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Golden Seed 프로젝트 사업 2단계 최종보고서

발간등록번호

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원예작물의 MAS 지원용 대용량
분자마커 지원 시스템 개발 및 서비스

2022

농림식품기술기획평가원
농림축산식품부

원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스

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프로젝트연구기관 / 순천대학교
제 1세부프로젝트연구기관 / 순천대학교
제 2세부프로젝트연구기관 / 순천대학교

농림축산식품부
(전문기관) 농림식품기술기획평가원

제 출 문

농림축산식품부 장관 귀하

본 보고서를 “원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스”(개발
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프로젝트연구개발기관명 : 순천대학교 산학협력단 허재선 (인)
제 1세부프로젝트연구기관명 : 순천대학교 산학협력단 허재선 (인)
제 2세부프로젝트연구기관명 : 순천대학교 산학협력단 허재선 (인)
제 2세부위탁과제연구기관명 : 농업회사법인 가나종묘(주) 안재균 (인)
참여기관명 : 농업회사법인 가나종묘(주) 안재균

프로젝트연구책임자 : 정희정
제 1세부프로젝트연구책임자 : 정희정
제 2세부프로젝트연구책임자 : 박종인
제 2세부위탁과제연구책임자 : 안재균
참여기관책임자 : 안재균

국가연구개발혁신법 시행령 제33조에 따라 보고서 열람에 동의합니다.

보고서 요약서

과제고유번호	213007-05-5-C GG00	해당단계 연구기간	2017.1.1.~ 2021.12.31	단계구분	2/2
연구사업명	단위사업	Golden Seed 프로젝트사업			
	사업명	GSP원예종자사업단			
프로젝트명	프로젝트명	원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스			
	제 1세부 프로젝트명	원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스			
	제 2세부 프로젝트명	자가불화합성 야생종 토마토를 이용한 대목 품종개발 및 품질관리체계 구축			
	제 2세부 위탁과제명	토마토 대목 스페인 전시포 운영에 의한 마케팅 강화			
프로젝트책임자	정희정	해당단계 참여연구원 수	총: 86명 내부: 86명 외부: 명	해당단계 연구개발비	정부: 2,664,200천원 민간: 천원 계: 천원
		총 연구기간 참여연구원 수	총: 86명 내부: 86명 외부: 명	총 연구개발비	정부: 2,664,200천원 민간: 천원 계: 천원
연구기관명 및 소속부서명	순천대학교 원예학과			참여기업명: 농업회사법인 가나종묘(주)	
위탁연구	연구기관명: 농업회사법인 가나종묘(주)			연구책임자: 안 재 균	
연구개발성과의 보안등급 및 사유	일반과제				

9대 성과 등록·기탁번호

구분	논문	특허	보고서 원문	연구시 설·장 비	기술요 약 정보	소프트 웨어	화합물	생명자원		신품종	
								생명정 보	생물자 원	정보	실물
등록·기탁 번호	1422-0067										
	1471-2164										
	0735-9640										
	2211-3452										

국가과학기술종합정보시스템에 등록된 연구시설·장비 현황

구입기관	연구시설·장비명	규격 (모델명)	수량	구입연월일	구입가격 (천원)	구입처 (전화)	비고 (설치장소)	NTIS 등록번호

- 신규 분자마커 정보 확보, 유효성 검증 및 지원
 - 토마토 마커 유효성 검증: 풋마름병 마커 2종, 세균성 점무늬병 마커 2종, 회색점무늬병 마커 3종, 흰가루병 마커 1종, 시들음병 마커 1종, 잎곰팡이병 마커 1종, 고구마선충뿌리혹병 마커 1종, joint 관련 유전자 마커 2종, 응성 불임성 마커 1종, Flavor 관련 EP1칩
 - 양배추 마커 유효성 검증: 양배추 시들음병 마커 2종, 오렌지색 마커 1종, 자가불화합성 Class I 및 Class II 마커 34종
 - 양파 마커 유효성 검증: 계통 고정도 및 순도 확인용 384칩 (EP1 시스템)
 - 주요 병 및 원예형질 관련 서비스: 토마토 637,458점, 양배추 106,748점, 양파 222,104점
- 재배종(*S. lycopersicum*) 및 야생종(*S. chmielewskii*, *S. habrochaites*, *S. pennellii* 등)을 구분할 수 있는 토마토 종 구분용 분자마커 개발 및 종간교잡 계통 육성
- 해외 전시포 6개소 운영 및 누적수출 2.64만불 달성

보고서 면수
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<요약문>

<p>연구의 목적 및 내용</p>	<ul style="list-style-type: none"> ○ 분자마커 대량지원 시스템 개발 및 서비스에 의한 육종효율 증대 <ul style="list-style-type: none"> - MAS 지원용 대용량 · 신속 분자마커 지원 시스템 개발 및 기 개발마커의 개량 - 토마토, 양배추, 양파 분자마커의 대용량 · 신속 서비스 ○ 하우스 장기재배용 내병계 토마토 대목 개발 <ul style="list-style-type: none"> - 풋마름병, 황화잎말림바이러스병, 고구마선충뿌리혹병, 근부위조병 등이 도입된 복합병저항성 토마토 대목 개발 ○ 2021년도 종자수출 5만불 달성, 해외전시포 1개소/년 운영 <ul style="list-style-type: none"> - 해외 현지 전시포 운영 등에 의한 품종의 우수성 홍보 및 마케팅 강화
<p>연구개발성과</p>	<ul style="list-style-type: none"> ○ 토마토 신규 분자마커 정보 확보, 유효성 검증 및 지원 <ul style="list-style-type: none"> - 유효성 검증: 토마토 풋마름병 마커 2종 (<i>Bwr-12</i>, <i>Bwr-6</i>), 세균성 점무늬병 마커 2종 (<i>Rx-3</i>, <i>Rx-4</i>), 회색점무늬병 마커 3종 (<i>Sm-CT55</i>, <i>Sm-InDel</i>, <i>Sm-565</i>), 흰가루병 마커 1종 (<i>ot-2</i>), 시들음병 마커 1종 (<i>I-2</i>), 잎곰팡이병 마커 1종 (<i>Cf-9</i>), 고구마선충뿌리혹병 마커 1종 (<i>Mi-23</i>), joint 관련 유전자 마커 2종 (<i>J2</i>, <i>EJ2</i>), 웅성불임성 마커 1종 (<i>ms</i>), Flavor 관련 EP1칩 (24 SNP) - 주요 병 및 원예형질 관련 서비스: 637,458점 ○ 양배추 신규 분자마커 정보 확보, 유효성 검증 및 지원 <ul style="list-style-type: none"> - 유효성 검증: 양배추 시들음병 마커 2종 (<i>Fusa6m</i>, HRM마커), 오렌지색 마커 1종 (<i>Or</i>), 자가불화합성 Class I 및 Class II 마커 34종 - 주요 병 및 원예형질 관련 서비스: 106,748점 ○ 양파 신규 분자마커 정보 확보, 유효성 검증 및 지원 <ul style="list-style-type: none"> - 유효성 검증: 계통 고정도 및 순도 확인용 384칩 (EP1 시스템) - 주요 원예형질 관련 서비스: 222,104점 ○ 재배종(<i>S. lycopersicum</i>) 및 야생종(<i>S. chmielewskii</i>, <i>S. habrochaites</i>, <i>S. pennellii</i> 등)를 구분할 수 있는 토마토 종 구분용 분자마커 개발 ○ 재배종(<i>S. lycopersicum</i>) 및 야생종(<i>S. chmielewskii</i>, <i>S. habrochaites</i>, <i>S. pennellii</i> 등) 유전체를 이용한 MABC용 chip 개발 ○ 재배종(<i>S. lycopersicum</i>) 및 야생종(<i>S. chmielewskii</i>, <i>S. habrochaites</i>, <i>S. pennellii</i> 등)를 이용한 토마토 종간교잡 계통 육성 ○ 해외 전시포 6개소 운영 및 누적수출 2.64만불 달성

<p>연구개발성과의 활용계획 (기대효과)</p>	<ul style="list-style-type: none"> ○ 본 과제에서 확립된 분석 시스템(PCR 시스템, Qiaxcel 시스템, HRM 분석 시스템, 염기서열분석장치, DNA대량추출장치, EP1분석장치, SNPline 분석장비) 등은 대용량분자마커 서비스 확대를 통한 육종연한 단축 및 육종효율 증대를 위해 장비인프라를 적극 활용할 계획임 ○ 분자마커의 대량분석을 위해 구축된 HRM (High Resolution Melting) 분석 시스템으로 맞추어 개량 및 개발된 분자마커들은 서비스의 정확도, 분석 시간 단축으로 신속한 내병성 및 중요 원예형질을 지닌 신품종 육성의 가속화에 활용할 계획임 ○ 수집된 토마토 야생종 유전자원들은 병 등의 분자마커 개발, 장기재배용 토마토 대목 육종에 활용할 계획임 ○ 재배종(<i>S. lycopersicum</i>) 및 야생종(<i>S. chmielewskii</i>, <i>S. habrochaites</i>, <i>S. pennellii</i> 등)을 구분할 수 있는 토마토 종 구분용 분자마커는 토마토 종간교잡 (재배종×야생종 등) 육종에 활용할 계획임 ○ 재배종(<i>S. lycopersicum</i>) 및 야생종(<i>S. chmielewskii</i>, <i>S. habrochaites</i>, <i>S. pennellii</i> 등) 유전체를 이용하여 개발된 MABC용 chip은 토마토 종간교잡 (재배종×야생종 등) 육종에 활용할 계획임 ○ 재배종(<i>S. lycopersicum</i>) 및 야생종(<i>S. chmielewskii</i>, <i>S. habrochaites</i>, <i>S. pennellii</i> 등)을 이용한 토마토 종간교잡 육성 계통들은 장기재배용 토마토 대목 품종 개발에 활용할 계획임 ○ 해외 전시포 운용 및 마케팅에 대한 축적된 노하우들은 토마토 수출을 위한 새로운 시장 개척에 활용할 계획임 				
<p>국문핵심어 (5개 이내)</p>	<p>분자표지 이용 선발</p>	<p>내병성</p>	<p>야생종 토마토</p>	<p>대목</p>	<p>수출</p>
<p>영문핵심어 (5개 이내)</p>	<p>Marker-assisted selection</p>	<p>Disease resistance</p>	<p>Wild tomatoes</p>	<p>Rootstock</p>	<p>Export</p>

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<별첨 2> 자체평가보고서

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제 1 장 연구개발과제의 개요

제 1 절 연구개발 목적

- MAS지원용 대용량·신속 분자마커 지원 시스템 개발
 - MAS지원용 토마토 병저항성 및 주요형질 판별 마커의 대용량 분석 시스템 개발
 - MAS지원용 양배추 병저항성 및 주요형질 판별 마커의 대용량 분석 시스템 개발
 - MAS지원용 양과 주요 형질판별 마커의 HRM 분석 시스템 개발
- 병저항성 판별 관련 분자마커 검정 지원: EP1, HRM, PCR, SSR 마커 이용
 - 토마토: 역병(Ph-3), 잎곰팡이병(Cf-9), 풋마름병(Bwr-12), 시들음병(I-2, I-3), 반쪽시들음병(Ve), 근부위조병(J3), 흰가루병(Ol, Lv), 고구마선충뿌리혹병(Mi), 반점위조바이러스병(Sw5), 황화잎말림바이러스병(TYLCV) 등
 - 양배추: 시들음병(Yr 4종), 노균병 등
- 주요형질 판별 관련 분자마커 검정 지원: EP1, HRM, PCR, PCR-CAPs 마커 이용
 - 토마토: 유·무한생장형, 응성불임성, 심실수, 과실숙기, 과육 및 과피색 등
 - 양배추: 자가불화합성 유전자형(Class I/II), 응성불임성(Ogura, Polima), 추대, 열구 등
 - 양과: 세포질 유형(N, T, S), 응성불임회복친(Rf), 구피색 등
- 여교잡 세대단축, 종자순도 분자마커 서비스
 - 토마토: 여교잡세대단축(MABC)용 384chip 서비스
 - 양배추: 여교잡세대단축(MABC)용 384chip 서비스
 - 양과: 여교잡세대단축(MABC)용, 계통의 고정 및 F1 순도 검정용 384chip 서비스
- 하우스 장기재배용 토마토 대목의 자가불화합성 채종체계 구축
 - 국내외 장기재배용 토마토 야생종 유전자원 수집 및 자가불화합성 유전자형 동정
 - 자가불화합성을 이용한 원종채종 체계 확립 및 F1 품종의 종자 채종효율 분석
- 하우스 장기재배용 내병계 토마토 대목 2품종 개발
 - 풋마름병, 황화잎말림바이러스병, 고구마선충뿌리혹병, 근부위조병 등이 도입된 복합병저항성 토마토 대목 2품종 개발
- 2021년도 종자수출 5만불 달성, 해외전시포 1개소/년 운영
 - 해외 현지 전시포 운영 등에 의한 품종의 우수성 홍보 및 마케팅 강화

제 2 절 연구개발의 필요성

- 식물신품종에 대한 지적재산권 보호를 통해서 종자시장을 장악하려는 선진국들의 시도가 치열해지고 있고, 세계 각국이 종자산업을 새로운 성장동력으로 인식하고 발전시켜 가고 있음. 특히 식물신품종은 생명공학과 같은 첨단 과학기술과 지식 기반을 갖춘 선진국과 다국적 거대기업은 농업생산을 전방에서 좌우하는 종자산업에 대한 투자를 강화해가고 있음
- 종자 산업은 농업 분야에서 기술집약적인 고부가 가치산업이므로, 국토가 좁고 자원이 빈약하지만 우수한 인력을 보유하고 있는 우리나라에 적합한 산업분야임. 앞으로 원예작물

- 종자 산업은 Well-Being 소비 경향과 생명공학기술의 발달에 따라 발전 가능성이 매우 큼
- 생명과학 기술의 발전에 따라 종자 생산에 있어서 교잡, 선발 육종뿐만 아니라 분자유종 기술의 중요성이 급격히 커지고 있으며, 분자 육종을 통한新品种 개발 시간과 비용이 빠르게 단축되고 있기 때문에 원예작물 종자 시장에서의 국제경쟁력을 유지시키기 위한 산,학, 관, 연이 연계된 분자유종 통합 지원 시스템의 구축이 절실히 필요한 실정임
 - 특히 단기간 내에 선진국의 품종 육성 수준으로 도달하기 위해서는 분자마커 이용선발 (Marker-assisted selection, MAS)기술을 육종시스템을 정착하여 품종개발 연한 단축 및 우량개체 선발효율의 극대화를 통해 경쟁력을 확보하여야 함
 - 국내에서 원예작물에 대한 분자마커 연구지원은 제한적이고, 일부 회사를 제외하고는 마커 개발과 활용이 현재 가능한 회사가 없어 국가적 차원에서 마커 개발 및 지원 채널이 요구되는 상황임
 - 현재 육종가들은 마커에 대한 필요성은 인식하고 있으나 국내에서 적용 가능한 마커들의 종류, 선발 효율성, 특성 등이 객관적으로 파악되고 정리되지 않아 그 활용은 극히 미미한 실정임
 - 국내 원예작물의 MAS 지원을 가속화하기 위해서는 형질별 요구도, 기술도, 마커개발용 유전자원 확보유무에 따라 우선순위 선정이 필요하고, 마커개발이 해외에서 보고되었으나 국내 활용 가능성 검토가 필요한 마커와 신규로 개발이 필요한 마커에 대한 연구가 진행되어야 함
 - 토마토新品种 육종에 있어 가장 큰 핵심요소는 내병성 육종으로 분자마커를 이용한 선발 기술을 이용하면 품종개발 연한을 단축하고 우량개체 선발의 효율이 극대화되므로 이 분자마커를 활용한 선발기술의 중요성이 크게 부각되고 있음. 또한 분자지표를 이용하여 육종 재료가 지니는 내병성 유전인자의 종류와 각 유전인자의 유전자형을 정확히 파악함으로써 결과예측이 가능한 효율적인 교배조합 작성과 후대검정 규모의 예상이 가능하게 됨
 - 토마토의 경우 미국, 유럽, 일본 등의 선진국에서 채소작물 중 품종육성에 대한 MAS의 적용이 가장 잘 이루어지고 있는데 특히 몬산토 등 다국적 종자회사에서는 토마토와 같은 고부가가치 채소 품종 개발을 위해서 MAS 기술 개발 및 활용에 많은 예산과 인력을 투입하고 있음. 반면, 국내에서 토마토 분자마커 연구지원은 제한적이고, 일부 회사를 제외하고는 마커개발과 활용이 현재 가능한 회사가 없어 국가적 차원에서 마커 개발 및 지원 채널이 요구되는 상황임
 - 토마토 유전체염기서열 해독 완결 등 지노믹스 기술 및 분자유종기술 등 농업생명공학 및 융합기술 발전으로 농업을 고부가가치 산업으로 변화시킬 수 있는 새로운 기회가 전개됨. 토마토 대량 분자마커 기술 개발을 통한 토마토 산업의 활성화를 위해 유용 육종소재의 탐색 및 집단 양성, 분자마커 개발 시스템 구축, 목표형질과 관련된 유용 유전자원을 분리하여 이를 바탕으로 효과적인 육종시스템의 구축이 필요함
 - 양배추의 경우 국내 종묘회사에서 많은 유전자원을 보유 중인 반면 자가불화합성 유전자형이 정확히 분류되어 있지 않기 때문에 육종현장에서는 육종가가 관행적으로 교배조합을 작성하고 있으므로 교배조합의 범위가 매우 좁음. 따라서 자가불화합성 유전자형 동정 마커 개발을 통하여 양배추 유전자원의 자가불화합성 유전자형 구분이 필요함
 - 따라서 양배추 자가불화합성 인자의 조기 동정 마커를 육종에 적용시킬 경우 육종연한을 현저하게 단축시킬 수 있음. 특히 S 유전자형 동정은 정확하고 신속하므로 교배 시에 발생

하는 환경요인에 의한 장애요인을 제거할 수 있음. 유묘기 때 S 유전자형이 동정되면 개화기까지 작물을 재배하는데 필요한 비용과 교배 노력이 절감됨

- 배추과 작물의 세포질 응성불임성(CMS)계통은 육종 소재 활용도가 높고 동일한 유전기작의 응성불임성은 한 개체만 있어도 다양한 응성불임성 계통을 육성할 수 있으므로 유전기작이 다양한 응성불임성 획득 및 판별이 필요함 따라서 본 연구개발 과제를 통해 육종회사나 개인 육종가 등이 보유한 육종소재 또는 유전자원의 CMS 유형을 정확히 판별하여 정보를 제공함으로써 육종연한 단축 및 육종비용을 절감할 수 있을 것임
- 양배추의 순도검정 및 세대단축을 위하여 여교잡 선발(Marker-assisted backcrossing: MAB)을 위한 대용량 SNP 선발 및 분자마커개발이 필요하며, 대용량 분석 장비를 Fluidigm EP-1 system을 이용한 대용량 분자마커분석 시스템 구축이 필요함
- 양배추에서 기존의 뿌리혹병에 대한 저항성 품종이 새로운 균주에 의해 이병성으로 바뀔에 따라 새로운 균주에 대한 저항성 유전자원 수집 및 유전적 해석, 그리고 저항성 선발 마커 개발이 요구되어짐
- 국내의 양파 품종 개발은 선진국에 비해 육종역사가 짧고 소수 종묘회사와 개인 육종가에 의존하고 있어 육종기반이 매우 빈약한 실정임. 더욱이 양파는 2년생 작물이기 때문에 일반 1년생 작물에 비해서 육종 기간이 2배 이상 소요되어 1품종을 개발하는데 적어도 20년이 소요되는 단점이 있음. 따라서 양파는 품종 출시기간을 단축시키면 빠른 시장 선점이 가능하기 때문에 분자표지 및 이를 이용한 세대단축기술이 절실히 요구됨
- 특히 양파는 자가불화합성이 없고 1개의 화구(umbel)에 많게는 1000여개의 꽃이 피고, 각 꽃들은 2~4주에 걸쳐 순차적으로 개화하므로 물리적 제وع에 의한 F1 종자의 생산은 불가능에 가깝기 때문에 응성불임을 이용하는 것이 효과적임
- 따라서 F₁품종 개발을 위해 임성조사 및 자식검정을 통해서 응성불임의 종류를 판별하는데 짧게는 4년에서 길게는 8년까지 소요되어 가장 큰 장애요인이 되고 있기 때문에, 응성불임의 종류를 쉽게 단기간 내에 판별할 수 있는 분자표지의 개발 및 육종 체계 확립이 필요함
- NGS (next generation sequencing; 차세대 염기서열 분석) 기술에 의해 양파에서 대량의 SSR, EST, SNP 정보가 수집되어야 하며, 이러한 정보를 이용하여 순도검정 및 여교잡 세대단축 적용 및 유전형 분석을 위한 분자마커의 개량 및 개발이 필요함
- 감귤 등의 과수는 유년성의 존재로 육종기간이 상당히 오래 걸리는 단점이 있기 때문에 전통 육종은 매우 시간이 필요하고, 다배성, 응성불임성 등으로 인해 육종성과를 도출하기에 어려운 면이 있음. 따라서 감귤의 육종 연한 단축과 육종 비용을 획기적으로 절감하기 위해서는 조기선발 표지개발이 필수적임
- 특히 내병성 분자표지와 유전체 정보를 활용한 MAB (Marker Assisted Breeding) 체계의 확립이 절대적으로 요구되는 시점임. 최근 유전체 비교분석을 통한 분자표지 개발이 급속히 발전하고 있어, 이들 유전체 정보를 활용한 범용성 분자표지 개발 촉진과 MAS 실용화와 육종의 과학화가 요구됨
- 결론적으로 치열한 세계종자시장에서 품종개발 연한 단축 및 우량개체 선발효율의 극대화로 경쟁력 확보를 위해서는 전 세계 연구자들이 개발하여 발표하고 있는 관련 분자마커를 국내 품종 육성에 이용할 수 있도록 먼저 국내에 이용 가능한 분자마커인지를 조사하고, 내병성 및 유용형질 관련 분자마커의 분석 기술을 개발하고 확립하고, 더 나아가 간편·

초고속 분석 기술을 활용한 대형 서비스 기반을 구축하는 것이 필요함

- 세계 종자시장의 50% 이상을 차지하고 있는 바이엘, 몬산토, 듀폰, 신젠타 등 글로벌 종자 회사의 M&A를 통한 종자 시장의 급격한 변화에 천문학적인 금액의 R&D 투자를 통하여 세계 종자시장에 대한 지배력을 점차 확산하고 있음
- 토마토는 세계적으로 과채류 중에서 가장 재배면적(472만 ha, 2013년 FAO)이 많은 작물로 종자산업에서도 중요한 위치를 차지하고 있음. 재배 면적순으로 보면 중국이 98만ha(20%)로 가장 넓고 인도 88만ha(17%), 터키 31만ha(5.7%), 이집트 21만ha (4.4%)순으로 나타남
- 토마토 시장의 주도하고 있는 국가 또는 종묘회사로 아시아는 중국과 인도 (신젠타), 미주는 브라질 (세미니스, 신젠타), 아프리카는 이집트 (신젠타), 유럽은 스페인 (신젠타, 누넴)임
- 중국 토마토 재배면적은 2000년 이후 86만 ha로 꾸준히 증가하다가 2006년 140만 ha를 기점으로 공급과잉으로 인해 면적이 줄었으나 다시 조금씩 증가 추세로 2013년 98만 ha(2013, FAO)로 세계 최대 토마토 재배면적임
- 중국 토마토의 평균 종자 가격수준은 약 500~1,000불/kg 수준이지만 저가형 품종이 주를 이루고 있으며 점진적인 품질 개선으로 인해 종자가격이 상승하고 있으며, 중국 내 고가 시장은 주로 유럽과 미국기업의 종자를 중심으로 형성이 되어 있고 종자의 가격은 많게는 10,000~20,000불/kg수준까지 차이를 나타냄
- 중국 토마토 재배지역에 따라 산동성, 하남성, 하북성 등 중국 내륙 북부 지역에서 주로 시설재배가 이루어지며 핑크토마토, 레드토마토, 방울 토마토 순으로 재배가 됨
- 광둥성을 중심으로 한 남부지역에서는 노지재배가 주를 이루며 레드와 방울 토마토가 재배됨. 신장성, 감숙성 등 중국 서부지방은 노지 가공용 토마토 재배가 주를 이룸
- 중국의 토마토 시장은 로컬 기업이 시장의 90% 이상을 차지하고 있으며 주요 품종은 대과(90%), 미니(5% 이내)로 나타나며 과색은 Pink계통(50%)과 Red계통(50%)이고, 유럽과 미국기업이 고가품종을 대상으로 시장의 약 10%정도를 차지하고 있음.
- 인도 토마토는 노지용 종자시장이 대부분을 차지하고, 종자시장은 약 400억원 규모이며 중국 다음으로 넓은 토마토 재배 국가이며 잠재력이 매우 큰 시장임. 토마토 종자 소요량은 F1 종자는 약 85톤, OP는 250톤으로 총 335톤으로 추정되며 OP종 비율이 아직 높은 편이어서 종자가격이 낮게 형성되어 있으나 최근 경제성장과 다국적 기업의 진출로 F1 종자시장의 규모가 폭발적으로 성장함
- 인도의 TYLCV (Tomato Yellow Leaf Curl Virus) 발생 확대로 TYLCV 내병계 품종의 개발 및 보급이 절실히 요구되고 있으며, 일부 회사에서 TYLCV 내병계 품종이 출하되면서 재배 폭이 넓어지고 수량이 증가하면서 토마토 교배종 시장이 빠르게 성장하였음
- Namdhari Seeds, Syngenta, US agriseeds, Nunhems 등의 다국적 회사들이 진출하여 경쟁 중이며, 토마토 품종육성을 적극적으로 하여 F1 시장이 커지고 있지만 품종의 종류가 많지 않기 때문에 시장잠재력과 수출가능성이 높은 인도 시장을 공략할 수 있는 다양한 토마토 품종개발이 필요함. 따라서 신품종 육성은 인도시장을 개척할 수 있는 중요한 과제임
- 동남아의 토마토 종자시장의 규모는 500억원 수준으로 인도네시아, 미얀마, 필리핀 등지에서 재배가 많이 되고 있으며 재배면적의 증가에 따른 연평균 5%의 종자시장이 성장하고 있음

- 인도네시아 및 동남아시아의 토마토 품종은 대부분 청고병 및 바이러스 내병성을 위주로 육성되었고 최근 TYLCV의 다발생으로 인한 TYLCV 내병성 품종연구가 활발히 이루어지고 있으나 실제 현지 농가에서 요구하는 TYLCV 내병계 고품질을 갖춘 품종의 종류가 적음
- 동남아 지역의 현지 회사는 육종능력이 떨어지며 마커의 활용도가 낮으므로 품종육성 기한이 길어 빠르게 변하는 시장 요구도에 비해 신품종 대처 능력이 떨어짐
- 국내 토마토 재배면적은 2000년대부터 매년 증가하다가 2007년도에 가장 많은 재배면적을 나타내었으며, 2015년도에 6,976ha에서 50만톤 정도 생산되었으며. 지역별로는 충남, 강원, 전남, 경기, 경남 순으로 많은 재배면적을 나타옴
- 대과토마토와 방울토마토의 재배면적 비율이 55:45 정도로 추산되며, 대과토마토는 핑크계 : 레드계 90 : 10, 방울토마토는 원형계 : 타원형계 (대추형) 40 : 60 정도로 재배되고 있음
- 재배품종은 국내육성품종이 약 30% 차지하고 있으며, 70% 정도가 외국품종으로 주로 일본과 유럽 등지에서 수입되고 있음. 대과종은 수입의존율이 높아 핑크계는 80% 정도가 일본품종이고, 레드계는 90% 정도가 네덜란드, 이스라엘 등에서 수입되고 있음
- 국내 토마토 종자시장에 외국 품종들이 무분별하게 들어오고 있으며, 종자가격도 비싸 토마토 재배농가의 부담을 가중시키고 있음. 또한 연작에 따른 각종 병해충 발생 증가와 최근 잦아진 극저온, 극고온 등 기후변화에 따른 토마토 안정생산이 위협받고 있음. 따라서 바이러스, 세균병, 곰팡이병 등에 복합내병성이면서 환경 적응성이 우수한 수입 대체용 신품종의 개발이 시급한 실정임
- 우리나라에서 주로 재배되는 품종은 기후와 토마토 소비 취향이 우리나라와 비슷한 일본에서 육성된 품종들이 대부분을 차지하고 있으나 최근에는 유럽의 종자회사들이 한국, 일본, 그리고 중국 동부지역에서 선호하는 분홍색 생식용 토마토 시장에 진출하고자 육성을 한 품종들의 재배면적이 국내에서 점차 늘어나고 있음
- 국내의 토마토 소비량이 점차 증가하여 재배면적이 매년 꾸준히 늘어나고 있어 농가소득에 중요한 위치를 차지하는 작물임. 토마토 재배는 대부분 시설에서 생산하고 있으나 우리나라의 시설재배농가는 경지면적이 적어 매년 연작하는 경우가 많아 연작에 따른 토양전염성 병해의 피해가 점점 증가하여 토마토 생산에 큰 타격을 주고 있는 실정임
- 토양전염성 병충해를 방제할 목적으로 토양소독을 실시하기도 하나 토양살균제를 이용한 소독은 토양환경 파괴를 수반하며 농가에 경제적인 부담이 큼. 이에 연작장애를 경감시키는 수단으로 접목은 매우 중요한 수단임
- 현재 우리나라의 토마토 접목비율은 60~65%정도로 추정되고 있으며 매년 증가할 것으로 예상되며, 접목율이 높은 일본도 꾸준히 접목 비율이 높아지고 있는 추세임
- 토마토 대목 품종은 대부분이 일본에서 수입하여 판매되고 있으며 대목종자의 수입은 종자의 대외 의존도를 높이고 경영비를 증가 시키는 요인이 되고 있음
- 현재 시판되고 있는 대목 품종은 내병계를 강화시킨 일반 대목 품종들 이며, 아직 국내에서 개발된 장기재배용 대목 품종은 전무한 실정임. 최근 장기재배용 대목 품종은 몬산토에서 판매되고 있는 'Maxifort' 품종을 홍농종묘에서 고가로 판매하고 있는 실정임. 따라서 외국의 장기재배용 대목 품종에 대한 의존율을 낮추기 위하여 'Maxifort' 품종보다 더 강화된

내병계 장기배재용 대목 품종의 개발이 필요함

제 3 절 연구개발 범위

연구 범위	연구수행방법 (이론적·실험적 접근방법)	구체적인 내용
<p>○ MAS지원용 대용량·신속 분자마커 지원 시스템 개발</p>	<p>○ 분자마커 서비스를 위한 장비 인프라 구축 및 활용성 업그레이드</p> <p>○ 신규 분자마커 정보 확보 및 validation Test</p>	<p>- SNP line(384), 대용량 DNA 추출장치, EP-1 시스템, 염기서열 및 fragment분석, SSR분석장치, PCR장치, HRM분석장치</p> <p>- 토마토 풋마름병(Bw) 저항성 SNP 분자마커(CH12-1, CH12-2, CH12-3, CH06_1) 정보 확보 및 표현형이 정확한 69sample에 대한 검증완료(2종 선발)</p> <p>- 토마토 세균성점무늬병 분자마커 (<i>Rx-3</i>, <i>Rx-4</i>) 정보 확보, 저항성 계통 및 이병성 계통을 통한 마커 검증 결과 저항성 계통과 이병성 계통을 명확하게 구분할 수 있는 마커의 검증완료(2종 선발)</p> <p>- 토마토 회색점무늬병 분자마커 (Sm-CT55)의 정보 확보 및 여러 가지 토마토 소재에 대한 검증완료(1종 선발)</p> <p>토마토 회색점무늬병 분자마커 (Sm-InDel, Sm-565)의 정보 확보 및 여러 가지 토마토 소재에 대한 검증완료(2종 선발)</p> <p>- 토마토 흰가루병 저항성 SNP 분자마커(<i>ol-2</i>) 정보 확보 및 표현형이 정확한 저항성 계통에 대한 검증완료(1종 선발)</p> <p>- 토마토 시들음병 I2 저항성 판별 SCAR 마커의 HRM 마커화를 통해 신속 정확 및 이형접합의 구분이 가능한 분자마커 검증완료(1종 선발)</p> <p>- 토마토 잎곰팡이병 Cf9 저항성 판별 Simple PCR마커의 개량을 통한 저항성, 이병성 및 이형접합 구분의 용이성을 개선한 분자마커 검</p>

		<p>증 완료(1종 선발)</p> <ul style="list-style-type: none"> - 기존 토마토 고구마선충뿌리혹병 분자마커인 <i>Mi-rex</i> 보다 더 정확하게 저항성 및 이병성을 판별할 수 있는 <i>Mi-23</i>마커를 HRM마커화 하였으며, 저항성 및 이병성 소재에 대한 검증완료(1종 선발) - 토마토 Joint 관련 분자마커(J2, EJ2) 정보 확보 및 표현형이 정확한 22 sample에 대한 검증완료(2종 선발) - 토마토 응성불임성 분자마커 (<i>GMS</i>) 관련 분자마커의 정보 확보 및 응성불임과 응성가임 소재에 대한 검증완료(1종 선발) - 토마토 flavor 관련 분자마커 정보 확보 및 유효성 검증(24 SNP 선발) - 양배추 시들음병 저항성판별 분자마커(<i>Fusa6m</i>) 정보 확보 및 표현형이 정확한 264 sample에 대한 검증완료(1종 선발) - 양배추 시들음병 저항성 판별 분자마커인 SSR마커를 HRM 마커로 전환하여, 시들음병에 저항성 및 이병성, heterozygote type에 대한 검증완료(1종 선발) - 양배추 자가불화합성 Class-II 유전자형의 판별이 가능한 qPCR용 3종의 분자마커 검증 완료(3종 선발) - 양배추 자가불화합성 Class-I 유전자형의 판별이 가능한 qPCR용 31종의 분자마커 검증 완료(31종 선발) - 양배추 오렌지색 Or 판별할 수 있는 Simple PCR의 HRM마커화를 통해 신속 정확한 오렌지색 판별이 가능한 분자마커 검증 완료(1종 선발)
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		양파 MABC용 384 SNP 마커 검증 완료(384 SNP 선발)
○ 병저항성 판별 관련 분자마커 검정 지원	○ 의뢰된 시료의 분자마커 서비스 실시	- 토마토 병저항성 판별 관련 분자마커 검정 지원: 1차년도 50,228점, 2차년도 56,669점, 3차년도 37,729점, 4차년도 75,492점, 5차년도 22,969점 - 양배추 병저항성 판별 관련 분자마커 검정 지원: 1차년도 1,014점, 2차년도 168점, 3차년도 567점, 4차년도 1,464점, 5차년도 1,200점
○ 주요 원예형질 판별 관련 분자마커 검정 지원	○ 의뢰된 시료의 분자마커 서비스 실시	- 토마토 주요 원예형질 판별 관련 분자마커 검정 지원: 1차년도 1,090점, 2차년도 793점, 3차년도 14,322점, 4차년도 928점, 5차년도 590점 - 양배추 주요 원예형질 판별 관련 분자마커 검정 지원: 1차년도 1,134점, 2차년도 1,104점, 3차년도 20,415점, 4차년도 23,862점, 5차년도 142점 - 양파 주요 원예형질 판별 관련 분자마커 검정 지원: 1차년도 4,136점, 2차년도 11,729점, 3차년도 10,144점, 4차년도 3,504점, 5차년도 87점
○ 순도/고정도 판별 관련 분자마커 검정 지원	○ 의뢰된 시료의 분자마커 서비스 실시	- 토마토 순도/고정도 판별 관련 분자마커 검정 지원: 1차년도 27,648점, 2차년도 6,888점, 4차년도 9,216점, 5차년도 14,167점 - 양배추 순도/고정도 판별 관련 분자마커 검정 지원: 5차년도 2,304점 - 양파 순도/고정도 판별 관련 분자마커 검정 지원: 1차년도 2,304점, 2차년도 18,432점, 5차년도 60,716점
국내외 장기재배용 토마토 야생종 등의 유전자원 수집	- 아시아채소연구개발센터 및 미국농무부(AVRDC 및 USDA)로부터 유전자원 수집 - 현재 시판중인 토마토 대목용 품종 수집 - 국내 농업유전자원센터로부터 유전자원 수집 - 수집된 유전자원들의 특성 검정	-USDA로부터 야생종 토마토 102 accession을 분양받아 자가불화합성 및 자가화합성을 본 연구에서 개발한 분자마커를 이용하여 검토한 결과 43개의 accession이 자가화합성으로 나타남. 이에 43개의 accession을 장기재배용 토마토 대목 개발에 이용하기 위하여 재배중임. -국내 토마토 대목의 대부분은 일본에서 종자를 수입하고 있음. 이에 일본에서 판매되고 있는 대부분의 품종을 수집하였으며, 본 연구실에서 보유하고 있는 13개의 병관련 분자마커들을 이용하여 병저항성 검정을 수행하였음 -각각의 품종들의 F2 및 F3 세대

		진전시 병 관련 분자마커들을 이용하여 병 관련 유전자들이 많이 집적된 식물체들을 선발하여 세대를 진전시켰음
토마토 종 구분용 분자마커 개발	<ul style="list-style-type: none"> - 토마토 종 구분관련 문헌정보 수집 - NCBI등으로부터 토마토 재배종 (<i>S. lycopersicum</i>) 및 야생종(<i>S. chmielewskii</i>, <i>S. habrochaites</i>, <i>S. pennellii</i> 등)들의 유전체 정보 탐색 - 탐색된 정보를 이용한 토마토 종 구분용 분자마커 개발 	<ul style="list-style-type: none"> -유전자은행 및 기 보고된 문헌들로부터 야생종인 LA1777 유전체 염기서열 및 재배종 Heinz 1706 유전체 염기서열을 확보하였음 -이들 2개의 유전체 염기서열들을 이용하여 In silico 분석을 통하여 다수의 SNP 및 InDel을 동정하였음 -다수의 동정된 SNP들을 이용하여 다수의 primer 조합 디자인 및 probe를 작성하여 EP-1 system을 이용하여 실험을 수행 - 68개의 유효 SNP 마커들이 재배종 및 야생종을 정확하게 구분할 수 있었음 -68개의 SNP 마커들은 장기재배용 토마토 대목품종 개발에 MABC용으로 이용할 계획임
자가불화합성 유전자형 동정을 위한 분자마커 개발	<ul style="list-style-type: none"> - 토마토 자가불화합성 유전자형 구분관련 문헌정보 수집 - NCBI등으로부터 토마토 자가불화합성 유전자 정보 탐색 - 탐색된 정보들을 이용한 토마토 야생종 자가불화합성 유전자형 동정용 분자마커 개발 - 수집 대목용 토마토 야생종의 자가불화합성 유전자형 동정 	<ul style="list-style-type: none"> -유전자은행으로부터 야생종 자가화합성 토마토 LA0407, PI_134418, CGN15791, CGN15793, LYC4의 유전체 염기서열 정보 및 야생종 자가불화합성 토마토 LA1718, LA1777의 유전체 염기서열 정보를 수집하였음. -수집된 유전체 염기서열 정보들을 이용하여 In silico분석을 통하여 자가불화합성 및 자가화합성 특이적 영역을 동정하였음 -동정된 부분으로부터 다수의 primer 조합 디자인 및 probe를 작성하여 HRM system을 이용하여 실험을 수행한 결과, 다수의 primer 조합 중 한 개의 primr 조합에서 자가불화합성 및 자가화합성 야생종 토마토를 정확하게 구분하였음 -개발된 자가불화합성 및 자가불화합성 구분용 분자마커를 이용하여 수집된 야생종 102개 accession을 검정한 결과 43개 accession이 자가화합성 야생종 토마토였음
재배종 및 야생종간 교배친화성 여부 검정	<ul style="list-style-type: none"> - 재배종(<i>S. lycopersicum</i>) 및 야생종(<i>S. chmielewskii</i>, <i>S. habrochaites</i>, <i>S. pennellii</i>)들간의 이면교배 수행 - 일측성 및 양측성 교배친화성 조사 	<ul style="list-style-type: none"> -재배종(<i>S. lycopersicum</i>) 및 야생종(<i>S. chmielewskii</i>, <i>S. habrochaites</i>, <i>S. pennellii</i>)들간에는 일측성 자가불화합성을 나타냄 -재배종(<i>S. lycopersicum</i>)을 female측으로 이용하고 야생종(<i>S. habrochaites</i>)을 male측으로 이용하여 교배하였음

		<p>때에 종자를 수확할 수 있었음</p> <p>-그러나 야생종(<i>S. habrochaites</i>)을 female측으로 이용하고 재배종(<i>S. lycopersicum</i>)을 male측으로 이용하여 교배하였을 때에 종자를 수확할 수 없었음</p> <p>-이러한 결과는 장기재배용 토마토 대목품종 개발을 위하여 야생종을 이용할 경우 야생종 토마토는 화분측으로만 이용 가능하다는 결과임</p>
토마토 유전자원(야생종 포함)의 병 저항성 평가	<ul style="list-style-type: none"> - 대목용 토마토 유전자원들에 대한 (야생종 포함) 풋마름병, 황화잎말림바이러스병, 고구마선충뿌리혹병, 근부위조병 등의 병 저항성 검정(분자마커 이용) - 선발 유전자원의 세대진전 및 계통 육성 	<p>-수집된 유전자원들의 F2 및 F3 세대진전시 병 관련 분자마커들을 이용하여 병 관련 유전자들이 많이 집적된 식물체들을 선발하여 세대를 진전시켰음</p> <p>-특히 토양점염병인 시들음병, 반쪽시들음병, 근부위조병, 갈색근부병, 고구마선충뿌리혹병, 풋마름병, 잎곰팡이병에 대한 저항성 유전자의 집적 정도를 중요시 하였으며, 또한 원종 채종을 위하여 중요한 모자이크바이러스병, 황화잎말림바이러스병 저항성 유전자의 집적도 매우 중요함. 이에 세대진전시 이들 유전자들이 집적된 식물체들을 선발하여 세대를 진전시켰음</p>
해외 전시포운영	<ul style="list-style-type: none"> - 스페인 지역의 환경 적응성시험 및 평가 - 스페인 전시포 및 시범포 운영을 통한 품종 홍보 	<p>-해외 전시포를 통한 국내 개발 대목 품종의 우수성 검증</p> <p>-해외: 유럽 스페인 2개소에 농가시험재배 및 지역 적응성시험을 실시</p>
수출 5만불 달성	-해외 수출	<p>-5만불 수출 달성을 위하여 해외 전시포운영을 통한 마케팅 강화</p> <p>-금액 5.75 만불을 달성함</p>

제 2 장 연구수행 내용 및 결과

제 1 절 분자마커 활용성 검토 및 서비스

1. 분자마커 서비스 가능한 분자마커 정보 및 장비 인프라 구축

○ 본 연구는 원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스에 의한 육종효율 증대를 목표로 토마토, 양배추, 양파 등을 대상으로 기 개발된 마커 또는 GSP 사업단에서 개발한 MAS지원용, MABC용 마커를 이용하여 대용량·신속 분자마커 지원 시스템 개발 및 서비스를 위한 과제이다.

○ Gold seed 개발을 위한 필수조건으로 크게 3가지를 들 수 있다. 먼저 내병성, 내재해성, 우수하고 다양한 원예형질을 가진 유전자원이 풍부해야 하며 이러한 우수한 유전자원을 엘리트 계통이나 품종에 도입할 수 있는 진보된 육종기술이 뒷받침 되어야 하며 이러한 육종과정에서 전통육종의 단점을 보완하고 육종효율을 극대화하기 위해 정확하고 현장적용이 가능한 실용적인 분자마커(병저항성 및 원예형질 판별, 내재해성판별, MABC 적용)의 지원이 필수적이다.

○ 특히 분자마커 지원시스템이 효율적으로 구축되기 위해서는 첫째 현장적용이 가능하며 정확한 분자마커의 확보가 선행되어야 하며 아울러 분자마커의 종류에 적합한 다양한 장비 인프라(대용량 DNA 추출장치, PCR장치, EP-1 시스템, 염기서열 및 fragment분석, SSR분석장치)와 우수한 인적자원을 확보함으로써 신속, 정확하고 노동력과 비용을 적게 투입하면서 대용량 분자마커 지원 시스템이 가능할 것이다.

가. 품목별 서비스 가능한 분자마커 종류

(1) 토마토 서비스 가능한 분자마커 종류

구분	병 및 형질 종류		마커종류	비고
병저항성 판별마커	바이러스	반점위조바이러스병(Tomato spotted wilt virus)	Sw-5	24 종
		모자이크바이러스병(Tomato mosaic virus)	Tm-2a	
		황화잎말림바이러스병(Tomato yellow leaf curl virus)	Ty1, Ty2, Ty4, ty5, Ty6	
	곰팡이	역병 (Late blight)	Ph-3	
		잎곰팡이병(Leaf mould)	Cf-9	
		회색집무늬병(Gray leaf spot)	Sm (Ls)	
		시들음병(Fusarium wilt)	I, I-2, I-3, I-7	
		반쪽시들음병(Vericillium wilt)	Ve-2	

구분	병 및 형질 종류		마커종류	비고
		근부위조병(Fusarium crown and root rot)	J3 (Frl)	
		갈색근부병(Corky root rot)	py-1	
		흰가루병(Powery mildew)	ol-2, Lv	
	세균	세균성 점무늬병(Bacterial spot)	Rx-3, Rx-4	
		꽃마름병(Bacterial wilt)	Bwr-6, Bwr-12	
	선충	고구마선충뿌리혹병(Nematoda root knot)	Mi-23	
원예형질 판별마커	유무한생장형(non-self pruning/self pruning)		SP	24 종
	웅성불임성(GMS)		MS10	
	심실수		Lc	
	과실숙기 NOR(fast ripening) / nor(non ripening), RIN(fast ripening) / rin(ripening inhibitor)		NOR, RIN	
	Yellow 과육색		Psy1 (5 종)	
	Orange 과육색		CYC-B	
	Brown 과육색		SGR (5 종)	
	Pink 과피색		MYB12 (6 종)	
	Jointless 분지수		J2 EJ2	
MABC	여교잡세대단축(MABC)용		384chip(EP-1 시스템)	1 세트
순도검정	F1 순도검정용		384 SNP	1 세트

현재까지 서비스 가능한 병저항성 판별마커는 24종이며 원예형질 판별관련 마커는 현재까지 24종이 서비스가 가능하며, 여교잡세대단축(MABC용) 마커는 현재 384chip이 완료되어 서비스가 가능하다.

(2) 양배추 서비스 가능한 분자마커 종류

구분	병 및 형질 종류		마커종류	비고
병저항성 판별마커	곰팡이	시들음병, 노균병	FocBo1 (4 종) Pp523 (1 종)	5 종
원예형질 판별마커	웅성불임성 (오구라 CMS 판별)		orf138 (1 종)	37 종
	자가불화합성 (Self-incompatibility)		SI (34 종)	
	자색/녹색구분		MYBL2 (1 종)	
	노란색 구분		Or (1 종)	
MABC	여교잡세대단축(MABC)		96chip(EP-1 시스템)	1 세트
순도검정	F1 순도검정용		96 SNP	1 세트

양배추 품목의 병저항성 판별마커는 현재까지 시들음병과 노균병에 대해 5종의 마커가 개발이 완료되어 서비스를 하고 있으며, 양배추 형질판별 마커는 37종의 마커가 개발완료되어 현재 서비스가 가능하다. 여교잡세대단축(MABC용) 마커는 현재 96chip이 완료되었으며, 동일한 SNP를 이용하여 종자 순도검정용 분자마커 서비스가 가능하다.

(3) 양과 서비스 가능한 분자마커 종류

구분	병 및 형질 종류	마커종류	비고
병저항성판별마커	노균병	DMR (1)	1 종
원예형질판별마커	웅성불임 유무 및 유형	orf725 (1)	2 종
	웅성불임 회복유전자	Jnurfl3 (1)	
MABC	여교잡세대단축(MABC)용	384 chip	1 세트
순도검정	F1 순도검정용	384 SNP	1 세트

양과품목의 병저항성 판별마커는 현재까지 노균병에 대하여 서비스 가능하며, 양과 형질마커의 경우 웅성불임 유무 및 유형, 웅성불임 회복유전자 판별마커 2종에 대해 서비스가 가능하다. 여교잡세대단축(MABC용) 마커는 현재 384chip이 완료되어 종자 순도검정용서비스 및 여교잡세대단축(MABC용) 분자마커 서비스가 가능하다.

나. 분자마커 서비스를 위한 장비 인프라 구축

○ 신속, 정확하며 대용량으로 분자마커 서비스를 지원하기 위해해서는 분자마커의 종류에 따라 이에 적합한 다양한 장비인프라 구축이 선행되어야 하는데, 이구축된 장비인프라는 다음과 같다.

■ HRM 시스템 및 SSR시스템



<PCR >



<HRM 분석>



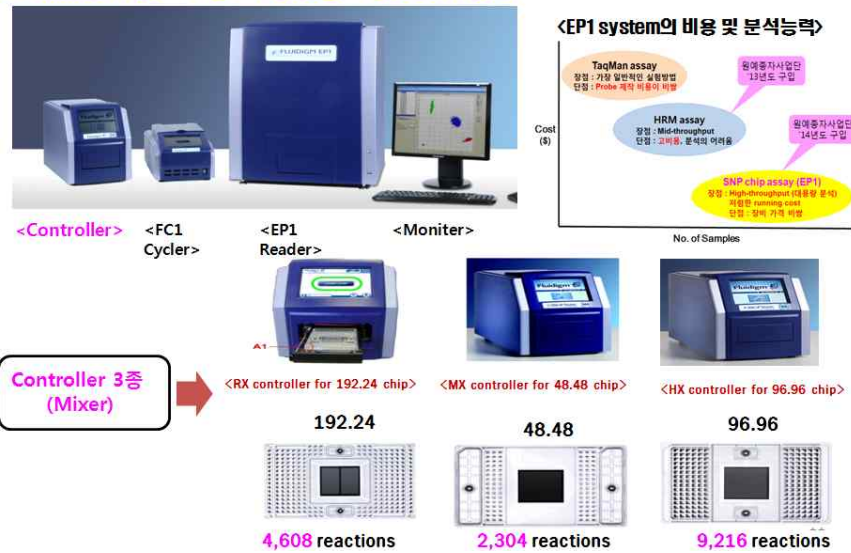
<Qiaxcel_SSR>



<염기서열 및 fragment 분석>

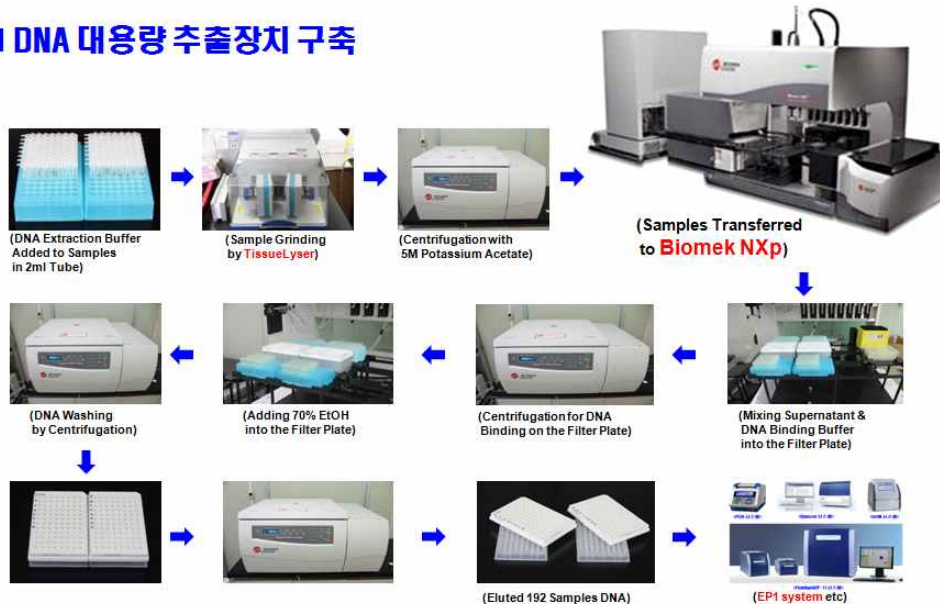
분자마커 서비스 과제가 시작된 1단계 1차년도(2013년)에는 분자마커 서비스에 필요한 가장 기본 장비의 구축을 시작하여 현재까지 PCR 분석장치 11대, SNP마커 분석을 위한 HRM 분석장치 2대, SSR마커를 분석하기 위한 Qiaxcel장치 1대 와 염기서열 및 fragment 분석장치 1대가 구축되어 있다.

Fluidigm (EP-1) 분석 장비의 구성 및 활용성



대용량 분자마커 서비스를 위해 Fluidigm(EP-1) 분석장비를 도입하여 구축하여 활용성 검토를 하였다. 현재까지 3종의 controller를 모두 갖추었으며, 192×24chip의 처리용량은 4,608점, 48×48chip의 처리용량은 2,304점, 96×96chip의 처리용량은 9,216점이 가능하다.

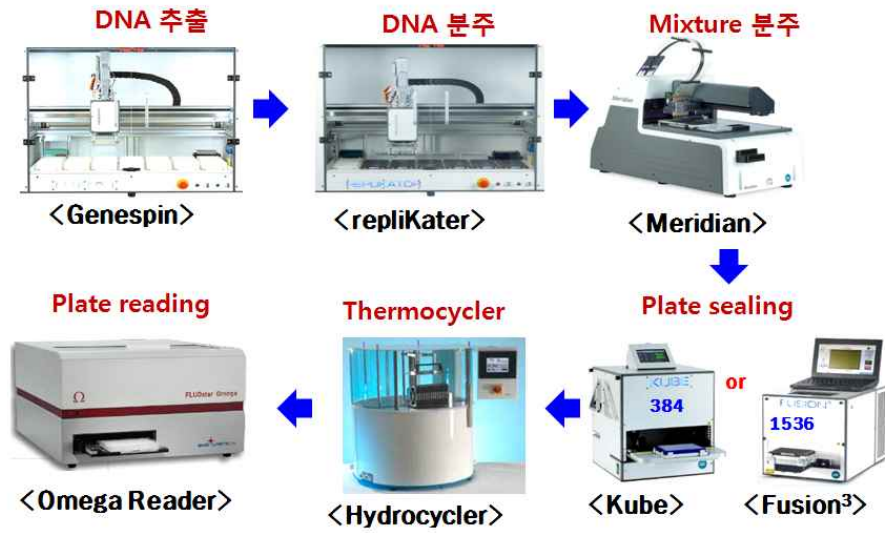
DNA 대용량 추출장치 구축



대용량 분자마커 서비스를 위한 첫 단계인 DNA추출의 경우 수동으로 추출할 경우 시간과 비용이 많이 들고 추출과정에서 실수가 발생할 수 있다. 이러한 문제점을 해결하기 위해 DNA 대용량 추출장치를 구축하였는데 1회 처리할 수 있는 sample은 288점(96well×3plate)이며 1시간 30분이 소요된다. 대용량으로 추출된 DNA는 DNA양과 질에 우수하고 sample간 변화가 적으며 수동추출과정에서 발생하는 실수를 줄이 수 있는 장점이 있으며 추출 후 바로 Fluidigm(EP-1)

분석에 바로 적용할 수 있다.

■ SNP line 분석장비 구축



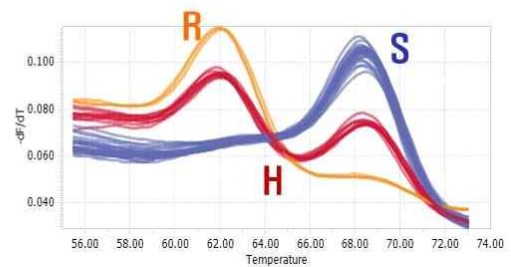
대용량 분자마커 서비스를 위해 SNP line 분석장치를 구축하고 활용성 검토를 실시하였다. 현재 1개의 SNP 분자마커에 대해 384sample을 한꺼번에 분석 처리할 수 있다.

2. 신규 분자마커 정보 확보 및 유효성 검증

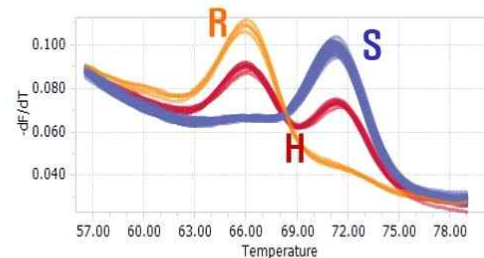
1) 토마토 풋마름병(Bw) 저항성 분자마커 CH12-3 (Bwr-12), CH06_1 (Bwr-6) 정보 확보 및 validation Test

토마토 풋마름병의 저항성에 관한 major QTL로는 chromosome 12번이 잘 알려져 있으며 minor QTL인 chromosome 6번이 알려져 있어 2곳에서 총 4개의 SNP 마커정보(CH12-1, CH12-2, CH12-3, CH06_1)를 확보하여 표현형을 정확히 알고 있는 69개의 sample을 이용하여 validation Test 실시한 결과 2종의 마커(CH12-3, CH06_1)가 표현형과 일치하여 현재 이 2종의 분자마커를 이용하여 토마토 풋마름병 서비스가 가능하다.

No.	CH12_1	CH12_2	CH12_3	CH06_1	No.	CH12_1	CH12_2	CH12_3	CH06_1
1	H	S	H	H	36	R	R	S	S
2	H	S	H	H	37	H	H	S	S
3	H	S	H	H	38	R	R	S	S
4	S	S	S	H	39	H	H	S	S
5	S	S	S	H	40	S	S	S	S
6	S	S	S	H	41	H	H	S	S
7	S	S	H	H	42	H	H	S	S
8	S	S	H	H	43	H	H	S	S
9	S	S	H	H	44	H	H	S	S
10	R/H	S	R	H	45	H	H	S	S
11	R/H	S	R	H	46	R	S	S	S
12	R/H	S	R	H	47	R	S	S	S
13	S	S	H	R	48	R	S	S	S
14	S	S	H	R	49	R	S	S	S
15	S	S	H	R	50	R	S	S	S
16	H	S	R	R	51	R	S	S	S
17	H	S	R	R	52	R	S	S	S
18	H	S	R	R	53	R	S	S	S
19	S	S	S	S	54	S	S	S	H
20	S	S	S	S	55	S	S	S	H
21	H	H	S	S	56	H	S	S	H
22	S	S	S	S	57	S	S	S	H
23	S	S	S	S	58	H	S	S	H
24	S	S	S	S	59	S	S	S	S
25	S	S	S	S	60	S	S	S	H
26	S	S	S	S	61	S	S	S	S
27	S	S	S	S	62	H	S	H	H
28	S	S	S	S	63	H	S	H	H
29	H	H	S	S	64	S	S	S	R
30	R	R	S	S	65	H	S	H	R
31	H	H	S	S	66	R	R	S	S
32	S	S	S	S	67	H	H	H	S
33	H	S	H	S	68	H	H	S	S
34	S	S	S	S	69	H	S	S	S
35	H	H	S	S					



<CH12_3마커>



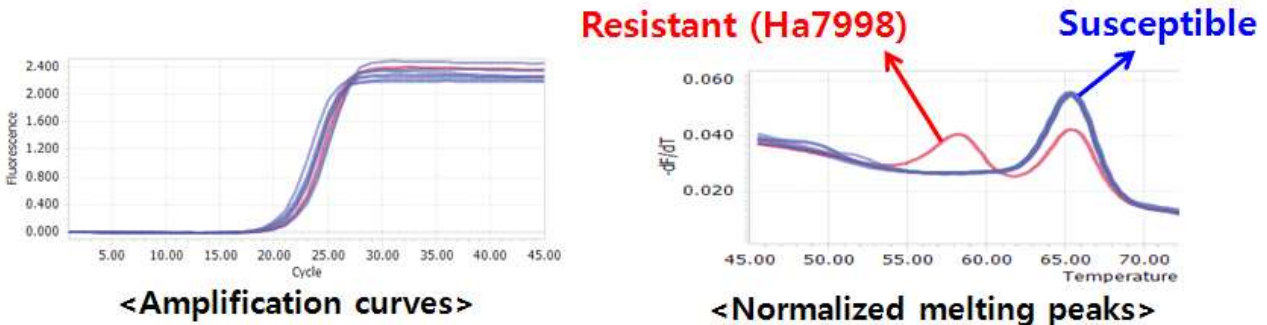
<CH06_1마커>

<그림. 토마토 풋마름병(Bw) 저항성 분자마커 CH12-1, CH12-2, CH12-3, CH06_1 validation Test>

2) 토마토 세균성 점무늬병 (Rx-3, Rx-4) 저항성 분자마커 정보 확보 및 validation Test

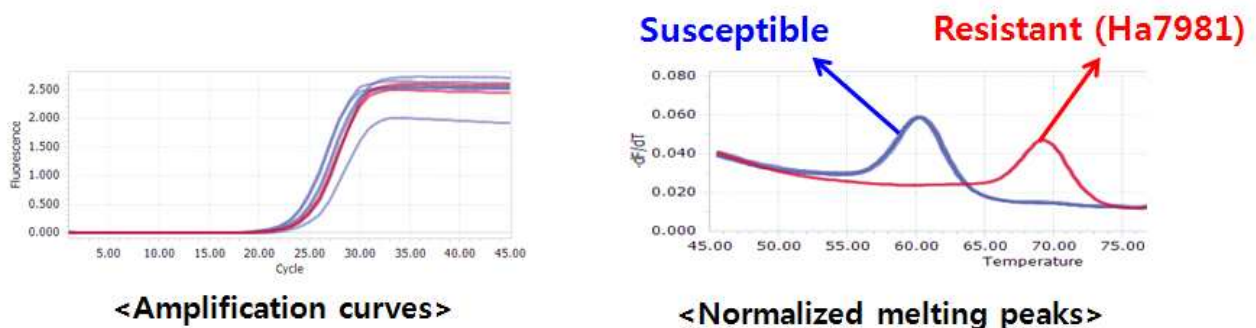
토마토 세균성 점무늬병의 저항성에 관한 분자마커 정보를 GSP 토마토 분자마커 개발팀에서 세균성 점무늬병(Rx-3 및 Rx-4)에 저항성 및 이병성을 구별할 수 있는 SNP 위치를 제공받아, HRM 마커를 제작하였다. 또한 분자마커팀으로부터 Rx-3에 저항성 계통인 Ha7998에서 분리한 DNA를 분양받았다. 분양받은 DNA 및 세균성 점무늬병에 이병성인 개체를 여러 조합의 primer 및 probe를 작성하여, 검정해 본 결과 저항성 계통인 Ha7998의 melting peak이 heterozygote type으로 판별되어 저항성 homozygote 저항성 계통을 명확히 구분할 수 있는 마

커의 개선이 요구된다. 또한 *Rx-4*에 저항성 계통인 Ha7981에서 분리한 DNA도 분양받아 HRM 마커를 작성하여 실험을 해본 결과 저항성 계통과 이병성 계통이 명확하게 구분되었다. 현재 개발된 세균성 점무늬병 분자마커를 이용하여 분자마커 서비스가 가능하다.



저항성 샘플의 경우는 heterozygote 으로
저항성 homozygote type을 구분할 수 있는 마커의 개선 요구됨

<그림. 토마토 세균성 점무늬병 (*Rx-3*) 저항성 분자마커 validation Test>

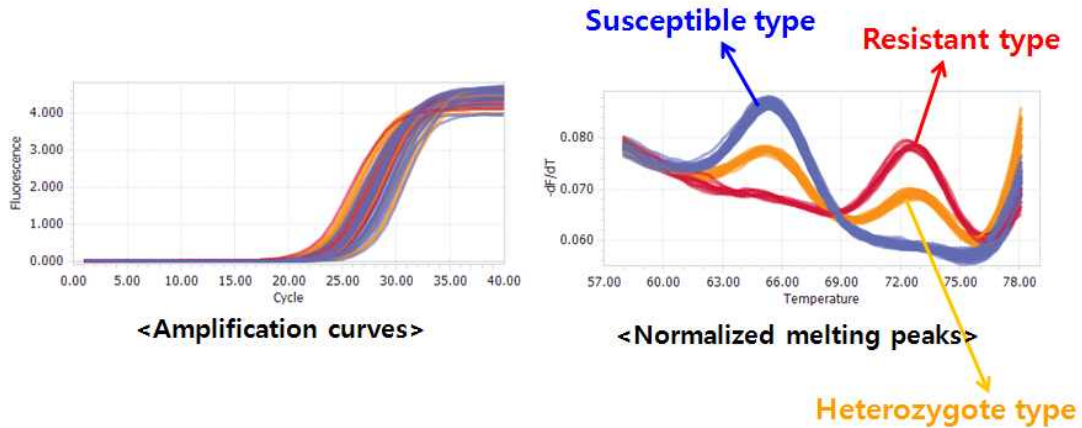


*Rx-4*의 저항성, 감수성을 신속·정확하게 판별할 수 있는 HRM마커 제작 완료

<그림. 토마토 세균성 점무늬병 (*Rx-4*) 저항성 분자마커 validation Test>

3) 토마토 회색점무늬병 (*Sm-CT55*) 저항성 분자마커 정보 확보 및 validation Test

토마토 회색점무늬병의 저항성 및 이병성을 구별할 수 있는 기 보고된(*Sm-CT55*) CAPS 마커의 SNP 위치를 이용하여 HRM마커로 전환하였다. 다양한 토마토 품종 및 계통을 가지고 개발한 HRM 마커를 테스트 해본 결과 저항성, 이병성 및 heterozygote type이 잘 분리되는 것을 확인하였다. 현재 이를 이용하여 회색점무늬병 저항성 및 이병성 판별을 위한 분자마커 서비스가 가능하다.



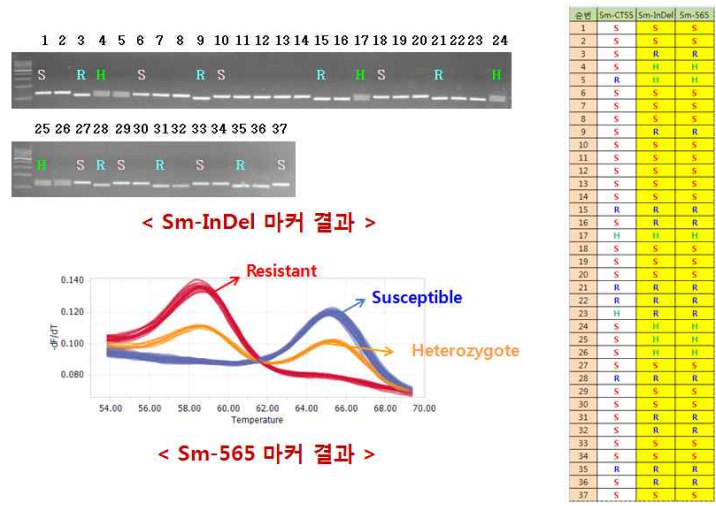
기 보고된 CAPS마커의 SNP 정보로부터 HRM마커로의 전환

<그림. 토마토 회색점무늬병 (Sm-CT55) 저항성 분자마커 validation Test>

4) 토마토 점무늬병(Sm) 저항성 분자마커 Sm-InDel, Sm-565 정보 확보 및 validation Test

토마토 육종가로부터 37샘플을 제공받아 기존에 분자마커에 사용하였던 Sm-CT55와 새로운 논문(Su et al, 2018, TAG)에 나온 자료의 InDel 위치 및 SNP에 대하여 분자마커 validation을 실시하였다. 아래 그림은 Sm-CT55, Sm-InDel 및 SNP 위치에서 새롭게 디자인하여 Sm-565 분자마커를 개발하였다. 그 결과 토마토 37샘플에 대하여 Sm-InDel과 Sm-565는 100% 일치하는 결과이었으며, Sm-CT55의 경우는 새로운 마커들과 약 68%만 일치하였다. 또한 이 결과를 소재를 제공해 준 육종가에게 피드백은 받아 기존 Sm-CT55 보다는 새롭게 개발된 Sm-InDel 및 Sm-565가 표현형과 일치된다는 의견을 받았다. 따라서 Sm-InDel 및 Sm-565 중 마커 분석이 신속, 정확하게 나올 수 있는 HRM 마커인 Sm-565를 이용하여 더 정확한 서비스를 진행할 수 있을 것으로 기대된다.

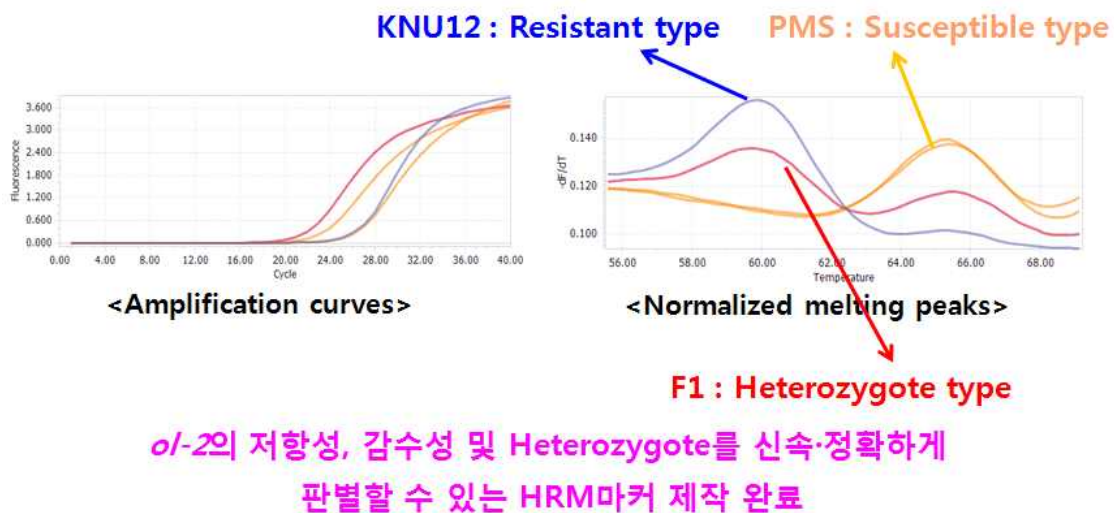
◆ 토마토 점무늬병 관련 분자마커 validation



<그림. 토마토 회색점무늬병 (Sm-InDel 및 Sm-565) 저항성 분자마커 validation Test>

5) 토마토 흰가루병(*o1-2*) 저항성 분자마커 정보 확보 및 validation Test

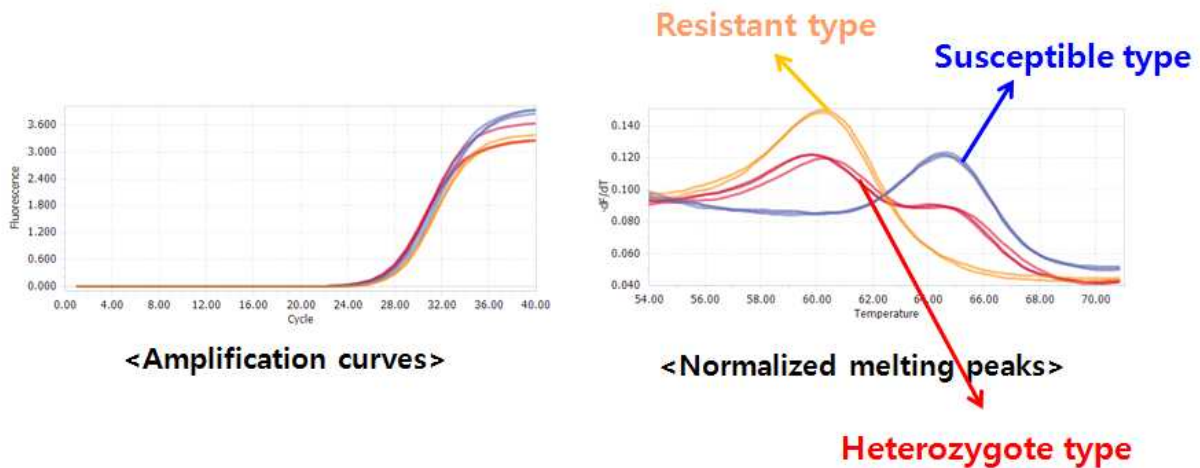
토마토 흰가루병의 저항성에 관한 분자마커 정보를 GSP 토마토 분자마커 개발팀에서 흰가루병에 저항성 및 이병성을 구별할 수 있는 1 bp InDel 위치를 제공받아, HRM 마커를 제작하였다. 또한 분자마커팀으로부터 저항성 계통인 KNU12와 이병성 계통인 PMS 및 이들의 F1 개체에서 분리한 DNA를 분양받았다. 분양받은 DNA에 여러 조합의 primer 및 probe를 작성하여, 저항성 계통, 이병성 계통 및 F1이 잘 구분되는 조합을 찾았으며, 현재 개발된 *o1-2* 분자마커를 이용하여 흰가루병 저항성 판별 분자마커 서비스가 가능하다.



6) 토마토 시들음병 I-2 저항성 판별 분자마커 개량 및 validation Test

기존에 사용하였던 시들음병(I2) 저항성 판별 분자마커인 Z1063(Arens et al, 2010, TAG)의 경우 저항성에서만 940 bp의 단일 밴드로 증폭되어, 이형접합(Heterozygote)인 경우 정확한 분자마커의 판별이 불가능하여, 이형접합을 판별할 수 있는 분자마커가 요구된다. I2 유전자는 6개의 homologue가 알려져 있는 NBS-LRR인 R 유전자이다. 따라서 6개의 homologue 중에서 I2 저항성을 판별해 낼 수 있는 분자마커를 만드는 것 작업이 필요했으며, 특히 이병성을 특이적으로 검출해 낼 수 있는 방법이 필요하였다. NCBI 데이터베이스 및 Solgenomics의 저항성 유전자 염기서열 정보를 이용하여 저항성과 이병성 및 이형접합 상태를 구분해 낼 수 있는 HRM용 분자마커를 개발하였다. 그 결과 Simple PCR로는 확인이 불가능했던 이형접합을 정확하게 판별해 낼 수 있었으며, 이러한 결과는 분리육종시 선발효율을 크게 높일 수 있으리라 기대된다.

용하면, 고구마선충뿌리혹병의 저항성 및 이병성을 구분할 수가 있다는 보고가 있었다. 하지만 기존의 *Mi-23*의 mutation 영역은 InDel mutation이라서 simple PCR을 통해 나온 결과를 높은 농도(%)의 gel에 흘려보낸 후 확인해야 하는 번거로움이 있었다. 따라서, 더욱 더 효율적인 마커검정을 위한 HRM을 이용하기 위하여 여러 가지의 primer 및 probe를 디자인하였다. 그 중에서 저항성과 이병성 및 heterozygote type이 잘 구분되는 조합을 찾아내었으며, 현재 이를 이용하여 고구마선충뿌리혹병 저항성 및 이병성 판별을 위한 분자마커 서비스가 가능하다.



Mi-rer 마커에서 *Mi-23* 마커로의 전환

<그림. 토마토 고구마선충뿌리혹병 (*Mi-23*) 저항성 분자마커 validation Test>

9) 토마토 Joint 관련 분자마커정보 확보 및 validation Test

토마토 화방의 joint 관련 유전자인 J2 와 EJ2로부터 joint관련 마커 정보를 확보하여 표현형을 정확히 알고 있는 22개의 sample을 이용하여 validation Test를 실시하였다. J2유전자에 Mutation이 일어난 것은 jointless로 표현형과 정확히 일치하였으며, J2유전자가 정상적인 경우 jointed로 표현형과 일치하였다. EJ2 유전자의 경우 정상인 경우 단화방(low branching)으로 나타났으며, Mutation이 일어났을 때 복화방(multi branching)을 나타내었으며, Hetero일 경우 중간형 화방(L/M branching)의 표현형과 일치하였다. 따라서 J2 와 EJ2 분자마커를 이용할 경우 토마토 화방의 joint 유무와 화방형태를 판별할 수 있어, 2개의 분자마커를 이용하여 현재 서비스가 가능하다.

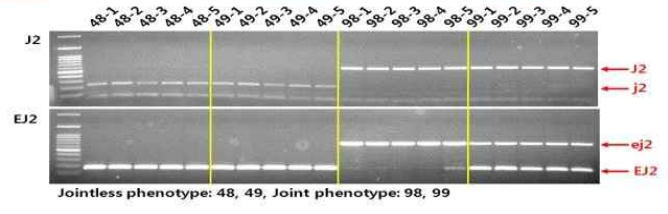
No.	CN	GN	J2	EJ2	마크관성분류	비고
1	48-1	F5	M	N	jointless, low branching (단약방)	중과중
2	48-2	F5	M	N	jointless, low branching (단약방)	중과중
3	48-3	F5	M	N	jointless, low branching (단약방)	중과중
4	48-4	F5	M	N	jointless, low branching (단약방)	중과중
5	48-5	F5	M	N	jointless, low branching (단약방)	중과중
6	49-1	F5	M	N	jointless, low branching (단약방)	중과중
7	49-2	F5	M	N	jointless, low branching (단약방)	중과중
8	49-3	F5	M	N	jointless, low branching (단약방)	중과중
9	49-4	F5	M	N	jointless, low branching (단약방)	중과중
10	49-5	F5	M	N	jointless, low branching (단약방)	중과중
11	50-1	F5	N	N	jointed, rare branching (단약방)	중대과중
12	98-1	F5	N	M	jointed, multi branching (복약방)	방울형
13	98-2	F5	N	M	jointed, multi branching (복약방)	방울형
14	98-3	F5	N	M	jointed, multi branching (복약방)	방울형
15	98-4	F5	N	M	jointed, multi branching (복약방)	방울형
16	98-5	F5	N	M	jointed, multi branching (복약방)	방울형
17	99-1	F5	N	H	jointed, L/M branching (단/복약방)	송이형
18	99-2	F5	N	H	jointed, L/M branching (단/복약방)	송이형
19	99-3	F5	N	H	jointed, L/M branching (단/복약방)	송이형
20	99-4	F5	N	H	jointed, L/M branching (단/복약방)	송이형
21	99-5	F5	N	H	jointed, L/M branching (단/복약방)	송이형
22	100-1	F5	M	M	jointless, multi branching (복약방)	가공용 중과중



<Jointless>



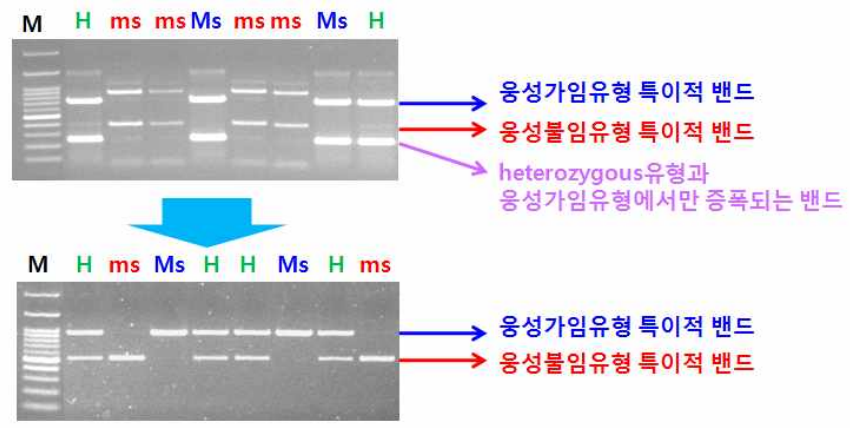
<Jointed>



<그림. 토마토 Joint 관련 분자마커(J2, EJ2)의 정보 확보 및 validation Test>

10) 토마토 응성불임성 관련 분자마커정보 확보 및 validation Test

토마토 응성불임성 관련 유전자인 *MS10³⁵*의 기 보고된 mutation 위치의 정보 획득 및 GSP 토마토 분자마커 개발팀에서 작성한 primer 정보를 제공받아 조금 더 gel에서 명확하게 응성가임과 응성불임 및 heterozygote type을 판별할 수 있는 simple PCR 마커를 디자인하였다. 현재, PCR 분자마커를 확보하여 토마토 응성불임성을 판별하는 데 분자마커 서비스가 가능하다.

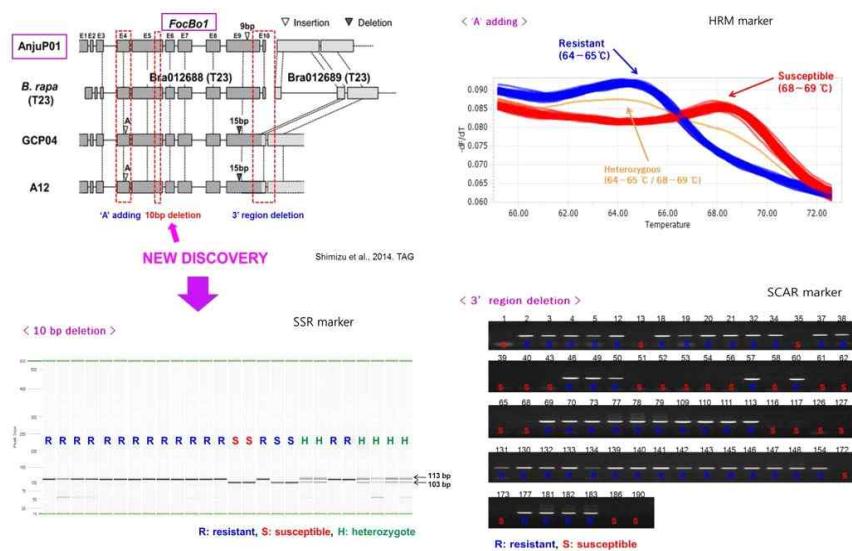


토마토 분자마커 개발팀으로부터 받은 primer정보에 기초하여 더 잘 구분되는 PCR 분자마커 확보

<그림. 토마토 응성불임성 판별 분자마커의 정보 확보 및 validation Test>

12) 양배추 시들음병 저항성 판별 분자마커(Fusa6m) 정보 확보 및 validation Test

양배추 시들음병 저항성 판별마커는 GSP 1단계에서 본 과제 수행시 3종의 판별마커 정보를 확보하여 validation Test 거친 후 아래 그림과 같이 서비스를 진행해왔다. 1차년도에 양배추 시들음병 저항성 관련 새로운 위치가 보고된바 관련 분자마커(Fusa6m)정보를 확보하여 시들음병 표현형이 확인된 264 sample에 대해 기존의 마커 결과와 일치여부를 확인하였다. validation test 결과 기존의 마커 3종의 마커와 96.1%의 일치율을 나타내었다. 기존의 분자마커 서비스에 이용했던 양배추 시들음병 저항성 판별마커(3종)는 정확도는 매우 높으나 판별을 위해서는 3종을 마커를 모두 사용해야 하지만 Fusa6m의 경우는 분자마커 1종으로 판별이 가능하므로 앞으로 Fusa6m마커를 좀 더 개선하여 분자마커 서비스에 활용할 계획이다.



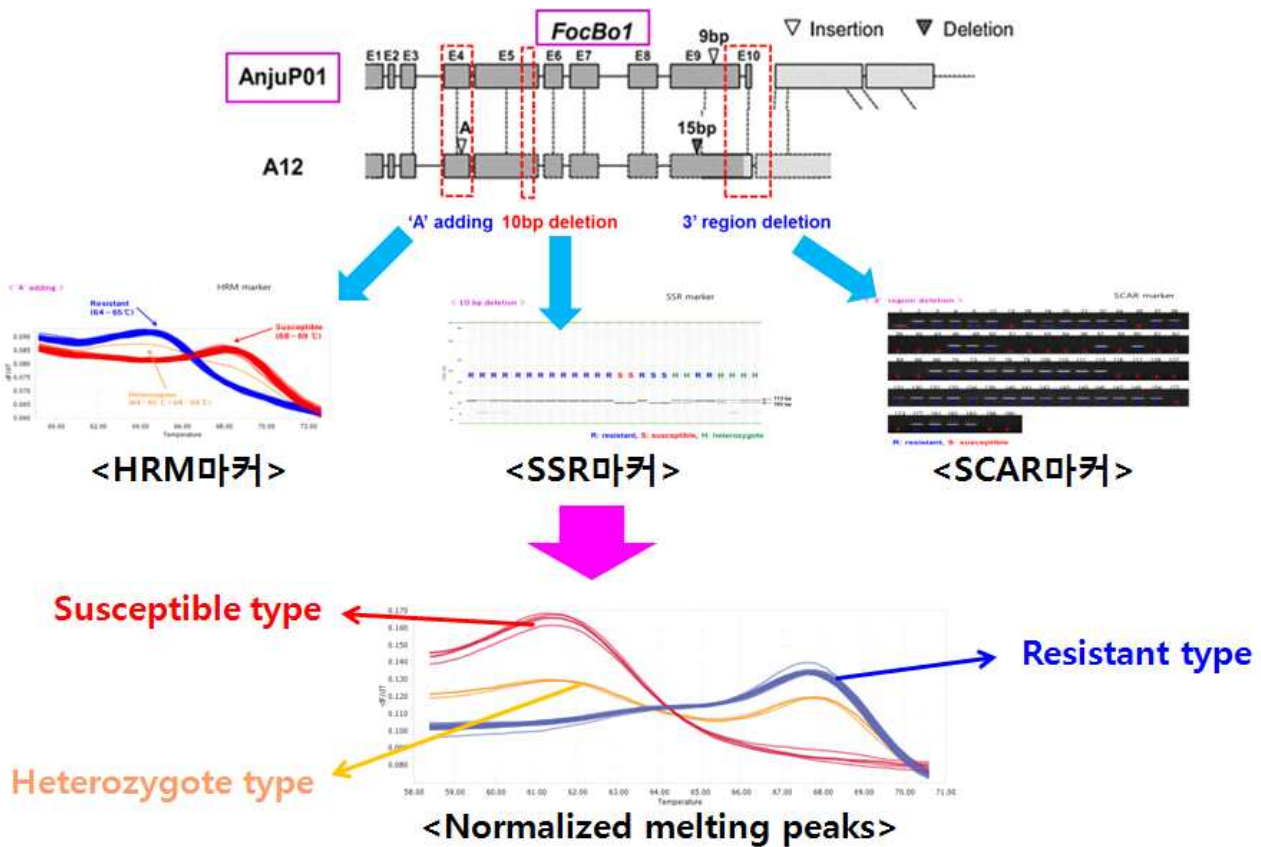
<그림. 1단계 GSP 과제에서 개발 및 서비스 중인 양배추 시들음병 저항성 판별 분자마커 3종>

No.	Type	샘플수	백분율 (%)	'A' adding	3'-Del	10bp Del	기존 마커 (3종) 시들음병 판별	Fusa 6m
1	A	92	34.8	R	R	R	R	R
2	B	59	22.3	S	S	R	S	S
3	C	31	11.7	R	R	H	H	H
4	D	31	11.7	H	H	R	H	H
5	E	16	6.1	H	H	H	S	S
6	F	13	4.9	R	R	S	S	S
7	G	7	2.7	R	R	H	H	S
8	H	5	1.9	R	n/a	R	S	n/a
9	I	4	1.5	R	H	S	S	S
10	J	3	1.1	H	S	R	S	S
11	L	1	0.4	R	H	H	S	S
12	M	1	0.4	H	R	R	H	R
13	N	1	0.4	H	R	H	S	H
14	P	1	0.4	S	H	R	S	H
합계		264		기존마커와 새로운 마커(Fusa6m) 일치율 96.1%				

<그림. 양배추 시들음병 저항성 판별 기존의 분자마커 3종과 새로 확보된 분자마커(Fusa6m)의 일치율>

13) 양배추 시들음병 저항성 판별 분자마커 SSR 마커를 HRM마커로 전환 후 validation Test

양배추 시들음병 저항성 판별마커 중 SSR 마커가 있어서 이는 일반적인 gel에서 DNA 밴드의 크기를 구분하기 어려워 자동전기영동장치인 QIAxcel과 같은 장비가 필요하며, 마커를 분석하는 분석비도 저렴하지 않아, 분석이 간편하고 분석비가 저렴한 HRM으로 바꾸기 위하여 여러 가지의 primer 및 probe를 디자인하였다. 그 결과 SSR 위치의 저항성, 이병성 및 heterozygote type을 신속정확하게 구분할 수 있는 조합을 선발하였다. 현재, 이 시들음병 저항성 판별 분자마커를 이용하여 분자마커 서비스가 가능하다.

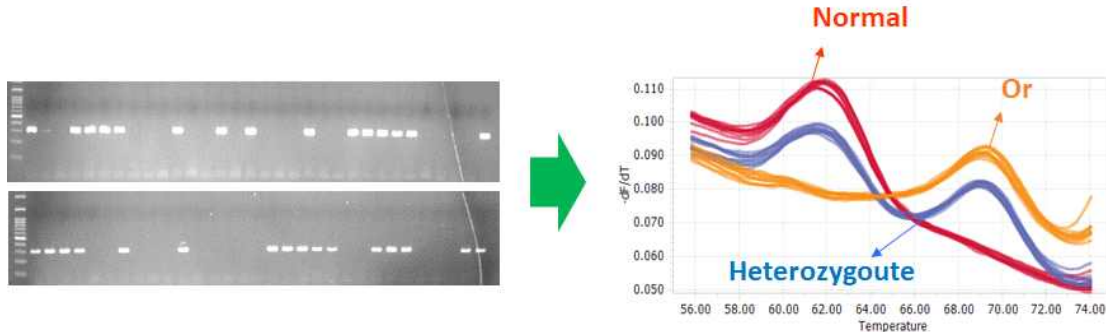


<그림. 양배추 시들음병 저항성 판별 기존의 SSR 분자마커의 HRM 분자마커로의 전환 및 validation test 결과>

14) 양배추 오렌지색 Or 판별 분자마커의 HRM으로의 전환 후 validation test

양배추 오렌지색 판별 분자마커인 Or의 경우 Or 유전자 내에 long insertion으로 인하여 꽃양배추의 core 부분에 오렌지색을 띄는 것으로 알려져 있다. Or 유전자 내의 long insertion은 기존의 방법은 SCAR에 의한 분자마커로서 Simple PCR로만 확인이 가능하였으나, Simple PCR의 경우 PCR 과정과 gel running이라는 복잡한 과정으로 시간이 오래 소요되며, 많은 샘플을 분석하기에 부적합하다. 따라서 대량의 시료 분석을 위하여, long insertion 부위의 염기

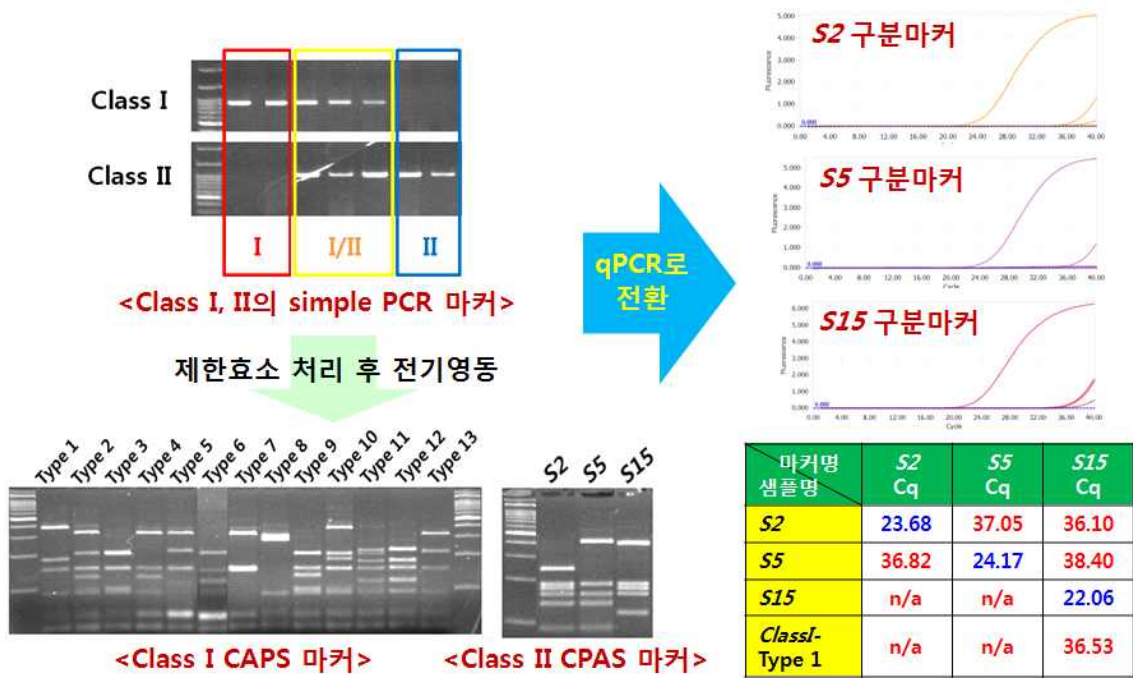
서열을 분석하여 HRM용으로 primer 및 probe를 디자인하여 validation을 수행하였다. 그 결과 아래 그림과 같이 정상(normal), 오렌지색 mutant(Or), 이형접합(Heterozygote)가 정확하게 구별될 수 있는 분자마커를 개발하였으며, Simple PCR의 HRM마커화는 분자마커 분석 효율을 높일 수 있을 것으로 보인다.



<그림. 양배추 Or 판별 분자마커의 HRM화 >

15) 양배추 자가불화합성 Class II 마커의 qPCR로의 전환 후 validation test

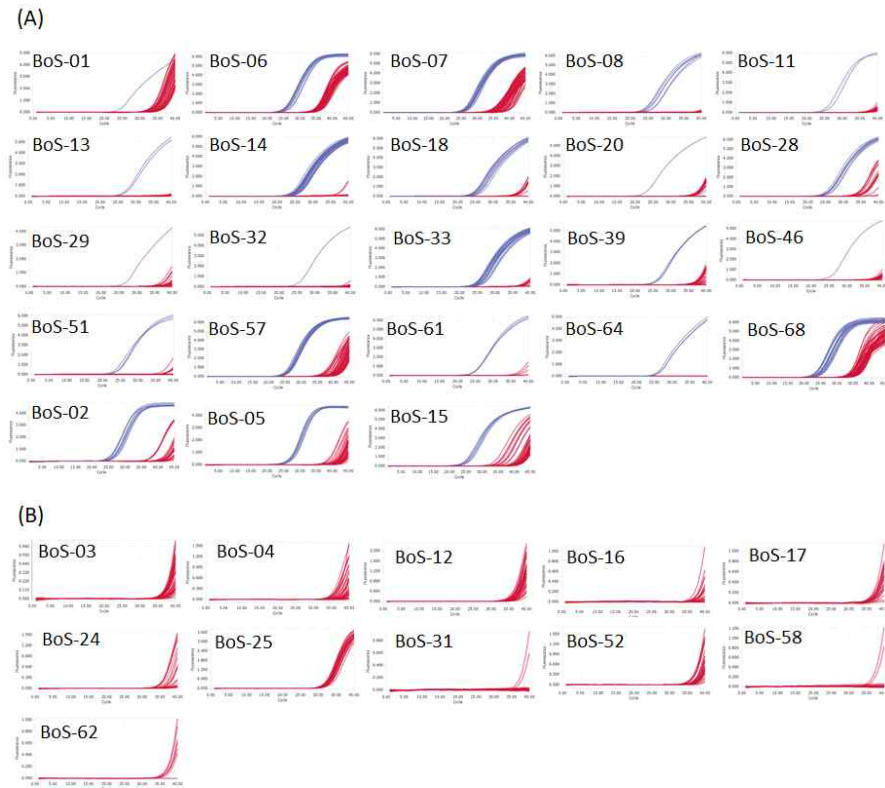
양배추의 교배 모본 및 부분에 대한 조합작성을 위해서는 각각의 계통에 대한 자가불화합성 유형을 판별하는 것이 무엇보다 중요하다고 볼 수 있다. 자가불화합성 판별을 위해서 기존에는 simple PCR을 거쳐서, class I과 class II로 구별을 한 다음 PCR 산물에 각기 적합한 제한효소로 처리를 하여 전기영동을 통해 밴드의 다형성을 육안으로 확인하는 PCR-RFLP의 방법으로 자가불화합성 유전자형을 판별하였다. 이러한 기존의 방법은 PCR을 하고 전기영동해서 한 번 확인하고 다시 그 산물을 제한효소로 처리한 후에 전기영동을 통해서 최종 확인이 가능하여 한 번 분석하는 데 있어서, 복잡하며 시간 많이 소요 되는 작업이었다. 따라서 보통 자가불화합성 유전자형 중 많이 이용되는 class II의 세 가지 유형(S2, S5, S15)를 각기 S-allele 별로 특이적으로 증폭이 될 수 있도록 디자인하여 validation을 수행하였다. 그 결과는 각각의 qPCR을 수행하여 Cq 값으로 확인이 가능하며, 전체적으로 Cq값이 26 이하인 경우는 특이적으로 증폭되었으며, 26 초과인 Cq 값이 나왔을 경우에는 증폭이 되지 않는 것으로 판단하였다. 따라서 기존의 PCR-RFLP를 qPCR로 전환함으로써 전기영동 과정 없이 신속하게 양배추의 S2, S5, S15를 확인할 수 있었다. 이러한 결과는 더욱 신속하게 분자마커 서비스를 수행하는 데 도움이 될 수 있을 것으로 기대된다.



<그림. 양배추 자가불화합성 Class-II 판별 분자마커의 qPCR화 >

16) 양배추 자가불화합성 Class I 유전자형 판별 분자마커의 qPCR로의 적용 및 validation test

양배추의 교배조합 작성에 있어서, 자가불화합성 유전자형의 판별은 매우 중요하다. 기존의 방법은 PCR-CAPS에 의한 밴드 패턴의 분석을 통해 정확한 자가불화합성 유전자형의 판별은 불가하였다. 양배추 자가불화합성 유전자형 판별을 위하여, class II의 S-2, S-5, S-15에 대해서는 qPCR화 시켰으나, 나머지 다양한 class I에서의 유전자형을 판별하기 위한 분자마커가 필요하였다. 따라서 본 연구에서는 기존의 class II의 3가지 유형을 포함하여, 총 34개의 S-유전자형을 분석하였으며, 이 중 23개는 한 개 이상의 샘플에서 증폭되었으나, 11개는 검정한 샘플 모두에서 증폭이 되지 않았다. 하지만 본 연구 결과는 기존에 정확하게 유전자형 분석을 할 수 없었던 S-유전자형을 다수 판별할 수 있게 되었으며, 이는 양배추 육종의 효율화에 크게 기여할 수 있을 것으로 보인다.



<그림. 양배추 자가불화합성 유전자형 판별.
(A) 증폭된 23개의 S-allele. (B) 증폭되지 않은 11개의 S-allele. >

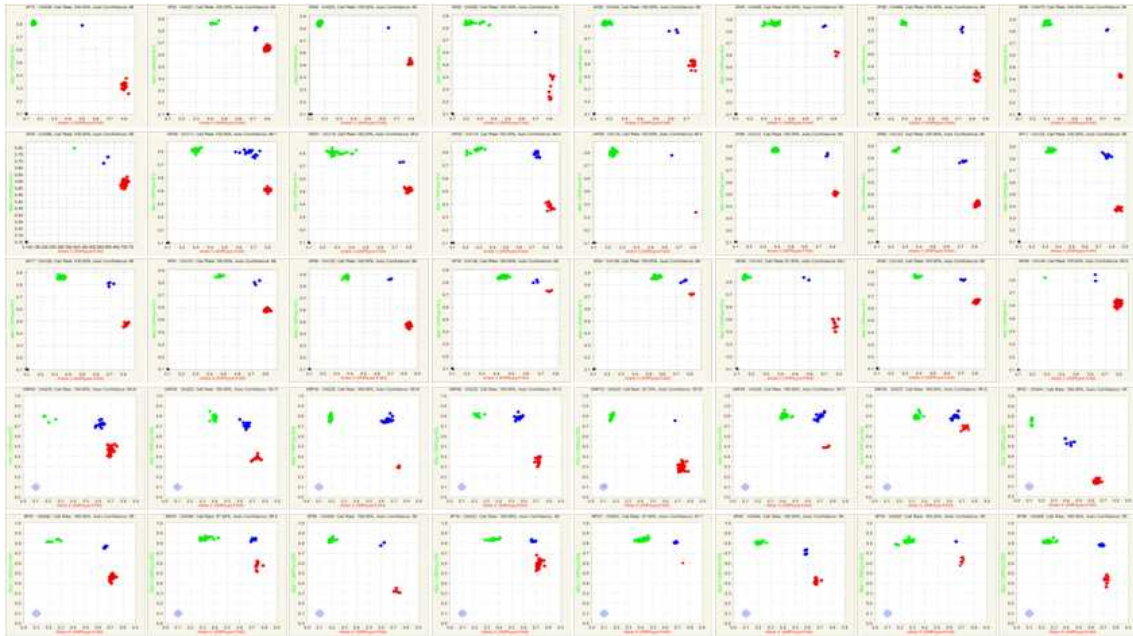
17) 양파 MABC용 SNP chip validation Test

양파 여교잡 육종과정에서 세대를 단축하기 위해 SNP 마커를 이용한 MABC용 384chip 개발을 목표로 타 기관과 공동연구를 통해 얻은 SNP정보를 이용하였다. 유효 SNP를 선별하기 위하여, 16조합의 P1, P2 및 F1을 국내육종회사(씨앗과사람들, 농우바이오, 양파나라)로부터 샘플을 분양받아 SNP validation에 사용하였다. SNP validation을 위해 분양받은 16조합의 샘플은 아래 표와 같다. 현재 384chip의 개발이 완료되었다. 이 384chip은 MABC용으로 활용이 가능하며, 또한 현재 양파 계통의 고정도 및 F1 순도 검정용으로 서비스가 가능하다.

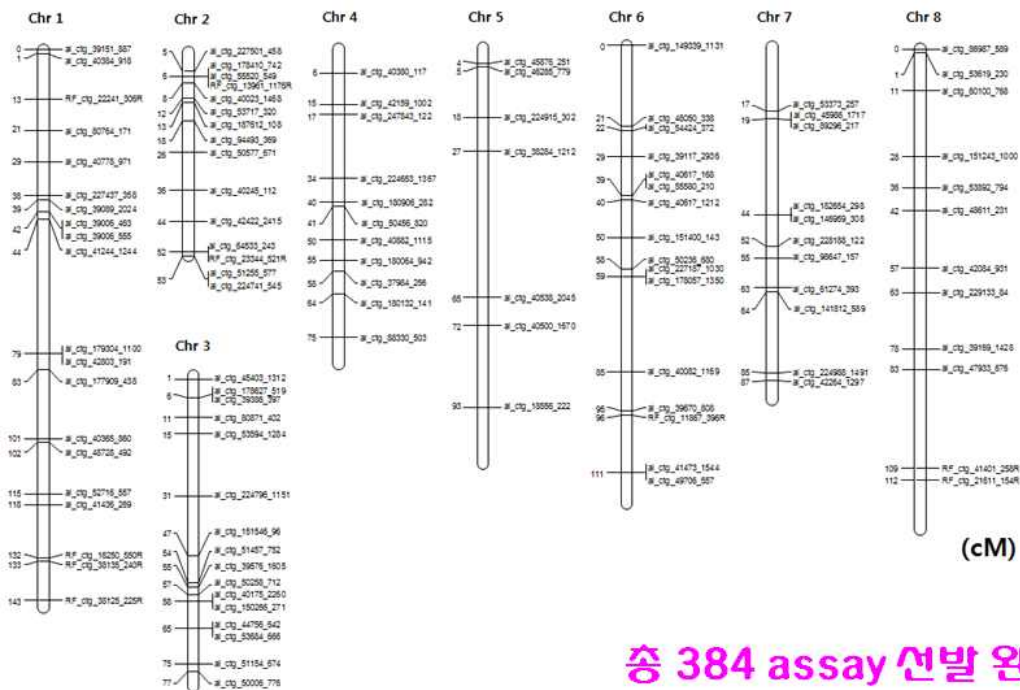
<표. 유효한 384 SNP를 선별하기 위해 사용한 16조합의 P1, P2, F1 샘플>

No.	Sample Name			Resources
	Parent		F1	
	P1	P2		
1	01-ON01	01-ON02	01-ON03	Seed & People Co.
2	02-ON04	02-ON05	02-ON06	
3	03-ON07	03-ON08	03-ON09	
4	04-ON10	04-ON11	04-ON12	
5	05-ON13	05-ON14	05-ON15	Nongwood Seed Co.
6	06-ON16	06-ON17	06-ON18	
7	07-ON19	07-ON20	07-ON21	

8	08-ON22	08-ON23	08-ON24	Yangpanara Agricultural Co.
9	09-ON25	09-ON26	09-ON27	
10	10-ON28	10-ON29	10-ON30	
11	11-ON31	11-ON32	11-ON33	
12	12-ON34	12-ON35	12-ON36	
13	13-ON37	13-ON38	13-ON39	
14	14-ON40	14-ON41	14-ON42	
15	15-ON43	15-ON44	15-ON45	
16	16-ON46	16-ON47	16-ON48	



<그림. 양파 여교잡세대단축용(MABC용) 유효 SNP validation test >



<그림. 양파 여교잡세대단축용(MABC용) 유효 SNP에 대한 유전자 지도>

3. 분자마커 서비스

1) 토마토 분자마커 서비스

1-1) 1차년도 토마토 분자마커 서비스

1차년도에 토마토 분자마커 서비스는 가나종묘, 아시아종묘, 토마토생명과학연구소, 부농종묘, 농우바이오, 대연육종연구소, 순천대학교, 한경대학교, 유전자원센터, 씨드이플랫폼, 바이오통, 해피바이오텍 등으로 총 12곳에서 의뢰를 받아 실시하였다.

① 가나종묘

가나종묘로부터 총 527점의 시료를 받아 3번의 서비스를 진행하였다. 처음 28점의 시료에 대하여, 병 관련 1종의 마커로 서비스를 진행하였다(표 1). 두 번째로는 480점의 시료에 대하여, 고정도 검사를 위해 48 마커로 서비스를 진행하였다(표 2). 세 번째로는 19점의 시료에 대하여, 병 관련 13종의 마커로 서비스를 진행하였다(표 3). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 1, 2, 3).

표 1. 가나종묘 28점의 시료에 대하여, 병 관련 1종의 마커를 이용한 서비스 결과

No.	Sample name	Bw12	No.	Sample name	Bw12
1	E-90-1	SS	15	E-92-3	SS
2	E-90-2	SS	16	E-92-4	SS
3	E-90-3	SS	17	E-92-5	SS
4	E-90-4	SS	18	E-92-6	SS
5	E-90-5	RR	19	E-92-7	SS
6	E-90-6	RR	20	E-92-8	SS
7	E-91-1	SS	21	E-92-9	SS
8	E-91-2	SS	22	E-100-1	SS
9	E-91-3	SS	23	E-100-2	SS
10	E-91-4	SS	24	E-100-3	SS
11	E-91-5	SS	25	E-100-4	SS
12	E-91-6	SS	26	E-100-5	SS
13	E-92-1	SS	27	E-100-6	SS
14	E-92-2	SS	28	SK-1	SS

표 2. 가나종묘 480점의 시료에 대하여, 고정도 검사를 위해 48종의 마커를 이용한 서비스 결과

순번	유효 SNP수	고정된 SNP수	고정율 (%)	순번	유효 SNP수	고정된 SNP수	고정율 (%)	순번	유효 SNP수	고정된 SNP수	고정율 (%)
1	44	44	100.0%	161	48	47	97.9%	321	48	44	91.7%
2	44	43	97.7%	162	48	47	97.9%	322	48	41	85.4%
3	44	44	100.0%	163	48	46	95.8%	323	48	42	87.5%
4	44	44	100.0%	164	48	44	91.7%	324	48	42	87.5%
5	44	44	100.0%	165	48	45	93.8%	325	48	47	97.9%
6	44	43	97.7%	166	48	47	97.9%	326	48	42	87.5%
7	44	43	97.7%	167	48	47	97.9%	327	48	44	91.7%
8	44	44	100.0%	168	48	48	100.0%	328	48	44	91.7%
9	44	44	100.0%	169	48	45	93.8%	329	48	46	95.8%
10	44	43	97.7%	170	48	46	95.8%	330	48	43	89.6%
11	44	43	97.7%	171	48	47	97.9%	331	48	43	89.6%
12	44	43	97.7%	172	48	45	93.8%	332	48	46	95.8%
13	44	43	97.7%	173	48	46	95.8%	333	48	48	100.0%
14	44	43	97.7%	174	47	47	100.0%	334	48	48	100.0%
15	44	43	97.7%	175	47	46	97.9%	335	48	48	100.0%
16	44	43	97.7%	176	47	47	100.0%	336	48	48	100.0%
17	44	44	100.0%	177	47	45	95.7%	337	48	48	100.0%

순번	유효 SNP수	고정된 SNP수	고정율 (%)
18	44	43	97.7%
19	44	43	97.7%
20	44	44	100.0%
21	44	43	97.7%
22	44	43	97.7%
23	44	43	97.7%
24	44	43	97.7%
25	44	44	100.0%
26	44	44	100.0%
27	44	43	97.7%
28	44	43	97.7%
29	44	44	100.0%
30	44	42	95.5%
31	48	46	95.8%
32	48	45	93.8%
33	48	47	97.9%
34	48	46	95.8%
35	48	47	97.9%
36	48	46	95.8%
37	48	46	95.8%
38	48	46	95.8%
39	48	45	93.8%
40	48	46	95.8%
41	48	46	95.8%
42	48	46	95.8%
43	48	47	97.9%
44	48	47	97.9%
45	48	46	95.8%
46	48	48	100.0%
47	48	46	95.8%
48	48	47	97.9%
49	48	46	95.8%
50	48	48	100.0%
51	48	46	95.8%
52	48	45	93.8%
53	48	47	97.9%
54	48	45	93.8%
55	44	42	95.5%
56	44	44	100.0%
57	44	43	97.7%
58	44	43	97.7%
59	44	42	95.5%
60	44	41	93.2%
61	44	42	95.5%
62	44	41	93.2%
63	44	42	95.5%
64	44	42	95.5%
65	46	41	89.1%
66	46	42	91.3%
67	46	41	89.1%
68	46	43	93.5%
69	46	44	95.7%
70	46	42	91.3%
71	46	40	87.0%
72	46	43	93.5%
73	46	41	89.1%
74	46	45	97.8%
75	46	42	91.3%
76	46	44	95.7%
77	46	44	95.7%
78	46	44	95.7%
79	46	42	91.3%

순번	유효 SNP수	고정된 SNP수	고정율 (%)
178	47	46	97.9%
179	47	46	97.9%
180	47	46	97.9%
181	47	45	95.7%
182	47	45	95.7%
183	47	45	95.7%
184	47	46	97.9%
185	47	44	93.6%
186	47	46	97.9%
187	47	46	97.9%
188	47	46	97.9%
189	47	45	95.7%
190	47	47	100.0%
191	47	45	95.7%
192	47	45	95.7%
193	47	45	95.7%
194	47	44	93.6%
195	47	44	93.6%
196	47	46	97.9%
197	47	45	95.7%
198	47	46	97.9%
199	47	45	95.7%
200	47	45	95.7%
201	47	45	95.7%
202	47	45	95.7%
203	47	46	97.9%
204	44	42	95.5%
205	44	40	90.9%
206	44	41	93.2%
207	44	42	95.5%
208	44	39	88.6%
209	44	41	93.2%
210	44	39	88.6%
211	44	44	100.0%
212	44	43	97.7%
213	44	41	93.2%
214	44	39	88.6%
215	44	40	90.9%
216	44	40	90.9%
217	44	39	88.6%
218	44	39	88.6%
219	44	41	93.2%
220	44	40	90.9%
221	44	43	97.7%
222	44	43	97.7%
223	44	41	93.2%
224	44	43	97.7%
225	44	41	93.2%
226	44	43	97.7%
227	44	41	93.2%
228	44	40	90.9%
229	47	47	100.0%
230	47	47	100.0%
231	47	47	100.0%
232	47	47	100.0%
233	47	47	100.0%
234	47	47	100.0%
235	48	48	100.0%
236	48	48	100.0%
237	48	48	100.0%
238	48	48	100.0%
239	48	48	100.0%

순번	유효 SNP수	고정된 SNP수	고정율 (%)
338	48	48	100.0%
339	48	48	100.0%
340	48	48	100.0%
341	48	48	100.0%
342	48	48	100.0%
343	48	48	100.0%
344	48	48	100.0%
345	48	48	100.0%
346	48	48	100.0%
347	48	48	100.0%
348	48	48	100.0%
349	48	48	100.0%
350	48	48	100.0%
351	48	46	95.8%
352	48	47	97.9%
353	48	44	91.7%
354	48	47	97.9%
355	48	46	95.8%
356	48	47	97.9%
357	48	46	95.8%
358	48	47	97.9%
359	48	44	91.7%
360	48	48	100.0%
361	48	47	97.9%
362	48	45	93.8%
363	48	45	93.8%
364	48	45	93.8%
365	48	44	91.7%
366	48	44	91.7%
367	48	47	97.9%
368	48	44	91.7%
369	46	45	97.8%
370	46	46	100.0%
371	46	45	97.8%
372	46	46	100.0%
373	46	44	95.7%
374	46	45	97.8%
375	46	45	97.8%
376	46	44	95.7%
377	46	45	97.8%
378	46	46	100.0%
379	48	48	100.0%
380	48	48	100.0%
381	48	48	100.0%
382	48	48	100.0%
383	48	48	100.0%
384	48	48	100.0%
385	48	48	100.0%
386	48	48	100.0%
387	48	48	100.0%
388	48	48	100.0%
389	48	48	100.0%
390	48	48	100.0%
391	48	48	100.0%
392	48	48	100.0%
393	48	48	100.0%
394	48	48	100.0%
395	46	45	97.8%
396	46	45	97.8%
397	46	46	100.0%
398	46	46	100.0%
399	46	45	97.8%

순번	유효 SNP수	고정된 SNP수	고정율 (%)
80	46	43	93.5%
81	46	43	93.5%
82	46	44	95.7%
83	46	43	93.5%
84	46	44	95.7%
85	46	43	93.5%
86	46	42	91.3%
87	46	45	97.8%
88	46	42	91.3%
89	46	45	97.8%
90	46	45	97.8%
91	46	46	100.0%
92	46	44	95.7%
93	46	45	97.8%
94	46	45	97.8%
95	46	46	100.0%
96	46	44	95.7%
97	46	43	93.5%
98	48	46	95.8%
99	48	47	97.9%
100	48	47	97.9%
101	48	46	95.8%
102	48	47	97.9%
103	48	47	97.9%
104	48	47	97.9%
105	48	45	93.8%
106	48	46	95.8%
107	48	47	97.9%
108	48	45	93.8%
109	48	45	93.8%
110	48	47	97.9%
111	48	46	95.8%
112	48	46	95.8%
113	48	47	97.9%
114	48	46	95.8%
115	48	46	95.8%
116	48	47	97.9%
117	48	44	91.7%
118	48	47	97.9%
119	48	47	97.9%
120	48	48	100.0%
121	48	47	97.9%
122	48	48	100.0%
123	48	48	100.0%
124	48	48	100.0%
125	48	48	100.0%
126	48	47	97.9%
127	48	47	97.9%
128	48	48	100.0%
129	48	48	100.0%
130	48	47	97.9%
131	48	48	100.0%
132	48	47	97.9%
133	48	47	97.9%
134	48	47	97.9%
135	48	48	100.0%
136	48	48	100.0%
137	48	47	97.9%
138	48	48	100.0%
139	48	48	100.0%
140	48	48	100.0%
141	48	47	97.9%

순번	유효 SNP수	고정된 SNP수	고정율 (%)
240	48	48	100.0%
241	48	48	100.0%
242	48	48	100.0%
243	48	48	100.0%
244	48	48	100.0%
245	48	48	100.0%
246	48	48	100.0%
247	48	48	100.0%
248	48	48	100.0%
249	48	48	100.0%
250	48	48	100.0%
251	48	48	100.0%
252	48	48	100.0%
253	48	48	100.0%
254	48	48	100.0%
255	48	48	100.0%
256	48	48	100.0%
257	48	48	100.0%
258	48	48	100.0%
259	44	44	100.0%
260	44	44	100.0%
261	44	44	100.0%
262	44	44	100.0%
263	44	44	100.0%
264	44	44	100.0%
265	44	44	100.0%
266	44	44	100.0%
267	44	44	100.0%
268	44	44	100.0%
269	44	44	100.0%
270	44	44	100.0%
271	44	44	100.0%
272	44	44	100.0%
273	44	44	100.0%
274	44	44	100.0%
275	44	44	100.0%
276	44	44	100.0%
277	47	47	100.0%
278	47	47	100.0%
279	47	47	100.0%
280	47	47	100.0%
281	47	47	100.0%
282	48	48	100.0%
283	48	48	100.0%
284	48	48	100.0%
285	48	48	100.0%
286	48	48	100.0%
287	48	48	100.0%
288	48	48	100.0%
289	48	48	100.0%
290	48	48	100.0%
291	48	48	100.0%
292	48	48	100.0%
293	48	48	100.0%
294	48	48	100.0%
295	48	48	100.0%
296	48	48	100.0%
297	48	48	100.0%
298	48	48	100.0%
299	48	48	100.0%
300	44	38	86.4%
301	44	39	88.6%

순번	유효 SNP수	고정된 SNP수	고정율 (%)
400	48	48	100.0%
401	48	48	100.0%
402	48	48	100.0%
403	48	48	100.0%
404	48	48	100.0%
405	48	48	100.0%
406	48	48	100.0%
407	48	48	100.0%
408	48	48	100.0%
409	48	48	100.0%
410	48	48	100.0%
411	48	48	100.0%
412	48	48	100.0%
413	48	48	100.0%
414	48	48	100.0%
415	48	48	100.0%
416	48	48	100.0%
417	48	48	100.0%
418	48	48	100.0%
419	48	48	100.0%
420	48	48	100.0%
421	48	48	100.0%
422	48	48	100.0%
423	48	48	100.0%
424	48	48	100.0%
425	48	48	100.0%
426	48	48	100.0%
427	48	48	100.0%
428	48	48	100.0%
429	48	48	100.0%
430	48	48	100.0%
431	48	48	100.0%
432	48	48	100.0%
433	48	48	100.0%
434	48	46	95.8%
435	48	48	100.0%
436	48	46	95.8%
437	48	46	95.8%
438	48	48	100.0%
439	48	48	100.0%
440	48	48	100.0%
441	48	46	95.8%
442	48	46	95.8%
443	48	48	100.0%
444	48	48	100.0%
445	48	46	95.8%
446	48	47	97.9%
447	48	47	97.9%
448	48	46	95.8%
449	48	47	97.9%
450	48	46	95.8%
451	48	48	100.0%
452	48	47	97.9%
453	48	47	97.9%
454	48	47	97.9%
455	48	47	97.9%
456	48	47	97.9%
457	48	47	97.9%
458	48	46	95.8%
459	48	47	97.9%
460	47	47	100.0%
461	47	47	100.0%

순번	유효 SNP수	고정된 SNP수	고정율 (%)
142	48	48	100.0%
143	48	48	100.0%
144	48	47	97.9%
145	48	47	97.9%
146	48	46	95.8%
147	48	46	95.8%
148	48	45	93.8%
149	48	47	97.9%
150	48	45	93.8%
151	48	47	97.9%
152	48	45	93.8%
153	48	44	91.7%
154	48	45	93.8%
155	48	45	93.8%
156	48	47	97.9%
157	48	46	95.8%
158	48	45	93.8%
159	48	48	100.0%
160	48	46	95.8%

순번	유효 SNP수	고정된 SNP수	고정율 (%)
302	44	37	84.1%
303	44	42	95.5%
304	44	39	88.6%
305	44	41	93.2%
306	44	38	86.4%
307	44	42	95.5%
308	44	43	97.7%
309	44	41	93.2%
310	44	42	95.5%
311	44	40	90.9%
312	44	37	84.1%
313	48	41	85.4%
314	48	42	87.5%
315	48	41	85.4%
316	48	43	89.6%
317	48	43	89.6%
318	48	45	93.8%
319	48	44	91.7%
320	48	43	89.6%

순번	유효 SNP수	고정된 SNP수	고정율 (%)
462	46	46	100.0%
463	47	47	100.0%
464	47	47	100.0%
465	47	47	100.0%
466	47	47	100.0%
467	48	43	89.6%
468	48	43	89.6%
469	48	42	87.5%
470	48	42	87.5%
471	48	43	89.6%
472	48	41	85.4%
473	48	43	89.6%
474	48	45	93.8%
475	48	31	64.6%
476	48	38	79.2%
477	48	32	66.7%
478	48	36	75.0%
479	48	29	60.4%
480	48	31	64.6%

표 3. 가나종묘 19점의 시료에 대하여, 병 관련 13종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	J3	Lv	Ph3	Bw6	Bw12	Ve2	I2	Mi-rex	Tm2a	Sw5	Cf9
1	S	H	S	S	R	R	S	S	S	S	S	S	S
2	S	H	S	S	R	R	S	S	S	S	S	S	S
3	S	H	H	S	R	R	S	S	S	S	H	S	S
4	S	S	H	S	R	R	S	S	S	S	H	S	S
5	S	H	S	S	R	H	S	S	S	S	S	S	S
6	S	S	S	S	S	H	S	H	S	S	H	S	R/H
7	S	S	S	S	H	S	S	S	S	S	S	S	R/H
8	S	S	S	S	S	S	S	S	S	S	S	S	R/H
9	S	S	S	S	H	H	S	S	S	S	S	S	S
10	S	H	S	S	R	R	S	S	S	S	S	S	S
11	S	H	S	S	R	R	S	S	S	S	S	S	S
12	S	S	H	S	H	S	S	H	R/H	S	R	S	S
13	S	S	H	S	S	S	S	S	R/H	S	H	S	S
14	S	S	H	S	S	S	S	S	R/H	S	H	S	S
15	S	S	S	S	R	R	S	S	S	S	S	S	S
16	S	S	S	S	R	R	S	S	S	S	S	S	S
17	R	S	R	S	S	S	R	R	S	R	R	S	R/H
18	R	S	R	S	S	S	R	R	S	R	R	S	R/H
19	S	S	S	S	R	S	S	S	S	S	R	S	S

② 아시아종묘

아시아종묘로부터 총 3,137점의 시료를 받아 5번의 서비스를 진행하였다. 처음 1,344점의 시료에 대하여, 병 관련 1종의 마커로 서비스를 진행하였다(표 4). 두 번째로는 539점의 시료에 대하여, 병 관련 9종의 마커로 서비스를 진행하였다(표 5). 세 번째로는 576점의 시료에 대하여, 병 관련 9종의 마커로 서비스를 진행하였다(표 6). 네 번째로는 537점의 시료에 대하여, 병 관련 9종의 마커로 서비스를 진행하였다(표 7). 다섯 번째로는 141점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 8). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 4, 5, 6, 7, 8).

표 4. 아시아종묘 1,344점의 시료에 대하여, 병 관련 1종의 마커를 이용한 서비스 결과

No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1
1	S	169	S	337	H	505	S	673	S	841	S	1009	S
2	S	170	S	338	H	506	S	674	S	842	S	1010	S
												1177	S
												1178	S

No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1
3	S	171	S	339	S	507	S	675	S	843	S	1011	S	1179	S
4	S	172	S	340	S	508	S	676	S	844	S	1012	S	1180	S
5	S	173	S	341	S	509	S	677	S	845	S	1013	S	1181	S
6	S	174	S	342	S	510	S	678	S	846	S	1014	S	1182	S
7	S	175	S	343	S	511	S	679	S	847	S	1015	S	1183	S
8	S	176	S	344	H	512	S	680	S	848	S	1016	S	1184	S
9	S	177	S	345	H	513	S	681	S	849	H	1017	S	1185	S
10	S	178	S	346	H	514	-	682	S	850	H	1018	S	1186	S
11	S	179	S	347	H	515	R	683	S	851	H	1019	S	1187	S
12	S	180	S	348	H	516	R	684	S	852	H	1020	S	1188	S
13	S	181	S	349	S	517	R	685	S	853	H	1021	S	1189	S
14	S	182	S	350	S	518	H	686	S	854	H	1022	S	1190	S
15	S	183	S	351	S	519	S	687	S	855	H	1023	S	1191	S
16	S	184	S	352	S	520	S	688	S	856	H	1024	S	1192	S
17	S	185	S	353	S	521	S	689	S	857	H	1025	S	1193	S
18	S	186	S	354	S	522	S	690	S	858	H	1026	S	1194	S
19	S	187	S	355	S	523	S	691	S	859	H	1027	S	1195	S
20	S	188	S	356	S	524	H	692	S	860	H	1028	S	1196	S
21	S	189	S	357	S	525	H	693	S	861	H	1029	S	1197	S
22	S	190	S	358	S	526	H	694	S	862	H	1030	S	1198	S
23	S	191	S	359	H	527	H	695	S	863	S	1031	S	1199	S
24	S	192	S	360	H	528	H	696	S	864	S	1032	S	1200	S
25	S	193	S	361	H	529	R	697	S	865	S	1033	S	1201	S
26	S	194	S	362	H	530	R	698	S	866	S	1034	S	1202	S
27	S	195	S	363	H	531	H	699	S	867	S	1035	S	1203	S
28	S	196	S	364	H	532	R	700	S	868	S	1036	S	1204	S
29	S	197	S	365	H	533	R	701	S	869	S	1037	S	1205	S
30	S	198	S	366	H	534	H	702	S	870	S	1038	S	1206	S
31	-	199	S	367	H	535	H	703	S	871	S	1039	S	1207	S
32	S	200	S	368	H	536	H	704	S	872	S	1040	S	1208	S
33	S	201	S	369	S	537	H	705	S	873	H	1041	S	1209	S
34	S	202	S	370	S	538	H	706	S	874	H	1042	S	1210	S
35	S	203	S	371	S	539	H	707	S	875	H	1043	S	1211	S
36	S	204	S	372	S	540	H	708	S	876	H	1044	S	1212	S
37	S	205	S	373	S	541	H	709	S	877	H	1045	S	1213	S
38	S	206	S	374	S	542	H	710	S	878	S	1046	S	1214	S
39	S	207	S	375	S	543	H	711	S	879	S	1047	S	1215	S
40	S	208	S	376	S	544	H	712	S	880	S	1048	S	1216	S
41	S	209	S	377	S	545	H	713	S	881	S	1049	S	1217	R
42	S	210	S	378	S	546	H	714	S	882	S	1050	S	1218	R
43	S	211	S	379	S	547	H	715	S	883	S	1051	S	1219	R
44	S	212	S	380	S	548	H	716	S	884	S	1052	S	1220	R
45	S	213	S	381	S	549	-	717	S	885	S	1053	S	1221	R
46	S	214	S	382	S	550	H	718	H	886	S	1054	S	1222	R
47	S	215	S	383	S	551	H	719	H	887	S	1055	S	1223	R
48	S	216	S	384	S	552	H	720	H	888	S	1056	S	1224	R
49	S	217	S	385	S	553	H	721	H	889	S	1057	S	1225	R
50	S	218	S	386	S	554	H	722	S	890	S	1058	S	1226	R
51	S	219	S	387	S	555	H	723	S	891	S	1059	S	1227	R
52	S	220	S	388	S	556	H	724	S	892	S	1060	S	1228	R
53	S	221	S	389	S	557	H	725	S	893	H	1061	S	1229	R
54	S	222	S	390	S	558	H	726	S	894	H	1062	S	1230	R
55	S	223	S	391	S	559	H	727	S	895	H	1063	S	1231	R
56	S	224	S	392	S	560	H	728	S	896	H	1064	S	1232	R
57	S	225	S	393	S	561	H	729	S	897	H	1065	S	1233	R
58	S	226	S	394	S	562	H	730	S	898	H	1066	S	1234	R
59	S	227	S	395	S	563	H	731	S	899	H	1067	S	1235	R
60	S	228	S	396	S	564	H	732	S	900	H	1068	S	1236	R
61	S	229	S	397	S	565	H	733	S	901	H	1069	S	1237	R
62	S	230	S	398	S	566	H	734	S	902	H	1070	S	1238	S
63	S	231	S	399	S	567	H	735	S	903	S	1071	S	1239	S
64	S	232	S	400	S	568	H	736	S	904	S	1072	S	1240	S
65	S	233	S	401	S	569	H	737	S	905	S	1073	S	1241	S

No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1
66	S	234	S	402	S	570	H	738	H	906	S	1074	S	1242	S
67	S	235	H	403	S	571	H	739	H	907	S	1075	S	1243	S
68	S	236	S	404	S	572	H	740	H	908	S	1076	S	1244	S
69	S	237	S	405	S	573	H	741	H	909	S	1077	S	1245	S
70	S	238	S	406	S	574	H	742	H	910	S	1078	S	1246	S
71	S	239	S	407	S	575	H	743	H	911	S	1079	S	1247	S
72	S	240	S	408	S	576	H	744	H	912	S	1080	S	1248	S
73	S	241	S	409	S	577	H	745	H	913	H	1081	S	1249	S
74	S	242	S	410	S	578	H	746	H	914	H	1082	S	1250	S
75	S	243	S	411	S	579	H	747	S	915	H	1083	S	1251	S
76	H	244	S	412	H	580	H	748	H	916	H	1084	S	1252	S
77	H	245	H	413	H	581	H	749	H	917	H	1085	S	1253	S
78	H	246	H	414	S	582	H	750	H	918	S	1086	S	1254	S
79	H	247	S	415	S	583	H	751	H	919	S	1087	S	1255	S
80	H	248	S	416	S	584	H	752	H	920	S	1088	S	1256	S
81	S	249	S	417	S	585	H	753	S	921	S	1089	S	1257	S
82	S	250	S	418	S	586	H	754	S	922	S	1090	S	1258	S
83	S	251	H	419	H	587	H	755	S	923	S	1091	S	1259	S
84	S	252	S	420	H	588	H	756	S	924	S	1092	S	1260	S
85	S	253	S	421	H	589	H	757	S	925	S	1093	S	1261	S
86	S	254	S	422	H	590	H	758	H	926	S	1094	S	1262	S
87	S	255	S	423	H	591	H	759	H	927	S	1095	S	1263	S
88	S	256	S	424	S	592	H	760	H	928	S	1096	S	1264	S
89	S	257	S	425	S	593	S	761	H	929	S	1097	S	1265	S
90	S	258	S	426	S	594	H	762	H	930	S	1098	S	1266	S
91	S	259	S	427	S	595	H	763	H	931	S	1099	S	1267	S
92	S	260	S	428	S	596	H	764	H	932	S	1100	S	1268	S
93	S	261	H	429	H	597	H	765	H	933	S	1101	S	1269	S
94	S	262	S	430	H	598	H	766	H	934	S	1102	S	1270	S
95	S	263	H	431	H	599	R	767	H	935	S	1103	S	1271	S
96	S	264	H	432	H	600	R	768	S	936	S	1104	S	1272	S
97	S	265	S	433	H	601	H	769	S	937	S	1105	S	1273	S
98	S	266	H	434	H	602	R	770	S	938	S	1106	S	1274	S
99	S	267	S	435	H	603	R	771	S	939	S	1107	S	1275	S
100	S	268	H	436	H	604	H	772	S	940	S	1108	S	1276	H
101	S	269	H	437	H	605	H	773	S	941	S	1109	S	1277	S
102	S	270	H	438	H	606	H	774	S	942	S	1110	S	1278	H
103	S	271	S	439	S	607	H	775	S	943	S	1111	S	1279	H
104	S	272	S	440	S	608	H	776	S	944	S	1112	S	1280	H
105	S	273	S	441	S	609	S	777	S	945	S	1113	S	1281	H
106	H	274	S	442	S	610	H	778	S	946	S	1114	S	1282	H
107	S	275	S	443	S	611	S	779	S	947	S	1115	S	1283	S
108	S	276	S	444	H	612	S	780	S	948	S	1116	S	1284	S
109	S	277	S	445	S	613	H	781	S	949	S	1117	S	1285	S
110	H	278	S	446	S	614	S	782	S	950	S	1118	S	1286	S
111	S	279	S	447	S	615	H	783	S	951	S	1119	S	1287	S
112	S	280	S	448	S	616	S	784	S	952	S	1120	S	1288	S
113	S	281	S	449	S	617	S	785	S	953	S	1121	S	1289	S
114	S	282	S	450	S	618	S	786	S	954	S	1122	S	1290	S
115	S	283	S	451	S	619	S	787	S	955	S	1123	S	1291	S
116	S	284	S	452	S	620	S	788	S	956	S	1124	S	1292	S
117	S	285	S	453	S	621	H	789	S	957	S	1125	S	1293	S
118	S	286	S	454	S	622	H	790	S	958	S	1126	S	1294	S
119	S	287	S	455	S	623	S	791	S	959	S	1127	S	1295	S
120	S	288	S	456	S	624	S	792	S	960	S	1128	S	1296	S
121	S	289	S	457	S	625	S	793	H	961	S	1129	S	1297	S
122	S	290	S	458	S	626	S	794	H	962	S	1130	S	1298	S
123	S	291	S	459	H	627	S	795	H	963	S	1131	S	1299	S
124	S	292	S	460	H	628	H	796	H	964	S	1132	S	1300	S
125	S	293	S	461	H	629	S	797	H	965	S	1133	S	1301	S
126	H	294	S	462	H	630	H	798	H	966	S	1134	S	1302	S
127	S	295	S	463	H	631	H	799	H	967	S	1135	S	1303	S
128	H	296	H	464	S	632	S	800	H	968	S	1136	S	1304	S

No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1
129	H	297	H	465	S	633	S	801	H	969	S	1137	S	1305	S
130	H	298	H	466	S	634	S	802	H	970	S	1138	S	1306	S
131	H	299	H	467	S	635	S	803	H	971	S	1139	S	1307	S
132	S	300	H	468	S	636	S	804	H	972	S	1140	S	1308	S
133	S	301	S	469	H	637	S	805	H	973	S	1141	S	1309	S
134	S	302	S	470	H	638	H	806	H	974	S	1142	S	1310	S
135	S	303	S	471	H	639	H	807	H	975	S	1143	S	1311	S
136	S	304	S	472	H	640	H	808	H	976	S	1144	S	1312	S
137	S	305	S	473	H	641	H	809	H	977	S	1145	S	1313	S
138	S	306	S	474	S	642	H	810	H	978	S	1146	S	1314	S
139	S	307	S	475	S	643	S	811	H	979	S	1147	S	1315	S
140	S	308	S	476	S	644	H	812	H	980	S	1148	S	1316	S
141	S	309	S	477	S	645	H	813	H	981	S	1149	S	1317	S
142	S	310	S	478	S	646	S	814	S	982	S	1150	S	1318	S
143	S	311	S	479	S	647	H	815	H	983	S	1151	S	1319	S
144	S	312	S	480	S	648	H	816	H	984	S	1152	S	1320	S
145	S	313	S	481	H	649	H	817	H	985	S	1153	S	1321	S
146	S	314	H	482	H	650	H	818	S	986	S	1154	S	1322	S
147	S	315	H	483	H	651	H	819	S	987	S	1155	S	1323	S
148	S	316	H	484	S	652	H	820	S	988	S	1156	S	1324	S
149	S	317	H	485	S	653	H	821	S	989	S	1157	S	1325	S
150	S	318	H	486	S	654	H	822	S	990	S	1158	S	1326	S
151	S	319	S	487	S	655	H	823	H	991	S	1159	S	1327	S
152	S	320	S	488	S	656	H	824	H	992	S	1160	S	1328	S
153	S	321	S	489	S	657	H	825	H	993	S	1161	S	1329	S
154	S	322	S	490	S	658	H	826	H	994	S	1162	S	1330	S
155	S	323	S	491	S	659	H	827	H	995	S	1163	S	1331	H
156	S	324	S	492	S	660	H	828	S	996	S	1164	S	1332	H
157	S	325	S	493	S	661	H	829	S	997	S	1165	S	1333	H
158	S	326	S	494	S	662	H	830	S	998	S	1166	S	1334	S
159	S	327	S	495	S	663	S	831	S	999	S	1167	S	1335	S
160	S	328	S	496	S	664	S	832	S	1000	S	1168	S	1336	S
161	S	329	H	497	S	665	S	833	S	1001	S	1169	S	1337	S
162	S	330	H	498	S	666	S	834	S	1002	S	1170	S	1338	S
163	S	331	H	499	S	667	S	835	S	1003	S	1171	S	1339	S
164	S	332	H	500	S	668	S	836	S	1004	S	1172	S	1340	S
165	S	333	H	501	S	669	S	837	S	1005	S	1173	S	1341	S
166	S	334	H	502	S	670	S	838	S	1006	S	1174	S	1342	S
167	S	335	H	503	S	671	S	839	S	1007	S	1175	S	1343	S
168	S	336	H	504	S	672	S	840	S	1008	S	1176	S	1344	S

표 5. 아시아종묘 539점의 시료에 대하여, 병 관련 9종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	I2	Ve2	J3	Tm2a	Sw5	Cf9	Ph3	No.	Ty1	Ty2	I2	Ve2	J3	Tm2a	Sw5	Cf9	Ph3
1	SS	SS	R	RS	RS	RR	SS	SS	SS	271	SS	SS	R	RR	SS	SS	SS	R	SS
2	SS	SS	R	RS	RS	RR	SS	SS	SS	272	SS	SS	R	RR	SS	SS	SS	R	SS
3	SS	SS	R	RS	RS	RR	SS	SS	SS	273	SS	SS	R	RR	SS	SS	SS	R	SS
4	SS	SS	SS	RS	RS	RR	SS	SS	SS	274	SS	SS	R	RR	SS	SS	SS	R	SS
5	SS	SS	R	RS	RS	RR	SS	SS	SS	275	SS	SS	R	RR	SS	SS	SS	R	SS
6	SS	SS	R	RR	SS	RS	SS	SS	SS	276	RS	SS	R	RR	RS	RS	SS	R	SS
7	SS	SS	R	RR	SS	RS	SS	SS	SS	277	RS	SS	R	RR	RS	RS	SS	R	SS
8	SS	SS	R	RR	SS	RS	SS	SS	SS	278	RS	SS	R	RR	RS	RS	SS	R	SS
9	SS	SS	R	RR	SS	RS	SS	SS	SS	279	RS	SS	R	RR	RS	RS	SS	-	SS
10	SS	SS	R	RR	SS	RS	SS	SS	SS	280	RS	SS	R	RR	RS	RS	SS	R	SS
11	SS	SS	R	RR	SS	RR	SS	SS	SS	281	SS	SS	R	RR	SS	RS	SS	SS	SS
12	SS	SS	R	RR	SS	RR	SS	SS	SS	282	SS	SS	R	RR	SS	RS	SS	SS	SS
13	SS	SS	R	RR	SS	RR	SS	SS	SS	283	SS	SS	R	RR	SS	RS	SS	SS	SS
14	SS	SS	R	RR	SS	RR	SS	SS	SS	284	SS	SS	R	RS	SS	RS	SS	SS	SS
15	SS	SS	R	RR	SS	RR	SS	SS	SS	285	SS	SS	R	RR	SS	RS	SS	SS	SS
16	SS	SS	SS	RS	SS	RS	SS	SS	RS	286	SS	SS	R	RS	SS	RS	SS	R	SS
17	SS	SS	SS	RS	SS	RS	SS	SS	RS	287	SS	SS	R	RS	SS	RS	SS	R	SS

No.	Ty1	Ty2	I2	Ve2	J3	Tm2a	Sw5	Cf9	Ph3
18	SS	SS	SS	SS	SS	RS	SS	SS	RS
19	SS	SS	SS	RS	SS	RS	SS	SS	RS
20	SS	SS	SS	RS	SS	RS	SS	SS	RS
21	SS	SS	SS	RS	RS	RR	SS	RR	RR
22	SS	SS	SS	RR	RS	RR	SS	RR	RR
23	SS	SS	SS	RR	RS	RR	SS	RR	RR
24	SS	SS	SS	RS	RS	RR	SS	RR	RR
25	SS	SS	SS	RR	RS	RR	SS	RR	RR
26	SS	SS	SS	SS	SS	SS	SS	SS	SS
27	SS	SS	SS	SS	SS	SS	SS	SS	SS
28	SS	SS	SS	SS	SS	SS	SS	SS	SS
29	SS	SS	SS	SS	SS	SS	SS	SS	SS
30	SS	SS	SS	SS	SS	SS	SS	SS	SS
31	SS	SS	SS	RS	SS	SS	SS	SS	RR
32	SS	SS	SS	RS	SS	RR	SS	SS	RR
33	SS	SS	SS	RS	SS	RS	SS	SS	RR
34	SS	SS	SS	SS	SS	RS	SS	SS	RR
35	SS	SS	SS	SS	SS	RS	SS	SS	RR
36	SS	SS	SS	SS	SS	RS	SS	SS	RR
37	SS	SS	SS	SS	SS	RR	SS	SS	RR
38	SS	SS	SS	SS	SS	RS	SS	SS	RR
39	SS	SS	SS	SS	SS	RR	SS	SS	RR
40	SS	SS	SS	SS	SS	RS	SS	SS	RR
41	SS	SS	SS	SS	SS	SS	SS	SS	SS
42	SS	SS	SS	SS	SS	SS	SS	SS	SS
43	SS	SS	SS	SS	SS	SS	SS	SS	SS
44	SS	SS	SS	SS	SS	SS	SS	SS	SS
45	SS	SS	SS	SS	SS	SS	SS	SS	SS
46	RS	SS	R	RS	SS	RR	RS	SS	SS
47	RS	SS	R	RS	SS	RR	RS	SS	SS
48	RS	SS	R	RS	SS	RR	RS	SS	SS
49	RS	SS	R	RS	SS	RR	RS	SS	SS
50	RS	SS	R	RS	SS	RR	RS	SS	SS
51	SS	SS	R	SS	SS	RS	SS	SS	RR
52	SS	SS	R	SS	SS	RS	SS	SS	RR
53	SS	SS	R	SS	SS	RS	SS	SS	RR
54	SS	SS	R	SS	SS	RS	SS	SS	RR
55	SS	SS	R	SS	SS	RS	SS	SS	RR
56	SS	SS	R	RS	SS	RS	SS	SS	RR
57	SS	SS	R	RS	SS	RS	SS	SS	RR
58	SS	SS	R	RS	SS	RS	SS	SS	RR
59	SS	SS	R	RS	SS	RS	SS	SS	RR
60	SS	SS	R	RS	SS	RS	SS	SS	RR
61	RS	SS	R	RS	SS	RR	RS	SS	RR
62	RS	SS	R	RS	SS	RR	RS	SS	RR
63	RS	SS	R	RS	SS	RR	RS	SS	RR
64	RS	SS	R	RS	SS	RR	RS	SS	RR
65	RS	SS	R	RS	SS	RR	RS	SS	RR
66	SS	RR	SS	SS	RR	SS	SS	SS	SS
67	SS	RR	SS	SS	RR	SS	SS	SS	SS
68	SS	RR	SS	SS	RR	SS	SS	SS	SS
69	SS	RR	SS	SS	RR	SS	SS	SS	SS
70	SS	RR	SS	SS	RR	SS	SS	SS	SS
71	SS	SS	SS	SS	SS	SS	SS	SS	SS
72	SS	SS	SS	SS	SS	RR	SS	SS	SS
73	SS	SS	SS	SS	SS	SS	SS	SS	SS
74	SS	SS	SS	SS	SS	RS	SS	SS	SS
75	SS	SS	SS	SS	SS	SS	SS	SS	SS
76	SS	SS	SS	SS	SS	RR	SS	SS	SS
77	SS	SS	SS	SS	SS	RR	SS	SS	SS
78	SS	SS	SS	SS	SS	RR	SS	SS	SS
79	SS	SS	SS	SS	SS	RR	SS	SS	SS
80	SS	SS	SS	SS	SS	RR	SS	SS	SS

No.	Ty1	Ty2	I2	Ve2	J3	Tm2a	Sw5	Cf9	Ph3
288	SS	SS	R	RS	SS	RS	SS	R	SS
289	SS	SS	R	RS	SS	RS	RS	SS	SS
290	-	SS	R	RS	SS	RS	SS	SS	SS
291	-	SS	R	RS	RR	RS	SS	SS	RS
292	RS	SS	R	RS	RR	RS	SS	SS	RS
293	RS	SS	SS	RS	RR	RS	SS	SS	RS
294	RS	SS	SS	RS	-	RS	SS	SS	RS
295	RS	SS	R	RS	RR	RS	SS	SS	RS
296	RS	SS	R	RR	SS	RS	SS	SS	RS
297	RS	SS	R	RR	SS	RS	SS	-	RS
298	RS	-	R	RR	SS	RS	SS	-	RS
299	-	SS	SS	-	-	-	-	-	-
300	RS	SS	R	RR	SS	RS	SS	-	RS
301	RS	SS	R	RS	RR	RS	RS	SS	RS
302	-	SS	SS	-	-	-	-	-	-
303	RS	SS	R	RS	RS	RR	RS	SS	RS
304	RS	SS	R	RS	RS	RR	RS	SS	RS
305	RS	SS	R	RS	RS	RR	SS	-	RS
306	RS	SS	R	RS	RS	RR	SS	-	RS
307	RS	SS	R	RS	RS	RR	SS	-	RS
308	RS	SS	R	RS	RS	RR	SS	-	RS
309	RS	SS	R	RS	RS	RR	SS	-	RS
310	RS	SS	R	RS	RS	RR	SS	-	RS
311	RS	SS	R	RS	RS	RR	SS	-	RS
312	RS	-	R	RS	RS	RR	SS	-	RS
313	RS	-	R	RS	RS	RR	-	-	RS
314	RS	SS	R	RS	RS	RR	SS	-	RS
315	RS	-	R	RS	RS	RR	SS	-	RS
316	RS	SS	R	RS	RS	RR	SS	-	RS
317	RS	SS	R	RS	RS	RR	SS	-	RS
318	RS	SS	R	RS	RS	RS	SS	-	RS
319	RS	-	R	RS	RS	RS	SS	-	RS
320	-	-	-	RS	-	-	SS	-	-
321	RS	SS	R	RS	RS	RR	SS	SS	RS
322	RS	SS	R	RR	SS	SS	RS	SS	RS
323	RS	SS	R	RS	SS	SS	SS	SS	RS
324	RS	SS	R	RS	RS	RS	SS	-	RS
325	RS	SS	R	RR	SS	RS	SS	-	RS
326	RS	SS	R	RR	SS	RR	SS	-	RS
327	SS	SS	R	RS	RS	RR	SS	-	SS
328	RS	SS	R	RR	SS	RR	SS	-	RS
329	RS	SS	R	RR	SS	RR	SS	SS	RS
330	SS	SS	R	RS	RS	RR	SS	SS	RS
331	-	SS	SS	-	-	-	SS	SS	-
332	RS	SS	R	RR	SS	RR	SS	SS	SS
333	RS	SS	R	RR	SS	RR	SS	SS	SS
334	RS	-	R	RR	SS	RR	-	-	SS
335	RS	SS	R	RR	SS	RR	SS	SS	SS
336	RS	SS	R	RR	SS	RR	SS	SS	SS
337	RS	SS	R	RR	SS	RR	SS	SS	SS
338	RS	SS	R	RR	SS	RR	SS	SS	SS
339	RS	-	R	RR	SS	RR	-	-	SS
340	RS	SS	SS	RR	SS	RR	SS	SS	-
341	RS	SS	R	RR	SS	RR	SS	-	SS
342	-	SS	SS	-	-	RR	SS	SS	-
343	RS	SS	R	RR	SS	RR	SS	SS	SS
344	RS	SS	R	RR	SS	RS	SS	SS	SS
345	RS	SS	R	RR	SS	RR	SS	SS	SS
346	RS	SS	R	RR	SS	RR	SS	SS	SS
347	RS	SS	R	RR	SS	RR	SS	SS	SS
348	RS	SS	R	RR	SS	RR	SS	SS	SS
349	RS	SS	R	RR	SS	RR	SS	SS	SS
350	RS	SS	R	RR	SS	RR	SS	SS	SS

No.	Ty1	Ty2	I2	Ve2	J3	Tm2a	Sw5	Cf9	Ph3
81	SS	SS	SS	SS	SS	RR	SS	SS	RR
82	SS	SS	SS	SS	SS	RR	SS	SS	RR
83	SS	SS	SS	SS	SS	RR	SS	SS	RR
84	SS	SS	SS	SS	SS	RR	SS	SS	RR
85	SS	SS	SS	SS	SS	RR	SS	SS	RR
86	SS	SS	SS	SS	SS	SS	SS	SS	SS
87	SS	SS	SS	SS	SS	SS	SS	SS	SS
88	SS	SS	SS	SS	SS	SS	SS	SS	SS
89	SS	SS	SS	SS	SS	SS	SS	SS	SS
90	SS	SS	SS	SS	SS	SS	SS	SS	SS
91	SS	SS	R	R	SS	RR	SS	SS	SS
92	SS	SS	R	R	SS	RR	SS	SS	SS
93	SS	SS	R	R	SS	RR	SS	SS	SS
94	SS	SS	R	R	SS	RR	SS	SS	SS
95	SS	SS	R	R	SS	RR	SS	SS	SS
96	SS	SS	SS	SS	RS	RS	SS	SS	RR
97	SS	SS	SS	SS	RS	RS	SS	SS	RR
98	SS	SS	SS	SS	RS	RS	SS	SS	RR
99	SS	SS	SS	SS	RS	RS	SS	SS	RR
100	SS	SS	SS	SS	RS	RS	SS	SS	RR
101	SS	SS	SS	SS	RS	RS	SS	SS	RS
102	SS	SS	SS	SS	RS	RS	SS	SS	RS
103	SS	SS	SS	SS	RS	RS	SS	SS	RS
104	SS	SS	SS	SS	RS	RS	SS	SS	RS
105	SS	SS	SS	SS	RS	RS	SS	SS	RS
106	RS	SS	R	RS	RS	RS	SS	SS	RR
107	RS	SS	R	RS	RS	RS	SS	SS	RR
108	RS	SS	R	RS	RS	RS	SS	SS	RR
109	RS	SS	R	RS	RS	RS	SS	SS	RR
110	RS	SS	R	RS	RS	RS	SS	SS	RS
111	SS	SS	SS	SS	RS	RS	SS	SS	RS
112	SS	SS	SS	SS	RS	RS	SS	SS	RS
113	SS	SS	SS	SS	RS	RS	SS	SS	RS
114	SS	SS	SS	SS	RS	RS	SS	SS	RS
115	SS	SS	SS	SS	RS	RS	SS	SS	RS
116	SS	RS	SS	SS	RR	RR	SS	SS	RR
117	SS	RS	SS	SS	RR	RR	SS	SS	RR
118	SS	RS	SS	SS	RR	RR	SS	SS	RR
119	SS	RS	SS	SS	RR	RR	SS	SS	RR
120	SS	RS	SS	SS	RR	RR	SS	SS	RR
121	RR	SS	R	RR	RS	RS	SS	SS	SS
122	RR	SS	R	RR	RS	RS	SS	SS	SS
123	RR	SS	R	RR	RS	RS	SS	SS	SS
124	RR	SS	R	RR	RS	RS	SS	SS	SS
125	RR	SS	R	RR	RS	RS	SS	SS	SS
126	RR	SS	R	RR	RS	RS	SS	SS	SS
127	RR	SS	R	RR	RS	RS	SS	SS	SS
128	RR	SS	R	RR	RS	RR	SS	SS	SS
129	RR	SS	R	RR	RS	RS	SS	SS	SS
130	RR	SS	R	RR	RS	RR	SS	SS	SS
131	RS	SS	SS	RR	SS	RS	SS	SS	SS
132	RS	SS	SS	RR	SS	RS	SS	SS	SS
133	RS	SS	SS	RR	SS	RR	SS	SS	SS
134	RS	SS	SS	RR	SS	RS	SS	SS	SS
135	RS	SS	SS	RR	SS	RS	SS	SS	SS
136	RS	SS	R	RS	SS	RS	SS	R	SS
137	RS	SS	R	RS	SS	RS	SS	R	SS
138	RS	SS	R	RS	SS	RR	SS	R	SS
139	RS	SS	R	RS	SS	RR	SS	R	SS
140	RS	SS	R	RS	SS	RR	SS	R	SS
141	SS	SS	R	SS	SS	RR	SS	R	SS
142	SS	SS	R	SS	SS	RR	SS	R	SS
143	RS	SS	R	RS	SS	RS	SS	R	SS

No.	Ty1	Ty2	I2	Ve2	J3	Tm2a	Sw5	Cf9	Ph3
351	RS	SS	R	RR	SS	RR	SS	SS	SS
352	RS	SS	R	RR	SS	RS	SS	SS	SS
353	-	SS	SS	-	-	-	-	-	-
354	RS	SS	R	RR	SS	RS	-	-	SS
355	-	SS	SS	-	-	-	SS	SS	-
356	RS	SS	R	RR	SS	RR	SS	SS	SS
357	RS	SS	R	RR	SS	RS	SS	SS	SS
358	RS	SS	R	-	SS	RR	-	-	SS
359	-	SS	SS	-	-	-	SS	SS	-
360	-	-	SS	-	-	-	-	-	-
361	RS	SS	R	-	SS	RR	-	-	SS
362	RS	SS	R	-	SS	RR	SS	SS	SS
363	RS	SS	R	-	SS	RR	SS	SS	SS
364	RS	SS	R	-	SS	RR	SS	SS	SS
365	RS	SS	R	-	SS	RR	SS	SS	SS
366	RS	SS	R	-	SS	RR	SS	SS	SS
367	RS	SS	R	-	SS	RR	SS	SS	SS
368	-	SS	SS	-	-	-	SS	SS	-
369	RS	SS	R	RR	SS	RR	SS	-	SS
370	-	SS	SS	-	-	-	SS	-	-
371	SS	-	SS	SS	SS	RR	SS	SS	RR
372	-	SS	SS	SS	SS	RR	SS	SS	RR
373	SS	SS	SS	SS	SS	RR	SS	SS	RR
374	RS	-	SS	SS	SS	RR	SS	SS	RR
375	SS	SS	SS	SS	SS	RR	-	-	RR
376	RR	SS	SS	SS	SS	RR	SS	SS	RR
377	RR	SS	SS	SS	SS	RR	SS	-	RR
378	RR	SS	SS	SS	SS	RR	SS	-	RR
379	RR	SS	SS	SS	SS	RR	SS	SS	RR
380	-	SS	SS	SS	SS	RR	SS	-	RR
381	-	SS	SS	RS	SS	RS	SS	-	RR
382	SS	SS	SS	RS	SS	RS	SS	-	RR
383	SS	SS	SS	RS	SS	RS	SS	-	RR
384	SS	SS	SS	RS	SS	RS	SS	-	RR
385	SS	SS	SS	RS	SS	RS	SS	-	RR
386	SS	SS	SS	SS	SS	RR	SS	-	RR
387	-	-	SS	-	-	-	-	-	-
388	SS	-	SS	SS	SS	RR	-	-	RR
389	-	SS	SS	-	-	-	SS	SS	-
390	-	-	SS	-	-	-	-	-	-
391	SS	SS	SS	RR	SS	SS	SS	SS	RR
392	SS	SS	SS	RR	SS	SS	SS	-	RR
393	SS	SS	SS	RR	SS	SS	SS	SS	RR
394	SS	SS	SS	RR	SS	SS	SS	SS	RR
395	SS	SS	SS	RR	SS	SS	SS	-	RR
396	RS	SS	SS	RS	SS	RR	SS	SS	RR
397	RS	SS	SS	RS	SS	RR	SS	-	RR
398	RS	SS	SS	RS	SS	RR	SS	-	RR
399	RS	SS	SS	RS	SS	RR	SS	-	RR
400	RS	SS	SS	RS	SS	RR	SS	-	RR
401	SS	SS	SS	RR	SS	SS	SS	-	SS
402	SS	SS	SS	RR	SS	SS	SS	-	SS
403	SS	SS	SS	RR	SS	SS	SS	-	SS
404	SS	SS	R	RR	SS	SS	SS	SS	SS
405	SS	SS	R	RR	SS	SS	SS	SS	SS
406	-	SS	R	RR	SS	RR	SS	SS	SS
407	-	SS	R	RR	SS	RR	SS	SS	SS
408	-	SS	R	RR	SS	RR	SS	SS	SS
409	-	SS	SS	RR	SS	RR	SS	-	SS
410	RR	SS	R	RR	SS	RR	SS	SS	SS
411	SS	SS	R	RS	SS	SS	SS	-	RS
412	RS	SS	SS	RR	SS	RS	SS	-	SS
413	RS	SS	R	RR	SS	RS	SS	-	SS

No.	Ty1	Ty2	I2	Ve2	J3	Tm2a	Sw5	Cf9	Ph3
144	RS	SS	R	RS	SS	RS	SS	R	SS
145	RS	SS	R	SS	SS	RS	SS	R	SS
146	RS	SS	R	RS	SS	RS	SS	R	SS
147	RS	SS	R	RS	SS	RS	SS	R	SS
148	RS	SS	R	RS	SS	RS	SS	R	SS
149	RS	SS	R	RS	SS	RS	SS	R	SS
150	RS	SS	R	RS	SS	RS	SS	R	SS
151	RS	SS	R	RS	SS	SS	SS	SS	SS
152	RS	SS	R	RS	SS	SS	SS	SS	SS
153	RS	SS	SS	-	SS	-	SS	SS	SS
154	RS	SS	R	RS	SS	SS	SS	SS	SS
155	RS	SS	R	RS	SS	SS	SS	SS	SS
156	RS	SS	R	SS	SS	SS	SS	SS	SS
157	RS	SS	SS	-	SS	-	SS	SS	SS
158	RS	SS	R	SS	SS	SS	SS	SS	SS
159	RS	SS	R	SS	SS	SS	SS	SS	SS
160	RS	SS	R	SS	SS	SS	SS	SS	SS
161	RS	SS	R	SS	SS	RS	SS	R	SS
162	SS	SS	R	SS	SS	RR	SS	R	SS
163	SS	SS	R	SS	SS	RR	SS	R	SS
164	RS	SS	R	RS	SS	RS	SS	R	SS
165	RS	SS	R	SS	SS	RS	SS	R	SS
166	RS	SS	R	SS	SS	RS	SS	R	SS
167	SS	SS	SS	SS	SS	RR	SS	R	SS
168	RS	SS	R	SS	SS	RS	SS	R	SS
169	RS	SS	R	SS	SS	RS	SS	R	SS
170	RS	SS	R	SS	SS	RS	SS	R	SS
171	RS	SS	R	RS	RS	RS	SS	SS	SS
172	RS	SS	R	RS	RS	RS	SS	SS	SS
173	RS	SS	R	RS	RS	RS	SS	SS	SS
174	RS	SS	R	RS	RS	RS	SS	SS	SS
175	RS	SS	R	RS	RS	RS	SS	SS	SS
176	RS	SS	R	RR	RS	SS	SS	SS	SS
177	RS	SS	R	RR	RS	SS	SS	SS	SS
178	RS	SS	R	RR	RS	SS	SS	SS	SS
179	RS	SS	R	RR	RS	SS	SS	SS	SS
180	RS	SS	R	RR	RS	SS	SS	SS	SS
181	RS	SS	R	RS	SS	RS	SS	SS	SS
182	RS	SS	R	RS	SS	RS	SS	SS	SS
183	RS	SS	R	RS	SS	RS	SS	SS	SS
184	RS	SS	R	SS	SS	RS	SS	SS	SS
185	RS	SS	R	SS	SS	RS	SS	SS	SS
186	RS	SS	R	RS	SS	RS	SS	R	SS
187	RS	SS	R	RS	SS	RS	SS	R	SS
188	RS	SS	R	RS	SS	RS	SS	R	SS
189	RS	SS	R	RS	SS	RS	SS	R	SS
190	RS	SS	R	RS	SS	RS	SS	R	SS
191	RS	SS	R	SS	SS	RS	SS	R	SS
192	RS	SS	SS	SS	SS	RS	SS	R	SS
193	SS	SS	R	RS	SS	RS	SS	R	SS
194	SS	SS	R	RS	SS	RS	SS	R	SS
195	SS	SS	R	RS	SS	RS	SS	R	SS
196	SS	SS	R	SS	SS	RS	SS	R	SS
197	SS	SS	R	SS	SS	RS	SS	R	SS
198	SS	SS	R	SS	SS	RS	SS	R	SS
199	RS	SS	R	SS	SS	RR	SS	R	SS
200	SS	SS	R	RS	SS	RS	SS	R	SS
201	RS	SS	R	RR	RS	RS	SS	R	SS
202	RS	SS	R	RR	RS	RS	SS	R	SS
203	RS	SS	R	RR	RS	RS	SS	R	SS
204	RS	SS	R	RR	RS	RS	SS	R	SS
205	RS	SS	R	RR	RS	RS	SS	R	RS
206	RS	SS	R	RR	RS	RS	SS	R	RR

No.	Ty1	Ty2	I2	Ve2	J3	Tm2a	Sw5	Cf9	Ph3
414	SS	SS	R	RR	SS	RS	SS	SS	SS
415	SS	SS	SS	RR	SS	RS	SS	-	SS
416	SS	SS	SS	SS	SS	SS	SS	-	SS
417	SS	SS	R	SS	SS	SS	SS	-	SS
418	SS	SS	R	SS	SS	SS	SS	-	SS
419	SS	SS	SS	SS	SS	SS	-	-	SS
420	SS	SS	R	SS	SS	SS	SS	-	SS
421	SS	SS	SS	SS	SS	SS	SS	-	RR
422	-	-	SS	SS	SS	SS	SS	-	RR
423	SS	SS	SS	SS	SS	SS	SS	-	RR
424	SS	SS	SS	SS	SS	SS	SS	-	RR
425	-	SS	R	SS	SS	-	SS	-	-
426	SS	SS	R	SS	SS	SS	SS	-	RS
427	SS	SS	SS	SS	SS	SS	SS	-	RS
428	SS	SS	R	SS	SS	SS	SS	-	RS
429	SS	SS	R	SS	SS	SS	SS	-	RS
430	-	SS	R	SS	SS	SS	SS	-	RS
431	SS	SS	R	RR	RR	RR	SS	-	SS
432	-	-	SS	RR	RR	RR	-	-	SS
433	-	SS	R	SS	SS	SS	SS	-	SS
434	-	-	SS	SS	SS	SS	-	-	SS
435	-	SS	SS	-	-	-	SS	-	-
436	-	-	SS	-	-	-	SS	-	-
437	-	-	SS	-	-	-	SS	-	-
438	RR	-	SS	RR	SS	RR	-	-	RR
439	-	SS	R	-	-	-	SS	-	-
440	-	SS	R	SS	SS	SS	SS	-	SS
441	-	SS	SS	-	-	-	SS	-	-
442	-	-	SS	-	-	-	-	-	-
443	-	SS	SS	RR	SS	SS	SS	-	SS
444	-	SS	SS	RR	SS	SS	SS	-	SS
445	-	SS	SS	RR	SS	SS	-	-	SS
446	SS	SS	SS	RR	SS	SS	SS	-	SS
447	-	-	SS	-	-	-	-	-	-
448	-	-	SS	RR	RR	RR	-	-	SS
449	SS	SS	R	-	-	-	SS	-	-
450	-	SS	R	SS	SS	SS	SS	-	SS
451	RR	SS	R	SS	SS	SS	SS	-	SS
452	RR	SS	R	SS	SS	SS	SS	-	SS
453	RR	SS	R	SS	SS	SS	SS	-	SS
454	RR	SS	R	SS	SS	SS	SS	-	SS
455	-	-	SS	SS	RS	RS	-	-	SS
456	SS	SS	SS	SS	RS	RS	-	-	SS
457	SS	SS	R	SS	RS	RS	SS	-	SS
458	-	SS	R	SS	RS	-	SS	-	SS
459	SS	-	R	SS	SS	-	SS	-	SS
460	SS	SS	R	RS	RS	RS	SS	-	SS
461	SS	SS	R	RS	RS	RS	SS	-	SS
462	SS	SS	R	RS	RS	RS	SS	-	SS
463	SS	-	SS	RS	RS	RS	SS	-	SS
464	SS	SS	R	RS	RS	RS	SS	-	SS
465	SS	SS	R	RS	RS	RS	SS	-	SS
466	-	-	SS	RS	RS	RS	SS	-	SS
467	SS	SS	SS	RS	RS	RS	SS	-	SS
468	SS	SS	R	RS	RS	RS	SS	-	SS
469	SS	-	R	RS	RS	RS	SS	-	SS
470	SS	-	R	RR	SS	SS	SS	-	SS
471	-	-	R	RS	SS	SS	SS	-	SS
472	SS	SS	R	RS	SS	SS	SS	-	SS
473	SS	SS	R	RR	SS	SS	SS	-	SS
474	-	SS	R	RR	SS	SS	SS	-	SS
475	SS	SS	SS	RS	RS	RS	SS	-	SS
476	SS	SS	SS	RS	RS	RS	-	-	SS

No.	Ty1	Ty2	I2	Ve2	J3	Tm2a	Sw5	Cf9	Ph3
207	RS	SS	R	RR	RS	RS	RS	R	RR
208	RS	SS	R	RR	RS	RS	RS	R	RR
209	RS	SS	R	RR	RS	RS	RS	R	RR
210	RS	SS	R	RR	RS	RS	RS	R	RR
211	RS	SS	R	RS	SS	RS	SS	SS	SS
212	RS	SS	R	RS	SS	RS	SS	SS	SS
213	RS	SS	R	RS	SS	RS	SS	SS	SS
214	RS	SS	R	RS	SS	RS	SS	SS	SS
215	RS	SS	R	RS	SS	RS	SS	SS	SS
216	RS	SS	R	SS	SS	RR	SS	SS	SS
217	RS	SS	R	SS	SS	RR	SS	SS	SS
218	RS	SS	R	SS	SS	RR	SS	SS	SS
219	RS	SS	R	SS	SS	RR	SS	SS	SS
220	RS	SS	R	SS	SS	RR	SS	SS	SS
221	RS	SS	R	RS	SS	RS	SS	SS	RS
222	RS	SS	R	RS	SS	RS	SS	SS	SS
223	RS	SS	R	RS	SS	RS	SS	SS	RS
224	RS	SS	R	RS	SS	RS	SS	SS	RS
225	RS	SS	R	RS	SS	RS	SS	SS	RS
226	RS	SS	R	RS	SS	RS	SS	SS	SS
227	RS	SS	R	RS	SS	RR	SS	SS	SS
228	RS	SS	R	RS	SS	RR	SS	SS	SS
229	RS	SS	R	RS	SS	RS	SS	SS	SS
230	RS	SS	R	RS	SS	RR	SS	SS	SS
231	RS	SS	R	RS	SS	RS	SS	R	RS
232	RS	SS	R	RS	SS	RS	SS	R	RS
233	RS	SS	R	RS	SS	RS	SS	R	RR
234	RS	SS	R	RS	SS	RS	SS	-	RS
235	RS	SS	R	RS	SS	RS	SS	R	RS
236	RS	SS	R	RR	RS	RS	SS	-	SS
237	RS	SS	R	RR	RS	RS	SS	R	SS
238	RS	SS	R	RR	RS	RS	SS	R	SS
239	RS	SS	R	RR	RS	RS	SS	-	SS
240	RS	SS	R	RR	RS	RS	SS	-	SS
241	RR	SS	R	RR	SS	RS	SS	SS	RS
242	RR	SS	R	RR	SS	RS	SS	SS	RS
243	RR	SS	R	RR	SS	RS	SS	SS	RS
244	RR	SS	R	RR	SS	RS	SS	SS	RS
245	RR	SS	R	RR	SS	RS	SS	SS	RS
246	RR	SS	R	RR	SS	RR	SS	-	RR
247	RS	SS	R	RS	SS	RR	SS	R	RR
248	RS	SS	R	RS	SS	RR	SS	-	RR
249	RS	SS	R	RS	SS	RS	SS	R	RR
250	RS	SS	R	RS	SS	RR	SS	R	RR
251	RS	SS	R	RR	SS	RS	RS	R	RR
252	RS	SS	R	RR	SS	RS	RS	R	RR
253	RS	SS	R	RR	SS	RS	RS	R	RR
254	SS	SS	R	RS	SS	RS	RS	R	RS
255	RS	SS	R	RR	SS	RS	RS	R	RR
256	RS	SS	R	RR	RS	RS	SS	R	SS
257	RS	SS	R	RR	RS	RS	SS	R	SS
258	RS	SS	R	RR	RS	RS	SS	-	SS
259	RS	SS	R	RR	SS	RS	RS	R	RS
260	RS	SS	R	RR	RS	RS	SS	R	SS
261	RR	SS	R	RR	RS	RR	SS	-	SS
262	RR	SS	R	RR	RS	RR	SS	R	SS
263	RR	SS	R	RR	RS	RR	SS	-	SS
264	RR	SS	R	RR	RS	RR	SS	R	SS
265	RR	SS	R	RR	RS	RR	SS	R	SS
266	RS	SS	R	RS	SS	RS	SS	R	RS
267	RS	SS	R	RS	SS	RR	SS	R	RS
268	RR	SS	R	RR	SS	SS	SS	SS	SS
269	RS	SS	R	RS	SS	RR	SS	R	RS

No.	Ty1	Ty2	I2	Ve2	J3	Tm2a	Sw5	Cf9	Ph3
477	-	SS	R	RS	RS	RS	SS	-	SS
478	SS	SS	R	RS	RS	RS	SS	-	SS
479	SS	SS	R	RS	RS	RS	-	-	SS
480	SS	SS	SS	RS	RS	RS	SS	-	SS
481	SS	-	R	RS	SS	RS	SS	-	SS
482	SS	SS	R	RS	SS	RS	SS	-	SS
483	SS	-	R	RS	SS	RS	SS	-	SS
484	SS	SS	R	RS	SS	RS	SS	-	SS
485	SS	SS	SS	SS	RS	RS	SS	-	SS
486	-	-	SS	SS	RS	RS	SS	-	-
487	SS	SS	SS	RS	RS	RS	SS	-	SS
488	SS	SS	SS	RS	RS	RS	SS	-	SS
489	SS	SS	R	RS	RS	RS	SS	SS	SS
490	SS	SS	R	RR	SS	RS	SS	SS	SS
491	-	SS	R	RR	SS	RS	SS	-	SS
492	SS	-	R	RR	SS	SS	SS	-	SS
493	SS	-	R	RR	SS	RS	SS	-	SS
494	SS	-	R	RR	SS	SS	SS	-	SS
495	SS	SS	R	RS	SS	RS	SS	-	SS
496	SS	SS	R	RS	SS	RS	SS	-	SS
497	SS	-	SS	RS	SS	RS	-	-	SS
498	SS	SS	R	RS	SS	RS	SS	SS	SS
499	SS	SS	R	RS	SS	RS	SS	SS	SS
500	SS	SS	R	RR	SS	SS	SS	SS	SS
501	SS	SS	R	RR	SS	SS	SS	SS	SS
502	SS	SS	R	RR	SS	SS	SS	SS	SS
503	SS	-	R	RR	SS	SS	SS	SS	SS
504	-	SS	R	-	-	-	SS	SS	-
505	SS	SS	R	RR	RS	RS	SS	-	-
506	SS	SS	R	RR	RS	RS	SS	-	SS
507	SS	-	R	RR	RS	RS	SS	-	SS
508	SS	-	R	RR	RS	RS	SS	-	SS
509	SS	SS	R	RR	RS	RS	SS	-	SS
510	SS	SS	R	RR	RS	RS	SS	-	SS
511	SS	SS	R	RR	RS	RS	SS	-	SS
512	-	SS	R	RR	RR	RR	SS	-	SS
513	SS	SS	R	RR	RR	RR	SS	-	SS
514	SS	SS	R	RR	RR	RR	SS	SS	SS
515	SS	SS	R	RR	SS	RS	SS	SS	RS
516	SS	SS	R	RR	SS	RS	SS	SS	RS
517	SS	SS	R	RR	SS	RS	SS	SS	RS
518	SS	SS	R	RR	SS	RS	-	SS	RS
519	SS	-	R	RR	SS	RS	SS	-	RS
520	RS	SS	R	RR	RS	RS	SS	-	RS
521	RS	SS	R	RR	RS	RS	SS	-	RS
522	RS	SS	R	RR	RS	RS	SS	-	RS
523	RS	SS	R	RR	RS	RS	SS	-	RS
524	-	-	R	RR	RS	RS	SS	-	RS
525	RS	SS	R	RS	RS	RR	SS	-	RS
526	RS	SS	R	RS	RS	RR	SS	-	RS
527	RS	-	R	RS	RS	RR	SS	-	RS
528	RS	SS	R	RS	RS	RR	SS	-	RS
529	SS	SS	R	RR	SS	RS	SS	-	RS
530	SS	SS	R	RR	RS	RR	SS	-	RS
531	SS	SS	R	RR	SS	RR	RS	-	RS
532	-	-	R	RR	SS	RR	RS	-	RS
533	-	-	R	RR	SS	RR	RS	-	RS
534	-	-	R	RR	RS	RR	RS	-	RS
535	-	SS	R	RR	SS	RS	RS	-	SS
536	-	SS	R	RR	SS	RS	SS	-	SS
537	RS	-	SS	RR	SS	RS	-	-	SS
538	RS	-	SS	RR	SS	RS	-	-	SS
539	RS	-	SS	RR	SS	RS	-	-	SS

No.	Ty1	Ty2	I2	Ve2	J3	Tm2a	Sw5	Cf9	Ph3
270	RS	SS	R	RS	SS	RR	SS	R	RS

No.	Ty1	Ty2	I2	Ve2	J3	Tm2a	Sw5	Cf9	Ph3
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표 6. 아시아종묘 576점의 시료에 대하여, 병 관련 9종의 마커를 이용한 서비스 결과

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
1	S	R/H	S	S	R	S	S	H	S
2	S	R/H	S	S	R	S	S	H	S
3	S	R/H	S	S	R	S	S	H	S
4	S	R/H	S	S	R	S	S	H	S
5	S	R/H	S	S	R	S	S	H	S
6	S	R/H	H	S	R	R/H	S	S	H
7	S	R/H	H	S	H	R/H	S	S	S
8	S	R/H	H	S	R	R/H	S	S	H
9	S	R/H	H	S	H	R/H	S	S	S
10	S	R/H	H	S	H	R/H	S	S	S
11	S	R/H	H	S	H	R/H	S	S	S
12	S	R/H	H	S	H	R/H	S	S	S
13	S	R/H	H	S	H	R/H	S	S	S
14	S	R/H	H	S	H	R/H	S	S	S
15	S	R/H	H	S	H	R/H	S	S	S
16	S	R/H	S	S	R	S	S	R	S
17	S	R/H	S	S	R	S	S	R	S
18	S	R/H	S	S	R	S	S	R	S
19	S	R/H	S	S	R	S	S	R	S
20	S	R/H	S	S	R	S	S	R	S
21	S	R/H	H	S	H	R/H	S	H	S
22	S	R/H	H	S	H	R/H	S	H	S
23	S	R/H	H	S	H	R/H	S	H	S
24	S	R/H	H	S	H	R/H	S	H	S
25	S	R/H	H	S	H	R/H	S	H	S
26	S	S	S	S	R	S	S	R	H
27	S	S	S	S	R	S	S	R	H
28	S	S	S	S	R	S	S	R	H
29	S	S	S	S	R	S	S	R	H
30	S	S	S	S	R	S	S	R	H
31	H	R/H	H	S	H	S	H	H	H
32	H	R/H	H	S	H	S	H	H	H
33	S	R/H	H	S	H	S	H	H	H
34	S	R/H	H	S	H	S	H	H	H
35	H	R/H	H	S	H	S	H	H	H
36	S	S	S	H	R	S	S	H	H
37	S	S	S	H	R	S	S	H	H
38	S	S	S	H	R	S	S	H	H
39	S	S	S	H	R	S	S	H	H
40	S	S	S	H	R	S	S	H	H
41	S	S	S	S	S	S	S	H	S
42	S	S	S	S	S	S	S	H	S
43	S	S	S	S	S	S	S	H	S
44	S	S	S	S	S	S	S	H	S
45	S	S	S	S	S	S	S	H	S
46	S	S	S	S	S	S	S	H	S
47	S	S	S	S	S	S	S	H	S
48	S	S	S	S	S	S	S	H	S
49	S	S	S	S	S	S	S	H	S
50	-	-	-	-	-	-	-	-	-
51	S	S	S	S	S	S	S	H	S
52	S	S	S	S	S	S	S	H	S
53	S	S	S	S	S	S	S	H	S
54	S	S	S	S	S	S	S	H	S
55	S	S	S	S	S	S	S	H	S
56	S	S	S	S	S	S	S	H	S
57	S	S	S	S	S	S	S	H	S
58	S	S	S	S	S	S	S	H	S

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
289	S	S	S	H	S	S	S	H	S
290	S	S	S	H	S	S	S	S	S
291	S	S	S	H	S	S	S	S	S
292	S	S	S	S	S	S	S	H	S
293	S	S	S	R	S	S	S	S	S
294	S	S	S	R	S	S	S	S	S
295	S	S	S	H	S	S	S	S	S
296	S	S	S	H	S	S	S	R	S
297	S	S	S	H	S	S	S	R	S
298	S	S	S	H	S	S	S	R	S
299	S	S	S	H	S	S	S	R	S
300	S	S	S	H	S	S	S	R	S
301	S	S	S	H	H	S	S	R	H
302	S	S	S	H	S	S	S	R	S
303	S	S	S	H	S	S	S	R	S
304	S	S	S	H	S	S	S	R	S
305	S	S	S	H	S	S	S	R	S
306	S	S	H	S	S	S	S	R	S
307	S	S	H	H	S	S	S	R	S
308	S	S	H	H	S	S	S	R	S
309	S	S	H	S	S	S	S	R	S
310	S	S	H	H	S	S	S	R	S
311	S	S	S	S	H	S	S	S	S
312	S	S	S	S	H	S	S	H	S
313	S	S	S	S	H	S	S	H	S
314	S	S	S	S	S	S	S	S	S
315	S	S	S	S	S	S	S	S	S
316	S	S	H	S	S	R/H	S	H	S
317	S	S	H	S	S	R/H	S	H	S
318	S	S	H	S	S	R/H	S	H	S
319	S	S	H	S	S	R/H	S	H	S
320	S	S	H	S	S	R/H	S	H	S
321	S	S	H	S	S	R/H	S	H	S
322	S	S	H	S	S	R/H	S	H	S
323	S	S	H	S	S	R/H	S	H	S
324	S	S	H	S	S	R/H	S	H	S
325	S	S	H	S	S	R/H	S	H	S
326	S	S	S	S	H	S	S	H	S
327	S	S	S	S	H	S	S	H	S
328	S	S	S	S	H	S	S	R	S
329	S	S	S	S	R	S	S	H	S
330	S	S	S	S	H	S	S	R	S
331	S	S	H	S	R	S	S	S	S
332	S	S	H	S	H	S	S	S	S
333	S	S	H	S	R	S	S	S	S
334	S	S	H	S	R	S	S	S	S
335	S	S	H	S	R	S	S	S	S
336	S	S	S	S	S	S	S	S	S
337	S	S	S	S	S	S	S	S	S
338	S	S	H	S	S	S	S	S	S
339	S	S	S	S	S	S	S	S	S
340	S	S	S	S	S	S	S	S	S
341	S	S	H	S	S	S	S	H	S
342	S	S	S	S	S	S	S	H	S
343	S	S	H	S	S	S	S	H	S
344	S	S	S	S	S	S	S	H	S
345	S	S	S	S	S	S	S	H	S
346	S	R/H	S	S	S	S	S	R	S

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
59	S	S	S	S	S	S	S	H	S
60	S	S	S	S	S	S	S	H	S
61	H	R/H	R	S	R	S	S	S	H
62	S	R/H	R	S	R	S	S	S	H
63	H	R/H	R	S	R	S	S	S	H
64	S	R/H	R	S	R	S	S	S	H
65	S	R/H	R	S	R	S	S	S	H
66	S	R/H	R	S	R	S	S	S	H
67	H	R/H	R	S	R	S	S	S	H
68	H	R/H	R	S	R	S	S	S	H
69	H	R/H	R	S	R	S	S	S	H
70	S	S	R	S	R	S	S	S	H
71	H	S	H	S	R	S	S	H	H
72	H	S	H	S	R	S	S	H	H
73	H	S	H	S	R	S	S	H	H
74	H	S	H	S	R	S	S	H	H
75	-	-	-	-	-	-	-	-	-
76	S	S	S	S	H	S	S	R	H
77	S	S	S	S	H	S	S	R	H
78	S	S	S	S	H	S	S	R	H
79	S	S	S	S	H	S	S	R	H
80	S	S	S	S	H	S	S	R	H
81	S	R/H	H	S	H	R/H	S	S	S
82	S	R/H	H	S	H	R/H	S	S	S
83	-	-	-	-	-	-	-	-	-
84	-	-	-	-	-	-	-	-	-
85	-	-	-	-	-	-	-	-	-
86	S	R/H	H	S	S	R/H	S	H	S
87	S	R/H	H	S	S	R/H	S	H	S
88	S	R/H	H	S	S	R/H	S	H	S
89	S	R/H	H	S	S	R/H	S	H	S
90	S	R/H	H	S	S	R/H	S	H	S
91	S	R/H	H	S	S	R/H	S	H	S
92	S	R/H	H	S	S	R/H	S	H	S
93	S	R/H	H	S	S	R/H	S	H	S
94	S	S	H	S	S	R/H	S	H	S
95	S	R/H	H	S	S	R/H	S	H	S
96	S	S	S	S	S	S	S	S	S
97	S	S	S	S	S	S	S	S	S
98	S	S	S	S	S	S	S	S	S
99	S	S	S	S	S	S	S	S	S
100	S	S	S	S	S	S	S	S	S
101	S	S	S	H	S	S	S	R	S
102	S	S	S	S	S	S	S	H	S
103	S	R/H	S	S	R	S	S	R	S
104	S	R/H	R	S	R	S	S	S	S
105	S	S	S	S	S	S	S	H	S
106	S	S	S	S	S	S	S	S	S
107	S	S	S	S	S	S	S	S	S
108	S	S	S	S	S	S	S	S	S
109	S	S	S	S	S	S	S	S	S
110	S	S	S	S	S	S	S	S	S
111	S	S	S	S	S	S	S	S	S
112	S	S	S	S	S	S	S	S	S
113	S	S	S	S	S	S	S	S	S
114	S	S	S	S	S	S	S	S	S
115	S	S	S	S	S	S	S	S	S
116	S	R/H	H	S	R	S	S	H	S
117	S	R/H	H	S	R	S	S	H	S
118	S	R/H	H	S	R	S	S	H	S
119	S	R/H	H	S	R	S	S	H	S
120	S	R/H	H	S	R	S	S	H	S
121	S	R/H	R	S	H	S	S	S	S

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
347	S	R/H	S	S	S	S	S	R	S
348	S	R/H	S	S	S	S	S	R	S
349	S	R/H	S	S	S	S	S	R	S
350	S	S	S	S	S	S	S	R	S
351	S	R/H	S	S	S	S	S	R	S
352	S	R/H	S	S	S	S	S	R	S
353	S	R/H	S	S	S	S	S	R	S
354	S	R/H	S	S	S	S	S	R	S
355	S	R/H	S	S	S	S	S	R	S
356	S	R/H	S	S	H	S	S	H	H
357	S	R/H	S	S	H	S	S	H	H
358	S	R/H	S	S	S	S	S	H	S
359	S	R/H	S	S	H	S	S	H	H
360	S	R/H	S	S	H	S	S	H	H
361	S	R/H	S	S	S	S	S	H	S
362	S	R/H	S	S	H	S	S	H	H
363	S	R/H	S	S	H	S	S	H	H
364	S	R/H	S	S	S	S	S	H	S
365	S	R/H	S	S	H	S	S	H	H
366	S	S	S	S	H	R/H	S	R	S
367	H	S	S	H	H	R/H	S	R	S
368	H	S	S	S	H	R/H	S	R	S
369	S	S	S	H	H	R/H	S	R	S
370	S	S	S	H	H	R/H	S	R	S
371	H	S	S	S	R	S	S	R	S
372	H	S	S	S	R	S	S	R	S
373	H	S	S	S	R	R/H	S	R	S
374	S	R/H	S	S	H	S	S	H	H
375	H	S	S	S	R	S	S	R	S
376	S	R/H	R	S	S	S	S	S	S
377	S	R/H	R	S	S	S	S	S	S
378	S	R/H	R	S	S	S	S	S	S
379	S	R/H	R	S	S	S	S	S	S
380	S	R/H	R	S	S	S	S	S	S
381	S	R/H	R	S	S	S	S	S	S
382	S	S	H	S	H	S	S	H	S
383	S	R/H	H	S	H	R/H	S	H	S
384	H	R/H	H	S	H	R/H	S	H	S
385	S	R/H	H	S	H	R/H	S	H	S
386	S	R/H	H	S	S	S	S	R	S
387	S	R/H	H	S	S	S	S	R	H
388	S	R/H	H	S	H	S	S	R	H
389	H	R/H	H	S	H	S	S	R	H
390	S	R/H	H	S	S	S	S	R	S
391	H	R/H	R	S	H	S	S	H	H
392	H	R/H	R	S	S	S	S	H	S
393	H	R/H	R	S	S	S	S	H	S
394	H	R/H	R	S	H	S	S	H	H
395	H	R/H	R	S	S	S	S	H	S
396	H	R/H	R	S	H	S	S	S	S
397	H	R/H	R	S	H	S	S	S	S
398	H	R/H	R	S	H	S	S	S	S
399	H	R/H	R	S	H	S	S	S	S
400	H	R/H	R	S	H	S	S	S	S
401	S	R/H	R	S	H	S	S	S	S
402	H	R/H	R	S	H	S	S	S	S
403	S	R/H	R	S	H	S	H	H	S
404	S	R/H	R	S	H	S	S	H	S
405	S	R/H	R	S	H	S	S	S	S
406	S	R/H	R	S	R	S	S	S	H
407	S	R/H	R	S	R	S	S	S	H
408	S	R/H	R	S	R	S	S	S	H
409	S	R/H	R	S	R	S	S	S	H

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
122	S	R/H	R	S	H	S	S	S	S
123	S	R/H	R	S	H	S	S	S	S
124	S	R/H	R	S	H	S	S	S	S
125	S	R/H	R	S	H	S	S	S	S
126	S	R/H	R	S	H	S	S	S	S
127	S	R/H	R	S	H	S	S	S	S
128	S	R/H	R	S	H	S	S	S	S
129	S	R/H	R	S	H	S	S	S	S
130	S	R/H	R	S	H	S	S	S	S
131	S	R/H	H	S	H	S	S	S	S
132	S	R/H	H	S	H	S	S	S	S
133	S	R/H	H	S	H	S	S	S	S
134	S	R/H	H	S	H	S	S	S	S
135	S	R/H	H	S	H	S	S	S	S
136	S	S	S	S	H	S	S	H	S
137	S	S	S	S	H	S	S	H	S
138	S	S	S	S	H	S	S	H	S
139	S	S	S	S	H	S	S	H	S
140	S	S	S	S	H	S	S	H	S
141	S	R/H	H	S	S	R/H	S	H	S
142	S	R/H	H	S	S	R/H	S	H	S
143	S	R/H	H	S	S	R/H	S	H	S
144	S	R/H	H	S	S	R/H	S	H	S
145	S	R/H	H	S	S	R/H	S	H	S
146	S	S	S	S	S	S	S	H	S
147	S	S	S	S	S	S	S	H	S
148	S	S	S	S	S	S	S	H	S
149	S	S	S	S	S	S	S	H	S
150	S	S	S	S	S	S	S	H	S
151	S	R/H	H	S	S	S	S	H	S
152	S	R/H	H	S	S	S	S	H	S
153	S	R/H	H	S	S	S	S	H	S
154	S	R/H	H	S	S	S	S	H	S
155	S	R/H	H	S	S	S	S	H	S
156	S	R/H	S	S	H	S	S	R	S
157	S	R/H	S	S	H	S	S	R	S
158	S	R/H	S	S	H	S	S	R	S
159	S	R/H	S	S	H	S	S	R	S
160	S	R/H	S	S	H	S	S	R	S
161	S	R/H	S	S	H	S	S	R	S
162	S	R/H	S	S	H	S	S	R	S
163	S	R/H	S	S	H	S	S	R	S
164	S	R/H	S	S	H	S	S	R	S
165	S	R/H	S	S	H	S	S	R	S
166	S	R/H	S	S	R	S	S	R	H
167	S	R/H	S	S	R	S	S	R	H
168	S	R/H	S	S	R	S	S	R	H
169	S	R/H	S	S	R	S	S	R	H
170	S	R/H	S	S	R	S	S	R	H
171	S	R/H	S	S	R	S	S	R	H
172	S	R/H	S	S	R	S	S	R	H
173	S	R/H	S	S	R	S	S	R	H
174	S	R/H	S	S	R	S	S	R	H
175	S	R/H	S	S	R	S	S	R	H
176	S	R/H	S	S	R	S	S	R	H
177	S	R/H	S	S	R	S	S	R	H
178	S	R/H	S	S	R	S	S	R	H
179	S	R/H	S	S	R	S	S	R	H
180	S	R/H	S	S	R	S	S	R	H
181	S	R/H	S	S	H	S	S	R	S
182	S	S	S	S	H	S	S	R	S
183	S	S	S	S	H	S	S	R	S
184	S	S	S	S	H	S	S	R	S

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
410	S	R/H	R	S	R	S	S	S	H
411	H	R/H	R	S	R	S	S	S	S
412	H	R/H	R	S	R	S	S	S	S
413	H	R/H	R	S	R	S	S	S	S
414	H	R/H	R	S	R	S	S	S	S
415	H	R/H	R	S	R	S	S	S	S
416	H	R/H	R	S	R	S	S	S	S
417	S	R/H	R	S	R	S	S	S	S
418	S	R/H	R	S	R	S	S	S	S
419	H	R/H	R	S	R	S	S	S	S
420	H	R/H	R	S	R	S	S	S	S
421	H	R/H	R	S	H	S	S	S	S
422	H	R/H	R	S	H	S	S	S	S
423	H	R/H	R	S	H	S	S	S	S
424	H	R/H	R	S	H	S	S	S	S
425	H	R/H	R	S	H	S	S	S	S
426	S	R/H	R	S	R	S	H	R	H
427	S	R/H	R	S	R	S	H	R	H
428	S	R/H	R	S	R	S	H	R	H
429	S	R/H	R	S	R	S	H	R	H
430	S	R/H	R	S	R	S	H	R	H
431	S	R/H	H	S	H	S	H	R	H
432	S	R/H	H	S	H	S	H	R	H
433	S	R/H	H	S	H	S	H	R	H
434	S	R/H	H	S	H	S	H	R	H
435	S	R/H	H	S	H	S	H	R	H
436	S	R/H	S	S	H	S	H	R	H
437	S	R/H	S	S	H	S	H	R	H
438	S	R/H	S	S	H	S	H	R	H
439	S	R/H	S	S	H	S	H	R	H
440	S	R/H	S	S	H	S	H	R	H
441	H	R/H	H	S	S	S	S	H	H
442	H	S	H	S	S	S	S	H	H
443	H	R/H	H	S	S	S	S	H	H
444	H	S	H	S	S	S	S	H	H
445	H	R/H	H	S	S	S	S	H	H
446	H	R/H	H	S	S	S	S	H	H
447	H	R/H	H	S	S	S	S	H	H
448	H	S	H	S	S	S	S	H	H
449	H	R/H	H	S	S	S	S	H	H
450	H	S	H	S	S	S	S	H	H
451	S	S	H	S	H	R/H	S	S	H
452	S	S	R	S	R	R/H	S	S	S
453	S	S	R	S	R	R/H	S	S	S
454	S	S	R	S	H	R/H	S	S	H
455	S	S	R	S	H	R/H	S	S	H
456	S	S	S	S	R	R/H	S	H	H
457	S	S	S	S	R	R/H	S	H	H
458	S	S	S	S	R	R/H	S	H	H
459	S	S	S	S	R	R/H	S	H	H
460	S	S	S	S	R	R/H	S	H	H
461	S	S	S	S	R	R/H	S	H	H
462	S	S	S	S	R	R/H	S	H	H
463	S	S	S	S	R	R/H	S	H	H
464	S	S	S	S	R	R/H	S	H	H
465	S	S	S	S	R	R/H	S	H	H
466	H	R/H	H	S	H	S	S	S	H
467	H	R/H	H	S	H	S	S	S	H
468	H	R/H	H	S	H	S	S	S	H
469	H	R/H	H	S	H	S	S	S	H
470	H	R/H	H	S	H	S	S	S	H
471	R	R/H	H	S	H	S	S	H	S
472	R	R/H	H	S	H	S	S	H	S

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
185	S	S	S	S	H	S	S	R	S
186	S	S	S	S	R	S	S	S	S
187	S	S	S	S	R	S	S	S	S
188	S	R/H	S	S	R	S	S	S	S
189	S	R/H	S	S	R	S	S	S	S
190	S	S	S	S	R	S	S	S	S
191	H	S	S	S	R	R/H	H	S	S
192	H	S	S	S	R	R/H	H	S	S
193	H	S	S	S	R	R/H	H	S	S
194	H	S	S	S	R	R/H	H	S	S
195	H	S	S	S	R	R/H	H	S	S
196	S	S	S	S	S	S	S	H	S
197	S	S	S	S	S	S	S	H	S
198	S	S	S	S	S	S	S	H	S
199	S	S	S	S	S	S	S	H	S
200	S	S	S	S	S	S	S	H	S
201	S	S	S	S	H	S	S	H	S
202	S	S	S	S	H	S	S	H	S
203	S	S	S	S	H	S	S	H	S
204	S	S	S	S	H	S	S	H	S
205	S	S	S	S	S	S	S	H	S
206	S	R/H	S	S	H	S	S	R	H
207	S	R/H	S	S	H	R/H	S	R	H
208	S	R/H	S	S	H	S	S	R	H
209	S	R/H	S	S	H	R/H	S	R	H
210	S	R/H	S	S	H	R/H	S	R	H
211	S	R/H	S	S	R	S	S	H	H
212	S	R/H	S	S	R	S	S	H	H
213	S	R/H	S	S	R	S	S	H	H
214	S	R/H	S	S	R	S	S	H	H
215	S	R/H	S	S	R	S	S	H	H
216	S	R/H	S	S	S	S	S	R	S
217	S	R/H	S	S	S	S	S	R	S
218	S	R/H	S	S	S	S	S	R	S
219	S	R/H	S	S	S	S	S	R	S
220	S	R/H	S	S	S	S	S	R	S
221	S	S	S	S	S	S	S	H	S
222	S	S	S	S	S	S	S	H	S
223	S	S	S	S	S	S	S	H	S
224	S	S	S	S	S	S	S	H	S
225	S	S	S	S	S	S	S	H	S
226	S	S	S	S	S	S	S	H	S
227	S	S	S	S	S	S	S	H	S
228	S	S	S	S	S	S	S	H	S
229	S	S	S	S	S	S	S	H	S
230	S	S	S	S	S	S	S	H	S
231	S	S	S	S	H	S	S	H	H
232	S	S	S	S	H	S	S	H	H
233	S	S	S	S	H	S	S	H	H
234	S	S	S	S	H	S	S	H	H
235	S	S	S	S	H	S	S	H	H
236	S	S	H	S	S	S	S	S	S
237	S	S	H	S	S	S	S	S	S
238	S	S	H	S	S	S	S	S	S
239	S	S	H	S	S	S	S	S	S
240	S	S	H	S	S	S	S	S	S
241	S	S	S	S	S	S	S	R	S
242	S	S	S	S	S	S	S	R	S
243	S	S	S	S	S	S	S	R	S
244	S	S	H	S	H	S	S	H	S
245	S	S	H	S	H	S	S	H	S
246	S	S	H	S	S	S	S	H	S
247	S	S	H	S	S	S	S	H	S

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
473	R	R/H	H	S	H	S	S	H	S
474	R	R/H	H	S	H	S	S	H	S
475	R	R/H	H	S	H	S	S	H	S
476	H	R/H	H	S	H	S	S	S	H
477	H	R/H	H	S	H	S	S	S	H
478	H	R/H	H	S	H	S	S	S	H
479	H	R/H	H	S	H	S	S	S	H
480	H	R/H	H	S	H	S	S	S	H
481	S	R/H	H	S	S	R/H	S	S	S
482	S	R/H	H	S	S	R/H	S	S	S
483	S	R/H	H	S	S	R/H	S	S	S
484	S	R/H	H	S	S	R/H	S	S	S
485	S	R/H	H	S	S	R/H	S	S	S
486	S	S	H	S	S	S	S	H	S
487	S	S	H	S	S	S	S	H	S
488	S	S	H	S	S	S	S	H	S
489	S	S	S	S	S	S	S	H	S
490	S	S	H	S	S	S	S	H	S
491	S	S	S	S	S	S	S	H	S
492	S	S	H	S	S	S	S	H	S
493	S	S	S	S	S	S	S	H	S
494	S	S	H	S	S	S	S	H	S
495	S	S	S	S	S	S	S	H	S
496	S	R/H	H	S	H	S	S	H	S
497	S	R/H	H	S	R	S	S	H	H
498	S	R/H	H	S	H	S	S	H	S
499	S	R/H	H	S	H	S	S	H	S
500	S	R/H	H	S	H	S	S	H	S
501	S	R/H	S	S	R	S	S	S	H
502	S	S	S	S	R	S	S	S	H
503	S	S	S	S	R	S	S	S	H
504	S	R/H	S	S	R	S	S	S	H
505	S	R/H	S	S	R	S	S	S	H
506	S	R/H	S	S	R	S	S	S	S
507	S	R/H	S	S	R	S	S	S	S
508	S	R/H	S	S	R	S	S	S	H
509	S	S	S	S	R	S	S	S	S
510	S	R/H	S	S	R	S	S	S	S
511	S	S	S	S	R	S	S	S	H
512	S	R/H	S	S	R	S	S	S	S
513	S	R/H	S	S	R	S	S	S	H
514	S	R/H	S	S	R	S	S	S	S
515	S	R/H	S	S	R	S	S	S	H
516	S	R/H	H	S	R	S	S	S	H
517	S	R/H	H	S	R	S	S	S	H
518	S	R/H	H	S	R	S	S	S	H
519	S	R/H	H	S	R	S	S	S	H
520	S	R/H	H	S	R	S	S	S	H
521	S	R/H	H	S	R	S	S	H	R
522	S	R/H	H	S	H	S	S	H	R
523	S	R/H	H	S	R	S	S	H	R
524	S	R/H	H	S	R	S	S	H	R
525	S	R/H	H	S	R	S	S	H	R
526	S	S	S	S	H	S	S	S	H
527	S	S	S	S	H	S	S	S	H
528	S	S	S	S	H	S	S	S	H
529	S	S	S	S	H	S	S	S	H
530	S	S	S	S	H	S	S	S	H
531	S	R/H	S	S	R	S	S	S	S
532	S	R/H	H	S	R	S	S	S	H
533	S	R/H	H	S	R	S	S	S	H
534	S	R/H	H	S	R	S	S	S	H
535	S	R/H	H	S	R	S	S	S	H

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
248	H	S	H	S	S	S	S	S	S
249	S	S	H	S	S	S	S	H	S
250	S	S	H	S	S	S	S	H	S
251	S	S	S	S	S	S	S	S	S
252	H	S	S	S	S	S	S	S	S
253	S	S	S	S	S	S	S	S	S
254	S	S	S	S	S	S	S	S	S
255	H	S	S	S	S	S	S	S	S
256	H	S	H	S	R	S	S	S	H
257	H	S	H	S	R	S	S	S	H
258	H	S	H	S	R	S	S	S	H
259	H	S	H	S	R	S	S	S	H
260	H	S	H	S	R	S	S	S	H
261	H	S	H	S	R	S	S	S	H
262	H	S	H	S	R	S	S	S	H
263	H	S	H	S	R	S	S	S	H
264	H	S	H	S	R	S	S	S	H
265	H	S	H	S	R	S	S	S	H
266	S	S	S	S	S	S	S	R	S
267	S	S	S	S	S	S	S	R	S
268	S	S	S	S	S	S	S	R	S
269	S	S	S	S	S	S	S	R	S
270	S	S	S	S	S	S	S	R	S
271	S	S	S	S	S	S	S	S	S
272	S	S	S	S	S	S	S	R	S
273	S	S	S	S	S	S	S	R	S
274	S	S	S	H	S	S	S	R	S
275	S	S	S	S	S	S	S	R	S
276	S	R/H	S	S	R	R/H	S	R	S
277	S	R/H	S	S	R	R/H	S	R	S
278	S	R/H	S	S	R	R/H	S	R	S
279	S	R/H	S	S	R	R/H	S	R	S
280	S	R/H	S	S	R	R/H	S	R	S
281	S	R/H	S	S	R	R/H	S	R	S
282	S	R/H	S	S	R	R/H	S	R	S
283	S	R/H	S	S	R	R/H	S	R	S
284	S	R/H	S	S	R	R/H	S	R	S

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
536	S	R/H	S	S	R	S	S	S	H
537	S	R/H	S	S	R	S	S	S	H
538	S	R/H	S	S	R	S	S	S	H
539	S	R/H	S	S	R	S	S	S	H
540	S	R/H	S	S	R	S	S	S	H
541	S	R/H	H	S	H	S	S	H	R
542	S	R/H	H	S	H	S	S	H	R
543	S	R/H	H	S	H	S	S	H	R
544	S	R/H	H	S	H	S	S	H	R
545	S	R/H	H	S	H	S	S	H	R
546	S	R/H	S	S	R	S	S	S	H
547	S	S	S	S	R	S	S	S	H
548	S	S	S	S	R	S	S	S	H
549	S	S	S	S	R	S	S	S	H
550	S	S	S	S	R	S	S	S	H
551	S	R/H	S	S	R	S	S	S	S
552	S	R/H	S	S	R	S	S	S	S
553	S	R/H	S	S	R	S	S	S	S
554	S	R/H	S	S	R	S	S	S	S
555	S	R/H	S	S	R	S	S	S	S
556	S	R/H	S	S	R	S	S	S	S
557	S	R/H	S	S	R	S	S	S	S
558	S	R/H	S	S	R	S	S	S	S
559	S	R/H	S	S	R	S	S	S	S
560	S	R/H	S	S	R	S	S	S	S
561	S	S	S	S	H	S	S	S	H
562	S	S	S	S	H	S	S	S	H
563	S	S	S	S	H	S	S	S	H
564	S	S	S	S	H	S	S	S	H
565	S	S	S	S	H	S	S	S	H
566	S	R/H	R	S	R	S	S	S	R
567	S	R/H	R	S	R	S	S	S	R
568	S	R/H	R	S	R	S	S	S	R
569	S	R/H	R	S	R	S	S	S	R
570	S	R/H	R	S	R	S	S	S	R
571	S	S	R	S	R	S	S	S	R
572	S	S	S	S	R	S	S	S	R

표 7. 아시아종묘 537점의 시료에 대하여, 병 관련 9종의 마커를 이용한 서비스 결과

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
1	S	R/H	R	S	S	H	S	S	S
2	S	R/H	H	S	S	H	S	S	S
3	S	S	S	S	S	S	S	S	S
4	S	R/H	H	S	S	H	S	S	S
5	S	R/H	R	S	S	S	S	S	S
6	S	S	S	S	H	S	S	S	H
7	S	S	S	S	H	S	S	S	H
8	S	S	S	S	H	S	S	S	H
9	S	S	S	S	H	S	S	S	H
10	S	S	S	S	H	S	S	S	H
11	S	S	S	S	H	S	S	S	H
12	S	R/H	H	S	H	S	S	S	H
13	S	S	S	S	H	S	S	S	H
14	S	R/H	S	S	H	S	S	S	H
15	S	R/H	H	S	H	S	S	S	H
16	S	R/H	S	S	H	S	S	S	H
17	S	R/H	S	S	H	S	S	S	H
18	S	R/H	S	S	S	S	S	S	S
19	S	R/H	S	S	S	S	S	S	S
20	S	R/H	S	S	H	S	S	S	H

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
270	S	R/H	H	S	S	H	S	S	S
271	S	R/H	H	S	H	S	S	S	H
272	S	R/H	H	S	H	S	S	S	H
273	S	R/H	H	S	H	S	S	S	H
274	S	R/H	H	S	H	S	S	S	H
275	S	R/H	H	S	H	S	S	S	H
276	H	R/H	R	S	S	S	S	S	H
277	H	R/H	R	S	S	S	S	S	S
278	H	R/H	R	S	S	S	S	S	S
279	H	R/H	H	S	S	S	S	S	S
280	H	R/H	R	S	S	S	S	S	S
281	H	R/H	H	S	H	S	H	H	R
282	R	S	S	S	R	S	S	R	R
283	H	R/H	H	S	H	S	H	H	R
284	H	R/H	H	S	H	H	H	H	R
285	H	R/H	H	S	H	H	H	H	R
286	S	R/H	R	S	S	S	S	S	S
287	S	R/H	R	S	S	S	S	S	S
288	S	R/H	R	S	S	S	S	S	S
289	S	R/H	R	S	S	S	S	S	S

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
21	S	S	S	S	H	S	S	S	H
22	S	S	S	S	H	S	S	S	H
23	S	S	S	S	H	S	S	S	H
24	S	S	S	S	H	S	S	S	H
25	S	S	S	S	H	S	S	S	H
26	S	R/H	S	S	R	S	S	S	R
27	S	R/H	S	S	R	S	S	S	R
28	S	R/H	S	S	R	S	S	S	R
29	S	S	S	S	R	S	S	S	R
30	S	R/H	S	S	R	S	S	S	R
31	S	S	S	S	H	S	S	S	H
32	S	S	S	S	H	S	S	S	H
33	S	R/H	S	S	H	S	S	S	H
34	S	R/H	S	S	H	S	S	S	H
35	S	R/H	S	S	H	S	S	S	H
36	S	R/H	H	S	H	S	S	S	H
37	S	R/H	H	S	H	S	S	S	H
38	S	R/H	H	S	H	S	S	S	H
39	S	R/H	H	S	H	S	S	S	H
40	S	R/H	H	S	H	S	S	S	H
41	S	S	S	H	R	S	S	S	R
42	S	S	S	H	R	S	S	S	R
43	S	S	S	S	R	S	S	S	R
44	S	S	S	H	R	S	S	S	R
45	S	S	S	H	R	S	S	S	R
46	S	R/H	H	S	H	S	S	S	H
47	S	R/H	H	S	H	S	S	S	H
48	S	R/H	H	S	H	S	S	S	H
49	S	R/H	H	S	H	S	S	S	H
50	S	R/H	H	S	H	S	S	S	H
51	S	R/H	H	S	H	S	S	S	H
52	S	R/H	H	S	H	S	S	S	H
53	S	R/H	S	S	H	S	S	S	H
54	S	R/H	S	S	H	S	S	S	H
55	S	R/H	H	S	H	S	S	S	H
56	S	R/H	R	S	S	S	S	S	S
57	S	R/H	R	S	S	S	S	S	S
58	S	R/H	R	S	S	S	S	S	S
59	S	R/H	R	S	S	S	S	S	S
60	S	R/H	R	S	S	S	S	S	S
61	S	R/H	S	S	R	S	S	S	R
62	S	R/H	S	S	R	S	S	S	R
63	S	R/H	S	S	R	S	S	S	R
64	S	R/H	S	S	R	S	S	S	R
65	S	R/H	S	S	R	S	S	S	R
66	S	R/H	H	S	H	S	S	S	H
67	S	R/H	H	S	H	S	S	S	H
68	S	R/H	H	S	H	S	S	S	H
69	S	R/H	H	S	H	S	S	S	H
70	S	R/H	H	S	H	S	S	S	H
71	S	R/H	R	S	H	S	S	S	R
72	S	R/H	H	S	S	S	S	S	H
73	S	R/H	H	S	S	S	S	S	H
74	S	R/H	H	S	S	S	S	S	H
75	S	R/H	H	S	S	S	S	S	H
76	H	R/H	R	S	S	S	S	S	S
77	H	R/H	R	S	S	S	S	S	S
78	H	R/H	R	S	S	S	S	S	S
79	H	R/H	R	S	S	S	S	S	S
80	H	R/H	R	S	S	S	S	S	S
81	S	R/H	R	S	S	N/A	S	S	S
82	S	R/H	R	S	H	S	S	S	S
83	S	R/H	R	S	S	S	S	S	S

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
290	S	R/H	R	S	S	S	S	S	S
291	S	R/H	H	H	H	S	S	S	S
292	S	R/H	H	H	H	S	S	S	S
293	S	R/H	H	H	H	S	S	S	S
294	S	R/H	H	H	H	S	S	S	S
295	S	R/H	H	H	H	S	S	S	S
296	S	S	R	S	S	S	S	S	S
297	S	S	R	S	S	S	S	S	S
298	S	S	R	S	S	S	S	S	S
299	S	S	R	S	S	S	S	S	S
300	S	S	R	S	S	S	S	S	S
301	H	R/H	R	S	H	S	S	S	H
302	H	R/H	R	S	H	S	S	S	H
303	H	R/H	R	S	H	S	S	S	H
304	H	R/H	R	S	H	S	S	S	H
305	H	R/H	R	S	H	S	S	S	H
306	H	R/H	H	S	H	S	S	H	H
307	H	R/H	H	S	H	S	S	H	H
308	H	R/H	H	S	H	S	S	H	H
309	H	R/H	H	S	H	S	S	H	H
310	H	R/H	H	S	H	S	S	H	H
311	S	S	S	H	R	S	S	S	R
312	S	S	S	H	R	S	S	S	R
313	S	S	S	H	R	S	S	S	R
314	S	S	S	H	R	S	S	S	R
315	S	S	S	H	R	S	S	S	R
316	S	S	S	H	R	S	S	S	R
317	S	S	S	H	R	S	S	S	R
318	S	S	S	H	R	S	S	S	R
319	S	S	S	H	R	S	S	S	R
320	S	S	S	H	R	S	S	S	R
321	S	R/H	R	S	S	S	S	S	S
322	S	R/H	R	S	S	S	S	S	S
323	S	R/H	R	S	S	S	S	S	S
324	S	R/H	R	S	S	S	S	S	S
325	S	R/H	R	S	S	S	S	S	S
326	S	R/H	H	S	H	S	S	H	S
327	S	R/H	H	S	H	S	S	H	S
328	S	R/H	H	S	H	S	S	H	S
329	S	R/H	H	S	H	S	S	H	S
330	S	R/H	H	S	H	S	S	H	S
331	S	R/H	R	S	S	S	S	S	S
332	S	R/H	R	S	S	S	S	S	S
333	S	R/H	R	S	S	S	S	S	S
334	S	R/H	R	S	S	S	S	S	S
335	N/A	N/A	N/A	N/A	N/A	N/A	S	S	S
336	S	S	R	S	S	S	S	H	S
337	S	S	R	S	S	S	S	H	S
338	S	R/H	R	S	S	S	S	S	S
339	S	S	R	S	S	S	S	H	S
340	S	S	R	S	S	S	S	S	S
341	S	R/H	R	S	S	S	S	H	S
342	S	R/H	R	S	S	S	S	H	S
343	S	R/H	R	S	S	S	S	S	S
344	S	R/H	R	S	S	S	S	H	S
345	S	R/H	R	S	S	S	S	H	S
346	S	R/H	R	S	S	S	S	S	S
347	S	R/H	R	S	S	S	S	S	S
348	S	R/H	R	S	S	S	S	S	S
349	S	R/H	R	S	S	S	S	S	S
350	S	R/H	R	S	S	S	S	S	S
351	S	S	R	S	S	S	S	H	S
352	S	S	R	S	S	S	S	H	S

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
84	S	R/H	R	S	H	S	S	S	S
85	S	R/H	R	S	H	S	S	S	S
86	S	R/H	H	S	H	S	S	S	H
87	S	R/H	H	S	H	S	S	S	H
88	S	R/H	H	S	H	S	S	S	H
89	H	R/H	H	S	H	S	S	S	H
90	S	R/H	H	S	H	S	S	S	R
91	S	R/H	R	S	S	H	S	H	S
92	R	R/H	R	S	S	H	S	H	S
93	R	R/H	R	S	S	H	S	H	S
94	R	R/H	R	S	S	H	S	H	S
95	R	R/H	R	S	S	H	S	H	S
96	H	R/H	H	S	H	S	S	S	H
97	H	R/H	H	S	H	S	S	S	H
98	H	R/H	H	S	H	S	S	S	H
99	R	R/H	R	S	S	S	S	S	S
100	H	R/H	H	S	H	S	S	S	H
101	H	R/H	H	S	H	S	S	S	H
102	H	R/H	H	S	H	S	S	S	H
103	H	R/H	H	S	H	S	S	S	H
104	H	R/H	H	S	H	S	S	S	H
105	H	R/H	H	S	H	S	S	S	H
106	H	R/H	R	S	H	S	S	S	H
107	H	R/H	R	S	H	S	S	S	H
108	H	R/H	R	S	H	S	S	S	H
109	H	R/H	R	S	H	S	S	S	H
110	H	R/H	R	S	H	S	S	S	H
111	R	S	S	S	H	S	S	H	H
112	R	S	S	S	H	S	S	H	H
113	R	S	S	S	H	S	S	H	H
114	R	S	S	S	H	S	S	H	H
115	R	S	S	S	H	S	S	H	H
116	R	S	R	S	S	H	S	S	S
117	R	S	R	S	S	H	S	S	S
118	R	S	R	S	S	H	S	S	S
119	R	S	R	S	S	H	S	S	S
120	R	S	R	S	S	H	S	S	S
121	R	S	H	S	H	S	S	S	S
122	R	S	H	S	H	S	S	S	S
123	R	S	H	S	H	S	S	S	S
124	R	S	H	S	H	S	S	S	S
125	R	S	H	S	H	S	S	S	S
126	R	R/H	H	H	H	S	S	S	S
127	R	R/H	H	H	H	S	S	S	S
128	R	R/H	H	H	H	S	S	S	S
129	R	R/H	H	H	H	S	S	S	S
130	R	R/H	H	H	H	S	S	S	S
131	R	S	R	S	S	S	S	S	S
132	R	S	R	S	S	S	S	S	S
133	R	S	R	S	S	S	S	S	S
134	R	S	R	S	H	S	S	S	S
135	R	S	R	S	H	S	S	S	S
136	R	R/H	H	S	R	S	S	H	H
137	R	R/H	H	S	R	S	S	H	H
138	R	R/H	H	S	R	S	S	H	H
139	R	R/H	H	S	R	S	S	H	H
140	R	R/H	H	S	R	S	S	H	H
141	H	R/H	H	S	H	S	S	S	H
142	H	R/H	H	S	H	S	S	S	H
143	H	R/H	H	S	H	S	S	S	H
144	H	R/H	H	S	H	S	S	S	H
145	H	R/H	H	S	H	S	S	S	H
146	R	S	H	H	S	S	S	H	S

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
353	S	S	R	S	S	S	S	H	S
354	S	S	R	S	S	S	S	H	S
355	S	S	R	S	S	S	S	S	S
356	S	S	R	S	H	S	S	S	S
357	S	S	R	S	H	S	S	S	S
358	S	S	R	S	H	S	S	S	S
359	S	S	R	S	H	S	S	S	S
360	S	S	R	S	H	S	S	S	S
361	S	S	H	H	S	S	S	H	S
362	S	S	H	H	S	S	S	H	S
363	S	S	H	H	S	S	S	H	S
364	S	S	H	H	S	S	S	H	S
365	S	S	H	H	S	S	S	H	S
366	S	R/H	R	S	S	S	S	S	S
367	S	R/H	R	S	S	S	S	S	S
368	S	R/H	R	S	S	S	S	S	S
369	S	R/H	R	S	S	S	S	S	S
370	S	R/H	R	S	S	S	S	S	S
371	S	R/H	H	S	H	R	S	S	H
372	S	S	H	S	H	H	H	S	H
373	S	R/H	H	S	H	S	H	H	H
374	S	R/H	H	S	H	S	H	H	H
375	S	R/H	H	S	H	H	S	S	H
376	S	R/H	S	H	H	S	S	S	H
377	S	R/H	S	H	H	S	S	S	H
378	S	R/H	S	H	H	S	S	S	H
379	S	R/H	S	H	H	S	S	S	H
380	S	R/H	S	H	H	S	S	S	H
381	S	R/H	S	S	H	S	S	H	H
382	S	R/H	S	S	H	S	S	H	H
383	S	R/H	S	S	H	S	S	H	H
384	S	R/H	S	S	H	S	S	H	H
385	S	R/H	S	S	H	S	S	H	H
386	H	R/H	R	S	S	S	S	S	S
387	H	R/H	R	S	S	S	S	S	S
388	H	R/H	R	S	S	S	S	S	S
389	H	R/H	R	S	S	S	S	S	S
390	H	R/H	R	S	S	S	S	S	S
391	S	S	H	S	H	S	S	S	S
392	S	S	H	S	H	S	S	S	S
393	S	S	H	S	H	S	S	S	S
394	S	S	H	S	H	S	S	S	S
395	S	S	H	H	S	S	S	H	S
396	S	S	H	H	S	S	S	H	S
397	S	S	H	H	S	S	S	H	S
398	S	S	H	H	S	S	S	H	S
399	H	R/H	R	S	S	S	S	S	S
400	H	R/H	R	S	S	S	S	S	S
401	H	R/H	R	S	S	S	S	S	S
402	H	R/H	R	S	S	S	S	S	S
403	S	S	S	H	H	S	S	S	H
404	S	S	S	H	H	S	S	S	H
405	S	S	S	H	H	S	S	S	H
406	S	R/H	S	H	H	S	S	S	H
407	S	R/H	S	H	H	S	S	S	H
408	S	R/H	H	S	R	S	S	H	H
409	S	R/H	H	S	R	S	S	H	H
410	S	R/H	H	S	R	S	S	H	H
411	S	R/H	H	S	R	S	S	H	H
412	S	R/H	H	S	R	S	S	H	H
413	S	S	S	S	S	S	S	R	S
414	S	R/H	R	S	S	S	S	S	S
415	S	S	S	S	S	S	S	R	S

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
147	R	S	H	H	S	S	S	H	S
148	R	S	H	H	S	S	S	H	S
149	R	S	H	H	S	S	S	H	S
150	R	S	H	H	S	S	S	H	S
151	R	S	S	S	H	S	S	H	H
152	R	S	S	S	H	S	S	H	H
153	R	S	S	S	H	S	S	H	H
154	R	S	S	S	H	S	S	H	H
155	R	S	S	S	H	S	S	H	H
156	R	S	R	S	S	H	S	S	S
157	R	S	R	S	S	H	S	S	S
158	R	S	R	S	S	H	S	S	S
159	R	S	R	S	S	H	S	S	S
160	R	S	R	S	S	H	S	S	S
161	R	S	H	S	H	S	S	S	S
162	R	S	H	S	H	S	S	S	S
163	R	S	H	S	H	S	S	S	S
164	R	S	H	S	H	S	S	S	S
165	R	S	H	S	H	S	S	S	S
166	R	R/H	H	H	H	S	S	S	S
167	R	R/H	H	H	H	S	S	S	S
168	R	R/H	H	H	H	S	S	S	S
169	R	R/H	H	H	H	S	S	S	S
170	R	R/H	H	H	H	S	S	S	S
171	R	R/H	H	S	R	S	S	H	H
172	R	R/H	H	S	R	S	S	H	H
173	R	R/H	H	S	R	S	S	H	H
174	R	R/H	H	S	R	S	S	H	H
175	R	R/H	H	S	R	S	S	H	H
176	H	R/H	H	S	H	S	S	S	H
177	H	R/H	H	S	H	S	S	S	H
178	H	R/H	H	S	H	S	S	S	H
179	H	R/H	H	S	H	S	S	S	H
180	H	R/H	H	S	H	S	S	S	H
181	R	S	H	H	S	S	S	H	S
182	R	S	H	H	S	S	S	H	S
183	R	S	H	H	S	S	S	H	S
184	R	S	H	H	S	S	S	H	S
185	R	S	H	H	S	S	S	H	S
186	R	S	S	S	S	S	S	S	S
187	R	S	S	S	S	S	S	S	S
188	S	S	S	S	S	S	S	S	S
189	S	S	S	S	S	S	S	S	S
190	S	S	S	S	S	S	S	S	S
191	S	S	H	S	S	S	S	S	S
192	S	S	H	S	S	S	S	S	S
193	S	S	H	S	S	S	S	S	S
194	S	S	H	S	S	S	S	S	S
195	S	S	H	S	S	S	S	S	S
196	S	S	H	S	S	S	S	S	S
197	S	S	H	S	S	S	S	S	S
198	S	S	H	S	S	S	S	S	S
199	S	S	H	S	S	S	S	S	S
200	S	S	H	S	S	S	S	S	S
201	H	R/H	H	S	S	S	S	H	S
202	H	R/H	H	S	S	S	S	H	S
203	H	R/H	H	S	S	S	S	H	S
204	H	R/H	H	S	S	S	S	H	S
205	H	R/H	H	S	S	S	S	H	S
206	H	R/H	R	S	H	S	S	S	S
207	H	R/H	R	S	H	S	S	S	S
208	H	R/H	R	S	H	S	S	S	S
209	H	R/H	R	S	H	S	S	S	S

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
416	S	S	H	S	S	S	S	R	S
417	S	R/H	R	S	S	S	S	S	S
418	S	R/H	R	S	S	H	S	S	S
419	S	R/H	R	S	S	H	S	S	S
420	S	R/H	R	S	S	H	S	S	S
421	S	R/H	R	S	S	H	S	S	S
422	S	R/H	R	S	S	H	S	S	S
423	S	R/H	R	S	H	H	H	H	H
424	S	R/H	R	S	H	H	H	H	H
425	S	R/H	R	S	H	H	H	H	H
426	S	R/H	R	S	H	H	H	H	H
427	S	R/H	R	S	H	H	H	H	H
428	S	R/H	R	S	S	S	H	H	S
429	S	R/H	R	S	S	S	H	H	S
430	S	R/H	R	S	S	S	H	H	S
431	S	R/H	R	S	S	S	H	H	S
432	S	R/H	R	S	S	S	H	H	S
433	S	R/H	R	S	H	H	H	H	S
434	S	R/H	R	S	H	H	H	H	S
435	S	R/H	R	S	H	H	H	R	S
436	S	R/H	R	S	H	H	H	R	S
437	S	R/H	R	S	H	H	H	H	S
438	S	R/H	R	S	H	H	S	H	H
439	S	R/H	R	S	H	H	S	H	H
440	S	R/H	R	S	H	H	S	H	H
441	S	R/H	R	S	H	H	S	H	H
442	S	R/H	R	S	H	H	S	H	H
443	H	S	H	S	S	S	H	H	S
444	H	S	H	S	S	S	H	H	S
445	H	S	H	S	S	S	H	H	S
446	H	S	H	S	S	S	H	H	S
447	H	S	H	S	S	S	H	H	S
448	H	R/H	R	S	S	H	S	S	S
449	H	R/H	R	S	S	H	S	S	S
450	H	R/H	R	S	S	H	S	S	S
451	H	R/H	R	S	S	H	S	S	S
452	H	R/H	R	S	S	H	S	S	S
453	S	S	R	S	S	S	S	R	S
454	S	S	H	S	S	S	S	R	S
455	S	S	H	S	S	S	S	R	S
456	S	S	S	S	S	S	S	R	S
457	S	S	S	S	S	S	S	R	S
458	H	R/H	H	S	R	S	S	S	R
459	H	R/H	H	S	R	S	S	S	R
460	H	R/H	H	S	R	S	S	S	R
461	H	R/H	H	S	R	S	S	S	R
462	H	R/H	H	S	R	S	S	S	R
463	S	R/H	R	S	H	S	S	S	S
464	S	R/H	R	S	H	S	S	S	S
465	S	R/H	R	S	H	S	S	S	S
466	S	R/H	R	S	H	S	S	S	S
467	S	R/H	R	S	H	S	S	S	S
468	S	R/H	R	S	S	S	S	H	S
469	S	R/H	R	S	S	H	S	H	S
470	S	R/H	R	S	S	S	S	S	S
471	S	R/H	R	S	S	S	S	H	S
472	S	R/H	R	S	S	S	S	H	S
473	S	R/H	R	S	S	H	S	H	S
474	S	R/H	R	S	S	H	S	H	S
475	S	R/H	R	S	S	H	S	H	S
476	S	R/H	R	S	S	H	S	H	S
477	S	R/H	R	S	S	H	S	H	S
478	S	S	S	S	S	S	S	S	S

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
210	H	R/H	R	S	H	S	S	S	S
211	S	S	R	S	S	H	H	R	S
212	S	S	R	S	S	H	H	R	S
213	S	S	R	S	S	H	H	R	S
214	S	S	R	S	S	H	H	R	S
215	S	S	R	S	S	H	H	R	S
216	S	S	R	S	H	S	S	S	S
217	S	S	R	S	H	S	S	S	S
218	S	S	R	S	H	S	S	S	S
219	S	S	R	S	H	S	S	S	S
220	S	S	R	S	H	S	S	S	S
221	S	R/H	R	S	H	H	S	S	H
222	S	R/H	R	S	H	H	S	S	H
223	S	R/H	R	S	H	H	S	S	H
224	S	R/H	R	S	H	H	S	S	H
225	S	R/H	R	S	H	H	S	S	H
226	S	R/H	H	S	S	S	S	S	R
227	S	R/H	H	S	S	S	S	S	R
228	S	R/H	H	S	S	S	S	S	R
229	S	R/H	H	S	S	S	S	S	R
230	S	R/H	H	S	S	S	S	S	R
231	S	S	H	H	H	S	S	S	H
232	S	S	H	H	H	S	S	S	H
233	S	S	H	H	H	S	S	S	H
234	S	S	H	H	H	S	S	S	H
235	S	S	H	H	H	S	S	S	H
236	S	R/H	R	S	S	S	S	S	S
237	S	R/H	R	S	S	S	S	S	S
238	S	R/H	R	S	S	S	S	S	S
239	S	R/H	R	S	S	S	S	S	S
240	S	R/H	R	S	S	S	S	S	S
241	H	R/H	H	S	R	S	S	S	R
242	H	R/H	H	S	R	S	S	S	R
243	H	R/H	H	S	R	S	S	S	R
244	H	R/H	H	S	R	S	S	S	R
245	H	R/H	H	S	R	S	S	S	R
246	S	S	S	S	H	S	S	S	H
247	S	S	S	S	H	S	S	S	H
248	S	S	S	S	H	S	S	S	H
249	S	S	S	S	H	S	S	S	H
250	S	S	S	S	H	S	S	S	H
251	H	R/H	R	S	R	S	S	S	R
252	H	R/H	R	S	R	S	S	S	R
253	H	R/H	R	S	R	S	S	S	R
254	H	R/H	R	S	R	S	S	S	R
255	H	R/H	R	S	R	S	S	S	R
256	S	R/H	H	H	S	S	S	H	S
257	S	R/H	H	H	H	S	S	H	S
258	S	R/H	S	H	H	S	S	S	S
259	S	R/H	H	H	H	S	S	S	S
260	S	R/H	H	S	S	S	S	S	S
261	S	R/H	R	S	S	S	H	R	S
262	S	R/H	R	S	S	S	H	R	S
263	S	R/H	R	S	S	S	H	R	S
264	S	R/H	R	S	S	S	H	R	S
265	S	R/H	R	S	S	S	H	R	S
266	S	R/H	H	S	S	H	S	S	S
267	S	R/H	H	S	S	H	S	S	S
268	S	R/H	H	S	S	H	S	S	S
269	S	R/H	H	S	S	H	S	S	S

No.	Ty1	I2	Ve2	Ty2	Tm2a	Cf9	Sw5	Ph3	J3
479	S	S	S	S	S	S	S	S	S
480	S	S	S	S	S	S	S	S	S
481	S	S	S	S	S	S	S	S	S
482	S	S	S	S	S	S	S	S	S
483	S	R/H	H	S	H	S	S	S	H
484	S	R/H	H	S	H	S	S	S	H
485	S	R/H	H	S	H	S	S	S	H
486	S	R/H	H	S	H	S	S	S	H
487	S	R/H	H	S	H	S	S	S	H
488	R	R/H	R	S	H	H	S	S	S
489	R	R/H	R	S	H	H	S	S	S
490	R	R/H	R	S	H	H	S	S	S
491	R	R/H	R	S	H	H	S	S	S
492	R	R/H	R	S	H	H	S	S	S
493	H	S	H	S	R	S	S	S	H
494	H	R/H	H	S	R	S	S	S	H
495	H	R/H	H	S	R	S	S	S	H
496	H	R/H	H	S	R	S	S	S	H
497	H	R/H	H	S	R	S	S	S	H
498	S	S	S	S	H	S	S	S	H
499	S	R/H	S	S	H	S	S	S	H
500	S	R/H	S	S	H	S	S	S	H
501	S	R/H	S	S	H	S	S	S	H
502	S	R/H	S	S	H	S	S	S	H
503	S	S	H	S	H	S	S	S	S
504	S	S	H	S	H	S	S	S	S
505	S	S	H	S	H	S	S	S	S
506	S	S	H	S	H	S	S	S	S
507	S	S	H	S	H	S	S	S	S
508	S	S	R	H	H	S	S	S	S
509	S	S	R	H	H	S	S	S	S
510	S	S	R	H	H	S	S	S	S
511	S	S	R	H	H	S	S	S	S
512	S	S	R	H	H	S	S	S	S
513	S	S	R	H	H	S	S	S	S
514	S	S	R	H	H	S	S	S	S
515	S	S	R	H	H	S	S	S	S
516	S	S	R	H	H	S	S	S	S
517	S	S	R	H	H	S	S	S	S
518	S	S	R	H	H	S	S	S	S
519	S	S	R	H	H	S	S	S	S
520	S	S	R	H	H	S	S	S	S
521	S	S	R	H	H	S	S	S	S
522	S	S	R	H	H	S	S	S	S
523	S	R/H	S	S	H	S	S	S	H
524	S	R/H	S	S	S	S	S	S	S
525	S	R/H	S	S	H	S	S	S	H
526	S	R/H	S	S	H	S	S	S	H
527	S	R/H	S	S	H	S	S	S	H
528	S	R/H	S	S	H	S	S	S	H
529	S	R/H	S	S	H	S	S	S	H
530	S	R/H	H	S	H	S	S	S	H
531	S	R/H	S	S	H	S	S	S	H
532	S	R/H	S	S	H	S	S	S	H
533	S	R/H	H	S	H	S	S	S	H
534	S	R/H	H	S	H	S	S	S	H
535	S	R/H	H	S	H	S	S	S	H
536	S	R/H	H	S	H	S	S	S	H
537	S	R/H	H	S	H	S	S	S	H

표 8. 아시아종묘 141점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

No.	J2	EJ2	마커검정결과
1	M	N	jointless, low branching
2	M	N	jointless, low branching
3	M	N	jointless, low branching
4	H	N	jointed, low branching
5	H	N	jointed, low branching
6	H	N	jointed, low branching
7	M	N	jointless, low branching
8	M	N	jointless, low branching
9	M	N	jointless, low branching
10	M	N	jointless, low branching
11	M	N	jointless, low branching
12	M	N	jointless, low branching
13	M	N	jointless, low branching
14	M	N	jointless, low branching
15	M	N	jointless, low branching
16	M	N	jointless, low branching
17	M	N	jointless, low branching
18	M	N	jointless, low branching
19	M	N	jointless, low branching
20	M	N	jointless, low branching
21	M	N	jointless, low branching
22	M	N	jointless, low branching
23	M	N	jointless, low branching
24	M	N	jointless, low branching
25	M	N	jointless, low branching
26	M	N	jointless, low branching
27	M	N	jointless, low branching
28	M	N	jointless, low branching
29	M	N	jointless, low branching
30	M	N	jointless, low branching
31	M	N	jointless, low branching
32	M	N	jointless, low branching
33	M	N	jointless, low branching
34	M	N	jointless, low branching
35	M	N	jointless, low branching
36	M	N	jointless, low branching
37	M	N	jointless, low branching
38	M	N	jointless, low branching
39	M	N	jointless, low branching
40	M	N	jointless, low branching
41	M	N	jointless, low branching
42	M	N	jointless, low branching
43	M	N	jointless, low branching
44	M	N	jointless, low branching
45	M	N	jointless, low branching
46	M	N	jointless, low branching
47	M	N	jointless, low branching
48	M	N	jointless, low branching
49	M	N	jointless, low branching
50	M	N	jointless, low branching
51	M	N	jointless, low branching
52	M	N	jointless, low branching
53	M	N	jointless, low branching
54	M	N	jointless, low branching
55	M	N	jointless, low branching
56	M	N	jointless, low branching
57	M	N	jointless, low branching
58	M	N	jointless, low branching
59	M	N	jointless, low branching
60	M	N	jointless, low branching

No.	J2	EJ2	마커검정결과
72	M	M	jointless, multi branching
73	M	M	jointless, multi branching
74	M	M	jointless, multi branching
75	M	M	jointless, multi branching
76	M	M	jointless, multi branching
77	M	M	jointless, multi branching
78	N/A	N/A	N/A
79	M	N	jointless, low branching
80	M	N	jointless, low branching
81	M	N	jointless, low branching
82	M	N	jointless, low branching
83	M	N	jointless, low branching
84	M	N	jointless, low branching
85	N	N	jointed, rare branching
86	M	N	jointless, low branching
87	M	N	jointless, low branching
88	M	N	jointless, low branching
89	M	N	jointless, low branching
90	M	N	jointless, low branching
91	M	N	jointless, low branching
92	N	N	jointed, rare branching
93	N	N	jointed, rare branching
94	N	N	jointed, rare branching
95	N	N	jointed, rare branching
96	N	N	jointed, rare branching
97	N	M	jointed, multi branching
98	N	M	jointed, multi branching
99	N	M	jointed, multi branching
100	N	M	jointed, multi branching
101	N	M	jointed, multi branching
102	N	H	jointed, L/M branching
103	N	H	jointed, L/M branching
104	N	H	jointed, L/M branching
105	N	H	jointed, L/M branching
106	N	H	jointed, L/M branching
107	N	N	jointed, rare branching
108	N	N	jointed, rare branching
109	N	N	jointed, rare branching
110	N	N	jointed, rare branching
111	N	N	jointed, rare branching
112	N	M	jointed, multi branching
113	N	M	jointed, multi branching
114	N	M	jointed, multi branching
115	N	M	jointed, multi branching
116	N	M	jointed, multi branching
117	N	M	jointed, multi branching
118	N	M	jointed, multi branching
119	N	M	jointed, multi branching
120	N	M	jointed, multi branching
121	N	M	jointed, multi branching
122	N	H	jointed, L/M branching
123	N	H	jointed, L/M branching
124	N	H	jointed, L/M branching
125	N	H	jointed, L/M branching
126	N	H	jointed, L/M branching
127	N	M	jointed, multi branching
128	N	M	jointed, multi branching
129	N	M	jointed, multi branching
130	N	M	jointed, multi branching
131	N	M	jointed, multi branching

No.	J2	EJ2	마커검정결과
61	M	N	jointless, low branching
62	M	N	jointless, low branching
63	M	M	jointless, multi branching
64	M	M	jointless, multi branching
65	M	M	jointless, multi branching
66	M	M	jointless, multi branching
67	M	M	jointless, multi branching
68	M	M	jointless, multi branching
69	M	M	jointless, multi branching
70	M	M	jointless, multi branching
71	M	M	jointless, multi branching

No.	J2	EJ2	마커검정결과
132	N	H	jointed, L/M branching
133	N	H	jointed, L/M branching
134	N	H	jointed, L/M branching
135	N	H	jointed, L/M branching
136	N	H	jointed, L/M branching
137	N	H	jointed, L/M branching
138	N	H	jointed, L/M branching
139	N	H	jointed, L/M branching
140	N	H	jointed, L/M branching
141	N	H	jointed, L/M branching

③ 토마토생명과학연구소

토마토생명과학연구소로부터 총 432점의 시료를 받아 4번의 서비스를 진행하였다. 처음 170점의 시료에 대하여, 병 관련 23종의 마커로 서비스를 진행하였다(표 9). 두 번째로는 159점의 시료에 대하여, 병 관련 23종의 마커 및 원예형질 관련 3종의 마커로 서비스를 진행하였다(표 10). 세 번째로는 20점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 11). 네 번째로는 83점의 시료에 대하여, 병 관련 22종의 마커로 서비스를 진행하였다(표 12). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 9, 10, 11, 12).

표 9. 토마토생명과학연구소 170점의 시료에 대하여, 병 관련 23종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	Ty4	ty5	J3	Mi- rex	Sw 5	I	I2	I3	I7	EDS 1	Ve 2	Tm2 a	Ph 3	Py 1	Pto	Sm- 1	Sm- 2	Cf 9	Bw 6	Bw 12	Lv
1	H	S	S	S	H	S	S	R	H/R	S	H	R	H	H	S	S	S	R	H	S	S	S	S
2	H	S	S	S	H	S	S	R	H/R	S	H	R	H	H	S	S	S	R	H	S	S	S	S
3	H	S	S	S	H	H	S	R	H/R	S	R	R	S	H	S	S	S	R	R	H/R	S	S	S
4	H	S	S	S	H	H	S	R	H/R	S	R	R	S	H	S	S	S	R	R	H/R	S	S	S
5	H	S	S	S	R	H	S	R	H/R	S	H	R	H	S	S	S	S	R	H	S	S	S	S
6	H	S	S	S	R	H	S	R	H/R	S	H	R	H	S	S	S	S	R	H	S	S	S	S
7	H	S	S	S	S	S	S	R	H/R	S	R	R	H	R	S	S	S	S	R	S	S	S	S
8	H	S	S	S	S	S	S	R	H/R	S	R	R	H	R	S	S	S	S	R	S	S	S	S
9	H	S	S	S	H	S	S	R	H/R	S	H	R	H	H	H	S	S	H	R	S	S	H	S
10	H	S	S	S	H	S	S	R	H/R	S	H	R	H	H	H	S	S	H	R	S	S	H	S
11	H	S	S	S	H	S	S	R	H/R	S	H	R	H	H	S	S	S	R	H	S	S	H	S
12	H	S	S	S	H	S	S	R	S	S	H	R	H	H	S	S	S	R	H	S	S	H	S
13	S	S	S	S	S	S	S	R	H/R	S	H	R	H	S	H	S	S	H	R	S	S	S	S
14	S	S	S	S	S	S	S	R	S	S	H	R	R	S	H	S	S	H	R	S	S	S	S
15	H	S	S	S	S	S	S	R	H/R	S	H	R	H	H	S	S	S	H	R	S	S	S	S
16	H	S	S	S	S	S	S	R	H/R	S	H	R	H	S	S	S	S	H	R	S	S	S	S
17	H	S	S	S	S	S	S	H	H/R	S	H	R	S	S	H	S	S	H	R	S	S	S	S
18	S	S	S	S	H	H	S	H	H/R	S	H	R	H	H	H	S	S	H	R	S	S	S	S
19	H	S	S	S	S	S	S	R	S	S	S	R	S	R	R	S	S	S	S	S	H	S	S
20	H	S	S	S	S	S	S	R	S	S	S	R	S	R	R	S	S	S	H	S	H	S	S
21	H	S	S	S	S	S	S	R	S	S	S	R	S	H	R	S	S	S	H	S	H	S	S
22	H	S	S	S	S	S	S	R	S	S	S	R	S	H	R	S	S	S	H	S	H	S	S
23	S	S	S	S	S	S	S	R	S	S	R	R	R	S	S	S	S	R	R	S	S	S	S
24	S	S	S	S	R	R	S	R	S	S	R	R	S	R	S	S	S	R	R	S	S	S	S
25	H	S	S	S	H	H	S	R	H/R	S	S	R	S	H	S	S	S	H	R	S	H	S	S
26	H	S	S	S	H	S	S	R	S	S	S	R	R	S	S	S	S	R	R	S	H	S	S
27	H	S	S	S	S	H	S	R	H/R	S	R	R	R	H	S	S	S	R	R	S	S	S	S
28	H	S	S	S	S	H	S	R	H/R	S	R	R	S	H	S	S	S	R	R	S	S	S	S
29	S	S	S	S	S	R	R	R	H/R	S	R	R	R	S	R	S	S	S	R	H/R	S	S	S
30	S	S	S	S	S	R	S	R	H/R	S	R	R	R	S	S	S	S	H	H	H/R	S	S	S
31	H	S	S	S	S	S	S	R	S	S	R	R	R	R	S	S	S	S	R	S	S	S	S
32	R	S	S	S	S	S	S	R	S	S	H	R	R	R	S	S	S	S	R	S	S	S	S
33	H	S	S	S	S	S	S	R	S	S	S	R	R	R	S	S	S	S	R	S	S	S	S

No.	Ty1	Ty2	Ty4	ty5	J3	Mi- rex	Sw 5	I	I2	I3	I7	EDS 1	Ve 2	Tm2 a	Ph 3	Py 1	Pto	Sm- 1	Sm- 2	Cf 9	Bw 6	Bw 12	Lv
34	H	S	S	S	S	S	S	R	S	S	R	R	R	R	S	S	S	S	R	S	S	S	S
35	S	S	S	S	S	S	S	R	S	S	S	R	R	R	S	S	S	S	R	R	S	S	S
36	S	S	S	S	S	S	S	R	H/R	S	R	R	R	R	S	S	S	R	R	S	S	S	S
37	S	S	S	S	H	S	S	R	H/R	S	R	R	R	H	H	S	S	R	R	S	S	S	S
38	S	S	S	S	R	H	S	R	H/R	S	H	R	R	S	S	S	S	R	R	S	S	S	S
39	S	S	S	S	R	H	S	R	H/R	S	H	R	R	R	S	S	S	S	R	H/R	S	S	S
40	S	S	S	S	S	S	S	R	S	S	R	R	R	S	R	S	S	H	R	S	S	S	S
41	H	S	S	S	S	H	S	R	H/R	S	R	R	R	H	H	S	S	H	R	S	S	S	S
42	H	S	S	S	S	H	S	R	H/R	S	R	R	R	H	H	S	S	H	R	S	S	S	S
43	S	S	S	S	H	H	S	R	H/R	S	S	R	R	R	S	S	S	R	H	S	S	S	S
44	R	S	S	S	R	R	S	R	S	S	S	R	S	R	S	S	S	R	R	S	S	S	S
45	H	S	S	S	S	S	S	R	H/R	S	S	R	R	S	S	S	S	R	R	S	S	S	S
46	H	S	S	S	S	S	S	R	H/R	S	S	R	R	S	S	S	S	R	R	S	S	S	S
47	H	S	S	S	S	S	S	R	H/R	S	S	R	R	H	S	S	S	H	R	S	S	H	S
48	H	S	S	S	S	S	S	R	H/R	S	S	R	R	H	S	S	S	S	R	S	S	R	S
49	H	S	S	S	S	S	S	R	S	S	S	R	R	S	R	S	S	S	R	H/R	S	S	S
50	S	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	R	R	S	S	S	S
51	S	S	S	S	S	S	S	R	S	S	R	R	S	R	S	S	S	S	R	S	S	S	S
52	S	S	S	S	S	S	S	R	S	S	S	R	R	S	S	S	S	S	R	S	S	S	S
53	R	S	S	S	R	S	S	R	S	S	R	R	S	R	S	S	S	R	H	S	S	S	S
54	H	S	S	S	R	S	S	R	S	S	R	R	R	R	S	S	S	R	R	S	S	S	S
55	H	S	S	S	R	S	S	R	S	S	R	R	R	R	S	S	S	R	R	S	S	S	S
56	H	S	S	S	R	S	S	R	S	S	S	R	H	R	S	S	S	R	S	S	S	S	S
57	H	S	S	S	S	H	S	R	H/R	S	R	R	R	S	S	S	S	S	R	S	S	S	S
58	H	S	S	S	R	H	S	R	H/R	S	R	R	R	S	S	S	S	S	R	S	S	S	S
59	R	S	S	S	S	S	S	R	H/R	S	R	R	R	R	S	S	S	S	R	S	S	S	S
60	H	S	S	S	S	S	S	R	H/R	S	H	R	R	R	S	S	S	S	R	H/R	S	S	S
61	H	S	S	S	S	H	S	R	H/R	S	R	R	R	S	S	S	S	H	R	S	S	S	S
62	R	S	S	S	H	S	S	R	S	S	R	R	S	H	S	S	S	S	R	S	S	H	S
63	R	S	S	S	S	S	S	R	S	S	R	R	R	R	S	S	S	S	R	S	S	S	S
64	S	S	S	S	H	S	S	R	S	S	R	R	S	R	S	S	S	R	R	S	S	S	S
65	S	S	S	S	R	R	S	R	H/R	S	R	R	R	R	S	S	S	S	R	H/R	S	S	S
66	S	S	S	S	R	R	S	R	H/R	S	R	R	R	R	S	S	S	S	R	H/R	S	S	S
67	S	S	S	S	S	R	S	R	S	S	R	R	R	S	S	S	S	R	R	S	S	S	S
68	S	S	S	S	S	R	S	R	S	S	R	R	R	S	S	S	S	R	R	S	S	S	S
69	S	S	S	S	S	S	S	R	H/R	S	R	R	S	R	S	S	S	S	R	S	S	S	S
70	S	S	S	S	S	S	S	R	S	S	R	R	R	S	S	S	S	R	R	S	S	S	S
71	R	S	S	S	H	R	S	R	H/R	S	R	R	R	R	S	S	S	R	S	S	S	S	S
72	H	S	S	S	H	H	S	R	H/R	S	R	R	R	R	S	S	S	R	H	S	S	S	S
73	H	S	S	S	S	S	S	R	H/R	S	R	R	R	S	S	S	S	R	R	H/R	S	S	S
74	H	S	S	S	S	S	S	R	S	S	R	R	R	S	S	S	S	S	R	H/R	S	S	S
75	H	S	S	S	S	S	S	R	S	S	R	R	R	S	S	S	S	S	R	H/R	S	S	S
76	H	S	S	S	S	S	S	R	S	S	R	R	R	S	S	S	S	S	R	H/R	S	S	S
77	S	S	S	S	R	S	S	R	H/R	S	S	R	S	R	S	S	S	R	R	H/R	S	S	S
78	S	S	S	S	H	S	S	R	H/R	S	R	R	R	H	S	S	S	S	R	H/R	S	S	S
79	H	S	S	S	S	H	S	R	H/R	S	H	R	R	H	S	S	S	H	R	S	S	S	S
80	H	S	S	S	S	H	S	R	H/R	S	H	R	R	H	S	S	S	H	R	S	S	S	S
81	H	S	S	S	H	S	S	R	H/R	S	S	R	H	H	S	S	S	H	R	S	H	S	S
82	H	S	S	S	H	S	S	R	H/R	S	S	R	H	H	S	S	S	R	R	S	H	S	S
83	H	S	S	S	H	S	S	R	H/R	S	S	R	H	H	S	S	S	H	R	S	H	S	S
84	H	S	S	S	H	H	S	R	H/R	S	H	R	H	H	S	S	S	R	H	S	S	S	S
85	H	S	S	S	H	S	S	R	H/R	S	H	R	H	H	S	S	S	R	H	S	S	S	S
86	H	S	S	S	H	H	S	R	H/R	S	R	R	H	H	S	S	S	H	R	H/R	S	S	S
87	H	S	S	S	H	S	S	R	H/R	S	R	R	R	H	S	S	S	S	R	H/R	S	S	S
88	H	S	S	S	S	S	S	R	H/R	S	H	R	H	H	S	S	S	R	R	H/R	S	S	S
89	H	S	S	S	S	S	S	R	H/R	S	S	R	H	R	S	S	S	H	R	S	S	H	S
90	H	S	S	S	H	S	S	R	H/R	S	H	R	S	H	S	S	S	R	H	S	S	H	S
91	H	S	S	S	H	S	S	R	H/R	S	H	R	S	H	S	S	S	R	H	S	S	H	S
92	H	S	S	S	S	H	S	R	H/R	S	R	R	H	S	S	S	S	H	R	S	S	S	S
93	H	S	S	S	S	H	S	R	H/R	S	R	R	H	S	S	S	S	H	R	S	S	S	S
94	H	S	S	S	H	H	S	R	H/R	S	R	R	H	H	S	S	S	H	R	S	S	S	S
95	H	S	S	S	H	H	S	R	H/R	S	R	R	H	H	S	S	S	H	R	S	S	S	S

No.	Ty1	Ty2	Ty4	ty5	J3	Mi- rex	Sw 5	I	I2	I3	I7	EDS 1	Ve 2	Tm2 a	Ph 3	Py 1	Pto	Sm- 1	Sm- 2	Cf 9	Bw 6	Bw 12	Lv
96	H	S	S	S	R	S	S	R	H/R	S	R	R	H	S	S	S	S	H	H	S	S	S	S
97	H	S	S	S	R	S	S	R	H/R	S	R	R	H	S	S	S	S	H	H	S	S	S	S
98	H	S	S	S	H	S	S	R	H/R	S	R	R	R	S	S	S	S	R	H/R	S	S	S	S
99	H	S	S	S	H	S	S	R	H/R	S	R	R	R	S	S	S	S	R	H/R	S	S	S	S
100	S	S	S	S	S	H	S	H	H/R	S	S	R	H	H	S	S	S	H	H	S	S	S	S
101	H	S	S	S	S	S	S	R	H/R	S	R	R	R	S	S	S	S	H	R	S	S	S	S
102	S	S	S	S	S	H	S	R	H/R	S	H	R	R	S	H	S	S	H	R	S	S	S	S
103	S	S	S	S	S	S	S	R	H/R	S	H	R	R	S	H	S	S	H	R	S	S	S	S
104	H	S	S	S	S	S	S	R	H/R	S	S	R	S	H	H	S	S	S	R	H/R	H	H	S
105	H	S	S	S	S	S	S	R	H/R	S	S	R	S	H	H	S	S	S	R	H/R	H	H	S
106	H	S	S	S	S	S	S	R	S	S	S	R	S	H	R	S	S	S	R	H/R	H	S	S
107	H	S	S	S	S	H	S	R	S	S	H	R	H	H	H	S	S	S	H	H/R	H	S	S
108	H	S	S	S	S	S	S	R	S	S	S	R	S	S	H	S	S	H	H	S	R	S	S
109	S	S	S	S	S	H	S	R	H/R	S	H	R	H	H	S	S	S	H	R	S	S	S	S
110	S	S	S	S	H	H	S	R	H/R	S	H	R	H	S	S	S	S	H	R	S	S	S	S
111	H	S	S	S	H	S	S	R	H/R	S	S	R	H	H	S	S	S	H	R	S	S	S	S
112	H	S	S	S	H	S	S	R	H/R	S	S	R	H	H	S	S	S	H	R	S	H	S	S
113	H	S	S	S	S	S	S	R	H/R	S	H	R	R	H	S	S	S	H	R	S	S	S	S
114	H	S	S	S	S	S	S	R	H/R	S	H	R	R	H	S	S	S	H	R	S	S	S	S
115	H	S	S	S	H	H	S	R	H/R	S	R	R	S	H	S	S	S	R	H	S	S	S	S
116	H	S	S	S	H	H	S	R	H/R	S	R	R	S	H	S	S	S	R	H	S	S	S	S
117	H	S	S	S	S	S	S	R	H/R	S	H	R	R	R	S	S	S	H	R	S	S	S	S
118	H	S	S	S	S	S	S	R	H/R	S	H	R	R	R	S	S	S	H	R	S	S	S	S
119	H	S	S	S	H	S	S	R	H/R	S	H	R	H	H	S	S	S	H	R	S	S	H	S
120	H	S	S	S	H	S	S	R	H/R	S	H	R	H	H	S	S	S	H	R	S	S	H	S
121	R	S	S	S	S	S	S	R	H/R	S	R	R	H	S	S	S	S	H	R	H/R	S	S	S
122	R	S	S	S	S	S	S	R	H/R	S	R	R	H	S	S	S	S	H	R	H/R	S	S	S
123	H	S	S	S	H	R	H	R	H/R	S	R	R	R	H	S	S	S	R	H	H/R	S	S	S
124	H	S	S	S	H	R	H	R	H/R	S	R	R	R	H	S	S	S	R	H	H/R	S	S	S
125	S	S	S	S	H	R	S	R	H/R	S	R	R	H	H	S	S	S	R	S	H/R	S	S	S
126	S	S	S	S	H	R	S	R	H/R	S	R	R	H	H	S	S	S	R	S	H/R	S	S	S
127	S	S	S	S	R	H	S	R	H/R	H	H	R	H	R	S	S	S	R	H	S	H	R	S
128	S	S	S	S	R	H	S	R	H/R	H	H	R	H	R	S	S	S	R	H	S	H	R	S
129	H	S	S	S	S	H	S	R	S	S	H	R	H	H	H	S	S	S	H	H/R	H	S	S
130	H	S	S	S	S	H	S	R	S	S	H	R	H	H	H	S	S	S	H	H/R	S	S	S
131	H	S	S	S	S	H	S	R	S	S	H	R	S	H	H	S	S	H	H	H/R	H	S	S
132	H	S	S	S	S	H	S	R	S	S	H	R	S	H	H	S	S	H	H	H/R	H	S	S
133	H	S	S	S	S	S	S	R	S	S	H	R	S	S	S	S	S	R	R	S	H	S	S
134	H	S	S	S	S	S	S	R	S	S	H	R	S	S	S	S	S	R	R	S	H	S	S
135	H	S	S	S	S	S	S	R	S	S	S	R	S	S	H	S	S	H	H	S	R	S	S
136	H	S	S	S	S	S	S	R	S	S	S	R	S	S	H	S	S	H	H	S	R	S	S
137	R	S	S	S	S	S	S	R	S	S	S	R	S	S	R	S	S	S	R	S	R	S	S
138	R	S	S	S	S	S	S	R	S	S	S	R	S	S	R	S	S	S	R	S	R	S	S
139	S	S	S	S	S	S	S	R	S	S	S	R	S	S	R	S	S	S	R	H/R	H	S	S
140	S	S	S	S	S	S	S	R	S	S	S	R	S	H	R	S	S	S	R	H/R	R	S	S
141	R	S	S	S	S	S	S	R	S	S	R	R	S	R	S	S	S	S	S	S	R	S	S
142	R	S	S	S	S	S	S	R	S	S	R	R	S	R	S	S	S	S	S	S	R	S	S
143	R	S	S	S	S	S	S	R	S	S	H	R	S	R	S	S	S	S	S	S	R	S	S
144	R	S	S	S	S	S	S	R	S	S	R	R	S	R	S	S	S	S	S	S	R	S	S
145	R	S	S	S	S	S	S	R	S	S	S	R	S	R	R	S	S	S	H	S	R	S	S
146	R	S	S	S	S	S	S	R	S	S	S	R	S	R	R	S	S	S	R	S	R	S	S
147	H	S	S	S	R	H	S	R	H/R	S	R	R	H	R	S	S	S	R	R	S	S	S	S
148	H	S	S	S	H	H	S	R	H/R	S	R	R	H	H	S	S	S	S	R	S	S	S	S
149	S	S	S	S	H	R	S	R	H/R	S	R	R	H	H	S	S	S	R	R	S	S	S	S
150	R	S	S	S	R	S	S	R	S	S	S	R	S	S	S	S	S	H	R	S	R	S	S
151	R	S	S	S	R	S	S	R	S	S	S	R	S	S	S	S	S	H	R	S	R	S	S
152	S	S	S	S	R	R	S	R	S	S	R	R	S	R	S	S	S	R	R	S	S	S	S
153	S	S	S	S	R	R	S	R	S	S	R	R	S	R	S	S	S	R	R	S	S	S	S
154	R	S	S	S	S	S	S	R	H/R	S	R	R	S	S	S	S	S	R	R	H/R	S	S	S
155	R	S	S	S	S	S	S	R	H/R	S	R	R	S	S	S	S	S	R	R	H/R	S	S	S
156	S	S	S	S	S	S	S	R	H/R	S	R	R	S	S	S	S	S	R	R	S	S	S	S
157	S	S	S	S	S	S	S	R	H/R	S	R	R	S	S	S	S	S	R	R	S	S	S	S

No.	Ty1	Ty2	Ty4	ty5	J3	Mi-rex	Sw5	I	I2	I3	I7	EDS1	Ve2	Tm2a	Ph3	Py1	Pto	Sm-1	Sm-2	Cf9	Bw6	Bw12	Lv
158	R	S	S	S	S	S	S	R	H/R	S	R	R	R	R	S	S	S	S	R	S	S	S	S
159	R	S	S	S	S	S	S	R	H/R	S	R	R	R	R	S	S	S	S	R	S	S	S	S
160	S	S	S	S	S	S	S	R	S	S	S	R	R	R	S	S	S	R	R	S	S	S	S
161	S	S	S	S	S	S	S	R	S	S	S	R	R	R	S	S	S	R	R	S	S	S	S
162	R	S	S	S	R	S	S	R	S	S	S	R	S	R	S	S	S	R	S	S	S	R	S
163	R	S	S	S	R	S	S	R	S	S	S	R	S	R	S	S	S	R	S	S	S	R	S
164	S	S	S	S	R	R	S	R	H/R	S	R	R	R	R	S	S	S	S	R	H/R	S	S	S
165	S	S	S	S	R	R	S	R	H/R	S	R	R	R	R	S	S	S	S	R	H/R	S	S	S
166	H	S	S	S	S	S	S	R	H/R	S	H	R	R	R	S	S	S	H	R	S	S	S	S
167	H	S	S	S	S	S	S	R	S	S	H	R	R	R	S	S	S	R	R	S	S	S	S
168	R	S	S	S	R	S	S	R	H/R	S	S	R	S	S	S	S	S	S	R	S	R	S	S
169	R	S	S	S	R	S	S	R	S	S	S	R	S	R	S	S	S	R	S	S	S	S	S
170	S	S	S	S	S	S	S	R	S	S	R	R	R	S	S	S	S	R	R	S	S	S	S

표 10. 토마토생명과학연구소 159점의 시료에 대하여, 병 관련 23종 및 원예형질 관련 3종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	Ty4	ty5	J3	Mi-rex	Sw5	I	I2	I3	I7	EDS1	Ve2	Tm2a	Ph3	Cf9	Bw6	Bw12	Py1-4	Pto	Sm-1	Sm-2	Lv	심실수	J2	EJ2	
1	H	S	S	S	S	H	S	R	S	S	S	R	S	H	R	R/H	R	S	S	S	S	S	R	S	low lc	N	N
2	H	S	S	S	S	S	S	R	S	S	S	R	S	S	R	R/H	H	S	S	S	S	S	R	S	low lc	N	H
3	H	S	S	S	S	H	S	R	S	S	H	R	H	H	H	R/H	H	S	S	S	S	H	S	low lc	N	N	
4	H	S	S	S	S	S	S	R	S	S	S	R	S	S	H	S	R	S	S	S	H	H	S	low lc	N	N	
5	S	S	S	S	S	S	S	R	S	S	H	R	S	S	S	S	H	S	S	S	H	R	S	low lc	N	N	
6	S	S	S	S	S	H	S	R	S	S	H	R	S	H	R	S	H	S	S	S	S	H	S	low lc	N	H	
7	S	S	S	S	R	R	S	R	R/H	S	S	R	S	S	S	S	S	S	S	S	H	R	S	high lc	N	M	
8	S	S	S	S	S	S	S	R	R/H	S	R	R	S	R	S	S	S	S	S	S	S	R	S	high lc	N	M	
9	S	S	S	S	S	S	S	R	R/H	S	R	R	S	S	S	S	S	S	S	S	R	R	S	high lc	N	M	
10	S	S	S	S	S	S	S	R	S	S	S	R	R	R	S	S	S	S	S	S	R	R	S	high lc	N	M	
11	R	S	S	S	H	S	S	R	R/H	S	R	R	R	H	S	S	S	S	S	S	S	R	S	high lc	N	M	
12	R	S	S	S	S	S	S	R	R/H	S	R	R	R	S	S	R/H	S	S	S	S	S	R	S	high lc	N	M	
13	R	S	S	S	H	S	S	R	R/H	S	R	R	R	H	S	R/H	S	S	S	S	S	R	S	high lc	N	M	
14	H	S	S	S	S	H	S	R	R/H	S	R	R	R	H	S	S	S	S	S	S	R	R	S	high lc	N	M	
15	R	S	S	S	S	R	S	R	R/H	S	R	R	S	S	S	S	S	S	S	S	R	R	S	high lc	N	M	
16	H	S	S	S	S	S	S	R	S	S	S	R	R	S	S	S	H	S	S	S	R	R	S	high lc	N	M	
17	R	S	S	S	S	S	S	R	R/H	S	R	R	R	R	S	R/H	S	S	S	S	S	R	S	H	N	M	
18	H	S	S	S	S	H	H	R	R/H	S	R	R	R	S	H	R/H	S	S	S	S	S	R	S	H	N	M	
19	H	S	S	S	S	H	H	R	R/H	S	R	R	R	S	H	S	S	S	S	S	R	S	S	H	N	M	
20	S	S	S	S	S	S	S	R	S	S	R	R	R	S	S	S	S	S	S	S	R	R	S	high lc	N	M	
21	S	S	S	S	S	S	S	R	S	S	R	R	R	S	S	S	S	S	S	S	R	R	S	high lc	N	M	
22	R	S	S	S	S	S	S	R	R/H	S	R	R	R	R	S	S	S	S	S	S	S	R	S	low lc	N	M	
23	R	S	S	S	S	S	S	R	R/H	S	R	R	R	R	S	S	S	S	S	S	S	R	S	low lc	N/A	M	
24	S	S	S	S	S	S	S	R	S	S	R	R	R	S	S	S	S	S	S	S	R	R	S	high lc	N	M	
25	R	S	S	S	S	S	S	R	S	S	S	R	R	R	S	S	S	S	S	S	S	R	S	low lc	N(?)	N	
26	R	S	S	S	S	S	S	R	S	S	H	R	R	R	S	S	S	S	S	S	S	R	S	low lc	N	N	
27	H	S	S	S	S	S	S	R	S	S	R	R	R	R	S	S	S	S	S	S	S	R	S	low lc	N(?)	N	
28	H	S	S	S	S	S	S	R	S	S	R	R	R	R	S	S	S	S	S	S	S	R	S	low lc	N	N	
29	S	S	S	S	S	R	S	R	R/H	S	R	R	S	S	S	S	S	H	S	S	R	R	S	low lc	N/A	M	
30	S	S	S	S	S	R	S	R	R/H	S	R	R	S	S	S	S	S	R	S	S	R	R	S	low lc	N/A	M	
31	R	S	S	S	S	S	R	R	R/H	S	S	R	R	R	S	S	S	S	S	S	R	R	S	H	N	M	
32	H	S	S	S	S	S	R	R	R/H	S	S	R	R	R	S	S	S	S	S	S	R	R	S	low lc	N	M	
33	H	S	S	S	S	H	R	R/H	S	H	R	R	R	R	S	S	S	S	S	S	R	R	S	high lc	N	M	
34	H	S	S	S	S	H	R	R/H	S	H	R	R	R	R	S	S	S	S	S	S	R	R	S	high lc	N	M	
35	S	S	S	S	S	H	R	R/H	S	S	R	R	R	S	S	S	S	S	S	S	R	R	S	high lc	N	M	
36	S	S	S	S	S	S	R	R	R/H	S	S	R	R	R	S	S	S	S	S	S	R	R	S	high lc	N	M	
37	H	S	S	S	S	S	R	R	R/H	S	S	R	R	R	S	S	S	S	S	S	R	R	S	H	N	M	
38	S	S	S	S	S	S	R	R	R/H	S	S	R	R	R	S	S	S	S	S	S	R	R	S	H	N	M	
39	S	S	S	S	S	S	S	R	R/H	S	R	R	R	R	S	S	S	S	S	S	R	R	S	high lc	N	N	
40	S	S	S	S	S	H	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	R	S	high lc	N	M	
41	S	S	S	S	S	R	S	R	S	S	R	R	S	R	S	S	S	S	S	S	R	R	S	low lc	N	M	

No.	Ty1	Ty2	Ty4	ty5	J3	Mi- rex	Sw 5	I	I2	I3	I7	EDS 1	Ve2	Tm 2a	Ph3	Cf9	Bw 6	Bw 12	Py1 -4	Pto	Sm- 1	Sm- 2	Lv	심실수	J2	EJ2
42	R	S	S	S	S	S	S	R	S	S	R	R	S	R	R	R/H	S	S	S	S	R	R	S	low lc	N	N
43	S	S	S	S	S	S	S	R	S	S	S	R	R	R	R	S	S	S	S	S	R	R	S	low lc	N	M
44	S	S	S	S	S	S	S	R	S	S	S	R	R	R	R	S	S	S	S	S	R	R	S	low lc	N	M
45	S	S	S	S	S	S	S	R	S	S	S	R	R	R	R	S	S	S	S	S	R	R	S	low lc	N	M
46	S	S	S	S	S	S	S	R	S	S	S	R	R	R	R	S	S	S	S	S	R	R	S	low lc	N	M
47	S	S	S	S	S	S	S	R	S	S	S	R	R	R	R	S	S	S	S	S	R	R	S	low lc	N	M
48	S	S	S	S	S	S	S	R	S	S	S	R	R	R	R	S	S	S	S	S	R	R	S	low lc	N	M
49	S	S	S	S	S	S	S	R	S	S	S	R	R	R	R	S	S	S	S	S	R	R	S	low lc	N	M
50	R	S	S	S	R	S	S	R	S	S	S	R	S	R	R	S	S	S	S	S	S	R	S	low lc	N	H
51	R	S	S	S	R	S	S	R	R/H	S	S	R	S	R	R	S	S	S	S	S	R	R	S	low lc	N	M
52	R	S	S	S	R	S	S	R	S	S	S	R	S	R	S	S	S	S	S	S	R	R	S	low lc	N	H
53	S	S	S	S	R	R	S	R	S	S	S	R	S	R	S	S	S	S	S	S	R	R	S	low lc	N	H
54	H	S	S	S	R	H	S	R	R/H	S	R	R	S	S	R	S	H	S	S	S	R	R	S	low lc	N	H
55	H	S	S	S	R	H	S	R	R/H	S	H	R	S	S	R	R/H	H	S	S	S	R	R	S	low lc	N	N
56	S	S	S	S	S	R	S	R	S	S	R	R	S	R	R	S	S	S	S	S	R	R	S	low lc	N	N
57	S	S	S	S	S	R	S	R	S	S	R	R	S	R	R	S	S	S	S	S	R	R	S	low lc	N	N
58	S	S	S	S	H	S	S	R	R/H	S	H	R	R	S	S	S	S	S	S	S	H	R	S	H	N(?)	H
59	S	S	S	S	S	S	S	R	R/H	S	H	R	H	S	H	S	S	S	S	S	H	R	S	H	N(?)	N
60	S	S	S	S	H	H	S	H	R/H	S	H	R	S	H	H	S	S	S	R	S	H	R	S	low lc	N	M
61	H	S	S	S	S	S	S	R	R/H	S	S	R	S	R	H	R/H	S	H	S	S	S	R	S	H	N	M
62	H	S	S	S	S	S	S	R	S	S	H	R	S	R	H	S	H	S	S	S	S	S	S	low lc	N	H
63	H	S	S	S	S	S	S	R	S	S	S	R	S	H	R	S	H	S	S	S	S	H	S	low lc	N	N
64	H	S	S	S	S	S	S	R	S	S	S	R	S	R	R	S	H	S	S	S	S	S	S	low lc	N	H
65	R	S	S	S	S	S	S	R	R/H	S	H	R	S	H	H	S	R	S	S	S	S	H	S	low lc	N	H
66	H	S	S	S	S	S	S	R	S	S	S	R	S	H	R	R/H	H	S	S	S	R	S	low lc	N	H	
67	H	S	S	S	S	H	S	R	S	S	S	R	S	H	R	R/H	H	S	S	S	R	S	low lc	N	N	
68	H	S	S	S	S	H	S	R	S	S	H	R	H	H	H	R/H	H	S	S	S	H	S	low lc	N	H	
69	H	S	S	S	S	S	S	R	S	S	S	R	H	H	R	S	H	S	S	S	H	S	low lc	N	M	
70	H	S	S	S	S	H	S	R	S	S	H	R	H	S	S	S	H	S	S	S	S	S	low lc	N	H	
71	S	S	S	S	S	H	S	R	S	S	H	R	S	S	R	S	H	S	S	S	H	R	S	low lc	N	H
72	H	S	S	S	H	S	S	R	S	S	H	R	S	H	S	S	H	S	S	S	H	H	S	high lc	N	M
73	S	S	S	S	R	S	S	R	S	S	S	R	R	H	R	S	H	R	S	S	R	S	high lc	N	M	
74	S	S	S	S	H	H	S	R	R/H	S	H	R	R	H	S	S	R	R	S	S	R	R	S	H	N	M
75	R	S	S	S	H	S	S	R	R/H	S	H	R	H	H	S	S	S	H	S	S	S	R	S	high lc	N	M
76	S	H	S	S	S	H	S	R	R/H	S	R	R	R	H	S	S	H	R	S	S	R	H	S	H	N	M
77	S	S	S	S	S	S	S	R	S	S	R	R	H	S	S	S	R	H	S	S	R	R	S	high lc	N	H
78	S	S	S	S	S	R	S	R	R/H	S	S	R	R	S	S	R/H	S	H	S	S	R	R	S	H	N	M
79	H	S	S	S	S	H	S	R	R/H	S	S	R	R	H	S	R/H	S	S	S	S	R	S	S	low lc	N	M
80	H	S	S	S	S	S	S	R	R/H	S	R	R	R	S	S	S	S	S	S	S	R	R	S	high lc	N	M
81	S	S	S	S	S	S	S	R	R/H	S	R	R	R	R	S	S	S	S	S	S	R	R	S	low lc	N	M
82	R	S	S	S	R	R	S	R	R/H	S	R	R	R	R	S	S	S	S	S	S	R	S	S	high lc	N	N
83	R	S	S	S	S	R	S	R	R/H	S	R	R	R	R	S	S	S	S	S	S	R	S	S	high lc	N	N
84	R	S	S	S	S	R	S	R	R/H	S	R	R	R	R	S	S	S	S	S	S	R	S	S	high lc	N	N
85	R	S	S	S	S	R	S	R	R/H	S	R	R	R	R	S	S	S	S	S	S	R	H	S	high lc	N	N
86	S	R	S	S	S	R	S	R	R/H	S	R	R	R	S	S	S	S	R	S	S	R	S	S	high lc	N	M
87	S	R	S	S	S	R	S	R	S	S	R	R	R	S	S	R/H	S	S	S	S	R	S	S	high lc	N	M
88	R	S	S	S	H	S	S	R	S	S	R	R	R	H	S	R/H	S	S	S	S	R	S	high lc	N	M	
89	R	S	S	S	S	S	S	R	R/H	S	R	R	R	S	S	S	S	S	S	S	R	S	high lc	N	M	
90	H	S	S	S	H	S	S	R	R/H	S	R	R	R	H	S	R/H	S	S	S	S	R	S	high lc	N	M	
91	H	S	S	S	S	S	S	R	S	S	R	R	R	S	S	R/H	S	S	S	S	R	S	high lc	N	M	
92	S	S	S	S	S	S	S	R	S	S	R	R	R	S	S	S	S	S	S	S	R	S	high lc	N	M	
93	H	S	S	S	S	S	S	R	S	S	R	R	R	S	S	H	S	S	S	S	R	S	high lc	N	M	
94	R	S	S	S	S	R	S	R	R/H	S	R	R	R	H	S	S	S	S	S	S	R	R	S	high lc	N	M
95	H	S	S	S	S	H	S	R	R/H	S	R	R	S	S	S	S	S	S	S	S	R	R	S	high lc	N	M
96	H	S	S	S	H	R	S	R	R/H	S	S	R	S	S	S	S	H	S	S	S	H	R	S	high lc	N	M
97	S	S	S	S	S	S	S	R	R/H	S	S	R	R	R	S	S	S	S	S	S	R	R	S	high lc	N	M
98	S	S	S	S	S	R	S	R	S	S	R	R	R	R	S	R/H	S	S	S	S	R	S	S	high lc	N	M
99	S	H	S	S	R	R	S	R	S	S	R	R	S	R	S	S	S	S	S	S	R	H	S	low lc	N	M
100	H	S	S	S	R	H	S	R	R/H	S	R	R	R	S	S	R/H	S	S	S	S	R	S	S	high lc	N	M
101	H	S	S	S	S	H	R	R	R/H	S	R	R	R	R	S	R/H	S	S	S	S	R	S	S	high lc	N	M
102	R	S	S	S	S	R	S	R	R/H	S	R	R	R	S	S	R/H	S	S	S	S	R	S	S	high lc	N	M
103	R	S	S	S	S	S	H	R	R/H	S	R	R	H	R	S	R/H	S	S	S	S	R	S	S	high lc	N	M

No.	Ty1	Ty2	Ty4	ty5	J3	Mi- rex	Sw 5	I	I2	I3	I7	EDS 1	Ve2	Tm 2a	Ph3	Cf9	Bw 6	Bw 12	Py1 -4	Pto	Sm- 1	Sm- 2	Lv	심실수	J2	EJ2
104	S	S	S	S	R	S	S	R	S	S	S	R	H	R	S	S	S	S	S	S	R	S	S	high lc	N	M
105	S	S	S	S	S	S	S	R	R/H	S	S	R	R	R	S	R/H	S	S	S	S	S	R	S	high lc	N	M
106	R	S	S	S	S	S	S	R	R/H	S	R	R	R	S	S	R/H	S	S	S	S	H	R	S	high lc	N	M
107	S	S	S	S	S	S	S	R	R/H	S	S	R	R	S	S	S	S	H	S	S	H	R	S	high lc	N	M
108	S	S	S	S	S	S	S	R	R/H	S	R	R	S	R	R	R/H	S	S	S	S	S	R	S	H	N	M
109	R	S	S	S	H	S	S	R	R/H	S	R	R	R	R	S	R/H	S	S	S	S	S	R	S	H	N	M
110	H	S	S	S	S	H	S	R	R/H	S	R	R	R	S	S	S	S	S	S	S	S	R	S	high lc	N	M
111	S	S	S	S	S	R	S	R	S	S	S	R	R	R	S	S	S	S	S	S	R	R	S	H	N	M
112	R	S	S	S	S	S	S	R	R/H	S	R	R	R	R	S	S	S	S	S	S	R	R	S	H	N(?)	M
113	H	S	S	S	S	H	S	R	R/H	S	R	R	S	H	S	S	S	S	S	S	R	R	S	high lc	N	M
114	H	S	S	S	S	S	S	R	S	S	R	R	R	R	S	S	S	S	S	S	R	R	S	H	N	M
115	S	S	S	S	S	R	S	R	R/H	S	R	R	R	S	S	R/H	S	S	S	S	R	R	S	low lc	N	M
116	R	S	S	S	S	H	R	R	R/H	S	R	R	R	R	R	R/H	S	S	S	S	S	R	S	low lc	N	M
117	S	S	S	S	S	R	R	R	R/H	S	R	R	R	S	R	R/H	S	S	S	S	S	R	S	low lc	N	M
118	S	S	S	S	S	R	S	R	R/H	S	R	R	R	S	S	R/H	S	S	S	S	H	H	S	high lc	N	M
119	H	S	S	S	S	S	S	R	R/H	S	R	R	R	R	S	S	S	S	S	S	S	R	S	low lc	N	M
120	S	S	S	S	S	R	R	R	R/H	S	R	R	R	H	R	S	S	S	S	S	H	H	S	low lc	N	M
121	H	S	S	S	S	H	S	R	R/H	S	R	R	R	S	H	S	S	S	S	S	S	R	S	high lc	N	N
122	R	S	S	S	R	H	S	R	S	S	S	R	S	H	S	S	S	S	S	S	R	S	high lc	N	M	
123	R	S	S	S	S	S	S	R	S	S	H	R	R	R	S	S	S	S	S	S	R	R	S	low lc	N(?)	N
124	H	S	S	S	S	H	S	R	R/H	S	R	R	R	R	S	S	S	S	S	S	R	R	S	high lc	N	M
125	S	S	S	S	S	S	S	R	S	S	S	R	R	R	S	S	S	S	S	S	R	R	S	low lc	N/A	N
126	H	S	S	S	S	S	S	R	R/H	S	H	R	R	H	S	S	S	S	S	S	R	R	S	high lc	N(?)	M
127	S	S	S	S	S	S	S	R	S	S	S	R	S	R	R	R/H	S	S	S	S	S	S	S	low lc	N	M
128	S	S	S	S	S	S	S	R	S	S	S	R	S	R	R	R/H	S	S	S	S	S	S	S	low lc	N	M
129	R	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	H	R	S	low lc	N	M
130	R	S	S	S	S	S	S	R	S	S	S	R	S	S	R	S	R	S	S	S	R	S	low lc	N	N	
131	R	S	S	S	S	S	S	R	S	S	S	R	S	S	R	S	R	S	S	S	R	S	low lc	N	N	
132	S	S	S	S	S	S	S	R	S	S	S	R	S	H	R	R/H	H	S	S	S	R	S	low lc	N	M	
133	S	S	S	S	S	S	S	R	S	S	S	R	S	R	R	S	S	S	S	S	R	R	S	high lc	N	M
134	R	S	S	S	S	S	S	R	S	S	R	R	S	R	S	S	R	S	S	S	S	S	S	low lc	N	M
135	R	S	S	S	S	S	S	R	S	S	R	R	S	R	S	S	R	S	S	S	S	S	S	low lc	N	M
136	S	S	S	S	R	R	S	R	S	S	R	R	S	R	S	S	S	S	S	S	R	R	S	high lc	N	M
137	S	S	S	S	R	R	S	R	S	S	R	R	S	R	S	S	S	S	S	S	R	R	S	high lc	N	M
138	R	S	S	S	S	S	S	R	R/H	S	R	R	S	S	S	R/H	S	S	S	S	R	R	S	high lc	N	M
139	R	S	S	S	S	S	S	R	R/H	S	R	R	S	S	S	R/H	S	S	S	S	R	R	S	high lc	N	M
140	S	S	S	S	S	S	S	R	R/H	S	R	R	S	S	S	S	S	S	S	S	R	R	S	high lc	N	M
141	S	S	S	S	S	S	S	R	R/H	S	R	R	S	S	S	S	S	S	S	S	R	R	S	high lc	N	M
142	R	S	S	S	S	S	S	R	R/H	S	R	R	R	R	S	S	S	S	S	S	R	S	low lc	N	M	
143	R	S	S	S	S	S	S	R	R/H	S	R	R	R	R	S	S	S	S	S	S	R	S	low lc	N	M	
144	S	S	S	S	S	S	S	R	S	S	S	R	R	R	S	S	S	S	S	S	R	R	S	high lc	N	M
145	S	S	S	S	S	S	S	R	S	S	S	R	R	R	S	S	S	S	S	S	R	R	S	high lc	N	M
146	R	S	S	S	H	S	S	R	S	S	S	R	S	R	S	S	S	R	S	S	R	S	high lc	N	M	
147	R	S	S	S	R	S	S	R	S	S	S	R	S	R	S	S	S	R	S	S	R	S	high lc	N	M	
148	S	S	S	S	R	R	S	R	R/H	S	R	R	R	R	S	R/H	S	S	S	S	R	S	high lc	N	M	
149	S	S	S	S	R	R	S	R	R/H	S	R	R	R	R	S	R/H	S	S	S	S	R	S	high lc	N	M	
150	H	S	S	S	S	S	S	R	R/H	S	H	R	R	R	S	S	S	S	S	S	H	R	S	H	N	M
151	H	S	S	S	S	S	S	R	R/H	S	H	R	R	R	S	S	S	S	S	S	H	R	S	H	N	M
152	S	S	S	S	R	H	S	R	R/H	H	H	R	H	R	S	S	H	R	S	S	R	H	S	high lc	N	M
153	S	S	S	S	R	H	S	R	R/H	H	H	R	H	R	S	S	H	R	S	S	R	H	S	high lc	N	M
154	S	S	S	S	S	H	H	R	S	S	S	R	S	H	S	R/H	S	S	S	S	H	R	S	H	N	H
155	S	S	S	S	S	H	R	R	S	S	H	R	S	H	S	R/H	S	S	S	S	R	S	S	H	N	M
156	S	S	S	S	S	H	H	R	S	S	H	R	S	R	S	R/H	S	S	S	S	R	R	S	H	N	M
157	S	S	S	S	R	R	S	R	R/H	S	R	R	S	R	S	S	S	S	S	S	R	R	S	low lc	N	M
158	R	S	S	S	S	S	S	R	R/H	S	R	R	S	S	S	R/H	S	S	S	S	R	R	S	high lc	N	M
159	S	S	S	S	S	S	S	R	R/H	S	R	R	S	S	S	R/H	S	S	S	S	R	R	S	high lc	N	M

표 11. 토마토생명과학연구소 20점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

No.	J2	EJ2	마커검정결과	No.	J2	EJ2	마커검정결과
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No.	J2	EJ2	마커검정결과
1	M	N	jointless, low branching
2	M	N	jointless, low branching
3	M	N	jointless, low branching
4	M	N	jointless, low branching
5	M	N	jointless, low branching
6	M	N	jointless, low branching
7	M	N	jointless, low branching
8	M	N	jointless, low branching
9	M	N	jointless, low branching
10	M	N	jointless, low branching

No.	J2	EJ2	마커검정결과
11	N	M	jointed, low branching
12	N	M	jointed, low branching
13	N	M	jointed, low branching
14	N	M	jointed, low branching
15	N	M	jointed, low branching
16	N	H	jointed, low branching
17	N	H	jointed, low branching
18	N	H	jointed, low branching
19	N	H	jointed, low branching
20	N	H	jointed, low branching

표 12. 토마토생명과학연구소 83점의 시료에 대하여, 병 관련 22종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	Ty4	ty5	J3	Mi-r ex	Sw5	I	I2	I3	Ve2	Tm2 a	Ph3	Cf9	Bw6	Bw1 2	Py1- 2	Py1- 4	Pto	Sm- 1	Sm- 2	Lv
1	H	S	S	S	S	S	S	R	S	S	S	R	R	S	H	S	S	S	S	S	S	S
2	H	S	S	S	S	H	S	R	S	S	S	H	H	R/H	H	S	S	S	S	H	H	S
3	S	S	S	S	H	S	S	R	S	S	H	H	H	R/H	S	S	H	S	S	R	R	S
4	R	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S	R	S	S	S	S	S
5	R	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S	R	S	S	S	S	S
6	H	S	S	S	S	H	S	R	R/H	S	S	R	S	S	H	S	R	S	S	R	R	S
7	S	S	S	S	H	R	S	R	S	S	R	H	S	S	S	S	R	S	S	R	R	S
8	S	S	S	S	S	S	S	R	R/H	S	S	R	S	S	S	S	R	S	S	S	R	S
9	H	S	S	S	R	S	S	R	S	S	R	R	S	S	S	S	R	S	S	R	R	S
10	S	S	S	S	S	S	S	R	R/H	S	S	S	S	S	S	S	R	S	S	R	R	S
11	S	S	S	S	S	S	S	R	R/H	S	S	S	S	S	S	S	R	S	S	R	R	S
12	S	S	S	S	S	S	S	R	R/H	S	S	S	S	S	S	S	R	S	S	R	R	S
13	S	S	S	S	S	S	S	R	R/H	S	S	S	S	S	S	S	R	S	S	R	R	S
14	H	S	S	S	S	S	S	R	R/H	S	R	S	S	S	S	S	R	S	S	R	R	S
15	H	S	S	S	S	S	S	R	R/H	S	R	S	S	S	S	S	R	S	S	R	R	S
16	R	S	S	S	S	S	S	R	S	S	R	S	R	R/H	S	S	R	S	S	S	R	S
17	H	S	S	S	S	S	S	R	S	S	R	S	R	R/H	S	S	R	S	S	S	R	S
18	H	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S	R	S	S	S	R	S
19	R	S	S	S	S	S	S	R	R/H	S	R	R	S	S	S	S	R	S	S	S	R	S
20	S	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S	R	S	S	R	R	S
21	R	S	S	S	S	S	S	R	R/H	S	R	R	S	S	S	S	R	S	S	S	R	S
22	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	R	S	S	H	R	S
23	R	S	S	S	S	S	S	R	R/H	S	R	S	S	S	S	S	R	S	S	S	R	S
24	R	S	S	S	S	S	R	R	R/H	S	R	S	R	R/H	S	S	R	S	S	R	H	S
25	R	S	S	S	S	S	S	R	R/H	S	R	R	S	S	S	S	R	S	S	R	R	S
26	S	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	R	S	S	S	R	S
27	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	R	S	S	S	R	S
28	S	S	S	S	H	S	R	R	R/H	S	S	H	S	S	S	R	R	S	S	S	R	S
29	S	S	S	S	R	S	S	R	R/H	S	R	R	S	R/H	S	S	R	S	S	S	R	S
30	H	S	S	S	S	S	R	R	R/H	S	R	S	R	R/H	S	S	R	S	S	S	R	S
31	R	S	S	S	S	H	R	R	R/H	S	R	R	R	R/H	S	S	R	S	S	S	R	S
32	R	S	S	S	S	S	S	R	R/H	S	R	S	R	R/H	S	S	R	S	S	R	H	S
33	R	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	R	S	S	S	R	S
34	R	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	R	S	S	S	R	S
35	H	S	S	S	S	S	S	R	S	S	R	H	S	S	S	S	R	S	S	R	R	S
36	H	S	S	S	S	H	R	R	R/H	S	R	H	R	S	S	S	R	S	S	H	R	S
37	H	S	S	S	S	H	S	R	R/H	S	R	H	H	S	S	S	R	S	S	H	R	S
38	H	S	S	S	S	H	S	R	R/H	S	R	S	S	S	S	S	R	S	S	S	R	S
39	H	S	S	S	S	S	S	R	S	S	R	H	S	S	S	S	R	S	S	R	R	S
40	R	S	S	S	S	S	S	R	R/H	S	R	S	S	S	S	S	R	S	S	R	R	S
41	H	S	S	S	S	S	S	R	R/H	S	S	R	S	S	S	S	R	S	S	R	R	S
42	H	S	S	S	R	S	S	R	R/H	S	R	S	S	S	S	S	R	S	S	S	R	S
43	H	S	S	S	S	S	S	R	R/H	S	R	R	S	S	S	S	R	S	S	S	R	S
44	H	S	S	S	S	S	R	R	R/H	S	R	R	S	S	S	S	R	S	S	R	R	S
45	H	S	S	S	S	S	S	R	R/H	S	R	R	S	S	S	S	R	S	S	R	R	S
46	H	S	S	S	S	S	H	R	R/H	S	R	R	S	S	S	S	R	S	S	R	R	S

No.	Ty1	Ty2	Ty4	ty5	J3	Mi-r ex	Sw5	I	I2	I3	Ve2	Tm2 a	Ph3	Cf9	Bw6	Bw1 2	Py1- 2	Py1- 4	Pto	Sm- 1	Sm- 2	Lv	
47	H	S	S	S	S	H	S	R	S	S	S	S	S	S	S	S	R	S	S	S	R	R	S
48	S	S	S	S	S	H	S	R	R/H	S	R	H	S	S	S	S	R	S	S	S	R	R	S
49	H	S	S	S	S	H	S	R	S	S	S	R	R	R/H	H	S	S	S	S	R	R	S	S
50	H	S	S	S	S	S	S	R	S	S	S	S	R	S	R	S	R	S	S	S	H	S	S
51	S	S	S	S	S	S	S	R	S	S	S	S	S	S	R	S	R	S	S	R	R	S	S
52	S	S	S	S	S	R	S	R	S	S	S	R	R	R/H	R	S	S	S	S	S	R	S	S
53	H	S	S	S	S	S	S	R	S	S	S	R	S	S	R	S	S	S	S	S	R	S	S
54	R	S	S	S	S	S	S	R	S	S	S	R	R	R/H	S	S	S	S	S	S	S	S	S
55	H	S	S	S	S	S	S	R	S	S	S	R	R	S	H	S	S	S	S	S	S	S	S
56	H	S	S	S	S	S	S	R	S	S	S	R	R	S	H	S	S	S	S	S	S	S	S
57	R	S	S	S	S	S	S	R	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S
58	R	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S	R	S	S	S	S	S	S
59	R	S	S	S	S	S	R	R	S	S	R	S	R	S	S	S	R	S	S	S	S	S	S
60	R	S	S	S	S	S	R	R	S	S	R	S	R	S	S	S	R	S	S	S	S	S	S
61	R	S	S	S	S	S	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S	S	S
62	H	S	S	S	S	H	S	R	S	S	S	S	S	S	H	S	R	S	S	S	S	S	S
63	S	S	S	S	S	S	S	R	S	S	S	R	R	S	S	S	S	S	S	R	R	S	S
64	R	S	S	S	S	S	S	R	S	S	R	S	S	S	S	R	S	S	R	R	S	S	S
65	R	S	S	S	S	S	S	R	R/H	S	R	S	S	S	S	R	S	S	H	R	S	S	S
66	R	S	S	S	S	S	S	R	S	S	R	S	S	S	S	R	S	S	H	R	S	S	S
67	R	S	S	S	S	S	S	R	S	S	R	S	S	S	S	R	S	S	S	R	S	S	S
68	R	S	S	S	S	S	S	R	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S
69	R	S	S	S	S	S	S	R	S	S	S	R	R	S	R	S	S	S	S	S	R	S	S
70	R	S	S	S	S	S	S	R	S	S	S	R	R	S	R	S	S	S	S	S	H	S	S
71	S	S	S	S	S	S	S	R	S	S	S	H	R	R/H	S	S	S	S	S	R	S	S	S
72	S	S	S	S	S	S	S	R	S	S	S	H	R	R/H	H	S	S	S	S	R	S	S	S
73	S	S	S	S	S	S	S	R	S	S	S	S	R	R/H	S	S	S	S	S	R	S	S	S
74	S	S	S	S	S	S	S	R	S	S	S	S	R	R/H	H	S	S	S	S	R	S	S	S
75	S	S	S	S	S	S	S	R	S	S	S	R	R	S	R	S	S	S	S	S	S	S	S
76	S	S	S	S	S	R	S	R	S	S	R	S	S	R/H	R	S	H	S	S	S	S	S	S
77	S	S	S	S	S	S	S	R	S	S	S	S	S	R	S	R	S	S	R	S	S	S	S
78	H	S	S	S	S	R	S	R	S	S	R	S	S	S	S	S	R	S	S	R	R	S	S
79	R	S	S	S	H	H	S	R	R/H	S	R	R	S	S	S	R	S	S	S	R	S	S	S
80	H	S	S	S	S	H	H	R	R/H	S	R	H	H	R/H	S	S	R	S	S	H	H	S	S
81	S	S	S	S	S	S	S	R	S	S	S	R	R	S	S	S	S	S	S	S	S	S	S
82	S	S	S	S	S	S	S	R	S	S	S	R	R	R/H	S	S	S	S	S	S	S	S	S
83	S	S	S	S	S	S	S	R	S	S	S	R	R	R/H	S	S	S	S	S	S	S	S	S

④ 부농종묘

부농종묘로부터 총 504점의 시료를 받아 2번의 서비스를 진행하였다. 처음 480점의 시료에 대하여, 병 관련 11종의 마커로 서비스를 진행하였다(표 13). 두 번째로는 24점의 시료에 대하여, 병 관련 3종의 마커로 서비스를 진행하였다(표 14). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 13, 14).

표 13. 부농종묘 480점의 시료에 대하여, 병 관련 11종의 마커를 이용한 서비스 결과

No.	Sw5	Ty1	Ty2	ty5	Tm2 a	Cf9	Ph3	Bw1 2	Ve2	J3	Mi-r ex	No.	Sw5	Ty1	Ty2	ty5	Tm2 a	Cf9	Ph3	Bw1 2	Ve2	J3	Mi-r ex
1	S	S	R	S	S	S	R	S	S	S	S	241	S	S	S	S	S	S	H	S	S	S	S
2	S	S	H	S	S	S	R	S	S	S	S	242	S	S	S	S	S	S	R	S	S	S	S
3	S	S	S	S	S	S	R	S	S	S	S	243	S	S	S	S	S	S	S	S	S	S	S
4	S	S	H	S	S	S	R	S	S	S	S	244	S	S	S	S	S	S	R	S	S	S	S
5	S	S	R	S	S	S	R	S	S	S	S	245	S	S	S	S	S	S	R	S	S	S	S
6	S	S	S	S	H	S	R	S	S	H	S	246	S	S	S	S	S	S	H	S	S	S	S
7	S	S	S	S	H	S	R	S	S	S	S	247	S	S	S	S	S	S	H	S	S	S	S
8	S	S	S	S	H	S	R	S	S	H	S	248	S	S	S	S	S	S	H	S	S	S	S
9	S	S	S	S	S	S	R	S	S	S	H	249	S	S	S	S	S	S	R	S	R	S	S

No.	Sw5	Ty1	Ty2	ty5	Tm2 a	Cf9	Ph3	Bw1 2	Ve2	J3	Mi-r ex
10	S	S	S	S	S	S	R	S	S	S	S
11	S	S	S	S	H	S	R	S	S	S	S
12	S	S	S	S	H	S	R	S	S	S	H
13	S	S	S	S	R	S	R	S	S	S	R
14	S	S	S	S	H	S	R	S	S	S	R
15	S	S	S	S	H	S	R	S	S	S	H
16	S	S	S	S	R	H/R	S	R	R	S	S
17	S	S	S	S	S	S	R	S	S	S	S
18	S	S	S	S	S	S	R	S	S	S	S
19	S	S	S	S	S	S	R	S	S	S	S
20	S	S	S	S	S	S	R	S	S	S	S
21	S	S	S	S	S	S	R	S	S	S	S
22	S	S	S	S	S	S	R	S	S	S	S
23	S	S	S	S	S	S	R	S	S	S	S
24	S	S	S	S	S	S	R	S	S	S	S
25	S	R	S	S	R	H/R	R	S	S	S	S
26	S	R	S	S	R	H/R	S	S	S	S	S
27	S	R	S	S	R	H/R	R	S	S	S	S
28	S	H	S	S	R	H/R	H	S	S	S	S
29	S	H	S	S	R	H/R	H	S	S	S	S
30	S	R	S	S	R	H/R	S	S	S	S	S
31	S	S	S	S	R	H/R	H	S	S	S	S
32	S	H	S	S	R	H/R	S	S	S	S	S
33	S	S	S	S	S	S	R	S	S	S	S
34	S	S	S	S	S	S	R	S	S	S	S
35	S	S	S	S	S	S	R	S	S	S	S
36	S	S	S	S	S	S	R	S	S	S	S
37	S	S	S	S	S	S	R	S	S	S	S
38	S	S	S	S	S	S	R	S	S	S	S
39	S	S	S	S	S	S	R	S	S	S	S
40	S	S	S	S	S	S	R	S	S	S	S
41	S	H	S	S	S	S	H	S	R	S	S
42	S	S	S	S	S	S	H	R	R	S	S
43	S	H	S	S	S	S	S	R	R	S	S
44	S	H	S	S	S	S	R	R	R	S	S
45	S	H	S	S	S	S	H	H	R	S	S
46	S	H	S	S	S	S	S	H	R	S	S
47	S	R	S	S	S	S	H	S	R	S	S
48	S	S	S	S	S	S	S	H	R	S	S
49	S	R	S	S	S	S	R	H	S	S	S
50	S	R	S	S	H	S	R	R	S	H	S
51	S	S	S	S	R	S	R	R	S	R	S
52	S	S	S	S	R	S	R	S	S	R	S
53	S	H	S	S	H	S	R	R	S	H	S
54	S	H	S	S	R	S	R	H	S	R	S
55	S	H	S	S	H	S	R	H	S	H	S
56	S	R	S	S	S	S	R	H	S	S	S
57	S	S	S	S	S	H/R	S	S	S	S	S
58	S	S	S	S	S	H/R	S	S	S	S	S
59	S	S	S	S	S	H/R	S	S	S	S	S
60	S	S	S	S	S	H/R	S	S	S	S	S
61	S	S	S	S	S	H/R	S	S	S	S	S
62	S	S	S	S	S	H/R	S	S	S	S	S
63	S	S	S	S	S	H/R	S	S	S	S	S
64	S	S	S	S	S	H/R	S	S	S	S	S
65	S	S	S	S	S	S	R	S	S	S	S
66	S	S	S	S	S	S	R	S	S	S	S
67	S	S	S	S	S	S	R	S	S	S	S
68	S	S	S	S	S	S	R	S	S	S	S
69	S	S	S	S	S	S	R	S	S	S	S
70	S	S	S	S	S	S	R	S	S	S	S
71	S	S	S	S	S	S	R	S	S	S	S

No.	Sw5	Ty1	Ty2	ty5	Tm2 a	Cf9	Ph3	Bw1 2	Ve2	J3	Mi-r ex
250	S	S	S	S	S	S	S	R	S	R	S
251	S	S	S	S	S	S	S	R	S	R	S
252	S	S	S	S	S	S	S	R	S	R	S
253	S	S	S	S	S	S	S	R	S	R	S
254	S	S	S	S	S	S	S	R	S	R	S
255	S	S	S	S	S	S	S	R	S	R	S
256	S	S	S	S	S	S	S	R	S	R	S
257	S	S	S	S	H	S	S	H	H	S	S
258	S	S	S	S	H	S	S	H	H	S	S
259	S	S	S	S	H	S	S	H	H	S	S
260	S	S	S	S	H	S	S	H	H	S	S
261	S	S	S	S	H	S	S	H	H	S	S
262	S	S	S	S	H	S	S	H	H	S	S
263	S	S	S	S	H	S	S	H	H	S	S
264	S	S	S	S	H	S	S	H	H	S	S
265	S	S	H	H	S	S	H	H	H	S	S
266	S	S	H	H	S	S	H	H	H	S	S
267	S	S	H	H	S	S	H	H	H	S	S
268	S	S	H	H	S	S	H	H	H	S	S
269	S	S	H	H	S	S	H	H	H	S	S
270	S	S	H	H	S	S	H	H	H	S	S
271	S	S	H	H	S	S	H	H	H	S	S
272	S	S	H	H	S	S	H	H	H	S	S
273	S	S	H	S	H	S	S	H	H	H	S
274	S	S	H	S	H	S	S	H	H	H	S
275	S	S	H	S	H	S	S	R	S	H	S
276	S	S	H	S	H	S	S	R	H	H	S
277	S	S	H	S	H	S	S	R	S	H	S
278	S	S	H	S	H	S	S	H	H	H	S
279	S	S	H	S	R	S	S	H	H	H	S
280	S	S	H	S	H	S	S	H	H	H	S
281	R	R	S	S	R	S	S	R	R	S	S
282	R	R	S	S	R	S	S	R	R	S	S
283	R	R	S	S	R	S	S	S	R	S	S
284	R	R	S	S	R	S	S	H	R	S	S
285	R	R	S	S	R	S	S	H	R	S	S
286	R	R	S	S	R	S	S	H	R	S	S
287	R	R	S	S	R	S	S	R	R	S	S
288	R	R	S	S	R	S	S	H	R	S	S
289	S	S	S	S	R	H/R	S	R	S	S	H
290	S	S	S	S	R	S	S	R	S	R	H
291	S	S	S	S	R	H/R	S	R	S	R	H
292	S	S	S	S	R	H/R	S	R	S	H	H
293	S	S	S	S	R	H/R	S	R	S	H	H
294	S	S	S	S	R	H/R	S	R	S	H	S
295	S	S	S	S	R	H/R	S	R	S	H	H
296	S	S	S	S	R	H/R	S	R	S	S	H
297	R	S	S	S	R	H/R	S	R	R	R	R
298	R	S	S	S	R	H/R	S	R	R	R	R
299	R	S	S	S	R	H/R	S	R	R	R	R
300	R	S	S	S	R	H/R	S	R	R	R	R
301	R	S	S	S	R	H/R	S	R	R	R	R
302	R	S	S	S	R	H/R	S	R	R	R	R
303	R	S	S	S	R	H/R	S	R	R	R	R
304	R	S	S	S	R	H/R	S	R	R	R	R
305	S	S	S	S	S	H/R	R	R	R	S	S
306	S	S	S	S	H	S	H	H	H	H	S
307	S	S	S	S	H	S	H	H	H	H	S
308	S	S	S	S	H	S	S	S	R	H	S
309	S	S	S	S	S	H/R	R	R	S	S	S
310	S	S	S	S	H	H/R	S	H	H	H	S
311	S	S	S	S	H	S	H	H	R	H	S

No.	Sw5	Ty1	Ty2	ty5	Tm2 a	Cf9	Ph3	Bw1 2	Ve2	J3	Mi-r ex
72	S	S	S	S	S	S	R	S	S	S	S
73	S	S	S	S	H	S	R	S	S	S	S
74	S	S	S	S	H	S	R	S	S	S	S
75	S	S	S	S	H	S	R	S	S	S	S
76	S	S	S	S	H	S	R	S	S	S	S
77	S	S	S	S	S	S	R	S	S	S	S
78	S	S	S	S	S	S	R	S	S	S	S
79	S	S	S	S	H	S	R	S	S	S	S
80	S	S	S	S	S	S	R	S	S	S	S
81	S	S	S	S	S	S	R	S	S	S	S
82	S	S	S	S	S	S	R	S	S	S	S
83	S	S	S	S	S	S	R	S	S	S	S
84	S	S	S	S	S	S	R	S	S	S	S
85	S	S	S	S	S	S	R	S	S	S	S
86	S	S	S	S	S	S	R	S	S	S	S
87	S	S	S	S	S	S	R	S	S	S	S
88	S	S	S	S	S	S	R	S	S	S	S
89	S	S	S	S	S	S	R	S	S	S	S
90	S	R	S	S	S	S	S	S	S	S	S
91	S	R	S	S	S	S	S	S	S	S	S
92	S	R	S	S	S	S	S	S	S	S	S
93	S	R	S	S	S	S	S	S	S	S	S
94	S	R	S	S	S	S	S	S	S	S	S
95	S	R	S	S	S	S	S	S	S	S	S
96	S	R	S	S	S	S	S	S	S	S	S
97	S	S	S	S	S	S	H	S	S	S	S
98	S	S	S	S	S	S	R	S	S	S	S
99	S	S	S	S	S	S	R	S	S	S	S
100	S	S	S	S	S	S	R	S	S	S	S
101	S	S	S	S	S	S	R	S	S	S	S
102	S	S	S	S	S	S	S	S	S	S	S
103	S	S	S	S	S	S	H	S	S	S	S
104	S	S	S	S	S	S	S	S	S	S	S
105	S	R	S	S	S	H/R	H	H	S	S	H
106	S	H	S	S	H	H/R	H	H	S	S	H
107	S	H	S	S	S	H/R	H	H	S	S	H
108	S	S	S	S	H	H/R	S	H	S	S	R
109	S	H	S	S	H	S	R	R	S	S	H
110	S	H	S	S	H	H/R	H	R	S	S	H
111	S	R	S	S	H	H/R	S	S	S	S	S
112	S	R	S	S	H	H/R	S	H	S	S	S
113	S	S	S	S	S	S	R	R	S	S	S
114	S	S	S	S	S	S	R	R	H	S	S
115	S	S	S	S	S	S	R	R	R	S	S
116	S	S	S	S	S	S	R	R	S	S	S
117	S	S	S	S	S	S	R	R	H	S	S
118	S	S	S	S	S	S	R	R	R	S	S
119	S	S	S	S	S	S	R	R	S	S	S
120	S	S	S	S	S	S	R	R	R	S	S
121	S	R	S	S	R	H/R	S	R	S	S	S
122	S	S	S	S	R	S	S	R	S	S	S
123	S	R	S	S	R	H/R	S	R	S	S	S
124	S	H	S	S	R	H/R	S	R	S	S	S
125	S	S	S	S	R	H/R	S	R	S	S	S
126	S	R	S	S	R	H/R	S	R	S	S	S
127	S	H	S	S	R	S	S	R	S	S	S
128	S	S	S	S	R	H/R	S	R	S	S	S
129	S	S	S	S	S	S	S	S	S	S	S
130	S	S	S	S	S	S	S	S	S	S	S
131	S	S	S	S	S	S	S	S	S	S	S
132	S	S	S	S	S	S	S	S	S	S	S
133	S	S	S	S	S	S	S	S	S	S	S

No.	Sw5	Ty1	Ty2	ty5	Tm2 a	Cf9	Ph3	Bw1 2	Ve2	J3	Mi-r ex
312	S	S	S	S	S	H/R	H	H	S	S	S
313	S	S	S	S	S	H	H/R	R	S	R	H
314	S	S	S	S	R	H/R	R	S	R	R	S
315	S	S	S	S	R	H/R	R	S	R	R	S
316	S	S	S	S	S	H/R	R	S	R	S	S
317	S	S	S	S	S	H/R	R	S	R	S	S
318	S	S	S	S	H	H/R	R	S	R	H	S
319	S	S	S	S	H	H/R	R	S	R	H	S
320	S	S	S	S	R	H/R	R	S	R	R	S
321	H	R	S	S	S	H/R	H	S	R	S	S
322	H	H	S	S	H	H/R	H	R	R	H	H
323	S	S	S	S	R	H/R	S	R	R	R	R
324	R	S	S	S	R	H/R	R	S	R	R	R
325	H	S	S	S	H	H/R	H	S	R	H	R
326	S	S	S	S	R	H/R	H	H	R	R	R
327	H	S	S	S	H	H/R	H	S	R	H	R
328	H	R	S	S	H	H/R	H	R	R	H	S
329	S	S	S	S	H	H/R	H	H	R	S	R
330	S	S	S	S	H	S	H	R	R	S	R
331	S	S	S	S	H	H/R	R	H	R	S	R
332	S	S	S	S	R	H/R	S	R	R	S	R
333	S	S	S	S	H	S	S	H	R	S	R
334	S	S	S	S	S	H/R	H	S	R	S	R
335	S	S	S	S	H	H/R	H	H	R	S	R
336	S	S	S	S	R	H/R	R	H	R	S	R
337	S	R	S	S	R	S	S	H	R	S	S
338	S	H	S	S	R	S	S	R	R	S	S
339	R	H	S	S	R	S	R	H	R	H	S
340	S	H	S	S	R	S	S	S	R	H	S
341	H	S	S	S	R	S	H	S	R	S	S
342	S	H	S	S	R	S	S	H	R	R	S
343	R	H	S	S	R	S	R	S	R	H	S
344	H	H	S	S	R	S	H	R	R	R	S
345	S	S	S	S	R	S	H	S	H	S	H
346	S	S	S	S	R	S	R	S	R	H	H
347	S	S	S	S	R	S	S	S	H	H	R
348	S	S	S	S	R	S	H	S	S	H	H
349	S	S	S	S	R	S	S	S	H	S	R
350	S	S	S	S	R	S	H	S	S	H	R
351	S	S	S	S	R	S	R	S	H	H	S
352	S	S	S	S	R	S	H	S	H	R	H
353	H	S	S	S	R	H/R	H	S	R	R	R
354	H	S	S	S	H	H/R	H	S	R	H	R
355	S	H	S	S	S	H/R	S	S	R	S	H
356	R	H	S	S	H	H/R	R	S	R	H	H
357	R	H	S	S	R	H/R	R	S	R	R	H
358	H	R	S	S	H	H/R	H	S	R	H	S
359	H	R	S	S	R	H/R	H	S	R	R	S
360	S	H	S	S	S	H/R	S	S	R	S	H
361	H	S	S	S	R	H/R	H	S	R	S	R
362	R	H	S	S	R	H/R	R	S	R	S	H
363	R	H	S	S	H	H/R	R	S	R	S	H
364	S	H	S	S	R	H/R	S	S	R	S	H
365	H	H	S	S	H	H/R	H	S	R	S	H
366	R	S	S	S	H	H/R	R	S	R	S	R
367	S	S	S	S	S	H/R	S	S	R	S	R
368	H	H	S	S	S	H/R	H	S	R	S	H
369	H	S	S	S	R	S	S	R	H	H	R
370	S	S	S	S	R	H/R	S	R	H	H	H
371	H	S	S	S	R	H/R	S	R	S	S	H
372	H	S	S	S	R	H/R	S	R	H	H	R
373	S	S	S	S	R	H/R	S	R	S	S	S

No.	Sw5	Ty1	Ty2	ty5	Tm2 a	Cf9	Ph3	Bw1 2	Ve2	J3	Mi-r ex
134	S	S	S	S	S	S	S	S	S	S	S
135	S	S	S	S	S	S	S	S	S	S	S
136	S	S	S	S	S	S	S	S	S	S	S
137	S	S	S	S	S	S	S	S	S	S	S
138	S	S	S	S	S	S	S	S	S	S	S
139	S	S	S	S	S	S	S	S	S	S	S
140	S	S	S	S	S	S	S	S	S	S	S
141	S	S	S	S	S	S	S	S	S	S	S
142	S	S	S	S	S	S	S	S	S	S	S
143	S	S	S	S	S	S	S	S	S	S	S
144	S	S	S	S	S	S	S	S	S	S	S
145	H	S	S	S	R	S	H	R	H	S	S
146	H	R	S	S	R	H/R	H	R	R	S	S
147	H	R	S	S	R	S	H	R	S	S	S
148	S	R	S	S	R	S	S	R	R	S	S
149	H	H	S	S	R	H/R	H	R	R	S	S
150	R	H	S	S	R	S	R	R	H	S	S
151	H	R	S	S	R	H/R	H	R	H	S	S
152	S	R	S	S	R	H/R	S	R	S	S	S
153	S	S	H	S	S	S	S	S	S	S	S
154	S	S	H	S	S	S	R	S	S	S	S
155	S	S	H	S	S	S	H	H	S	S	S
156	S	S	H	S	S	S	S	H	S	S	S
157	S	S	H	S	S	S	H	H	S	S	S
158	S	S	H	S	S	S	S	S	S	S	S
159	H	S	S	S	R	H/R	H	R	H	S	S
160	S	S	S	S	S	S	H	H	S	S	S
161	S	S	H	S	S	H/R	S	H	H	S	S
162	S	S	H	S	S	H/R	S	R	R	S	S
163	S	S	H	S	S	H/R	S	H	S	S	S
164	S	S	H	S	S	H/R	S	R	H	S	S
165	S	S	R	S	S	S	S	H	R	S	S
166	S	S	H	S	S	S	S	R	R	S	S
167	S	S	R	S	S	H/R	S	H	S	S	S
168	S	S	H	S	S	S	S	H	S	S	S
169	S	S	S	S	R	S	S	R	S	R	H
170	S	S	S	S	R	S	S	S	S	R	S
171	S	S	S	S	R	S	S	H	S	R	H
172	S	S	S	S	R	S	S	S	S	R	H
173	S	S	S	S	R	S	S	S	S	R	H
174	S	S	S	S	R	S	S	H	S	R	S
175	S	S	S	S	R	S	S	H	S	R	S
176	S	S	S	S	R	S	S	R	S	R	H
177	S	H	S	S	R	S	S	H	S	R	H
178	S	S	S	S	H	S	S	H	S	H	R
179	S	S	S	S	R	S	S	R	S	R	R
180	S	S	S	S	H	S	S	R	S	H	R
181	S	H	S	S	S	S	S	H	S	S	H
182	S	S	S	S	S	S	S	S	S	S	R
183	S	H	S	S	S	S	S	R	S	S	H
184	S	S	S	S	S	S	S	H	S	S	R
185	S	S	S	S	R	S	S	H	H	S	S
186	H	H	S	S	R	S	S	H	H	S	S
187	R	H	S	S	R	S	S	S	H	S	S
188	S	S	S	S	R	S	S	R	H	S	S
189	R	H	S	S	R	S	S	H	H	S	S
190	S	S	S	S	R	S	S	H	H	S	S
191	H	H	S	S	R	S	S	R	H	S	S
192	H	S	S	S	R	S	S	H	H	S	S
193	S	S	S	S	R	S	S	H	R	S	H
194	H	S	S	S	R	S	S	R	R	S	R
195	H	S	S	S	R	S	S	S	R	S	H

No.	Sw5	Ty1	Ty2	ty5	Tm2 a	Cf9	Ph3	Bw1 2	Ve2	J3	Mi-r ex
374	H	S	S	S	R	H/R	S	R	S	R	H
375	H	S	S	S	R	S	S	R	S	R	H
376	R	S	S	S	R	S	S	R	S	H	S
377	S	S	S	S	R	S	S	S	R	S	R
378	S	S	S	S	R	H/R	S	S	R	S	R
379	S	S	S	S	R	H/R	S	S	R	S	S
380	S	S	S	S	R	H/R	S	S	R	S	S
381	S	S	S	S	R	H/R	S	S	R	S	H
382	S	S	S	S	R	S	S	S	R	S	S
383	S	S	S	S	R	S	S	S	R	S	S
384	S	S	S	S	R	H/R	S	S	R	S	H
385	H	R	S	S	S	H	H/R	H	H	R	S
386	R	S	S	S	S	H	H/R	R	H	R	S
387	R	R	S	S	S	H	H/R	R	S	R	S
388	H	H	S	S	S	H	H/R	S	R	R	S
389	H	R	S	S	S	H/R	H	H	R	S	S
390	R	S	S	S	S	H	H/R	R	H	R	S
391	H	H	S	S	S	H	H/R	H	H	R	S
392	H	H	S	S	S	H	H/R	H	R	R	S
393	S	R	S	S	S	H	H/R	S	S	R	H
394	S	S	S	S	S	R	S	S	S	R	S
395	S	S	S	S	S	S	H/R	S	S	R	S
396	S	S	S	S	R	H/R	S	S	R	R	S
397	S	S	S	S	S	H	H/R	S	S	R	H
398	S	H	S	S	S	H	H/R	S	S	R	H
399	S	H	S	S	S	H	H/R	S	S	R	H
400	S	S	S	S	S	H/R	S	S	R	S	S
401	R	S	S	S	R	H/R	H	R	R	H	R
402	R	S	S	S	R	H/R	H	R	R	H	R
403	R	S	S	S	R	H/R	H	R	R	H	R
404	R	S	S	S	R	H/R	H	R	R	H	R
405	R	S	S	S	R	H/R	H	R	R	H	R
406	R	S	S	S	R	H/R	H	R	R	H	R
407	R	S	S	S	R	H/R	H	R	R	H	R
408	R	S	S	S	R	H/R	H	R	R	H	R
409	S	H	S	S	S	H	H/R	H	H	R	S
410	S	H	S	S	S	H	H/R	H	H	R	S
411	S	H	S	S	S	S	R	S	R	S	R
412	S	S	S	S	S	H	S	H	R	R	S
413	S	H	S	S	S	H	H/R	H	H	R	S
414	S	H	S	S	S	H	H/R	S	S	R	S
415	S	R	S	S	S	S	H	H	R	S	R
416	S	H	S	S	R	H/R	R	H	R	S	R
417	S	H	S	S	S	H	H/R	S	S	R	S
418	S	H	S	S	S	H	H/R	S	S	R	S
419	S	S	S	S	S	H	H/R	S	S	R	S
420	S	H	S	S	S	H	H/R	S	S	R	S
421	S	H	S	S	S	H	H/R	S	S	R	S
422	S	H	S	S	S	H	S	S	S	R	S
423	S	S	S	S	R	S	S	S	R	S	S
424	S	H	S	S	S	H/R	S	S	R	S	S
425	S	H	S	S	S	H	S	S	S	H	H
426	S	H	S	S	S	H	S	S	S	H	H
427	S	H	S	S	S	S	S	S	H	R	H
428	S	H	S	S	R	S	S	S	H	S	H
429	S	S	S	S	S	H	S	S	H	H	R
430	S	H	S	S	S	H	S	S	R	H	H
431	S	R	S	S	S	H	S	S	H	H	S
432	S	H	S	S	S	S	S	S	R	R	H
433	S	R	S	S	S	H/R	S	S	R	S	S
434	S	H	S	S	S	S	S	S	R	S	H
435	S	S	S	S	S	S	S	S	R	S	R

No.	Sw5	Ty1	Ty2	ty5	Tm2 _a	Cf9	Ph3	Bw1 ₂	Ve2	J3	Mi-r _{ex}
196	H	S	S	S	R	S	S	S	R	S	S
197	R	S	S	S	R	S	S	R	R	S	H
198	H	S	S	S	R	S	S	S	R	S	S
199	H	S	S	S	R	S	S	R	R	S	H
200	S	S	S	S	R	S	S	H	R	S	H
201	S	S	S	S	S	S	S	H	S	S	S
202	S	S	S	S	S	S	S	H	S	S	S
203	S	S	S	S	R	S	S	R	S	R	S
204	S	S	S	S	S	S	S	H	S	S	S
205	S	S	S	S	R	S	S	R	S	R	S
206	S	S	S	S	H	S	S	S	S	H	S
207	S	S	S	S	H	S	S	S	S	H	S
208	S	S	S	S	S	S	S	R	S	S	S
209	S	S	S	S	R	S	S	R	R	H	R
210	S	S	S	S	R	S	S	R	H	H	H
211	S	S	S	S	R	S	S	R	R	S	H
212	S	S	S	S	R	S	S	R	H	H	H
213	S	S	S	S	R	S	S	R	H	S	H
214	S	S	S	S	R	S	S	R	S	R	H
215	S	S	S	S	R	S	S	R	S	R	H
216	S	S	S	S	R	S	S	R	S	R	H
217	R	R	S	S	R	H/R	R	H	R	S	S
218	R	R	S	S	R	H/R	R	H	R	S	S
219	R	R	S	S	R	H/R	R	H	R	S	S
220	R	R	S	S	R	H/R	R	S	R	S	S
221	R	R	S	S	R	H/R	R	H	R	S	S
222	R	R	S	S	R	H/R	R	R	R	S	S
223	R	R	S	S	R	H/R	R	H	R	S	S
224	R	R	S	S	R	H/R	R	H	R	S	S
225	S	S	S	S	S	S	S	H	S	S	S
226	S	S	S	S	S	S	S	R	S	S	S
227	S	S	S	S	S	S	S	S	S	S	S
228	S	S	S	S	S	S	S	H	S	S	S
229	S	S	S	S	S	S	S	H	S	S	S
230	S	S	S	S	S	S	S	H	S	S	S
231	S	S	S	S	S	S	S	S	S	S	S
232	S	S	S	S	S	S	S	R	S	S	S
233	S	S	S	S	S	S	S	H	S	S	S
234	S	S	S	S	S	S	S	R	S	S	S
235	S	S	S	S	S	S	S	H	S	S	S
236	S	S	S	S	S	S	S	S	S	S	S
237	S	S	S	S	S	S	S	S	S	S	S
238	S	S	S	S	S	S	S	R	S	S	S
239	S	S	S	S	S	S	S	H	S	S	S
240	S	S	S	S	S	S	S	R	S	S	S

No.	Sw5	Ty1	Ty2	ty5	Tm2 _a	Cf9	Ph3	Bw1 ₂	Ve2	J3	Mi-r _{ex}
436	S	S	S	S	S	H/R	S	S	R	S	R
437	S	H	S	S	S	S	S	S	R	S	H
438	S	S	S	S	S	S	S	S	R	S	R
439	S	H	S	S	S	S	S	S	R	S	H
440	S	H	S	S	S	H/R	S	S	R	S	H
441	S	S	S	S	H	S	S	S	R	H	H
442	S	S	S	S	H	S	S	S	H	H	R
443	S	S	S	S	H	S	S	S	R	H	S
444	S	S	S	S	S	S	S	S	S	R	H
445	S	S	S	S	H	S	S	S	S	H	R
446	S	S	S	S	H	S	S	S	H	H	H
447	S	S	S	S	H	S	S	S	H	H	H
448	S	S	S	S	H	S	S	S	R	H	S
449	H	H	S	S	H	H/R	S	H	H	H	H
450	S	H	S	S	R	H/R	S	R	H	S	H
451	H	R	S	S	H	H/R	S	H	S	H	S
452	S	S	S	S	R	H/R	S	H	H	S	R
453	H	H	S	S	R	H/R	S	H	R	S	H
454	H	H	S	S	R	H/R	S	H	R	S	H
455	R	S	S	S	H	H/R	S	H	H	H	R
456	H	H	S	S	S	H/R	S	S	S	R	H
457	S	R	S	S	S	H/R	S	H	R	H	R
458	S	R	S	S	S	H/R	S	S	R	R	R
459	S	H	S	S	R	S	H	H	R	S	R
460	S	R	S	S	R	S	H	S	R	S	R
461	S	H	S	S	R	H/R	H	H	R	S	R
462	S	H	S	S	R	H/R	H	R	R	S	R
463	S	R	S	S	S	H/R	H	H	R	R	R
464	S	R	S	S	H	H/R	S	R	R	H	R
465	S	H	S	S	H	H/R	S	R	S	H	H
466	S	H	S	S	R	H/R	S	H	H	S	H
467	S	H	S	S	S	H/R	S	S	H	R	H
468	S	S	S	S	H	H/R	S	S	R	H	R
469	S	R	S	S	H	H/R	S	H	H	H	S
470	S	H	S	S	H	H/R	S	R	H	H	H
471	S	H	S	S	H	H/R	S	R	R	H	H
472	S	H	S	S	R	H/R	S	H	H	S	H
473	S	S	S	S	S	S	S	S	S	S	S
474	S	S	S	S	S	S	S	S	S	S	S
475	S	S	S	S	S	S	S	S	S	S	S
476	S	S	S	S	S	S	S	S	S	S	S
477	S	S	S	S	S	S	S	S	S	S	S
478	S	S	S	S	S	S	S	S	S	S	S
479	S	S	S	S	S	S	S	S	S	S	S
480	S	S	S	S	S	S	S	S	S	S	S

표 14. 부농종묘 24점의 시료에 대하여, 병 관련 3종의 마커를 이용한 서비스 결과

No.	Bw6	Bw12	J3
1	S	S	S
2	S	S	S
3	S	S	S
4	S	S	S
5	S	S	S
6	S	S	S

No.	Bw6	Bw12	J3
7	S	S	S
8	S	S	S
9	S	R	S
10	S	R	H
11	S	R	H
12	S	R	H

No.	Bw6	Bw12	J3
13	H	R	H
14	H	R	H
15	H	R	H
16	H	R	H
17	H	R	R
18	H	R	R

No.	Bw6	Bw12	J3
19	S	S	S
20	S	S	S
21	S	S	S
22	S	S	S
23	S	S	S
24	S	S	S

⑤ 농우바이오

농우바이오로부터 총 156점의 시료를 받아 3번의 서비스를 진행하였다. 처음 11점의 시료에 대해

여, 원예형질 관련 9종의 마커로 서비스를 진행하였다(표 15). 두 번째로는 97점의 시료에 대하여, 병 관련 2종의 마커로 서비스를 진행하였다(표 16). 세 번째로는 48점의 시료에 대하여, MABC 96종의 마커로 서비스를 진행하였다(표 17). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 15, 16, 17).

표 15. 농우바이오 11점의 시료에 대하여, 원예형질 관련 9종의 마커를 이용한 서비스 결과

No.	psy1-1p1	propsy1-1 77	propsy1-7 45	propsy1-2 18	propsy1-1 48	propsy1-5 71	psy1 cds	psy1-e1-del	BproSNP- 77
1	yellow color	G	C	C	C	G	N	paint band	N
2	yellow color	G	C	C	C	G	N	paint band	N
3	yellow color	G	C	C	C	G	N	paint band	N
4	yellow color	G	C	C	C	G	N	paint band	N
5	yellow color	G	C	C	C	G	N	paint band	N
6	yellow color	G	C	C	C	G	N	paint band	N
7	yellow color	G	C	C	C	G	N	paint band	N
8	yellow color	G	C	C	C	G	N	paint band	N
9	yellow color	G	C	C	C	G	N	paint band	N
10	yellow color	G	C	C	C	G	N	paint band	N
11	yellow color	G	C	C	C	G	N	paint band	N

표 16. 농우바이오 97점의 시료에 대하여, 병 관련 2종의 마커를 이용한 서비스 결과

No.	Bw06	Bw12	No.	Bw06	Bw12	No.	Bw06	Bw12	No.	Bw06	Bw12
1	S	R	26	S	R	51	S	R	76	R	H
2	S	R	27	S	R	52	S	R	77	R	H
3	R	R	28	S	R	53	S	R	78	R	R
4	S	R	29	S	R	54	S	S	79	S	R
5	S	R	30	S	R	55	S	R	80	S	R
6	S	R	31	S	R	56	S	R	81	S	R
7	S	R	32	S	R	57	S	R	82	S	R
8	S	R	33	S	S	58	S	S	83	S	R
9	S	R	34	S	R	59	S	S	84	R	R
10	S	R	35	S	S	60	H	S	85	S	S
11	S	R	36	S	S	61	S	R	86	R	R
12	S	R	37	S	S	62	R	R	87	S	R
13	S	R	38	S	S	63	R	R	88	S	R
14	S	S	39	S	S	64	S	R	89	S	R
15	S	R	40	S	R	65	S	R	90	S	R
16	S	R	41	S	R	66	R	R	91	S	R
17	S	R	42	S	R	67	R	R	92	S	R
18	S	R	43	S	R	68	R	R	93	S	S
19	S	R	44	S	R	69	R	R	94	S	R
20	S	R	45	S	R	70	R	R	95	S	S
21	S	R	46	S	R	71	R	R	96	H	R
22	S	R	47	S	R	72	R	R	97	S	R
23	S	R	48	S	R	73	R	R			
24	S	R	49	S	R	74	S	R			
25	S	R	50	S	R	75	H	R			

표 17. 농우바이오 48점의 시료에 대하여, MABC 96종의 마커를 이용한 서비스 결과

1st set					2nd set				
BC1F1	BC2F1				BC1F1	BC2F1			
유효어세이: 137/384	유효어세이: 72/96				유효어세이: 147/384	유효어세이: 79/96			
치환율	샘플명	반복친	치환율	평균	치환율	샘플명	반복친동	치환율	평균

(%)		동일 SNP	(%)	치환율 (%)	(%)		일 SNP	(%)	치환율 (%)
	2381E	공여친				2381E	공여친		
	2382C	반복친				no sampleD	반복친		
32.8	2387-01CECxC	62	86.1	82.2	29.3	2402-01DEDxD	57	72.2	68.4
	2387-02CECxC	61	84.7			2402-02DEDxD	52	65.8	
	2387-03CECxC	59	81.9			2402-03DEDxD	59	74.7	
	2387-05CECxC	-	-			2402-04DEDxD	56	70.9	
	2387-06CECxC	54	75			2402-05DEDxD	46	58.2	
	2387-07CECxC	60	83.3			2402-06DEDxD	-	-	
68.6	2392-01CECxC	67	93.1	95.0	31.3	2404-01DEDxD	53	67.1	59.5
	2392-02CECxC	66	91.7			2404-02DEDxD	41	51.9	
	2392-03CECxC	70	97.2			2404-03DEDxD	50	63.3	
	2392-04CECxC	72	100.0			2404-04DEDxD	46	58.2	
	2392-05CECxC	67	93.1			2404-07DEDxD	45	57.0	
	2392-06CECxC	-	-		2404-08DEDxD	-	-		
69.3	2397-01CECxC	-	-	96.5	59.9	2409-03DEDxD	59	74.7	81.6
	2397-02CECxC	-	-			2409-05DEDxD	68	86.1	
	2397-03CECxC	-	-			2409-10DEDxD	66	83.5	
	2397-04CECxC	-	-			2409-26DEDxD	65	82.3	
	2397-05CECxC	69	95.8						
	2397-06CECxC	70	97.2						
34.3	2398-01CECxC	-	-	77.8	57.1	2415-02DEDxD	69	87.3	81.0
	2398-02CECxC	-	-			2415-03DEDxD	59	74.7	
	2398-03CECxC	-	-			2415-08DEDxD	70	88.6	
	2398-04CECxC	56	77.8			2415-16DEDxD	62	78.5	
					2415-30DEDxD	54	68.4		
					2415-39DEDxD	70	88.6		

⑥ 대연육종연구소

대연육종연구소로부터 총 889점의 시료를 받아 2번의 서비스를 진행하였다. 처음 457점의 시료에 대하여, 병 관련 5종의 마커로 서비스를 진행하였다(표 18). 두 번째로는 432점의 시료에 대하여, 병 관련 6종의 마커로 서비스를 진행하였다(표 19). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 18, 19).

표 18. 대연육종연구소 457점의 시료에 대하여, 병 관련 5종의 마커를 이용한 서비스 결과

No.	I2	I3	J3	Mi	Bw12
1	R	RR	SS	SS	SS
2	R	RR	SS	SS	SS
3	R	RR	RS	SS	SS
4	R	RR	RS	SS	SS
5	R	RR	RS	SS	SS
6	R	RR	RS	SS	SS
7	R	RR	RS	SS	SS
8	R	RR	RS	SS	SS
9	R	RR	SS	SS	SS
10	R	RR	RR	SS	SS
11	R	RR	SS	RR	SS
12	R	RR	RS	RR	SS
13	R	RR	RR	RR	SS
14	R	RR	SS	RR	SS
15	R	RR	RS	RR	SS
16	R	RR	RS	RR	SS
17	R	RR	RR	RR	SS
18	R	RR	RR	RR	SS
19	R	RR	RR	RR	SS
20	R	RR	RR	RR	SS
21	R	RR	RR	RR	SS
22	R	RR	SS	RR	SS

No.	I2	I3	J3	Mi	Bw12
230	SS	SS	RR	RR	SS
231	SS	SS	RR	RR	SS
232	SS	SS	RR	RR	SS
233	SS	SS	RR	RR	SS
234	SS	SS	RR	RR	SS
235	SS	SS	RR	RR	SS
236	SS	SS	RR	RR	SS
237	SS	SS	RR	RR	SS
238	SS	SS	RR	RR	SS
239	SS	SS	RR	RR	SS
240	R	SS	RR	RR	SS
241	SS	SS	RR	RR	SS
242	SS	SS	RR	RR	SS
243	SS	SS	RR	RR	SS
244	SS	SS	RR	RR	SS
245	SS	SS	RR	RR	SS
246	SS	SS	RR	RR	SS
247	SS	SS	RR	RR	SS
248	SS	SS	RR	RR	SS
249	SS	SS	RR	RR	SS
250	SS	SS	RR	RR	SS
251	SS	SS	RR	RR	SS

No.	I2	I3	J3	Mi	Bw12
23	R	RR	SS	RR	SS
24	R	RR	SS	RR	SS
25	R	RR	RS	RR	SS
26	R	RR	RR	RR	SS
27	R	RR	RR	RR	SS
28	R	RR	SS	RR	SS
29	R	RR	SS	RR	SS
30	R	RR	SS	RR	SS
31	SS	-	-	-	-
32	R	RR	RR	RR	RR
33	R	RR	RR	RR	RR
34	R	RR	RR	RR	RR
35	R	RR	RR	RR	RR
36	R	RR	RR	RR	RR
37	R	RR	RR	RR	RR
38	R	RR	RR	RR	RR
39	R	RR	SS	SS	SS
40	R	RR	RR	SS	SS
41	R	RR	SS	SS	SS
42	R	RR	RS	SS	SS
43	R	RR	RR	SS	SS
44	R	RR	RS	SS	SS
45	R	RR	RS	SS	SS
46	R	RR	RS	SS	SS
47	R	RR	RS	SS	SS
48	R	RR	RR	SS	SS
49	R	RR	RR	SS	SS
50	R	RR	RR	SS	SS
51	R	RR	RS	RR	SS
52	R	RR	RS	RR	SS
53	R	RR	RR	RR	SS
54	R	RR	RR	RR	SS
55	R	RR	SS	RR	SS
56	R	RR	RS	RR	SS
57	R	RR	SS	RR	SS
58	R	RR	RR	RR	SS
59	R	RR	RR	RR	SS
60	R	RR	RR	RR	SS
61	R	RR	RS	RR	SS
62	R	RR	RR	RR	SS
63	R	RR	RR	RR	SS
64	R	RR	RR	RR	SS
65	R	RR	RR	RR	SS
66	R	RR	RR	RR	SS
67	R	RR	RR	RR	SS
68	R	RR	RR	RR	SS
69	R	RR	RR	RR	SS
70	R	RR	RR	RR	SS
71	R	RR	RR	RR	SS
72	R	RR	RR	RR	SS
73	R	RR	RR	RR	SS
74	R	RR	RR	RR	SS
75	R	RR	RR	RR	SS
76	R	RR	RR	RR	SS
77	R	RR	RR	RR	SS
78	R	RR	RR	RR	SS
79	R	RR	RR	RR	SS
80	R	RR	RR	RR	SS
81	R	RR	RR	RR	SS
82	R	RR	RR	RR	SS
83	R	RR	SS	RR	SS
84	R	RR	SS	RR	SS

No.	I2	I3	J3	Mi	Bw12
252	SS	SS	RR	RR	SS
253	R	SS	RR	RR	SS
254	SS	SS	RR	RR	SS
255	SS	SS	RR	RR	SS
256	R	SS	RR	RR	SS
257	R	SS	RR	RR	SS
258	SS	SS	RR	RR	SS
259	SS	SS	RR	RR	SS
260	SS	SS	RR	RR	SS
261	SS	SS	RR	RR	SS
262	SS	SS	RR	RR	SS
263	SS	SS	RR	RR	SS
264	R	SS	RR	RR	SS
265	SS	SS	RR	RR	SS
266	SS	SS	RR	RR	SS
267	SS	SS	RR	RR	SS
268	SS	SS	RR	RR	SS
269	SS	SS	RR	RR	SS
270	SS	SS	RR	RR	SS
271	SS	SS	RR	RR	SS
272	R	SS	RR	RR	SS
273	SS	SS	RR	RR	SS
274	SS	SS	RR	RR	SS
275	SS	SS	RR	RR	SS
276	SS	SS	RR	RR	SS
277	SS	SS	RR	RR	SS
278	SS	SS	RR	-	SS
279	SS	SS	RR	RR	SS
280	R	SS	RR	RR	SS
281	R	SS	RR	RR	SS
282	SS	SS	RR	RR	SS
283	SS	SS	RR	RR	SS
284	SS	SS	RR	RR	SS
285	SS	SS	RR	RR	SS
286	R	SS	RR	RR	SS
287	SS	SS	RR	RR	SS
288	R	SS	RR	RR	SS
289	SS	SS	RR	RR	SS
290	SS	SS	RR	RR	SS
291	SS	SS	RR	RR	SS
292	SS	SS	RR	RR	SS
293	SS	SS	RR	RR	SS
294	SS	SS	RR	RR	SS
295	SS	SS	RR	RR	SS
296	R	SS	RR	RR	SS
297	SS	SS	RR	RR	SS
298	SS	SS	RR	RR	SS
299	SS	SS	RR	RR	SS
300	SS	SS	RR	RR	SS
301	SS	SS	RR	RR	SS
302	SS	SS	RR	RR	SS
303	SS	SS	RR	RR	SS
304	R	SS	RR	RR	SS
305	SS	SS	RR	RR	SS
306	SS	SS	RR	RR	SS
307	SS	SS	RR	RR	SS
308	SS	SS	RR	RR	SS
309	SS	SS	RR	RR	SS
310	SS	SS	RR	RR	SS
311	SS	SS	RR	RR	SS
312	R	SS	RR	RR	SS
313	SS	SS	RR	RR	SS

No.	I2	I3	J3	Mi	Bw12
85	R	RR	SS	RR	SS
86	R	RR	SS	RR	SS
87	R	RR	SS	RR	SS
88	R	RR	SS	RR	SS
89	R	RR	SS	RR	SS
90	R	RR	SS	RR	SS
91	R	RR	SS	RR	SS
92	R	RR	SS	RR	SS
93	R	RR	SS	RR	SS
94	R	RR	SS	RR	SS
95	R	RR	SS	RR	SS
96	R	RR	SS	RR	SS
97	R	RR	RS	RR	SS
98	R	RR	SS	RR	SS
99	R	RR	SS	RR	SS
100	R	RR	RS	RR	SS
101	R	RR	RS	RR	SS
102	R	RR	RS	RR	SS
103	R	RR	RS	RR	SS
104	R	RR	RS	RR	SS
105	R	RR	RS	RR	SS
106	R	RR	RS	RR	SS
107	R	RR	RR	RR	SS
108	R	RR	RR	RR	SS
109	R	RR	RR	RR	SS
110	R	RR	RR	RR	SS
111	R	RR	RR	RR	SS
112	R	RR	RR	RR	SS
113	R	RR	SS	RR	SS
114	R	RR	SS	RR	SS
115	R	RR	SS	RR	SS
116	R	RR	SS	RR	SS
117	R	RR	SS	RR	SS
118	R	RR	SS	RR	SS
119	R	RR	SS	RR	SS
120	R	RR	SS	RR	SS
121	R	RR	SS	RR	SS
122	R	RR	SS	RR	SS
123	R	RR	SS	RR	SS
124	R	RR	SS	RR	SS
125	R	RR	SS	RR	SS
126	R	RR	RS	RR	SS
127	R	RR	RS	RR	SS
128	R	RR	RS	RR	SS
129	R	RR	RS	RR	SS
130	R	RR	RS	RR	SS
131	R	RR	SS	RR	SS
132	R	RR	RS	RR	SS
133	R	RR	RS	RR	SS
134	R	RR	RS	RR	SS
135	R	RR	RS	RR	SS
136	R	RR	RS	RR	SS
137	R	RR	SS	RR	SS
138	R	RR	RS	RR	SS
139	R	RR	RS	RR	SS
140	R	RR	RS	RR	SS
141	R	RR	RR	RR	SS
142	R	RR	RR	RR	SS
143	R	RR	RR	RR	SS
144	R	RR	RR	RR	SS
145	R	RR	RR	RR	SS
146	R	RR	SS	RR	SS

No.	I2	I3	J3	Mi	Bw12
314	SS	SS	RR	RR	SS
315	SS	SS	RR	RR	SS
316	SS	SS	RR	RR	SS
317	SS	SS	RR	RR	SS
318	SS	SS	RR	RR	SS
319	SS	SS	RR	RR	SS
320	SS	SS	RR	RR	SS
321	SS	SS	RR	RR	SS
322	SS	SS	RR	RR	SS
323	SS	SS	RR	RR	SS
324	SS	SS	RR	RR	SS
325	SS	SS	RR	RR	SS
326	SS	SS	RR	RR	SS
327	SS	SS	RR	RR	SS
328	SS	SS	RR	RR	SS
329	SS	SS	RR	RR	SS
330	SS	SS	RR	RR	SS
331	SS	SS	RR	RR	SS
332	SS	SS	RR	RR	SS
333	SS	SS	RR	RR	SS
334	SS	SS	RR	RR	SS
335	SS	SS	RR	RR	SS
336	SS	SS	RR	RR	SS
337	SS	SS	RR	RR	SS
338	SS	SS	RR	RR	SS
339	SS	SS	RR	RR	SS
340	SS	SS	RR	RR	SS
341	SS	SS	RR	RR	SS
342	SS	SS	RR	RR	SS
343	SS	SS	RR	RR	SS
344	SS	RR	RR	RR	SS
345	SS	SS	RR	RR	SS
346	SS	RR	RR	RR	SS
347	SS	RS	RR	RR	SS
348	SS	RS	RR	RR	SS
349	SS	SS	RR	RR	SS
350	SS	SS	RR	RR	SS
351	SS	RS	RR	RR	SS
352	SS	RS	RR	RR	SS
353	SS	RS	RR	RR	SS
354	SS	RS	RR	RR	SS
355	SS	RS	RR	RR	SS
356	SS	RR	RR	RR	SS
357	SS	RS	RR	RR	SS
358	SS	RS	RR	RR	SS
359	SS	RR	RR	RR	SS
360	SS	SS	RR	RR	SS
361	SS	RS	RR	RR	SS
362	SS	RS	RR	RR	SS
363	SS	RR	RR	RR	SS
364	SS	RS	RR	RR	SS
365	SS	RS	RR	RR	SS
366	SS	RR	RR	RR	SS
367	SS	SS	RR	RR	SS
368	SS	SS	RR	RR	SS
369	SS	SS	RR	RR	SS
370	SS	SS	RR	RR	SS
371	SS	SS	RR	RR	SS
372	SS	SS	RR	RR	SS
373	SS	SS	RR	RR	SS
374	SS	SS	RR	RR	SS
375	SS	SS	RR	RR	SS

No.	I2	I3	J3	Mi	Bw12
147	R	RR	SS	RR	SS
148	R	RR	SS	RR	SS
149	R	RR	SS	RR	SS
150	R	RR	SS	RR	SS
151	R	RR	SS	RR	SS
152	R	RR	SS	RR	SS
153	R	RR	SS	RR	SS
154	R	RR	SS	RR	SS
155	R	RR	SS	RR	SS
156	R	RR	SS	RR	SS
157	R	RR	SS	RR	SS
158	R	RR	SS	RR	SS
159	R	RR	SS	RR	SS
160	R	RR	SS	RR	SS
161	R	RR	SS	RR	SS
162	R	RR	SS	RR	SS
163	R	RR	SS	RR	SS
164	R	RR	SS	RR	SS
165	R	RR	SS	RR	SS
166	R	RR	SS	RR	SS
167	R	RR	SS	RR	SS
168	R	RR	SS	RR	SS
169	R	RR	SS	RR	SS
170	R	RR	SS	RR	SS
171	R	RR	SS	RR	SS
172	R	RR	SS	RR	SS
173	R	RR	SS	RR	SS
174	R	RR	SS	RR	SS
175	R	RR	SS	RR	SS
176	R	RR	SS	RR	SS
177	R	RR	SS	RR	SS
178	R	RR	SS	RR	SS
179	R	RR	SS	RR	SS
180	R	RR	SS	RR	SS
181	R	RR	SS	RR	SS
182	R	RR	RS	RR	SS
183	R	RR	RS	RR	SS
184	R	RR	RS	RR	SS
185	R	RR	SS	RR	SS
186	R	RR	RS	RR	SS
187	R	RR	SS	RR	SS
188	R	RR	RS	RR	SS
189	R	RR	SS	RR	SS
190	R	RR	RS	RR	SS
191	R	RR	RR	RR	SS
192	R	RS	RR	RR	SS
193	SS	SS	RR	RR	SS
194	R	RR	RR	RR	SS
195	SS	RS	RR	RR	SS
196	R	RS	RR	RR	SS
197	R	RR	RR	RR	SS
198	R	SS	RR	RR	SS
199	R	SS	RR	RR	SS
200	R	RS	RR	RR	SS
201	R	RR	RR	RR	SS
202	R	RS	RR	RR	SS
203	R	RS	RR	RR	SS
204	R	SS	RR	RR	SS
205	R	-	RR	RR	SS
206	R	SS	RR	RR	SS
207	R	RR	RR	RR	SS
208	R	RS	RR	RR	SS

No.	I2	I3	J3	Mi	Bw12
376	SS	SS	RR	RR	SS
377	SS	SS	RR	RR	SS
378	SS	SS	RR	RR	SS
379	SS	SS	RR	RR	SS
380	SS	SS	RR	RR	SS
381	SS	SS	RR	RR	SS
382	SS	SS	RR	RR	SS
383	SS	SS	RR	RR	SS
384	R	RR	RR	RR	RR
385	R	RR	RR	RR	RR
386	R	RR	RR	RR	RR
387	R	RR	RR	RR	RR
388	R	RR	RR	RR	RR
389	R	RR	RR	RR	RR
390	R	RR	RR	RR	RR
391	R	RR	RR	RR	RR
392	R	RR	RR	RR	RR
393	R	RR	RR	RR	RR
394	R	RR	RR	RR	RR
395	R	RR	RR	RR	RR
396	R	RR	RR	RR	RR
397	R	RR	RR	RR	RR
398	R	RR	RR	RR	RR
399	R	RR	RR	RR	RR
400	R	RR	RR	RR	RR
401	R	RR	RR	RR	RR
402	R	RR	RR	RR	RR
403	R	RR	RR	RR	RR
404	R	RR	RR	RR	RR
405	R	RR	RR	RR	RR
406	R	RR	RR	RR	RR
407	R	RR	RR	RR	RR
408	R	RR	RR	RR	RR
409	R	RR	RR	RR	RR
410	R	RR	RR	RR	RR
411	R	RR	RR	RR	RR
412	R	RR	RR	RR	RR
413	R	RR	RR	RR	RR
414	R	RR	RR	RR	RR
415	R	RR	RR	RR	RR
416	R	RR	RR	RR	RR
417	R	RR	RR	RR	RR
418	R	RR	RR	RR	RR
419	R	RR	RR	RR	RR
420	R	RR	RR	RR	RR
421	R	RR	RR	RR	RR
422	R	RR	RR	RR	RR
423	R	RR	RR	RR	RR
424	R	RR	RR	RR	RR
425	R	RR	RR	RR	RR
426	R	RR	RR	RR	RR
427	R	RR	RR	RR	RR
428	R	RR	RR	RR	RR
429	R	RR	RR	RR	RR
430	R	RR	RR	RR	RR
431	R	RR	RR	RR	RR
432	R	RR	RR	RR	RR
433	R	RR	RR	RR	RR
434	R	RR	RR	RR	RR
435	R	RR	RR	RR	RR
436	R	RR	RR	RR	RR
437	R	RR	RR	RR	RR

No.	I2	I3	J3	Mi	Bw12
209	SS	SS	RR	RR	SS
210	SS	SS	RR	RR	SS
211	SS	SS	RR	RR	SS
212	SS	SS	RR	RR	SS
213	SS	SS	RR	RR	SS
214	SS	SS	RR	RR	SS
215	SS	SS	RR	RR	SS
216	SS	SS	RR	RR	SS
217	SS	SS	RR	RR	SS
218	SS	SS	RR	RR	SS
219	SS	SS	RR	RR	SS
220	SS	SS	RR	RR	SS
221	SS	SS	RR	RR	SS
222	SS	SS	RR	RR	SS
223	SS	SS	RR	RR	SS
224	SS	SS	RR	RR	SS
225	R	SS	RR	RR	SS
226	SS	SS	RR	RR	SS
227	SS	SS	RR	RR	SS
228	SS	SS	RR	RR	SS
229	SS	SS	RR	RR	SS

No.	I2	I3	J3	Mi	Bw12
438	R	RR	RR	RR	RR
439	R	RR	RR	RR	RR
440	R	RR	RR	RR	RR
441	R	RR	RR	RR	RR
442	R	RR	RR	RR	RR
443	R	RR	RR	RR	RR
444	R	RR	RR	RR	RR
445	R	RR	RR	RR	RR
446	R	RR	RR	RR	RR
447	R	RR	RR	RR	RR
448	R	RR	RR	RR	RR
449	SS	SS	RS	RR	RS
450	SS	SS	RS	RR	RS
451	SS	SS	RS	RR	RS
452	R	SS	RR	-	-
453	R	RS	RS	RS	SS
454	R	RS	RS	RS	SS
455	R	RS	RS	RS	SS
456	R	RS	RS	RS	SS
457	R	RS	RS	RS	SS

표 19. 대연육종연구소 432점의 시료에 대하여, 병 관련 6종의 마커를 이용한 서비스 결과

No.	Mi- <i>rex</i>	I2	I3	J3	Bw6	Bw12
1	R	R/H	R	S	S	R
2	R	R/H	R	S	S	R
3	R	R/H	R	S	S	R
4	R	R/H	R	S	S	R
5	R	R/H	R	S	S	R
6	R	R/H	R	R	R	R
7	R	R/H	R	R	R	R
8	R	R/H	R	R	R	R
9	R	R/H	R	R	R	R
10	R	R/H	R	R	R	R
11	R	R/H	R	R	R	R
12	R	R/H	R	R	R	R
13	R	R/H	R	R	R	R
14	R	R/H	R	R	R	R
15	R	R/H	R	R	R	R
16	R	R/H	R	R	R	R
17	R	R/H	R	R	R	R
18	R	R/H	R	H	S	R
19	R	R/H	R	S	S	R
20	R	R/H	R	H	S	R
21	R	R/H	R	H	S	R
22	R	R/H	R	H	S	R
23	R	R/H	R	H	S	R
24	R	R/H	R	S	S	R
25	R	R/H	R	R	S	R
26	R	R/H	R	S	S	R
27	R	R/H	R	H	S	R
28	R	R/H	R	S	S	R
29	R	R/H	R	S	S	R
30	R	R/H	R	R	S	R
31	R	R/H	R	R	S	R
32	R	R/H	R	R	S	R
33	R	R/H	R	R	S	R
34	R	R/H	R	R	S	R
35	R	R/H	R	R	S	R

No.	Mi- <i>rex</i>	I2	I3	J3	Bw6	Bw12
217	R	R/H	R	R	S	R
218	R	R/H	R	R	S	R
219	R	R/H	R	R	S	R
220	R	R/H	R	R	S	R
221	R	R/H	R	R	S	R
222	R	R/H	R	R	S	R
223	R	R/H	R	R	S	R
224	R	R/H	R	R	S	R
225	R	R/H	R	R	S	R
226	R	R/H	R	R	S	R
227	R	R/H	R	R	S	R
228	R	R/H	R	R	S	R
229	R	R/H	R	S	S	R
230	R	R/H	R	S	S	R
231	R	R/H	R	S	S	R
232	R	R/H	R	S	S	R
233	R	R/H	R	S	S	R
234	R	R/H	R	S	S	R
235	R	R/H	R	S	S	R
236	R	R/H	R	S	S	R
237	R	R/H	R	S	S	R
238	R	R/H	R	S	S	R
239	R	R/H	R	S	S	R
240	R	R/H	R	S	S	R
241	R	R/H	R	S	S	R
242	R	R/H	R	S	S	R
243	R	R/H	R	S	S	R
244	R	R/H	R	S	S	R
245	R	R/H	R	S	S	R
246	R	R/H	R	S	S	R
247	R	R/H	R	S	S	R
248	R	R/H	R	S	S	R
249	R	R/H	R	S	S	R
250	R	R/H	R	S	S	R
251	R	R/H	R	S	S	R

No.	Mi-rex	I2	I3	J3	Bw6	Bw12
36	R	R/H	R	R	S	R
37	R	R/H	R	R	S	R
38	R	R/H	R	R	S	R
39	R	R/H	R	R	S	R
40	R	R/H	R	R	S	R
41	R	R/H	R	R	S	R
42	R	R/H	R	R	S	R
43	R	R/H	R	R	S	R
44	R	R/H	R	R	S	R
45	R	R/H	R	R	S	R
46	R	R/H	R	R	S	R
47	R	R/H	R	R	S	R
48	R	R/H	R	R	S	R
49	R	R/H	R	R	S	R
50	R	R/H	R	R	S	R
51	R	R/H	R	R	S	R
52	R	R/H	R	R	S	R
53	R	R/H	R	R	S	R
54	R	R/H	R	R	S	R
55	R	R/H	R	R	S	R
56	R	R/H	R	R	S	R
57	R	R/H	R	R	S	R
58	R	R/H	R	R	S	R
59	R	R/H	R	R	S	R
60	R	R/H	R	R	S	R
61	R	R/H	R	R	S	R
62	R	R/H	R	R	S	R
63	R	R/H	R	R	S	R
64	R	R/H	R	R	S	R
65	R	R/H	R	R	S	R
66	R	R/H	R	R	S	R
67	R	R/H	R	R	S	R
68	R	R/H	R	R	S	R
69	R	R/H	R	R	S	R
70	R	R/H	R	R	S	R
71	R	R/H	R	R	S	R
72	R	R/H	R	R	S	R
73	R	R/H	R	R	S	R
74	R	R/H	R	R	S	R
75	R	R/H	R	R	S	R
76	R	R/H	R	R	S	R
77	R	R/H	R	R	S	R
78	R	R/H	R	R	S	R
79	R	R/H	R	R	S	R
80	N/A	R/H	R	R	S	R
81	R	R/H	R	R	S	R
82	R	R/H	R	R	S	R
83	R	R/H	R	R	S	R
84	R	R/H	R	R	S	R
85	R	R/H	R	R	S	R
86	R	R/H	R	R	S	R
87	R	R/H	R	R	S	R
88	R	R/H	R	R	S	R
89	R	R/H	R	R	S	R
90	R	R/H	R	R	S	R
91	R	R/H	R	R	S	R
92	R	R/H	R	R	S	R
93	R	R/H	R	R	S	R
94	R	R/H	R	R	S	R
95	R	R/H	R	R	S	R
96	R	R/H	R	R	S	R
97	R	R/H	R	R	S	R
98	R	R/H	R	R	S	R

No.	Mi-rex	I2	I3	J3	Bw6	Bw12
252	R	R/H	R	S	S	R
253	R	R/H	R	S	S	R
254	R	R/H	R	S	S	R
255	R	R/H	R	S	S	R
256	R	R/H	R	S	S	R
257	R	R/H	R	S	S	R
258	R	R/H	R	S	S	R
259	R	R/H	R	S	S	R
260	R	R/H	R	S	S	R
261	R	R/H	R	S	S	R
262	R	R/H	R	S	S	R
263	R	S	S	R	R	R
264	R	S	S	R	R	R
265	R	S	S	R	R	R
266	R	S	S	R	R	R
267	R	S	S	R	R	R
268	R	S	S	R	R	R
269	R	S	S	R	R	R
270	R	S	S	R	R	R
271	R	S	S	R	R	R
272	R	S	S	R	R	R
273	R	S	S	R	R	R
274	R	S	S	R	R	R
275	R	S	S	R	R	R
276	R	S	S	R	R	R
277	R	S	S	R	R	R
278	R	S	S	R	R	R
279	R	S	S	R	R	R
280	R	S	S	R	R	R
281	R	S	S	R	R	R
282	R	S	S	R	R	R
283	R	S	S	R	R	R
284	R	S	S	R	R	R
285	R	S	S	R	R	R
286	R	S	S	R	R	R
287	R	S	S	R	R	R
288	R	S	S	R	R	R
289	R	S	S	R	R	R
290	R	S	S	R	R	R
291	R	S	S	R	R	R
292	R	S	S	R	R	R
293	N/A	N/A	N/A	N/A	N/A	N/A
294	R	S	S	R	R	R
295	R	S	S	R	R	R
296	R	S	S	R	R	R
297	R	S	S	R	R	R
298	R	S	S	R	R	R
299	R	S	S	R	R	R
300	R	S	S	R	R	R
301	R	S	S	R	R	R
302	R	S	S	R	R	R
303	R	S	S	R	R	R
304	R	S	S	R	R	R
305	R	S	H	R	R	R
306	R	S	H	R	R	R
307	R	S	H	R	R	R
308	R	S	H	R	R	R
309	R	S	S	R	R	R
310	R	S	S	R	R	R
311	R	S	H	R	R	R
312	R	S	S	R	R	R
313	R	S	S	R	R	R
314	R	S	H	R	R	R

No.	Mi-rex	I2	I3	J3	Bw6	Bw12
99	R	R/H	R	R	S	R
100	R	R/H	R	R	S	R
101	R	R/H	R	R	S	R
102	R	R/H	R	R	S	R
103	R	R/H	R	R	S	R
104	R	R/H	R	R	S	R
105	R	R/H	R	R	S	R
106	R	R/H	R	R	S	R
107	R	R/H	R	R	S	R
108	N/A	R/H	R	R	S	R
109	R	R/H	R	R	S	R
110	R	R/H	R	R	S	R
111	R	R/H	R	R	S	R
112	R	R/H	R	R	S	R
113	R	R/H	R	R	S	R
114	R	R/H	R	R	S	R
115	N/A	N/A	N/A	N/A	N/A	N/A
116	R	R/H	R	R	S	R
117	R	R/H	R	R	S	R
118	R	R/H	R	R	S	R
119	R	R/H	R	R	S	R
120	R	R/H	R	R	S	R
121	R	R/H	R	R	S	R
122	R	R/H	R	R	S	R
123	R	R/H	R	R	S	R
124	R	R/H	R	R	S	R
125	R	R/H	R	R	S	R
126	R	R/H	R	R	S	R
127	R	R/H	R	R	S	R
128	R	R/H	R	R	S	R
129	R	R/H	R	R	S	R
130	R	R/H	R	R	S	R
131	R	R/H	R	R	S	R
132	R	R/H	R	R	S	R
133	R	R/H	R	R	S	R
134	R	R/H	R	R	S	R
135	R	R/H	R	R	S	R
136	R	R/H	R	R	S	R
137	R	R/H	R	R	S	R
138	R	R/H	R	R	S	R
139	R	R/H	R	R	S	R
140	R	R/H	R	R	S	R
141	R	R/H	R	R	S	R
142	R	R/H	R	R	S	R
143	R	R/H	R	R	S	R
144	R	R/H	R	R	S	R
145	R	R/H	R	R	S	R
146	R	R/H	R	R	S	R
147	R	R/H	R	R	S	R
148	R	R/H	R	R	S	R
149	R	R/H	R	R	S	R
150	R	R/H	R	R	S	R
151	R	R/H	R	R	S	R
152	R	R/H	R	R	S	R
153	R	R/H	R	R	S	R
154	R	R/H	R	R	S	R
155	R	R/H	R	R	S	R
156	R	R/H	R	R	S	R
157	N/A	R/H	R	R	S	R
158	R	R/H	R	R	S	R
159	R	R/H	R	R	S	R
160	R	R/H	R	R	S	R
161	R	R/H	R	R	S	R

No.	Mi-rex	I2	I3	J3	Bw6	Bw12
315	R	S	H	R	R	R
316	R	S	R	R	R	R
317	R	S	H	R	R	R
318	R	S	S	R	R	R
319	R	S	R	R	R	R
320	R	S	S	R	R	R
321	R	S	H	R	R	R
322	R	S	S	R	R	R
323	R	S	R	R	R	R
324	R	S	S	R	R	R
325	R	S	R	R	R	R
326	R	S	S	R	R	R
327	R	S	S	R	R	R
328	R	S	S	R	R	R
329	R	S	S	R	R	R
330	R	S	S	R	R	R
331	R	S	S	R	R	R
332	R	S	S	R	R	R
333	R	S	S	R	R	R
334	R	S	S	R	R	R
335	R	R/H	R	R	R	R
336	R	R/H	R	R	R	R
337	R	R/H	R	R	R	R
338	R	R/H	R	R	R	R
339	R	R/H	R	R	R	R
340	R	R/H	R	R	R	R
341	N/A	N/A	N/A	N/A	N/A	N/A
342	R	R/H	R	R	R	R
343	R	R/H	R	R	R	R
344	R	R/H	R	R	R	R
345	R	R/H	R	R	R	R
346	R	R/H	R	R	R	R
347	R	R/H	R	R	R	R
348	R	R/H	R	R	R	R
349	R	R/H	R	R	R	R
350	R	R/H	R	R	R	R
351	R	R/H	R	R	R	R
352	R	R/H	R	R	R	R
353	R	R/H	R	R	R	R
354	R	R/H	R	R	R	R
355	R	R/H	R	R	R	R
356	R	R/H	R	R	R	R
357	R	R/H	R	R	R	R
358	R	R/H	R	R	R	R
359	R	R/H	R	R	R	R
360	R	R/H	R	R	R	R
361	R	R/H	R	R	R	R
362	R	R/H	R	R	R	R
363	R	R/H	R	R	R	R
364	R	R/H	R	R	R	R
365	R	R/H	R	R	R	R
366	R	R/H	R	R	R	R
367	R	R/H	R	R	R	R
368	R	R/H	R	R	R	R
369	R	R/H	R	R	R	R
370	R	R/H	R	R	R	R
371	R	R/H	R	R	R	R
372	R	R/H	R	R	R	R
373	R	R/H	R	R	R	R
374	R	R/H	R	R	R	R
375	R	R/H	R	R	R	R
376	R	R/H	R	R	R	R
377	R	R/H	R	R	R	R

No.	Mi-rex	I2	I3	J3	Bw6	Bw12
162	R	R/H	R	R	S	R
163	R	R/H	R	R	S	R
164	R	R/H	R	R	S	R
165	R	R/H	R	R	S	R
166	R	R/H	R	R	S	R
167	R	R/H	R	R	S	R
168	R	R/H	R	R	S	R
169	R	R/H	R	S	S	R
170	R	R/H	R	S	S	R
171	R	R/H	R	S	S	R
172	R	R/H	R	S	S	R
173	R	R/H	R	S	S	R
174	R	R/H	R	S	S	R
175	R	R/H	R	S	S	R
176	R	R/H	R	S	S	R
177	R	R/H	R	S	S	R
178	R	R/H	R	S	S	R
179	R	R/H	R	S	S	R
180	R	R/H	R	S	S	R
181	R	R/H	R	S	S	R
182	R	R/H	R	S	S	R
183	R	R/H	R	S	S	R
184	R	R/H	R	S	S	R
185	R	R/H	R	S	S	R
186	R	R/H	R	S	S	R
187	R	R/H	R	S	S	R
188	R	R/H	R	S	S	R
189	R	R/H	R	S	S	R
190	R	R/H	R	S	S	R
191	R	R/H	R	S	S	R
192	R	R/H	R	S	S	R
193	R	R/H	R	S	S	R
194	R	R/H	R	S	S	R
195	R	R/H	R	S	S	R
196	R	R/H	R	S	S	R
197	R	R/H	R	S	S	R
198	R	R/H	R	S	S	R
199	R	R/H	R	S	S	R
200	R	R/H	R	H	S	R
201	R	R/H	R	S	S	R
202	R	R/H	R	S	S	R
203	R	R/H	R	H	S	R
204	R	R/H	R	H	S	R
205	R	R/H	R	S	S	R
206	R	R/H	R	H	S	R
207	R	R/H	R	S	S	R
208	R	R/H	R	S	S	R
209	R	R/H	R	S	S	R
210	R	R/H	R	R	S	R
211	R	R/H	R	R	S	R
212	R	R/H	R	R	S	R
213	R	R/H	R	R	S	R
214	R	R/H	R	R	S	R
215	R	R/H	R	R	S	R
216	R	R/H	R	R	S	R

No.	Mi-rex	I2	I3	J3	Bw6	Bw12
378	R	R/H	R	R	R	R
379	R	R/H	R	R	R	R
380	R	R/H	R	R	R	R
381	R	R/H	R	R	R	R
382	R	R/H	R	R	R	R
383	R	R/H	R	R	R	R
384	R	R/H	R	R	R	R
385	R	R/H	R	R	R	R
386	R	R/H	R	R	R	R
387	R	R/H	R	R	R	R
388	R	R/H	R	R	R	R
389	R	R/H	R	R	R	R
390	R	R/H	R	R	R	R
391	R	R/H	R	R	R	R
392	R	R/H	R	R	R	R
393	R	R/H	R	R	R	R
394	R	R/H	R	R	R	R
395	R	R/H	R	R	R	R
396	R	R/H	R	R	R	R
397	R	R/H	R	R	R	R
398	R	R/H	R	R	R	R
399	R	R/H	R	R	R	R
400	R	R/H	R	R	R	R
401	R	R/H	R	R	R	R
402	R	R/H	R	R	R	R
403	R	R/H	R	R	R	R
404	R	R/H	R	R	R	R
405	H	R/H	R	R	S	R
406	H	R/H	R	R	S	R
407	H	R/H	R	R	S	R
408	H	R/H	R	R	S	R
409	H	R/H	R	R	S	R
410	H	R/H	R	R	S	R
411	H	R/H	R	R	S	R
412	H	R/H	R	R	S	R
413	H	R/H	R	R	S	R
414	H	R/H	R	R	S	R
415	H	R/H	R	R	S	R
416	H	R/H	R	R	S	R
417	H	R/H	R	R	S	R
418	H	R/H	S	R	H	S
419	H	R/H	S	R	H	S
420	H	R/H	S	R	H	S
421	S	R/H	H	H	S	R
422	S	R/H	H	H	S	R
423	S	R/H	H	H	S	R
424	S	R/H	H	H	S	R
425	S	R/H	H	H	S	R
426	S	R/H	H	H	S	R
427	S	S	S	S	S	S
428	S	S	S	S	S	S
429	S	S	S	S	S	S
430	S	S	S	S	S	S
431	S	S	S	S	S	S
432	S	S	S	S	S	S

⑦ 순천대학교

순천대학교로부터 총 4,605점의 시료를 받아 15번의 서비스를 진행하였다. 각각 384점, 382점, 367점, 379점, 381점, 96점, 384점, 96점, 365점, 362점, 144점, 144점, 384점 384점 및 353점을 각각 1개의 병

마커로 서비스를 진행하였다. 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 20).

표 20. 순천대학교 총 4,605점의 시료에 대한 병 마커 서비스 결과

Sample name	Ve2	Sample name	Ve2	Sample name	Ve2	Sample name	Ve2	Sample name	Ve2	Sample name	Ve2	Sample name	Ve2
T1-001	H	T1-056	H	T1-111	H	T1-166	H	T1-221	H	T1-276	H	T1-331	H
T1-002	H	T1-057	H	T1-112	H	T1-167	H	T1-222	H	T1-277	H	T1-332	H
T1-003	H	T1-058	H	T1-113	H	T1-168	H	T1-223	H	T1-278	H	T1-333	H
T1-004	H	T1-059	H	T1-114	H	T1-169	H	T1-224	H	T1-279	H	T1-334	H
T1-005	H	T1-060	H	T1-115	H	T1-170	H	T1-225	H	T1-280	H	T1-335	H
T1-006	H	T1-061	H	T1-116	N/A	T1-171	H	T1-226	H	T1-281	H	T1-336	H
T1-007	H	T1-062	H	T1-117	H	T1-172	H	T1-227	H	T1-282	H	T1-337	H
T1-008	H	T1-063	H	T1-118	H	T1-173	H	T1-228	H	T1-283	H	T1-338	H
T1-009	H	T1-064	H	T1-119	H	T1-174	H	T1-229	H	T1-284	H	T1-339	H
T1-010	H	T1-065	H	T1-120	H	T1-175	H	T1-230	H	T1-285	H	T1-340	H
T1-011	H	T1-066	H	T1-121	H	T1-176	H	T1-231	H	T1-286	H	T1-341	H
T1-012	H	T1-067	H	T1-122	H	T1-177	H	T1-232	H	T1-287	H	T1-342	H
T1-013	H	T1-068	H	T1-123	H	T1-178	H	T1-233	H	T1-288	H	T1-343	H
T1-014	H	T1-069	H	T1-124	H	T1-179	H	T1-234	H	T1-289	H	T1-344	H
T1-015	H	T1-070	H	T1-125	H	T1-180	H	T1-235	H	T1-290	H	T1-345	H
T1-016	H	T1-071	H	T1-126	H	T1-181	H	T1-236	H	T1-291	H	T1-346	H
T1-017	H	T1-072	H	T1-127	H	T1-182	H	T1-237	H	T1-292	H	T1-347	H
T1-018	H	T1-073	H	T1-128	H	T1-183	H	T1-238	H	T1-293	H	T1-348	H
T1-019	H	T1-074	H	T1-129	H	T1-184	H	T1-239	H	T1-294	H	T1-349	H
T1-020	H	T1-075	H	T1-130	H	T1-185	N/A	T1-240	H	T1-295	H	T1-350	H
T1-021	H	T1-076	H	T1-131	H	T1-186	H	T1-241	H	T1-296	H	T1-351	H
T1-022	H	T1-077	H	T1-132	H	T1-187	H	T1-242	H	T1-297	H	T1-352	H
T1-023	H	T1-078	H	T1-133	H	T1-188	H	T1-243	H	T1-298	H	T1-353	H
T1-024	H	T1-079	H	T1-134	H	T1-189	H	T1-244	H	T1-299	H	T1-354	H
T1-025	H	T1-080	H	T1-135	H	T1-190	H	T1-245	H	T1-300	H	T1-355	H
T1-026	H	T1-081	H	T1-136	H	T1-191	H	T1-246	H	T1-301	H	T1-356	H
T1-027	H	T1-082	H	T1-137	H	T1-192	H	T1-247	H	T1-302	H	T1-357	H
T1-028	H	T1-083	H	T1-138	H	T1-193	H	T1-248	H	T1-303	H	T1-358	H
T1-029	H	T1-084	H	T1-139	H	T1-194	H	T1-249	H	T1-304	H	T1-359	H
T1-030	H	T1-085	H	T1-140	H	T1-195	H	T1-250	H	T1-305	H	T1-360	H
T1-031	H	T1-086	H	T1-141	H	T1-196	H	T1-251	H	T1-306	H	T1-361	H
T1-032	H	T1-087	H	T1-142	H	T1-197	H	T1-252	H	T1-307	H	T1-362	H
T1-033	H	T1-088	H	T1-143	H	T1-198	H	T1-253	H	T1-308	H	T1-363	H
T1-034	H	T1-089	H	T1-144	H	T1-199	H	T1-254	H	T1-309	H	T1-364	H
T1-035	H	T1-090	H	T1-145	H	T1-200	H	T1-255	H	T1-310	H	T1-365	H
T1-036	H	T1-091	H	T1-146	H	T1-201	H	T1-256	H	T1-311	H	T1-366	H
T1-037	H	T1-092	H	T1-147	H	T1-202	H	T1-257	H	T1-312	H	T1-367	H
T1-038	H	T1-093	H	T1-148	H	T1-203	H	T1-258	H	T1-313	H	T1-368	H
T1-039	H	T1-094	H	T1-149	H	T1-204	H	T1-259	H	T1-314	H	T1-369	H
T1-040	H	T1-095	H	T1-150	H	T1-205	H	T1-260	H	T1-315	H	T1-370	H
T1-041	H	T1-096	H	T1-151	H	T1-206	H	T1-261	H	T1-316	H	T1-371	H
T1-042	H	T1-097	H	T1-152	H	T1-207	H	T1-262	H	T1-317	H	T1-372	H
T1-043	H	T1-098	H	T1-153	H	T1-208	H	T1-263	H	T1-318	H	T1-373	H
T1-044	H	T1-099	H	T1-154	H	T1-209	H	T1-264	H	T1-319	H	T1-374	H
T1-045	H	T1-100	H	T1-155	H	T1-210	H	T1-265	H	T1-320	H	T1-375	H
T1-046	H	T1-101	H	T1-156	H	T1-211	H	T1-266	H	T1-321	H	T1-376	H
T1-047	H	T1-102	H	T1-157	H	T1-212	H	T1-267	H	T1-322	H	T1-377	H
T1-048	H	T1-103	H	T1-158	H	T1-213	H	T1-268	H	T1-323	H	T1-378	H
T1-049	H	T1-104	H	T1-159	H	T1-214	H	T1-269	H	T1-324	H	T1-379	H
T1-050	H	T1-105	H	T1-160	H	T1-215	H	T1-270	H	T1-325	H	T1-380	H
T1-051	H	T1-106	H	T1-161	H	T1-216	H	T1-271	H	T1-326	H	T1-381	H
T1-052	H	T1-107	H	T1-162	H	T1-217	H	T1-272	H	T1-327	H	T1-382	H
T1-053	H	T1-108	H	T1-163	H	T1-218	H	T1-273	H	T1-328	H	T1-383	H
T1-054	H	T1-109	H	T1-164	H	T1-219	H	T1-274	H	T1-329	H	T1-384	H
T1-055	H	T1-110	H	T1-165	H	T1-220	H	T1-275	H	T1-330	H		

Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1
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Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1
T2-001	H	T2-056	H	T2-111	H	T2-166	H	T2-221	H	T2-276	H	T2-331	H
T2-002	H	T2-057	H	T2-112	H	T2-167	H	T2-222	H	T2-277	H	T2-332	H
T2-003	H	T2-058	H	T2-113	H	T2-168	H	T2-223	H	T2-278	H	T2-333	H
T2-004	H	T2-059	H	T2-114	H	T2-169	H	T2-224	H	T2-279	H	T2-334	H
T2-005	H	T2-060	H	T2-115	H	T2-170	H	T2-225	H	T2-280	H	T2-335	H
T2-006	H	T2-061	H	T2-116	H	T2-171	H	T2-226	H	T2-281	H	T2-336	H
T2-007	H	T2-062	H	T2-117	H	T2-172	H	T2-227	H	T2-282	H	T2-337	H
T2-008	H	T2-063	H	T2-118	H	T2-173	H	T2-228	H	T2-283	H	T2-338	H
T2-009	H	T2-064	H	T2-119	H	T2-174	H	T2-229	H	T2-284	H	T2-339	H
T2-010	H	T2-065	H	T2-120	H	T2-175	H	T2-230	H	T2-285	H	T2-340	H
T2-011	H	T2-066	H	T2-121	H	T2-176	H	T2-231	H	T2-286	H	T2-341	H
T2-012	H	T2-067	H	T2-122	H	T2-177	H	T2-232	H	T2-287	H	T2-342	H
T2-013	H	T2-068	H	T2-123	H	T2-178	H	T2-233	H	T2-288	H	T2-343	H
T2-014	H	T2-069	H	T2-124	H	T2-179	H	T2-234	H	T2-289	H	T2-344	H
T2-015	H	T2-070	H	T2-125	H	T2-180	H	T2-235	H	T2-290	H	T2-345	H
T2-016	H	T2-071	H	T2-126	N/A	T2-181	H	T2-236	H	T2-291	H	T2-346	H
T2-017	H	T2-072	H	T2-127	H	T2-182	H	T2-237	H	T2-292	H	T2-347	H
T2-018	H	T2-073	H	T2-128	H	T2-183	H	T2-238	H	T2-293	H	T2-348	H
T2-019	H	T2-074	H	T2-129	H	T2-184	H	T2-239	H	T2-294	H	T2-349	H
T2-020	H	T2-075	H	T2-130	H	T2-185	H	T2-240	H	T2-295	H	T2-350	H
T2-021	H	T2-076	H	T2-131	H	T2-186	H	T2-241	H	T2-296	H	T2-351	H
T2-022	H	T2-077	H	T2-132	H	T2-187	H	T2-242	H	T2-297	H	T2-352	H
T2-023	H	T2-078	H	T2-133	H	T2-188	H	T2-243	H	T2-298	H	T2-353	H
T2-024	H	T2-079	H	T2-134	H	T2-189	H	T2-244	H	T2-299	H	T2-354	H
T2-025	H	T2-080	H	T2-135	H	T2-190	N/A	T2-245	H	T2-300	H	T2-355	H
T2-026	H	T2-081	H	T2-136	H	T2-191	H	T2-246	H	T2-301	H	T2-356	H
T2-027	H	T2-082	H	T2-137	H	T2-192	H	T2-247	H	T2-302	H	T2-357	H
T2-028	H	T2-083	H	T2-138	H	T2-193	H	T2-248	H	T2-303	H	T2-358	H
T2-029	H	T2-084	H	T2-139	H	T2-194	H	T2-249	H	T2-304	H	T2-359	H
T2-030	H	T2-085	H	T2-140	H	T2-195	H	T2-250	H	T2-305	H	T2-360	H
T2-031	H	T2-086	H	T2-141	H	T2-196	H	T2-251	H	T2-306	H	T2-361	H
T2-032	H	T2-087	H	T2-142	H	T2-197	H	T2-252	H	T2-307	H	T2-362	H
T2-033	H	T2-088	H	T2-143	H	T2-198	H	T2-253	H	T2-308	H	T2-363	H
T2-034	H	T2-089	H	T2-144	H	T2-199	H	T2-254	H	T2-309	H	T2-364	H
T2-035	H	T2-090	H	T2-145	H	T2-200	N/A	T2-255	H	T2-310	H	T2-365	H
T2-036	H	T2-091	H	T2-146	H	T2-201	H	T2-256	H	T2-311	H	T2-366	H
T2-037	H	T2-092	H	T2-147	H	T2-202	H	T2-257	H	T2-312	H	T2-367	H
T2-038	H	T2-093	H	T2-148	H	T2-203	H	T2-258	H	T2-313	H	T2-368	H
T2-039	H	T2-094	H	T2-149	H	T2-204	H	T2-259	H	T2-314	H	T2-369	H
T2-040	H	T2-095	H	T2-150	H	T2-205	H	T2-260	H	T2-315	H	T2-370	H
T2-041	H	T2-096	H	T2-151	H	T2-206	H	T2-261	H	T2-316	H	T2-371	H
T2-042	H	T2-097	H	T2-152	H	T2-207	H	T2-262	H	T2-317	H	T2-372	H
T2-043	H	T2-098	H	T2-153	H	T2-208	H	T2-263	H	T2-318	H	T2-373	H
T2-044	H	T2-099	H	T2-154	H	T2-209	H	T2-264	H	T2-319	H	T2-374	N/A
T2-045	H	T2-100	H	T2-155	H	T2-210	H	T2-265	H	T2-320	H	T2-375	H
T2-046	H	T2-101	H	T2-156	H	T2-211	H	T2-266	H	T2-321	H	T2-376	H
T2-047	H	T2-102	H	T2-157	H	T2-212	H	T2-267	H	T2-322	H	T2-377	H
T2-048	H	T2-103	H	T2-158	H	T2-213	H	T2-268	H	T2-323	H	T2-378	H
T2-049	H	T2-104	H	T2-159	H	T2-214	H	T2-269	H	T2-324	H	T2-379	H
T2-050	H	T2-105	H	T2-160	H	T2-215	H	T2-270	H	T2-325	H	T2-380	H
T2-051	H	T2-106	H	T2-161	H	T2-216	H	T2-271	H	T2-326	H	T2-381	H
T2-052	H	T2-107	H	T2-162	H	T2-217	H	T2-272	H	T2-327	H	T2-382	H
T2-053	H	T2-108	H	T2-163	H	T2-218	H	T2-273	H	T2-328	H		
T2-054	H	T2-109	H	T2-164	H	T2-219	H	T2-274	H	T2-329	H		
T2-055	H	T2-110	H	T2-165	H	T2-220	H	T2-275	H	T2-330	H		

Sample name	J3	Sample name	J3	Sample name	J3	Sample name	J3	Sample name	J3	Sample name	J3		
T3-001	H	T3-054	H	T3-106	H	T3-160	H	T3-213	H	T3-266	H	T3-319	H
T3-002	H	T3-055	H	T3-107	H	T3-161	H	T3-214	H	T3-267	H	T3-320	H
T3-003	H	T3-056	H	T3-108	H	T3-162	H	T3-215	H	T3-268	H	T3-321	H
T3-004	H	T3-057	H	T3-109	H	T3-163	H	T3-216	H	T3-269	H	T3-322	H

Sample name	J3	Sample name	J3	Sample name	J3	Sample name	J3	Sample name	J3	Sample name	J3	Sample name	J3
T3-005	H	T3-058	H	T3-110	H	T3-164	H	T3-217	H	T3-270	H	T3-323	H
T3-006	H	T3-059	H	T3-111	H	T3-165	H	T3-218	H	T3-271	H	T3-324	H
T3-007	H	T3-060	H	T3-112	H	T3-166	H	T3-219	H	T3-272	H	T3-325	H
T3-008	H	T3-061	H	T3-113	H	T3-167	H	T3-220	H	T3-273	H	T3-326	H
T3-009	H	T3-062	H	T3-114	H	T3-168	H	T3-221	H	T3-274	H	T3-327	H
T3-010	H	T3-063	H	T3-115	H	T3-169	H	T3-222	H	T3-275	H	T3-328	H
T3-011	H	T3-064	H	T3-116	H	T3-170	H	T3-223	H	T3-276	H	T3-329	H
T3-012	H	T3-065	H	T3-117	H	T3-171	H	T3-224	H	T3-277	H	T3-330	H
T3-013	H	T3-066	H	T3-118	H	T3-172	H	T3-225	H	T3-278	H	T3-331	H
T3-014	H	T3-067	H	T3-119	H	T3-173	H	T3-226	H	T3-279	H	T3-332	H
T3-015	H	T3-068	H	T3-120	H	T3-174	H	T3-227	H	T3-280	H	T3-333	H
T3-016	H	T3-069	H	T3-121	H	T3-175	H	T3-228	H	T3-281	H	T3-334	H
T3-017	N/A	T3-070	H	T3-122	H	T3-176	H	T3-229	H	T3-282	H	T3-335	H
T3-018	H	T3-071	H	T3-123	H	T3-177	H	T3-230	H	T3-283	H	T3-336	H
T3-019	H	T3-072	H	T3-124	H	T3-178	H	T3-231	H	T3-284	H	T3-337	H
T3-020	H	T3-073	H	T3-125	H	T3-179	H	T3-232	H	T3-285	H	T3-338	H
T3-021	H	T3-074	H	T3-126	H	T3-180	H	T3-233	H	T3-286	H	T3-339	H
T3-022	H	T3-075	H	T3-127	H	T3-181	H	T3-234	H	T3-287	H	T3-340	H
T3-023	H	T3-076	H	T3-128	H	T3-182	H	T3-235	H	T3-288	H	T3-341	H
T3-024	H	T3-077	H	T3-129	H	T3-183	H	T3-236	H	T3-289	H	T3-342	H
T3-025	H	T3-078	H	T3-130	H	T3-184	H	T3-237	H	T3-290	H	T3-343	H
T3-026	H	T3-079	H	T3-131	H	T3-185	H	T3-238	H	T3-291	H	T3-344	H
T3-027	H	T3-080	H	T3-132	H	T3-186	H	T3-239	H	T3-292	N/A	T3-345	H
T3-028	H	T3-081	H	T3-133	H	T3-187	H	T3-240	H	T3-293	H	T3-346	H
T3-029	H	T3-082	H	T3-134	H	T3-188	H	T3-241	H	T3-294	H	T3-347	H
T3-030	H	T3-083	H	T3-135	H	T3-189	H	T3-242	H	T3-295	H	T3-348	H
T3-031	H	T3-084	H	T3-136	H	T3-190	H	T3-243	H	T3-296	H	T3-349	H
T3-032	H	T3-085	H	T3-137	H	T3-191	H	T3-244	H	T3-297	H	T3-350	H
T3-033	H	T3-086	H	T3-138	H	T3-192	H	T3-245	H	T3-298	H	T3-351	H
T3-034	H	T3-087	H	T3-139	H	T3-193	H	T3-246	H	T3-299	H	T3-352	H
T3-035	H	T3-088	H	T3-140	H	T3-194	H	T3-247	H	T3-300	H	T3-353	H
T3-036	H	T3-089	H	T3-141	H	T3-195	H	T3-248	H	T3-301	H	T3-354	H
T3-037	H	T3-090	H	T3-142	H	T3-196	H	T3-249	H	T3-302	H	T3-355	H
T3-038	H	T3-091	H	T3-143	H	T3-197	H	T3-250	H	T3-303	H	T3-356	H
T3-039	H	T3-092	H	T3-144	H	T3-198	H	T3-251	H	T3-304	H	T3-357	H
T3-040	H	T3-093	H	T3-145	H	T3-199	H	T3-252	H	T3-305	H	T3-358	H
T3-041	H	T3-094	H	T3-146	H	T3-200	H	T3-253	H	T3-306	H	T3-359	H
T3-042	H	T3-095	H	T3-147	H	T3-201	H	T3-254	H	T3-307	H	T3-360	H
T3-043	H	T3-096	N/A	T3-148	H	T3-202	H	T3-255	H	T3-308	H	T3-361	H
T3-044	H	T3-097	H	T3-149	H	T3-203	H	T3-256	H	T3-309	H	T3-362	H
T3-045	H	T3-098	H	T3-150	H	T3-204	H	T3-257	H	T3-310	H	T3-363	H
T3-046	H	T3-099	H	T3-151	H	T3-205	H	T3-258	H	T3-311	H	T3-364	H
T3-047	H	T3-100	H	T3-152	H	T3-206	H	T3-259	H	T3-312	H	T3-365	H
T3-048	H	T3-101	H	T3-153	H	T3-207	H	T3-260	H	T3-313	H	T3-366	H
T3-049	H	T3-102	H	T3-154	H	T3-208	H	T3-261	H	T3-314	H	T3-367	H
T3-050	H	T3-103	H	T3-155	H	T3-209	H	T3-262	H	T3-315	H		
T3-051	H	T3-104	H	T3-156	H	T3-210	H	T3-263	H	T3-316	H		
T3-052	N/A	T3-105	H	T3-157	H	T3-211	H	T3-264	H	T3-317	H		
T3-053	N/A	T3-106	H	T3-158	H	T3-212	H	T3-265	H	T3-318	H		

Sample name	Ph3	Sample name	Ph3	Sample name	Ph3	Sample name	Ph3	Sample name	Ph3	Sample name	Ph3	Sample name	Ph3
T4-001	H	T4-056	H	T4-111	H	T4-166	H	T4-221	H	T4-276	H	T4-331	H
T4-002	H	T4-057	H	T4-112	H	T4-167	H	T4-222	H	T4-277	H	T4-332	H
T4-003	H	T4-058	H	T4-113	H	T4-168	H	T4-223	H	T4-278	H	T4-333	H
T4-004	H	T4-059	H	T4-114	H	T4-169	H	T4-224	H	T4-279	H	T4-334	H
T4-005	H	T4-060	H	T4-115	H	T4-170	H	T4-225	H	T4-280	H	T4-335	H
T4-006	H	T4-061	H	T4-116	H	T4-171	H	T4-226	H	T4-281	H	T4-336	H
T4-007	H	T4-062	H	T4-117	H	T4-172	H	T4-227	H	T4-282	H	T4-337	H
T4-008	H	T4-063	H	T4-118	H	T4-173	H	T4-228	H	T4-283	H	T4-338	H
T4-009	H	T4-064	H	T4-119	H	T4-174	H	T4-229	H	T4-284	H	T4-339	H

Sample name	Ph3	Sample name	Ph3	Sample name	Ph3	Sample name	Ph3	Sample name	Ph3	Sample name	Ph3	Sample name	Ph3
T4-010	H	T4-065	H	T4-120	H	T4-175	H	T4-230	H	T4-285	H	T4-340	H
T4-011	H	T4-066	H	T4-121	H	T4-176	H	T4-231	H	T4-286	H	T4-341	H
T4-012	H	T4-067	H	T4-122	H	T4-177	H	T4-232	H	T4-287	H	T4-342	H
T4-013	H	T4-068	H	T4-123	H	T4-178	H	T4-233	H	T4-288	H	T4-343	H
T4-014	H	T4-069	H	T4-124	H	T4-179	H	T4-234	H	T4-289	H	T4-344	H
T4-015	H	T4-070	H	T4-125	H	T4-180	H	T4-235	H	T4-290	H	T4-345	H
T4-016	H	T4-071	H	T4-126	H	T4-181	H	T4-236	H	T4-291	H	T4-346	H
T4-017	H	T4-072	H	T4-127	H	T4-182	H	T4-237	H	T4-292	H	T4-347	H
T4-018	H	T4-073	H	T4-128	H	T4-183	H	T4-238	H	T4-293	H	T4-348	N/A
T4-019	H	T4-074	H	T4-129	H	T4-184	H	T4-239	H	T4-294	H	T4-349	H
T4-020	H	T4-075	H	T4-130	H	T4-185	H	T4-240	H	T4-295	H	T4-350	H
T4-021	H	T4-076	H	T4-131	H	T4-186	H	T4-241	H	T4-296	H	T4-351	H
T4-022	H	T4-077	H	T4-132	H	T4-187	H	T4-242	H	T4-297	H	T4-352	H
T4-023	H	T4-078	H	T4-133	H	T4-188	H	T4-243	H	T4-298	H	T4-353	H
T4-024	H	T4-079	H	T4-134	H	T4-189	H	T4-244	H	T4-299	H	T4-354	H
T4-025	H	T4-080	H	T4-135	H	T4-190	H	T4-245	H	T4-300	H	T4-355	H
T4-026	H	T4-081	H	T4-136	H	T4-191	H	T4-246	H	T4-301	H	T4-356	H
T4-027	H	T4-082	H	T4-137	H	T4-192	H	T4-247	H	T4-302	H	T4-357	H
T4-028	H	T4-083	H	T4-138	H	T4-193	H	T4-248	H	T4-303	H	T4-358	H
T4-029	H	T4-084	H	T4-139	H	T4-194	H	T4-249	H	T4-304	H	T4-359	H
T4-030	H	T4-085	H	T4-140	H	T4-195	H	T4-250	H	T4-305	H	T4-360	H
T4-031	H	T4-086	H	T4-141	H	T4-196	H	T4-251	H	T4-306	H	T4-361	H
T4-032	H	T4-087	H	T4-142	H	T4-197	H	T4-252	H	T4-307	H	T4-362	H
T4-033	H	T4-088	N/A	T4-143	H	T4-198	H	T4-253	H	T4-308	H	T4-363	H
T4-034	H	T4-089	H	T4-144	H	T4-199	H	T4-254	H	T4-309	H	T4-364	H
T4-035	H	T4-090	H	T4-145	H	T4-200	H	T4-255	H	T4-310	H	T4-365	H
T4-036	H	T4-091	H	T4-146	H	T4-201	H	T4-256	H	T4-311	H	T4-366	H
T4-037	H	T4-092	H	T4-147	H	T4-202	H	T4-257	H	T4-312	H	T4-367	H
T4-038	H	T4-093	H	T4-148	H	T4-203	H	T4-258	H	T4-313	H	T4-368	H
T4-039	H	T4-094	H	T4-149	H	T4-204	H	T4-259	H	T4-314	H	T4-369	H
T4-040	H	T4-095	H	T4-150	H	T4-205	H	T4-260	H	T4-315	H	T4-370	H
T4-041	H	T4-096	H	T4-151	H	T4-206	H	T4-261	H	T4-316	H	T4-371	H
T4-042	H	T4-097	H	T4-152	H	T4-207	H	T4-262	H	T4-317	H	T4-372	H
T4-043	H	T4-098	H	T4-153	H	T4-208	H	T4-263	H	T4-318	H	T4-373	H
T4-044	H	T4-099	H	T4-154	H	T4-209	H	T4-264	H	T4-319	H	T4-374	H
T4-045	H	T4-100	H	T4-155	H	T4-210	H	T4-265	H	T4-320	H	T4-375	H
T4-046	H	T4-101	H	T4-156	H	T4-211	H	T4-266	H	T4-321	H	T4-376	H
T4-047	H	T4-102	H	T4-157	H	T4-212	H	T4-267	H	T4-322	H	T4-377	H
T4-048	H	T4-103	H	T4-158	H	T4-213	H	T4-268	H	T4-323	H	T4-378	H
T4-049	H	T4-104	H	T4-159	H	T4-214	H	T4-269	H	T4-324	H	T4-379	H
T4-050	H	T4-105	H	T4-160	H	T4-215	H	T4-270	H	T4-325	H		
T4-051	H	T4-106	H	T4-161	H	T4-216	H	T4-271	H	T4-326	H		
T4-052	H	T4-107	H	T4-162	H	T4-217	H	T4-272	H	T4-327	H		
T4-053	H	T4-108	H	T4-163	H	T4-218	H	T4-273	H	T4-328	H		
T4-054	H	T4-109	H	T4-164	H	T4-219	N/A	T4-274	H	T4-329	H		
T4-055	H	T4-110	H	T4-165	H	T4-220	H	T4-275	H	T4-330	H		

Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1
T5-001	H	T5-056	H	T5-111	H	T5-166	H	T5-221	H	T5-276	H	T5-331	H
T5-002	H	T5-057	H	T5-112	H	T5-167	H	T5-222	H	T5-277	H	T5-332	H
T5-003	H	T5-058	H	T5-113	H	T5-168	H	T5-223	H	T5-278	H	T5-333	H
T5-004	H	T5-059	H	T5-114	H	T5-169	H	T5-224	H	T5-279	N/A	T5-334	H
T5-005	H	T5-060	H	T5-115	H	T5-170	H	T5-225	H	T5-280	H	T5-335	H
T5-006	H	T5-061	H	T5-116	H	T5-171	H	T5-226	H	T5-281	H	T5-336	H
T5-007	H	T5-062	H	T5-117	H	T5-172	H	T5-227	H	T5-282	H	T5-337	H
T5-008	H	T5-063	H	T5-118	H	T5-173	H	T5-228	H	T5-283	H	T5-338	H
T5-009	H	T5-064	H	T5-119	H	T5-174	H	T5-229	H	T5-284	H	T5-339	H
T5-010	H	T5-065	H	T5-120	H	T5-175	H	T5-230	H	T5-285	H	T5-340	H
T5-011	H	T5-066	H	T5-121	H	T5-176	H	T5-231	H	T5-286	H	T5-341	H
T5-012	H	T5-067	H	T5-122	H	T5-177	H	T5-232	H	T5-287	H	T5-342	H

Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1
T5-013	H	T5-068	H	T5-123	H	T5-178	H	T5-233	H	T5-288	H	T5-343	H
T5-014	H	T5-069	H	T5-124	H	T5-179	H	T5-234	H	T5-289	H	T5-344	H
T5-015	H	T5-070	H	T5-125	H	T5-180	H	T5-235	H	T5-290	H	T5-345	H
T5-016	H	T5-071	H	T5-126	H	T5-181	H	T5-236	H	T5-291	H	T5-346	H
T5-017	H	T5-072	H	T5-127	H	T5-182	H	T5-237	H	T5-292	H	T5-347	H
T5-018	H	T5-073	H	T5-128	H	T5-183	H	T5-238	H	T5-293	H	T5-348	H
T5-019	H	T5-074	H	T5-129	H	T5-184	H	T5-239	H	T5-294	H	T5-349	N/A
T5-020	H	T5-075	H	T5-130	H	T5-185	H	T5-240	H	T5-295	H	T5-350	H
T5-021	H	T5-076	H	T5-131	H	T5-186	H	T5-241	H	T5-296	H	T5-351	H
T5-022	H	T5-077	H	T5-132	H	T5-187	H	T5-242	H	T5-297	H	T5-352	H
T5-023	H	T5-078	H	T5-133	H	T5-188	H	T5-243	H	T5-298	H	T5-353	H
T5-024	H	T5-079	H	T5-134	H	T5-189	H	T5-244	H	T5-299	H	T5-354	H
T5-025	H	T5-080	H	T5-135	H	T5-190	H	T5-245	N/A	T5-300	H	T5-355	H
T5-026	H	T5-081	H	T5-136	H	T5-191	H	T5-246	H	T5-301	H	T5-356	H
T5-027	H	T5-082	H	T5-137	H	T5-192	H	T5-247	H	T5-302	H	T5-357	N/A
T5-028	H	T5-083	H	T5-138	H	T5-193	H	T5-248	H	T5-303	H	T5-358	H
T5-029	H	T5-084	H	T5-139	H	T5-194	H	T5-249	H	T5-304	H	T5-359	H
T5-030	H	T5-085	H	T5-140	H	T5-195	H	T5-250	H	T5-305	H	T5-360	H
T5-031	H	T5-086	H	T5-141	H	T5-196	H	T5-251	H	T5-306	H	T5-361	H
T5-032	H	T5-087	H	T5-142	H	T5-197	H	T5-252	H	T5-307	H	T5-362	H
T5-033	H	T5-088	H	T5-143	H	T5-198	H	T5-253	H	T5-308	H	T5-363	H
T5-034	H	T5-089	H	T5-144	H	T5-199	H	T5-254	H	T5-309	H	T5-364	H
T5-035	H	T5-090	H	T5-145	H	T5-200	H	T5-255	H	T5-310	H	T5-365	H
T5-036	H	T5-091	H	T5-146	H	T5-201	H	T5-256	H	T5-311	H	T5-366	H
T5-037	H	T5-092	H	T5-147	H	T5-202	H	T5-257	H	T5-312	H	T5-367	H
T5-038	H	T5-093	H	T5-148	H	T5-203	H	T5-258	H	T5-313	H	T5-368	H
T5-039	H	T5-094	H	T5-149	H	T5-204	H	T5-259	H	T5-314	H	T5-369	H
T5-040	H	T5-095	H	T5-150	H	T5-205	H	T5-260	H	T5-315	H	T5-370	H
T5-041	H	T5-096	H	T5-151	H	T5-206	H	T5-261	H	T5-316	H	T5-371	H
T5-042	N/A	T5-097	H	T5-152	H	T5-207	H	T5-262	H	T5-317	N/A	T5-372	H
T5-043	H	T5-098	H	T5-153	H	T5-208	H	T5-263	H	T5-318	H	T5-373	H
T5-044	H	T5-099	H	T5-154	H	T5-209	H	T5-264	H	T5-319	H	T5-374	H
T5-045	H	T5-100	H	T5-155	H	T5-210	H	T5-265	H	T5-320	H	T5-375	H
T5-046	H	T5-101	H	T5-156	H	T5-211	H	T5-266	H	T5-321	H	T5-376	H
T5-047	H	T5-102	H	T5-157	H	T5-212	H	T5-267	H	T5-322	H	T5-377	H
T5-048	H	T5-103	H	T5-158	H	T5-213	H	T5-268	H	T5-323	H	T5-378	H
T5-049	H	T5-104	H	T5-159	H	T5-214	H	T5-269	H	T5-324	H	T5-379	H
T5-050	H	T5-105	H	T5-160	H	T5-215	H	T5-270	H	T5-325	H	T5-380	H
T5-051	H	T5-106	H	T5-161	H	T5-216	H	T5-271	H	T5-326	H	T5-381	H
T5-052	H	T5-107	H	T5-162	H	T5-217	H	T5-272	H	T5-327	H		
T5-053	H	T5-108	H	T5-163	H	T5-218	H	T5-273	H	T5-328	H		
T5-054	H	T5-109	H	T5-164	H	T5-219	H	T5-274	H	T5-329	H		
T5-055	H	T5-110	H	T5-165	H	T5-220	H	T5-275	H	T5-330	H		

Sample name	Mi-rer	Sample name	Mi-rer	Sample name	Mi-rer	Sample name	Mi-rer	Sample name	Mi-rer	Sample name	Mi-rer	Sample name	Mi-rer
T5-001	H	T5-015	H	T5-029	H	T5-043	H	T5-057	N/A	T5-071	H	T5-085	H
T5-002	H	T5-016	H	T5-030	H	T5-044	H	T5-058	H	T5-072	H	T5-086	H
T5-003	H	T5-017	H	T5-031	H	T5-045	H	T5-059	H	T5-073	H	T5-087	H
T5-004	H	T5-018	H	T5-032	H	T5-046	H	T5-060	H	T5-074	H	T5-088	H
T5-005	H	T5-019	H	T5-033	H	T5-047	N/A	T5-061	H	T5-075	H	T5-089	H
T5-006	H	T5-020	H	T5-034	H	T5-048	H	T5-062	H	T5-076	H	T5-090	H
T5-007	H	T5-021	H	T5-035	H	T5-049	H	T5-063	H	T5-077	H	T5-091	H
T5-008	H	T5-022	H	T5-036	H	T5-050	H	T5-064	H	T5-078	H	T5-092	H
T5-009	H	T5-023	H	T5-037	H	T5-051	H	T5-065	H	T5-079	H	T5-093	H
T5-010	H	T5-024	H	T5-038	H	T5-052	H	T5-066	H	T5-080	H	T5-094	H
T5-011	H	T5-025	H	T5-039	H	T5-053	H	T5-067	H	T5-081	H	T5-095	H
T5-012	H	T5-026	H	T5-040	H	T5-054	H	T5-068	H	T5-082	H	T5-096	H
T5-013	H	T5-027	H	T5-041	H	T5-055	H	T5-069	H	T5-083	H		
T5-014	H	T5-028	H	T5-042	H	T5-056	H	T5-070	H	T5-084	H		

Sample name	J3	Sample name	J3	Sample name	J3	Sample name	J3	Sample name	J3	Sample name	J3	Sample name	J3
T6-001	H	T6-056	H	T6-111	H	T6-166	H	T6-221	H	T6-276	H	T6-331	H
T6-002	H	T6-057	H	T6-112	H	T6-167	H	T6-222	H	T6-277	H	T6-332	H
T6-003	H	T6-058	H	T6-113	H	T6-168	H	T6-223	H	T6-278	H	T6-333	H
T6-004	H	T6-059	H	T6-114	H	T6-169	H	T6-224	H	T6-279	H	T6-334	H
T6-005	H	T6-060	H	T6-115	H	T6-170	H	T6-225	H	T6-280	H	T6-335	H
T6-006	H	T6-061	H	T6-116	H	T6-171	H	T6-226	H	T6-281	H	T6-336	H
T6-007	H	T6-062	H	T6-117	H	T6-172	H	T6-227	H	T6-282	H	T6-337	H
T6-008	H	T6-063	H	T6-118	H	T6-173	H	T6-228	H	T6-283	H	T6-338	H
T6-009	H	T6-064	H	T6-119	H	T6-174	H	T6-229	H	T6-284	H	T6-339	H
T6-010	H	T6-065	H	T6-120	H	T6-175	H	T6-230	H	T6-285	H	T6-340	H
T6-011	H	T6-066	H	T6-121	H	T6-176	H	T6-231	H	T6-286	H	T6-341	H
T6-012	H	T6-067	H	T6-122	H	T6-177	H	T6-232	H	T6-287	H	T6-342	H
T6-013	H	T6-068	H	T6-123	H	T6-178	H	T6-233	H	T6-288	H	T6-343	H
T6-014	H	T6-069	H	T6-124	H	T6-179	H	T6-234	H	T6-289	H	T6-344	H
T6-015	H	T6-070	H	T6-125	H	T6-180	H	T6-235	H	T6-290	H	T6-345	H
T6-016	H	T6-071	H	T6-126	H	T6-181	H	T6-236	H	T6-291	H	T6-346	H
T6-017	H	T6-072	H	T6-127	H	T6-182	H	T6-237	H	T6-292	H	T6-347	H
T6-018	H	T6-073	H	T6-128	H	T6-183	H	T6-238	H	T6-293	H	T6-348	H
T6-019	H	T6-074	H	T6-129	H	T6-184	H	T6-239	H	T6-294	H	T6-349	H
T6-020	H	T6-075	H	T6-130	H	T6-185	H	T6-240	H	T6-295	H	T6-350	H
T6-021	H	T6-076	H	T6-131	H	T6-186	H	T6-241	H	T6-296	H	T6-351	H
T6-022	H	T6-077	H	T6-132	H	T6-187	H	T6-242	H	T6-297	H	T6-352	H
T6-023	H	T6-078	H	T6-133	H	T6-188	H	T6-243	H	T6-298	H	T6-353	H
T6-024	H	T6-079	H	T6-134	H	T6-189	H	T6-244	H	T6-299	H	T6-354	H
T6-025	H	T6-080	H	T6-135	H	T6-190	H	T6-245	H	T6-300	H	T6-355	H
T6-026	H	T6-081	H	T6-136	H	T6-191	H	T6-246	H	T6-301	H	T6-356	H
T6-027	H	T6-082	H	T6-137	H	T6-192	H	T6-247	H	T6-302	H	T6-357	H
T6-028	H	T6-083	H	T6-138	H	T6-193	H	T6-248	H	T6-303	H	T6-358	H
T6-029	H	T6-084	H	T6-139	H	T6-194	H	T6-249	H	T6-304	H	T6-359	H
T6-030	H	T6-085	H	T6-140	H	T6-195	H	T6-250	H	T6-305	H	T6-360	H
T6-031	H	T6-086	H	T6-141	H	T6-196	H	T6-251	H	T6-306	H	T6-361	H
T6-032	H	T6-087	H	T6-142	H	T6-197	H	T6-252	H	T6-307	H	T6-362	H
T6-033	H	T6-088	H	T6-143	H	T6-198	H	T6-253	H	T6-308	H	T6-363	H
T6-034	H	T6-089	H	T6-144	H	T6-199	H	T6-254	H	T6-309	H	T6-364	H
T6-035	H	T6-090	H	T6-145	H	T6-200	H	T6-255	H	T6-310	H	T6-365	H
T6-036	H	T6-091	H	T6-146	H	T6-201	H	T6-256	H	T6-311	H	T6-366	H
T6-037	H	T6-092	H	T6-147	H	T6-202	H	T6-257	H	T6-312	H	T6-367	H
T6-038	H	T6-093	H	T6-148	H	T6-203	H	T6-258	H	T6-313	H	T6-368	H
T6-039	H	T6-094	H	T6-149	H	T6-204	H	T6-259	H	T6-314	H	T6-369	H
T6-040	H	T6-095	H	T6-150	H	T6-205	H	T6-260	H	T6-315	H	T6-370	H
T6-041	H	T6-096	H	T6-151	H	T6-206	H	T6-261	H	T6-316	H	T6-371	H
T6-042	H	T6-097	H	T6-152	N/A	T6-207	H	T6-262	H	T6-317	H	T6-372	H
T6-043	H	T6-098	H	T6-153	H	T6-208	H	T6-263	H	T6-318	H	T6-373	H
T6-044	H	T6-099	H	T6-154	H	T6-209	H	T6-264	H	T6-319	H	T6-374	H
T6-045	H	T6-100	H	T6-155	H	T6-210	H	T6-265	H	T6-320	H	T6-375	H
T6-046	H	T6-101	H	T6-156	H	T6-211	H	T6-266	H	T6-321	H	T6-376	H
T6-047	H	T6-102	N/A	T6-157	H	T6-212	H	T6-267	H	T6-322	H	T6-377	H
T6-048	H	T6-103	N/A	T6-158	H	T6-213	H	T6-268	H	T6-323	H	T6-378	H
T6-049	H	T6-104	H	T6-159	H	T6-214	H	T6-269	H	T6-324	H	T6-379	H
T6-050	H	T6-105	H	T6-160	H	T6-215	H	T6-270	H	T6-325	H	T6-380	H
T6-051	H	T6-106	H	T6-161	H	T6-216	H	T6-271	H	T6-326	S	T6-381	H
T6-052	H	T6-107	H	T6-162	H	T6-217	H	T6-272	H	T6-327	H	T6-382	H
T6-053	H	T6-108	H	T6-163	H	T6-218	H	T6-273	H	T6-328	H	T6-383	H
T6-054	H	T6-109	N/A	T6-164	H	T6-219	H	T6-274	H	T6-329	H	T6-384	H
T6-055	H	T6-110	N/A	T6-165	H	T6-220	H	T6-275	H	T6-330	H		

Sample name	Tm2 a	Sample name	Tm2 a	Sample name	Tm2 a	Sample name	Tm2 a	Sample name	Tm2a	Sample name	Tm2 a	Sample name	Tm2a
T6-001	H	T6-015	H	T6-029	H	T6-043	H	T6-057	H	T6-071	H	T6-085	H
T6-002	H	T6-016	H	T6-030	H	T6-044	H	T6-058	H	T6-072	H	T6-086	H

Sample name	Tm2 a	Sample name	Tm2 a	Sample name	Tm2 a	Sample name	Tm2 a	Sample name	Tm2a	Sample name	Tm2 a	Sample name	Tm2a
T6-003	H	T6-017	H	T6-031	H	T6-045	H	T6-059	H	T6-073	H	T6-087	H
T6-004	H	T6-018	H	T6-032	H	T6-046	H	T6-060	H	T6-074	H	T6-088	H
T6-005	H	T6-019	H	T6-033	H	T6-047	H	T6-061	H	T6-075	H	T6-089	H
T6-006	H	T6-020	H	T6-034	H	T6-048	H	T6-062	H	T6-076	H	T6-090	H
T6-007	H	T6-021	H	T6-035	H	T6-049	H	T6-063	H	T6-077	H	T6-091	H
T6-008	H	T6-022	H	T6-036	H	T6-050	H	T6-064	H	T6-078	H	T6-092	H
T6-009	H	T6-023	H	T6-037	H	T6-051	H	T6-065	H	T6-079	H	T6-093	H
T6-010	H	T6-024	H	T6-038	H	T6-052	H	T6-066	H	T6-080	H	T6-094	H
T6-011	H	T6-025	H	T6-039	H	T6-053	H	T6-067	H	T6-081	H	T6-095	H
T6-012	H	T6-026	H	T6-040	H	T6-054	H	T6-068	H	T6-082	H	T6-096	H
T6-013	H	T6-027	H	T6-041	H	T6-055	H	T6-069	H	T6-083	H		
T6-014	H	T6-028	H	T6-042	H	T6-056	H	T6-070	H	T6-084	H		

Sample name	Mi- rex	Sample name	Mi- rex	Sample name	Mi- rex	Sample name	Mi- rex	Sample name	Mi- rex	Sample name	Mi- rex	Sample name	Mi- rex
T7-001	H	T7-054	H	T7-107	H	T7-160	H	T7-213	H	T7-266	H	T7-319	H
T7-002	H	T7-055	H	T7-108	H	T7-161	H	T7-214	H	T7-267	H	T7-320	H
T7-003	H	T7-056	H	T7-109	H	T7-162	H	T7-215	H	T7-268	H	T7-321	H
T7-004	H	T7-057	H	T7-110	H	T7-163	H	T7-216	H	T7-269	H	T7-322	H
T7-005	H	T7-058	H	T7-111	H	T7-164	H	T7-217	H	T7-270	H	T7-323	H
T7-006	H	T7-059	H	T7-112	H	T7-165	H	T7-218	H	T7-271	H	T7-324	H
T7-007	H	T7-060	H	T7-113	H	T7-166	H	T7-219	H	T7-272	H	T7-325	H
T7-008	H	T7-061	H	T7-114	H	T7-167	H	T7-220	H	T7-273	H	T7-326	H
T7-009	H	T7-062	H	T7-115	H	T7-168	H	T7-221	H	T7-274	H	T7-327	H
T7-010	H	T7-063	H	T7-116	H	T7-169	H	T7-222	H	T7-275	H	T7-328	H
T7-011	H	T7-064	H	T7-117	H	T7-170	H	T7-223	H	T7-276	H	T7-329	H
T7-012	H	T7-065	H	T7-118	H	T7-171	H	T7-224	H	T7-277	H	T7-330	H
T7-013	H	T7-066	H	T7-119	H	T7-172	H	T7-225	H	T7-278	H	T7-331	H
T7-014	H	T7-067	H	T7-120	H	T7-173	H	T7-226	H	T7-279	H	T7-332	H
T7-015	H	T7-068	H	T7-121	H	T7-174	H	T7-227	H	T7-280	H	T7-333	H
T7-016	H	T7-069	H	T7-122	H	T7-175	H	T7-228	H	T7-281	H	T7-334	H
T7-017	H	T7-070	H	T7-123	H	T7-176	H	T7-229	H	T7-282	H	T7-335	H
T7-018	H	T7-071	H	T7-124	H	T7-177	H	T7-230	H	T7-283	H	T7-336	H
T7-019	H	T7-072	H	T7-125	H	T7-178	H	T7-231	H	T7-284	H	T7-337	H
T7-020	H	T7-073	H	T7-126	H	T7-179	H	T7-232	H	T7-285	H	T7-338	H
T7-021	H	T7-074	H	T7-127	H	T7-180	H	T7-233	H	T7-286	H	T7-339	H
T7-022	H	T7-075	H	T7-128	H	T7-181	H	T7-234	H	T7-287	H	T7-340	H
T7-023	H	T7-076	H	T7-129	H	T7-182	H	T7-235	H	T7-288	H	T7-341	H
T7-024	H	T7-077	H	T7-130	H	T7-183	H	T7-236	H	T7-289	H	T7-342	H
T7-025	H	T7-078	H	T7-131	H	T7-184	H	T7-237	H	T7-290	H	T7-343	H
T7-026	H	T7-079	H	T7-132	H	T7-185	H	T7-238	H	T7-291	H	T7-344	H
T7-027	H	T7-080	H	T7-133	H	T7-186	H	T7-239	H	T7-292	H	T7-345	H
T7-028	H	T7-081	H	T7-134	H	T7-187	H	T7-240	H	T7-293	H	T7-346	H
T7-029	H	T7-082	H	T7-135	H	T7-188	H	T7-241	H	T7-294	H	T7-347	H
T7-030	H	T7-083	H	T7-136	H	T7-189	H	T7-242	H	T7-295	H	T7-348	H
T7-031	H	T7-084	H	T7-137	H	T7-190	H	T7-243	H	T7-296	H	T7-349	H
T7-032	H	T7-085	H	T7-138	H	T7-191	H	T7-244	H	T7-297	H	T7-350	H
T7-033	H	T7-086	H	T7-139	H	T7-192	H	T7-245	H	T7-298	H	T7-351	H
T7-034	H	T7-087	H	T7-140	H	T7-193	H	T7-246	H	T7-299	H	T7-352	H
T7-035	H	T7-088	H	T7-141	H	T7-194	H	T7-247	H	T7-300	H	T7-353	H
T7-036	H	T7-089	H	T7-142	H	T7-195	H	T7-248	H	T7-301	H	T7-354	H
T7-037	H	T7-090	H	T7-143	H	T7-196	H	T7-249	H	T7-302	H	T7-355	H
T7-038	H	T7-091	H	T7-144	H	T7-197	H	T7-250	H	T7-303	H	T7-356	H
T7-039	H	T7-092	H	T7-145	H	T7-198	H	T7-251	H	T7-304	H	T7-357	H
T7-040	H	T7-093	H	T7-146	H	T7-199	H	T7-252	H	T7-305	H	T7-358	H
T7-041	H	T7-094	H	T7-147	H	T7-200	H	T7-253	H	T7-306	H	T7-359	H
T7-042	H	T7-095	H	T7-148	H	T7-201	H	T7-254	H	T7-307	H	T7-360	H
T7-043	H	T7-096	H	T7-149	H	T7-202	H	T7-255	H	T7-308	H	T7-361	H
T7-044	H	T7-097	H	T7-150	H	T7-203	H	T7-256	H	T7-309	H	T7-362	H
T7-045	H	T7-098	H	T7-151	H	T7-204	H	T7-257	H	T7-310	H	T7-363	H
T7-046	H	T7-099	H	T7-152	H	T7-205	H	T7-258	H	T7-311	H	T7-364	H
T7-047	H	T7-100	H	T7-153	H	T7-206	H	T7-259	H	T7-312	H	T7-365	H

Sample name	Mi-rex	Sample name	Mi-rex	Sample name	Mi-rex	Sample name	Mi-rex	Sample name	Mi-rex	Sample name	Mi-rex	Sample name	Mi-rex
T7-048	H	T7-101	H	T7-154	H	T7-207	H	T7-260	H	T7-313	H		
T7-049	H	T7-102	H	T7-155	H	T7-208	H	T7-261	H	T7-314	H		
T7-050	H	T7-103	H	T7-156	H	T7-209	H	T7-262	H	T7-315	H		
T7-051	H	T7-104	H	T7-157	H	T7-210	H	T7-263	H	T7-316	H		
T7-052	H	T7-105	H	T7-158	H	T7-211	H	T7-264	H	T7-317	H		
T7-053	H	T7-106	H	T7-159	H	T7-212	H	T7-265	H	T7-318	H		

Sample name	Mi-rex	Sample name	Mi-rex	Sample name	Mi-rex	Sample name	Mi-rex	Sample name	Mi-rex	Sample name	Mi-rex	Sample name	Mi-rex
T8-001	H	T8-053	H	T8-105	H	T8-157	H	T8-209	H	T8-261	H	T8-313	H
T8-002	H	T8-054	H	T8-106	H	T8-158	H	T8-210	H	T8-262	H	T8-314	H
T8-003	H	T8-055	H	T8-107	H	T8-159	H	T8-211	H	T8-263	H	T8-315	H
T8-004	H	T8-056	H	T8-108	H	T8-160	H	T8-212	H	T8-264	H	T8-316	H
T8-005	H	T8-057	H	T8-109	H	T8-161	H	T8-213	H	T8-265	H	T8-317	H
T8-006	H	T8-058	H	T8-110	H	T8-162	H	T8-214	H	T8-266	H	T8-318	H
T8-007	H	T8-059	H	T8-111	H	T8-163	H	T8-215	H	T8-267	H	T8-319	H
T8-008	H	T8-060	H	T8-112	H	T8-164	H	T8-216	H	T8-268	H	T8-320	H
T8-009	H	T8-061	H	T8-113	H	T8-165	H	T8-217	H	T8-269	H	T8-321	H
T8-010	H	T8-062	H	T8-114	H	T8-166	H	T8-218	H	T8-270	H	T8-322	H
T8-011	H	T8-063	H	T8-115	H	T8-167	H	T8-219	H	T8-271	H	T8-323	H
T8-012	H	T8-064	H	T8-116	H	T8-168	H	T8-220	H	T8-272	H	T8-324	H
T8-013	H	T8-065	H	T8-117	H	T8-169	H	T8-221	H	T8-273	H	T8-325	H
T8-014	H	T8-066	H	T8-118	H	T8-170	H	T8-222	H	T8-274	H	T8-326	H
T8-015	H	T8-067	H	T8-119	H	T8-171	H	T8-223	H	T8-275	H	T8-327	H
T8-016	H	T8-068	H	T8-120	H	T8-172	H	T8-224	H	T8-276	H	T8-328	H
T8-017	H	T8-069	H	T8-121	H	T8-173	H	T8-225	H	T8-277	H	T8-329	H
T8-018	H	T8-070	H	T8-122	H	T8-174	H	T8-226	H	T8-278	H	T8-330	H
T8-019	H	T8-071	H	T8-123	H	T8-175	H	T8-227	H	T8-279	H	T8-331	H
T8-020	H	T8-072	H	T8-124	H	T8-176	H	T8-228	H	T8-280	N/A	T8-332	H
T8-021	H	T8-073	H	T8-125	H	T8-177	H	T8-229	H	T8-281	H	T8-333	H
T8-022	H	T8-074	H	T8-126	H	T8-178	H	T8-230	H	T8-282	H	T8-334	H
T8-023	H	T8-075	H	T8-127	H	T8-179	H	T8-231	H	T8-283	H	T8-335	H
T8-024	H	T8-076	H	T8-128	H	T8-180	H	T8-232	H	T8-284	H	T8-336	H
T8-025	H	T8-077	H	T8-129	H	T8-181	H	T8-233	H	T8-285	H	T8-337	H
T8-026	H	T8-078	H	T8-130	H	T8-182	H	T8-234	H	T8-286	H	T8-338	H
T8-027	H	T8-079	H	T8-131	H	T8-183	H	T8-235	H	T8-287	H	T8-339	H
T8-028	H	T8-080	H	T8-132	H	T8-184	H	T8-236	H	T8-288	H	T8-340	H
T8-029	H	T8-081	H	T8-133	H	T8-185	H	T8-237	H	T8-289	H	T8-341	H
T8-030	H	T8-082	H	T8-134	H	T8-186	H	T8-238	H	T8-290	H	T8-342	H
T8-031	H	T8-083	H	T8-135	H	T8-187	H	T8-239	H	T8-291	H	T8-343	H
T8-032	H	T8-084	H	T8-136	H	T8-188	H	T8-240	H	T8-292	H	T8-344	H
T8-033	H	T8-085	H	T8-137	N/A	T8-189	H	T8-241	H	T8-293	H	T8-345	H
T8-034	H	T8-086	H	T8-138	H	T8-190	H	T8-242	H	T8-294	H	T8-346	H
T8-035	H	T8-087	H	T8-139	H	T8-191	H	T8-243	H	T8-295	H	T8-347	H
T8-036	H	T8-088	H	T8-140	H	T8-192	H	T8-244	H	T8-296	H	T8-348	H
T8-037	N/A	T8-089	H	T8-141	H	T8-193	H	T8-245	H	T8-297	H	T8-349	H
T8-038	H	T8-090	H	T8-142	H	T8-194	H	T8-246	H	T8-298	H	T8-350	H
T8-039	H	T8-091	H	T8-143	H	T8-195	H	T8-247	H	T8-299	H	T8-351	H
T8-040	H	T8-092	H	T8-144	H	T8-196	H	T8-248	H	T8-300	H	T8-352	H
T8-041	H	T8-093	H	T8-145	H	T8-197	H	T8-249	H	T8-301	H	T8-353	H
T8-042	H	T8-094	H	T8-146	H	T8-198	H	T8-250	H	T8-302	H	T8-354	H
T8-043	H	T8-095	H	T8-147	H	T8-199	H	T8-251	H	T8-303	H	T8-355	H
T8-044	H	T8-096	H	T8-148	H	T8-200	H	T8-252	H	T8-304	H	T8-356	H
T8-045	H	T8-097	N/A	T8-149	H	T8-201	H	T8-253	H	T8-305	H	T8-357	H
T8-046	H	T8-098	H	T8-150	H	T8-202	H	T8-254	H	T8-306	H	T8-358	H
T8-047	H	T8-099	H	T8-151	H	T8-203	H	T8-255	H	T8-307	H	T8-359	H
T8-048	H	T8-100	H	T8-152	H	T8-204	H	T8-256	H	T8-308	H	T8-360	H
T8-049	H	T8-101	H	T8-153	H	T8-205	H	T8-257	H	T8-309	H	T8-361	H
T8-050	H	T8-102	H	T8-154	H	T8-206	H	T8-258	H	T8-310	H	T8-362	H
T8-051	H	T8-103	H	T8-155	H	T8-207	H	T8-259	H	T8-311	H		
T8-052	H	T8-104	H	T8-156	H	T8-208	H	T8-260	H	T8-312	H		

No.	Tm2a	No.	Tm2a	No.	Tm2a	No.	Tm2a	No.	Tm2a	No.	Tm2a	No.	Tm2a
1	H	22	H	43	H	64	H	85	H	106	H	127	H
2	H	23	H	44	H	65	H	86	H	107	H	128	H
3	H	24	H	45	H	66	H	87	H	108	H	129	H
4	H	25	H	46	H	67	H	88	H	109	H	130	H
5	H	26	H	47	H	68	H	89	H	110	H	131	H
6	H	27	H	48	H	69	H	90	H	111	H	132	H
7	H	28	H	49	H	70	H	91	H	112	H	133	H
8	H	29	H	50	H	71	H	92	H	113	H	134	H
9	H	30	H	51	H	72	H	93	N/A	114	H	135	H
10	H	31	H	52	H	73	H	94	H	115	H	136	H
11	H	32	H	53	H	74	H	95	H	116	H	137	H
12	H	33	H	54	H	75	H	96	H	117	H	138	H
13	H	34	H	55	H	76	N/A	97	H	118	H	139	H
14	H	35	H	56	H	77	H	98	H	119	H	140	H
15	H	36	H	57	H	78	H	99	H	120	H	141	H
16	H	37	H	58	H	79	H	100	H	121	H	142	H
17	H	38	H	59	H	80	H	101	H	122	H	143	H
18	H	39	H	60	H	81	H	102	H	123	H	144	H
19	H	40	H	61	H	82	H	103	H	124	H		
20	H	41	H	62	H	83	H	104	H	125	H		
21	H	42	H	63	H	84	H	105	H	126	H		

No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1	No.	Ty1
1	H	22	H	43	H	64	H	85	H	106	H	127	H
2	H	23	H	44	H	65	H	86	H	107	H	128	H
3	H	24	H	45	H	66	H	87	H	108	H	129	H
4	H	25	H	46	H	67	H	88	H	109	H	130	H
5	H	26	H	47	H	68	H	89	H	110	H	131	H
6	H	27	H	48	H	69	H	90	H	111	H	132	H
7	H	28	H	49	H	70	H	91	H	112	H	133	H
8	H	29	H	50	H	71	H	92	S	113	H	134	H
9	H	30	H	51	H	72	H	93	H	114	H	135	H
10	H	31	H	52	H	73	H	94	H	115	H	136	H
11	H	32	H	53	H	74	H	95	H	116	H	137	H
12	H	33	H	54	H	75	H	96	H	117	H	138	H
13	H	34	H	55	H	76	H	97	H	118	H	139	H
14	H	35	H	56	H	77	H	98	H	119	H	140	H
15	H	36	H	57	H	78	H	99	H	120	H	141	H
16	H	37	H	58	H	79	H	100	H	121	H	142	H
17	H	38	H	59	H	80	H	101	H	122	H	143	H
18	H	39	H	60	H	81	H	102	H	123	H	144	H
19	H	40	N/A	61	H	82	H	103	H	124	H		
20	H	41	H	62	H	83	H	104	H	125	H		
21	H	42	H	63	H	84	H	105	H	126	H		

Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1
T10-001	H	T10-056	H	T10-111	H	T10-166	H	T10-221	H	T10-276	H	T10-331	H
T10-002	H	T10-057	H	T10-112	H	T10-167	H	T10-222	H	T10-277	H	T10-332	H
T10-003	H	T10-058	H	T10-113	H	T10-168	H	T10-223	H	T10-278	H	T10-333	H
T10-004	H	T10-059	H	T10-114	H	T10-169	H	T10-224	H	T10-279	H	T10-334	H
T10-005	H	T10-060	H	T10-115	H	T10-170	H	T10-225	H	T10-280	H	T10-335	H
T10-006	H	T10-061	H	T10-116	H	T10-171	H	T10-226	H	T10-281	H	T10-336	H
T10-007	H	T10-062	H	T10-117	H	T10-172	H	T10-227	H	T10-282	H	T10-337	H
T10-008	H	T10-063	H	T10-118	H	T10-173	H	T10-228	H	T10-283	H	T10-338	H
T10-009	H	T10-064	H	T10-119	H	T10-174	H	T10-229	H	T10-284	H	T10-339	H
T10-010	H	T10-065	H	T10-120	H	T10-175	H	T10-230	H	T10-285	H	T10-340	H
T10-011	H	T10-066	H	T10-121	H	T10-176	H	T10-231	H	T10-286	H	T10-341	H
T10-012	H	T10-067	H	T10-122	H	T10-177	H	T10-232	H	T10-287	H	T10-342	H
T10-013	H	T10-068	H	T10-123	H	T10-178	H	T10-233	H	T10-288	H	T10-343	H
T10-014	H	T10-069	H	T10-124	H	T10-179	H	T10-234	H	T10-289	H	T10-344	H

Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1	Sample name	Ty1
T10-015	H	T10-070	H	T10-125	H	T10-180	H	T10-235	H	T10-290	H	T10-345	H
T10-016	H	T10-071	H	T10-126	H	T10-181	H	T10-236	H	T10-291	H	T10-346	H
T10-017	H	T10-072	H	T10-127	H	T10-182	H	T10-237	H	T10-292	H	T10-347	H
T10-018	H	T10-073	H	T10-128	H	T10-183	H	T10-238	H	T10-293	H	T10-348	H
T10-019	H	T10-074	H	T10-129	H	T10-184	H	T10-239	H	T10-294	H	T10-349	H
T10-020	H	T10-075	H	T10-130	H	T10-185	H	T10-240	H	T10-295	H	T10-350	H
T10-021	H	T10-076	H	T10-131	H	T10-186	H	T10-241	H	T10-296	H	T10-351	H
T10-022	H	T10-077	H	T10-132	H	T10-187	H	T10-242	H	T10-297	H	T10-352	H
T10-023	H	T10-078	H	T10-133	H	T10-188	H	T10-243	H	T10-298	H	T10-353	H
T10-024	H	T10-079	H	T10-134	H	T10-189	H	T10-244	H	T10-299	H	T10-354	H
T10-025	H	T10-080	H	T10-135	H	T10-190	H	T10-245	H	T10-300	H	T10-355	H
T10-026	H	T10-081	H	T10-136	H	T10-191	H	T10-246	H	T10-301	H	T10-356	H
T10-027	H	T10-082	H	T10-137	H	T10-192	H	T10-247	H	T10-302	H	T10-357	H
T10-028	H	T10-083	H	T10-138	H	T10-193	H	T10-248	H	T10-303	H	T10-358	H
T10-029	H	T10-084	H	T10-139	H	T10-194	H	T10-249	H	T10-304	H	T10-359	H
T10-030	H	T10-085	H	T10-140	H	T10-195	H	T10-250	H	T10-305	H	T10-360	H
T10-031	H	T10-086	H	T10-141	H	T10-196	H	T10-251	H	T10-306	H	T10-361	H
T10-032	H	T10-087	H	T10-142	H	T10-197	H	T10-252	H	T10-307	H	T10-362	H
T10-033	H	T10-088	H	T10-143	H	T10-198	H	T10-253	H	T10-308	H	T10-363	H
T10-034	H	T10-089	H	T10-144	H	T10-199	H	T10-254	H	T10-309	H	T10-364	H
T10-035	H	T10-090	H	T10-145	H	T10-200	H	T10-255	H	T10-310	H	T10-365	H
T10-036	H	T10-091	H	T10-146	H	T10-201	H	T10-256	H	T10-311	H	T10-366	H
T10-037	H	T10-092	H	T10-147	H	T10-202	H	T10-257	H	T10-312	H	T10-367	H
T10-038	H	T10-093	H	T10-148	H	T10-203	H	T10-258	H	T10-313	H	T10-368	H
T10-039	H	T10-094	H	T10-149	H	T10-204	H	T10-259	H	T10-314	H	T10-369	H
T10-040	H	T10-095	H	T10-150	H	T10-205	H	T10-260	H	T10-315	H	T10-370	H
T10-041	H	T10-096	H	T10-151	H	T10-206	H	T10-261	H	T10-316	H	T10-371	H
T10-042	H	T10-097	H	T10-152	H	T10-207	H	T10-262	H	T10-317	H	T10-372	H
T10-043	H	T10-098	H	T10-153	H	T10-208	H	T10-263	H	T10-318	H	T10-373	H
T10-044	H	T10-099	H	T10-154	H	T10-209	H	T10-264	H	T10-319	H	T10-374	H
T10-045	H	T10-100	H	T10-155	H	T10-210	H	T10-265	H	T10-320	H	T10-375	H
T10-046	H	T10-101	H	T10-156	H	T10-211	H	T10-266	H	T10-321	H	T10-376	H
T10-047	H	T10-102	H	T10-157	H	T10-212	H	T10-267	H	T10-322	H	T10-377	H
T10-048	H	T10-103	H	T10-158	H	T10-213	H	T10-268	H	T10-323	H	T10-378	H
T10-049	H	T10-104	H	T10-159	H	T10-214	H	T10-269	H	T10-324	H	T10-379	H
T10-050	H	T10-105	H	T10-160	H	T10-215	H	T10-270	H	T10-325	H	T10-380	H
T10-051	H	T10-106	H	T10-161	H	T10-216	H	T10-271	H	T10-326	H	T10-381	H
T10-052	H	T10-107	H	T10-162	H	T10-217	H	T10-272	H	T10-327	H	T10-382	H
T10-053	H	T10-108	H	T10-163	H	T10-218	H	T10-273	H	T10-328	H	T10-383	H
T10-054	H	T10-109	H	T10-164	H	T10-219	H	T10-274	H	T10-329	H	T10-384	H
T10-055	H	T10-110	H	T10-165	H	T10-220	H	T10-275	H	T10-330	H		

Sample name	Bw 06	Sample name	Bw 06	Sample name	Bw 06	Sample name	Bw 06	Sample name	Bw 06	Sample name	Bw 06	Sample name	Bw 06
T11-001	H	T11-056	H	T11-111	H	T11-166	H	T11-221	H	T11-276	H	T11-331	H
T11-002	H	T11-057	H	T11-112	H	T11-167	H	T11-222	H	T11-277	H	T11-332	H
T11-003	H	T11-058	H	T11-113	H	T11-168	H	T11-223	H	T11-278	H	T11-333	H
T11-004	H	T11-059	H	T11-114	H	T11-169	H	T11-224	H	T11-279	H	T11-334	H
T11-005	H	T11-060	H	T11-115	H	T11-170	H	T11-225	H	T11-280	H	T11-335	H
T11-006	H	T11-061	H	T11-116	H	T11-171	H	T11-226	H	T11-281	H	T11-336	H
T11-007	H	T11-062	H	T11-117	H	T11-172	H	T11-227	H	T11-282	H	T11-337	H
T11-008	H	T11-063	H	T11-118	H	T11-173	H	T11-228	H	T11-283	H	T11-338	H
T11-009	H	T11-064	H	T11-119	H	T11-174	H	T11-229	H	T11-284	H	T11-339	H
T11-010	H	T11-065	H	T11-120	H	T11-175	H	T11-230	H	T11-285	H	T11-340	H
T11-011	H	T11-066	H	T11-121	H	T11-176	H	T11-231	H	T11-286	H	T11-341	H
T11-012	H	T11-067	H	T11-122	H	T11-177	H	T11-232	H	T11-287	N/A	T11-342	H
T11-013	H	T11-068	H	T11-123	H	T11-178	H	T11-233	H	T11-288	H	T11-343	H
T11-014	H	T11-069	H	T11-124	H	T11-179	H	T11-234	H	T11-289	H	T11-344	H
T11-015	H	T11-070	H	T11-125	H	T11-180	H	T11-235	H	T11-290	H	T11-345	H
T11-016	H	T11-071	H	T11-126	H	T11-181	H	T11-236	H	T11-291	H	T11-346	H
T11-017	H	T11-072	H	T11-127	H	T11-182	H	T11-237	H	T11-292	H	T11-347	H
T11-018	H	T11-073	H	T11-128	H	T11-183	H	T11-238	H	T11-293	H	T11-348	H

Sample name	Ph3	Sample name	Ph3	Sample name	Ph3	Sample name	Ph3	Sample name	Ph3	Sample name	Ph3	Sample name	Ph3
T12-023	H	T12-074	H	T12-125	H	T12-176	H	T12-227	H	T12-278	H	T12-329	H
T12-024	H	T12-075	H	T12-126	H	T12-177	H	T12-228	H	T12-279	H	T12-330	H
T12-025	H	T12-076	H	T12-127	H	T12-178	H	T12-229	H	T12-280	H	T12-331	H
T12-026	H	T12-077	H	T12-128	H	T12-179	H	T12-230	H	T12-281	H	T12-332	H
T12-027	H	T12-078	H	T12-129	H	T12-180	H	T12-231	H	T12-282	H	T12-333	H
T12-028	H	T12-079	H	T12-130	H	T12-181	H	T12-232	H	T12-283	H	T12-334	H
T12-029	H	T12-080	H	T12-131	H	T12-182	H	T12-233	H	T12-284	H	T12-335	H
T12-030	H	T12-081	H	T12-132	H	T12-183	H	T12-234	H	T12-285	H	T12-336	H
T12-031	H	T12-082	H	T12-133	H	T12-184	H	T12-235	H	T12-286	H	T12-337	H
T12-032	H	T12-083	H	T12-134	H	T12-185	H	T12-236	H	T12-287	H	T12-338	H
T12-033	H	T12-084	H	T12-135	H	T12-186	H	T12-237	H	T12-288	H	T12-339	H
T12-034	H	T12-085	H	T12-136	H	T12-187	H	T12-238	H	T12-289	H	T12-340	H
T12-035	H	T12-086	H	T12-137	H	T12-188	H	T12-239	H	T12-290	H	T12-341	H
T12-036	H	T12-087	H	T12-138	H	T12-189	H	T12-240	H	T12-291	H	T12-342	H
T12-037	H	T12-088	H	T12-139	H	T12-190	H	T12-241	H	T12-292	H	T12-343	H
T12-038	H	T12-089	H	T12-140	H	T12-191	H	T12-242	H	T12-293	H	T12-344	H
T12-039	H	T12-090	H	T12-141	H	T12-192	H	T12-243	H	T12-294	H	T12-345	H
T12-040	H	T12-091	H	T12-142	H	T12-193	H	T12-244	H	T12-295	H	T12-346	H
T12-041	H	T12-092	H	T12-143	H	T12-194	H	T12-245	H	T12-296	H	T12-347	H
T12-042	H	T12-093	H	T12-144	H	T12-195	H	T12-246	H	T12-297	H	T12-348	H
T12-043	H	T12-094	H	T12-145	H	T12-196	H	T12-247	H	T12-298	H	T12-349	H
T12-044	H	T12-095	H	T12-146	H	T12-197	H	T12-248	H	T12-299	H	T12-350	H
T12-045	H	T12-096	H	T12-147	H	T12-198	H	T12-249	H	T12-300	H	T12-351	H
T12-046	H	T12-097	H	T12-148	H	T12-199	H	T12-250	H	T12-301	H	T12-352	H
T12-047	H	T12-098	H	T12-149	H	T12-200	H	T12-251	H	T12-302	H	T12-353	H
T12-048	H	T12-099	H	T12-150	H	T12-201	H	T12-252	H	T12-303	H		
T12-049	H	T12-100	H	T12-151	H	T12-202	H	T12-253	H	T12-304	H		
T12-050	H	T12-101	H	T12-152	H	T12-203	H	T12-254	H	T12-305	H		
T12-051	H	T12-102	H	T12-153	H	T12-204	H	T12-255	H	T12-306	H		

⑧ 환경대학교

환경대학교로부터 총 187점의 시료를 받아 3번의 서비스를 진행하였다. 처음 5점의 시료에 대하여, 원예 형질 관련 2종의 마커로 서비스를 진행하였다(표 21). 두 번째로는 48점의 시료에 대하여, 원예 형질 관련 1종의 마커로 서비스를 진행하였다(표 22). 세 번째로는 134점의 시료에 대하여, 원예 형질 관련 1종의 마커로 서비스를 진행하였다(표 23). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 21, 22, 23).

표 21. 환경대학교 5점의 시료에 대하여, 원예 형질 관련 2종의 마커를 이용한 서비스 결과

No.	샘플명	배축색	Ps	AAD	예상표현형
1	P1(msms) X P2(MsMs) #1	보라색	TA (Msms)	Msms	웅성가임
2	P1(msms) X P2(MsMs) #2	보라색	TA (Msms)	Msms	웅성가임
3	P1(msms) X P2(MsMs) #3	초록색	T (ms)	ms	웅성불임
4	P1(msms) X P2(MsMs) #4	보라색	TA (Msms)	Msms	웅성가임
5	P1(msms) X P2(MsMs) #5	초록색	T (ms)	ms	웅성불임

표 22. 환경대학교 48점의 시료에 대하여, 원예 형질 관련 1종의 마커를 이용한 서비스 결과

No.	AAD	No.	AAD	No.	AAD	No.	AAD	No.	AAD	No.	AAD
1	Msms	9	Msms	17	Msms	25	Msms	33	Msms	41	Msms
2	Msms	10	Msms	18	MsMs	26	Msms	34	Msms	42	Msms
3	Msms	11	Msms	19	Msms	27	Msms	35	MsMs	43	Msms
4	MsMs	12	Msms	20	Msms	28	Msms	36	MsMs	44	Msms
5	MsMs	13	Msms	21	Msms	29	Msms	37	Msms	45	MsMs
6	MsMs	14	MsMs	22	Msms	30	Msms	38	Msms	46	MsMs

No.	AAD	No.	AAD	No.	AAD	No.	AAD	No.	AAD	No.	AAD
7	Msms	15	Msms	23	Msms	31	Msms	39	Msms	47	Msms
8	Msms	16	Msms	24	Msms	32	Msms	40	Msms	48	Msms

표 23. 한경대학교 134점의 시료에 대하여, 원예 형질 관련 1종의 마커를 이용한 서비스 결과

No.	PT	GT	No.	PT	GT	No.	PT	GT	No.	PT	GT
#001	G	msms	#035	G	msms	#069	G	msms	#103	P	MSMS
#002	P	MSms	#036	P	MSms	#070	G	msms	#104	P	MSms
#003	P	MSms	#037	P	MSms	#071	P	MSms	#105	P	MSms
#004	P	MSMS	#038	P	MSms	#072	G	msms	#106	P	MSMS
#005	P	MSms	#039	G	msms	#073	P	MSMS	#107	P	MSms
#006	P	MSms	#040	P	MSms	#074	P	MSms	#108	P	MSms
#007	P	MSMS	#041	P	MSms	#075	P	MSms	#109	P	MSMS
#008	P	MSms	#042	G	msms	#076	P	MSms	#110	P	MSms
#009	P	MSms	#043	P	MSMS	#077	P	MSMS	#111	G	msms
#010	P	MSMS	#044	P	MSms	#078	G	msms	#112	P	MSms
#011	P	MSms	#045	P	MSms	#079	G	msms	#113	P	MSms
#012	P	MSMS	#046	P	MSms	#080	P	MSMS	#114	P	MSms
#013	P	MSms	#047	P	MSms	#081	P	MSms	#115	P	MSms
#014	P	MSms	#048	G	msms	#082	P	MSMS	#116	P	MSMS
#015	G	msms	#049	P	MSMS	#083	P	MSms	#117	P	MSMS
#016	P	MSms	#050	P	MSms	#084	G	msms	#118	P	MSms
#017	P	MSMS	#051	P	MSMS	#085	P	MSms	#119	G	msms
#018	P	MSms	#052	P	MSms	#086	G	msms	#120	P	MSms
#019	P	MSms	#053	P	MSms	#087	P	MSms	#121	P	MSMS
#020	G	msms	#054	P	MSms	#088	P	MSms	#122	P	MSms
#021	P	MSms	#055	P	MSms	#089	P	MSms	#123	P	MSMS
#022	P	MSms	#056	P	MSms	#090	P	MSMS	#124	P	MSMS
#023	P	MSMS	#057	P	MSms	#091	P	MSMS	#125	G	msms
#024	G	msms	#058	P	MSms	#092	G	msms	#126	P	MSms
#025	P	MSms	#059	P	MSms	#093	P	MSMS	#127	G	msms
#026	P	MSms	#060	G	msms	#094	P	MSms	#128	P	MSms
#027	G	msms	#061	P	MSms	#095	G	msms	#129	G	msms
#028	P	MSMS	#062	P	MSms	#096	P	MSms	#130	P	MSms
#029	P	MSMS	#063	P	MSms	#097	P	MSms	#131	P	MSms
#030	G	msms	#064	P	MSms	#098	P	MSms	#132	G	msms
#031	P	MSMS	#065	P	MSms	#099	P	MSms	#133	P	MSms
#032	P	MSms	#066	P	MSms	#100	G	msms	#134	P	MSms
#033	P	MSms	#067	P	MSms	#101	G	msms			
#034	P	MSMS	#068	P	MSMS	#102	P	MSms			

⑨ 유전자원센터

유전자원센터로부터 총 991점의 시료를 받아 병 관련 5종의 마커 (Mi-Rex, Tm2a, Ty1, I-2, Cf-9)로 서비스를 진행하였다. 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 24).

표 24. 유전자원센터 991점의 시료에 대하여, 병 관련 5종의 마커를 이용한 서비스 결과

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9	No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9	No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
1	SS	SS	SS	SS	SS	332	SS	SS	SS	SS	-	663	SS	SS	SS	SS	-
2	SS	SS	SS	SS	-	333	SS	SS	SS	SS	-	664	SS	SS	SS	SS	-
3	SS	SS	SS	SS	SS	334	SS	SS	SS	SS	RS	665	SS	SS	SS	SS	-

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
4	SS	SS	SS	SS	-
5	SS	SS	SS	SS	-
6	SS	SS	SS	SS	-
7	SS	SS	SS	SS	SS
8	SS	SS	SS	SS	-
9	SS	SS	SS	SS	SS
10	SS	SS	SS	SS	-
11	SS	SS	SS	SS	-
12	SS	SS	SS	SS	-
13	SS	SS	SS	SS	-
14	SS	SS	SS	SS	-
15	SS	SS	SS	SS	-
16	SS	SS	SS	SS	-
17	SS	SS	SS	SS	-
18	SS	SS	SS	SS	-
19	SS	SS	SS	SS	-
20	SS	SS	SS	SS	SS
21	SS	SS	SS	SS	-
22	SS	SS	SS	SS	RR
23	SS	SS	SS	SS	-
24	SS	SS	SS	SS	RS
25	SS	SS	SS	SS	SS
26	SS	SS	SS	SS	RR
27	SS	SS	SS	SS	-
28	SS	-	SS	SS	-
29	SS	SS	SS	SS	-
30	SS	SS	SS	SS	-
31	SS	SS	SS	R	RR
32	SS	SS	SS	SS	SS
33	SS	SS	SS	SS	-
34	?	SS	?	SS	-
35	SS	SS	SS	SS	SS
36	SS	SS	SS	SS	-
37	SS	SS	SS	SS	SS
38	SS	SS	SS	SS	-
39	SS	SS	SS	SS	SS
40	SS	SS	SS	SS	-
41	SS	SS	SS	SS	-
42	SS	SS	SS	SS	-
43	SS	SS	SS	SS	SS
44	SS	SS	SS	SS	-
45	SS	SS	SS	SS	-
46	SS	SS	SS	SS	RR
47	SS	SS	SS	SS	RR
48	SS	SS	SS	SS	-
49	SS	SS	SS	SS	-
50	SS	SS	SS	SS	-
51	SS	SS	SS	R	-
52	SS	SS	SS	SS	-
53	SS	SS	SS	SS	-
54	SS	SS	SS	SS	SS
55	SS	SS	SS	SS	SS
56	SS	SS	SS	SS	-
57	SS	SS	SS	SS	-
58	SS	SS	SS	SS	-
59	SS	SS	SS	SS	-
60	SS	SS	SS	SS	RS
61	SS	SS	SS	SS	-
62	SS	SS	SS	SS	-
63	SS	SS	SS	SS	-
64	SS	SS	SS	SS	-
65	SS	SS	SS	SS	-
66	SS	SS	SS	SS	-

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
335	SS	SS	SS	SS	RS
336	SS	SS	SS	SS	-
337	SS	SS	SS	SS	RS
338	SS	SS	SS	SS	-
339	SS	SS	SS	SS	-
340	SS	SS	SS	SS	-
341	SS	SS	SS	SS	-
342	SS	SS	SS	SS	RR
343	SS	SS	SS	SS	SS
344	SS	SS	SS	SS	RR
345	SS	SS	SS	SS	-
346	SS	SS	SS	SS	-
347	SS	SS	SS	SS	-
348	RR	RR	-	SS	-
349	SS	SS	-	SS	-
350	SS	SS	SS	SS	-
351	SS	SS	SS	SS	RS
352	SS	-	-	SS	-
353	SS	SS	SS	SS	-
354	SS	SS	SS	R	-
355	SS	SS	SS	SS	-
356	SS	SS	SS	SS	-
357	SS	SS	SS	SS	-
358	SS	SS	SS	SS	-
359	SS	SS	SS	SS	-
360	SS	SS	SS	SS	-
361	SS	SS	SS	SS	-
362	SS	SS	SS	SS	-
363	SS	SS	SS	SS	-
364	RR	SS	SS	SS	-
365	RR	SS	SS	SS	-
366	RR	SS	SS	SS	-
367	RR	SS	SS	SS	-
368	RR	SS	SS	SS	-
369	SS	SS	SS	SS	-
370	SS	SS	SS	SS	-
371	SS	SS	SS	SS	SS
372	SS	SS	SS	SS	SS
373	RS	SS	SS	R	SS
374	RR	SS	SS	SS	-
375	RR	SS	SS	SS	-
376	RR	SS	SS	R	-
377	SS	SS	SS	R	-
378	SS	SS	SS	R	-
379	SS	SS	SS	R	-
380	RS	SS	SS	R	-
381	RR	SS	SS	SS	-
382	SS	SS	SS	R	SS
383	RR	SS	SS	SS	SS
384	SS	SS	SS	SS	SS
385	SS	SS	SS	SS	SS
386	SS	SS	SS	SS	-
387	SS	SS	SS	SS	-
388	SS	SS	SS	SS	-
389	SS	SS	SS	SS	-
390	SS	SS	SS	SS	-
391	SS	SS	SS	SS	-
392	SS	SS	SS	SS	-
393	SS	SS	SS	SS	-
394	SS	SS	SS	SS	-
395	SS	SS	SS	SS	-
396	SS	SS	SS	SS	-
397	RS	RR	SS	SS	-

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
666	SS	SS	SS	SS	-
667	SS	SS	SS	SS	-
668	SS	SS	SS	SS	-
669	SS	SS	SS	SS	-
670	SS	SS	SS	SS	-
671	SS	SS	SS	SS	-
672	SS	SS	SS	SS	-
673	SS	SS	SS	SS	-
674	SS	SS	SS	SS	-
675	SS	SS	SS	SS	-
676	SS	SS	SS	SS	-
677	SS	SS	SS	SS	-
678	SS	SS	SS	SS	-
679	SS	SS	SS	SS	-
680	SS	SS	SS	SS	-
681	SS	SS	SS	SS	-
682	SS	SS	SS	R	-
683	SS	SS	SS	SS	-
684	RR	RS	SS	SS	-
685	SS	SS	SS	SS	-
686	SS	SS	SS	SS	-
687	SS	SS	SS	SS	-
688	SS	SS	SS	SS	-
689	SS	SS	SS	SS	-
690	SS	SS	SS	SS	-
691	SS	SS	SS	SS	-
692	SS	SS	SS	SS	-
693	SS	SS	SS	SS	-
694	SS	SS	SS	SS	-
695	SS	SS	SS	SS	-
696	SS	SS	SS	SS	-
697	SS	SS	SS	SS	-
698	SS	SS	SS	SS	-
699	SS	SS	SS	SS	-
700	SS	SS	SS	SS	-
701	SS	SS	SS	SS	-
702	SS	SS	SS	SS	-
703	SS	SS	SS	SS	SS
704	RR	RS	SS	SS	SS
705	RR	RR	SS	SS	SS
706	RS	SS	SS	SS	SS
707	SS	SS	SS	SS	-
708	SS	SS	SS	SS	-
709	SS	SS	SS	SS	-
710	SS	SS	SS	SS	-
711	SS	SS	SS	SS	-
712	SS	SS	SS	SS	-
713	SS	SS	SS	SS	-
714	SS	SS	SS	SS	-
715	SS	SS	SS	SS	-
716	SS	SS	SS	SS	-
717	SS	SS	SS	SS	-
718	SS	SS	SS	SS	-
719	SS	SS	SS	SS	-
720	SS	SS	SS	SS	-
721	SS	SS	SS	SS	-
722	SS	SS	-	SS	-
723	SS	SS	SS	SS	-
724	SS	SS	SS	SS	-
725	SS	SS	SS	SS	-
726	SS	SS	SS	SS	-
727	SS	SS	SS	SS	-
728	SS	SS	SS	SS	-

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
67	SS	SS	SS	SS	RS
68	SS	SS	SS	SS	-
69	SS	SS	SS	SS	-
70	SS	SS	SS	SS	-
71	SS	SS	SS	SS	RR
72	SS	SS	SS	SS	SS
73	SS	SS	SS	SS	-
74	SS	SS	SS	SS	-
75	SS	SS	SS	SS	-
76	SS	SS	SS	SS	RR
77	SS	SS	SS	SS	-
78	SS	SS	SS	SS	-
79	SS	SS	SS	SS	RR
80	-	-	-	SS	-
81	SS	SS	SS	SS	-
82	SS	SS	SS	SS	-
83	SS	SS	SS	SS	RS
84	SS	SS	SS	SS	-
85	SS	SS	SS	SS	-
86	SS	SS	SS	R	-
87	SS	SS	SS	SS	-
88	SS	SS	SS	SS	-
89	SS	SS	SS	SS	-
90	SS	SS	SS	SS	-
91	SS	SS	SS	SS	-
92	SS	SS	SS	SS	-
93	SS	SS	SS	SS	-
94	SS	SS	SS	SS	-
95	SS	SS	SS	SS	-
96	SS	SS	SS	SS	-
97	SS	SS	SS	SS	SS
98	SS	SS	SS	SS	-
99	SS	SS	SS	SS	SS
100	SS	SS	SS	SS	-
101	SS	SS	SS	SS	-
102	SS	SS	SS	SS	-
103	SS	SS	SS	SS	RS
104	SS	SS	SS	SS	-
105	SS	SS	SS	SS	SS
106	SS	SS	SS	SS	-
107	SS	SS	SS	SS	-
108	SS	SS	SS	SS	-
109	SS	SS	SS	SS	-
110	SS	SS	SS	SS	-
111	SS	SS	SS	SS	-
112	SS	SS	SS	SS	-
113	SS	SS	SS	SS	-
114	SS	SS	SS	SS	-
115	SS	SS	SS	SS	SS
116	SS	SS	SS	SS	-
117	SS	SS	SS	SS	RS
118	SS	SS	SS	SS	SS
119	SS	SS	SS	SS	-
120	SS	SS	SS	SS	RR
121	SS	SS	SS	SS	-
122	SS	SS	SS	SS	-
123	SS	SS	SS	SS	-
124	SS	SS	SS	SS	-
125	SS	SS	SS	R	RR
126	SS	SS	SS	R	-
127	SS	SS	SS	SS	RS
128	SS	SS	SS	SS	-
129	SS	SS	SS	SS	SS

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
398	RS	RR	SS	SS	-
399	RR	RR	SS	SS	-
400	RR	RR	SS	SS	SS
401	RR	RR	SS	SS	-
402	RS	RR	SS	SS	-
403	RR	RR	SS	SS	-
404	-	-	-	SS	-
405	SS	SS	SS	SS	-
406	SS	SS	SS	SS	-
407	SS	SS	SS	SS	-
408	SS	SS	SS	SS	-
409	SS	SS	SS	SS	-
410	SS	SS	SS	SS	-
411	SS	SS	SS	SS	-
412	SS	SS	SS	SS	-
413	SS	SS	SS	SS	-
414	SS	SS	SS	SS	-
415	SS	SS	SS	SS	-
416	SS	SS	SS	SS	-
417	SS	SS	SS	SS	-
418	SS	SS	SS	SS	-
419	SS	SS	SS	SS	-
420	SS	SS	SS	SS	-
421	SS	SS	SS	SS	-
422	SS	SS	SS	SS	-
423	SS	SS	SS	R	-
424	SS	SS	SS	SS	-
425	SS	SS	SS	SS	-
426	SS	SS	SS	SS	-
427	SS	SS	SS	SS	-
428	SS	SS	SS	SS	-
429	SS	SS	SS	SS	-
430	SS	SS	SS	SS	-
431	SS	SS	SS	SS	-
432	SS	SS	SS	SS	-
433	SS	SS	SS	R	-
434	SS	SS	SS	R	-
435	SS	SS	SS	R	-
436	SS	SS	SS	R	-
437	SS	SS	SS	SS	-
438	SS	SS	SS	SS	-
439	SS	SS	SS	SS	-
440	SS	SS	SS	SS	-
441	SS	SS	SS	SS	-
442	SS	SS	SS	SS	-
443	SS	SS	SS	SS	-
444	SS	SS	SS	SS	-
445	SS	SS	SS	SS	-
446	SS	SS	SS	SS	-
447	SS	-	-	SS	-
448	SS	SS	SS	SS	-
449	SS	SS	SS	R	-
450	SS	SS	SS	R	-
451	SS	SS	SS	SS	-
452	SS	SS	SS	R	-
453	SS	SS	SS	SS	-
454	SS	SS	SS	SS	-
455	SS	-	SS	SS	-
456	SS	SS	SS	SS	-
457	SS	SS	SS	SS	-
458	SS	SS	SS	SS	-
459	SS	SS	SS	SS	-
460	SS	SS	SS	SS	-

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
729	SS	SS	SS	SS	-
730	SS	SS	SS	SS	-
731	SS	SS	SS	SS	-
732	SS	SS	SS	SS	-
733	SS	SS	SS	SS	-
734	SS	SS	SS	SS	-
735	SS	SS	SS	SS	-
736	SS	SS	SS	SS	-
737	SS	SS	SS	SS	-
738	SS	SS	SS	SS	-
739	SS	SS	SS	SS	-
740	SS	SS	SS	SS	-
741	SS	SS	SS	SS	-
742	SS	SS	SS	SS	-
743	SS	SS	SS	SS	-
744	SS	SS	SS	SS	-
745	SS	SS	SS	SS	-
746	SS	SS	SS	SS	-
747	SS	SS	SS	SS	-
748	SS	SS	SS	SS	SS
749	SS	SS	SS	SS	SS
750	SS	SS	SS	SS	SS
751	SS	SS	SS	SS	SS
752	SS	SS	SS	SS	-
753	SS	SS	SS	SS	-
754	SS	SS	SS	SS	SS
755	SS	SS	SS	SS	SS
756	SS	SS	SS	SS	SS
757	SS	SS	SS	SS	-
758	SS	SS	SS	SS	-
759	SS	SS	SS	SS	-
760	SS	SS	SS	SS	SS
761	SS	SS	SS	SS	-
762	SS	SS	SS	SS	SS
763	SS	SS	SS	SS	-
764	SS	SS	SS	SS	SS
765	SS	SS	SS	SS	-
766	SS	SS	SS	SS	SS
767	SS	SS	SS	SS	SS
768	SS	SS	SS	SS	SS
769	SS	SS	SS	SS	-
770	RS	RR	SS	SS	-
771	RR	RR	SS	SS	SS
772	SS	RR	SS	SS	SS
773	RS	RR	SS	SS	-
774	SS	RR	SS	SS	SS
775	RS	RR	SS	SS	-
776	RS	RR	SS	SS	SS
777	SS	RR	SS	SS	-
778	RS	RR	SS	SS	SS
779	RR	RR	SS	SS	-
780	RR	RR	SS	SS	-
781	RS	RR	SS	SS	-
782	RS	RR	SS	SS	-
783	RS	RR	SS	SS	-
784	RR	RR	SS	SS	-
785	RS	RR	SS	SS	-
786	RS	RR	SS	SS	-
787	RR	RR	SS	SS	SS
788	RS	RR	SS	SS	-
789	RR	RR	SS	SS	-
790	RS	RR	SS	SS	-
791	RS	RR	SS	SS	-

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
130	SS	SS	SS	SS	SS
131	SS	SS	SS	SS	SS
132	SS	SS	SS	SS	SS
133	SS	SS	SS	SS	SS
134	SS	SS	SS	SS	-
135	SS	SS	SS	SS	-
136	SS	SS	SS	SS	-
137	SS	SS	SS	SS	-
138	SS	SS	SS	SS	RS
139	SS	SS	SS	SS	RS
140	SS	SS	SS	SS	RR
141	SS	SS	SS	SS	RR
142	RS	SS	SS	SS	-
143	SS	SS	SS	SS	-
144	SS	SS	SS	SS	-
145	SS	SS	SS	R	-
146	SS	SS	SS	SS	-
147	SS	SS	SS	SS	-
148	SS	SS	SS	SS	RR
149	SS	SS	SS	SS	RR
150	SS	SS	SS	SS	-
151	SS	SS	SS	SS	-
152	SS	SS	SS	SS	-
153	SS	SS	SS	SS	-
154	SS	SS	SS	SS	-
155	SS	SS	SS	SS	-
156	SS	SS	SS	SS	-
157	SS	SS	SS	SS	-
158	SS	SS	SS	SS	RS
159	SS	SS	SS	SS	-
160	SS	SS	SS	SS	RS
161	SS	SS	SS	SS	RS
162	SS	SS	SS	SS	-
163	SS	SS	SS	SS	-
164	SS	SS	SS	SS	-
165	SS	SS	SS	SS	RR
166	SS	SS	SS	SS	-
167	SS	SS	SS	SS	RR
168	SS	SS	SS	SS	-
169	SS	SS	SS	SS	-
170	SS	SS	SS	SS	RR
171	SS	SS	SS	SS	-
172	SS	SS	SS	SS	-
173	SS	SS	SS	SS	SS
174	-	-	-	SS	-
175	SS	SS	SS	SS	-
176	SS	SS	SS	SS	-
177	SS	SS	SS	SS	RS
178	SS	SS	SS	SS	-
179	SS	SS	SS	SS	-
180	SS	SS	SS	R	-
181	SS	SS	SS	SS	-
182	SS	SS	SS	SS	-
183	SS	SS	SS	SS	-
184	SS	SS	SS	SS	-
185	SS	SS	SS	SS	-
186	SS	SS	SS	SS	-
187	SS	SS	SS	SS	-
188	SS	SS	SS	SS	-
189	SS	SS	SS	SS	-
190	SS	SS	SS	SS	-
191	SS	SS	SS	SS	-
192	SS	SS	SS	SS	-

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
461	SS	SS	SS	SS	-
462	SS	SS	SS	SS	-
463	SS	SS	SS	SS	-
464	SS	SS	SS	SS	-
465	SS	SS	SS	SS	-
466	SS	SS	SS	SS	-
467	SS	SS	SS	SS	-
468	SS	SS	SS	SS	-
469	SS	SS	SS	SS	-
470	SS	SS	SS	SS	-
471	SS	SS	SS	SS	-
472	SS	SS	SS	SS	-
473	SS	SS	SS	SS	-
474	SS	SS	SS	SS	-
475	SS	-	SS	SS	-
476	SS	-	-	SS	-
477	SS	-	SS	SS	-
478	SS	SS	SS	SS	-
479	SS	SS	SS	SS	-
480	SS	SS	SS	SS	-
481	SS	SS	SS	SS	RR
482	SS	SS	SS	SS	RR
483	SS	SS	SS	SS	RR
484	SS	SS	SS	SS	RR
485	SS	SS	SS	SS	-
486	SS	SS	SS	SS	-
487	SS	SS	SS	SS	-
488	SS	-	SS	SS	-
489	SS	SS	SS	SS	-
490	SS	SS	SS	SS	-
491	SS	SS	SS	SS	-
492	SS	-	SS	SS	-
493	SS	SS	SS	SS	-
494	SS	SS	SS	SS	-
495	SS	SS	SS	SS	-
496	SS	SS	SS	SS	-
497	SS	-	SS	SS	-
498	SS	SS	SS	SS	-
499	SS	SS	SS	SS	-
500	SS	SS	SS	SS	-
501	SS	SS	SS	SS	-
502	SS	SS	SS	SS	-
503	SS	SS	SS	SS	-
504	SS	SS	SS	SS	-
505	SS	SS	SS	SS	-
506	SS	SS	SS	SS	-
507	SS	SS	SS	SS	-
508	SS	SS	SS	R	-
509	SS	SS	SS	SS	-
510	SS	-	SS	SS	-
511	SS	-	SS	SS	-
512	SS	SS	SS	SS	-
513	SS	SS	SS	SS	-
514	SS	-	SS	SS	-
515	SS	SS	SS	SS	-
516	SS	SS	SS	R	-
517	SS	SS	SS	SS	-
518	RR	SS	SS	SS	-
519	RR	SS	SS	SS	-
520	RR	SS	SS	SS	-
521	RR	SS	SS	SS	-
522	RR	SS	SS	SS	-
523	RR	SS	SS	SS	-

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
792	RR	RR	SS	SS	-
793	SS	RR	SS	SS	-
794	RS	RR	SS	SS	-
795	RS	RR	SS	SS	-
796	RS	RR	SS	SS	SS
797	RR	RR	SS	SS	-
798	RS	RR	SS	SS	-
799	RR	RR	SS	SS	SS
800	RS	RR	RS	SS	-
801	RR	RR	SS	SS	SS
802	-	-	-	SS	-
803	RS	RR	SS	SS	SS
804	RS	RR	SS	SS	-
805	RR	RR	SS	SS	-
806	RR	RR	SS	SS	SS
807	SS	RR	SS	SS	-
808	RS	RR	SS	SS	SS
809	RS	RR	SS	SS	SS
810	SS	RR	SS	SS	SS
811	RR	RR	SS	SS	-
812	RS	RR	SS	SS	SS
813	RR	RR	SS	SS	-
814	RR	SS	SS	SS	SS
815	RR	SS	SS	SS	-
816	RR	SS	SS	SS	SS
817	SS	SS	SS	SS	SS
818	SS	SS	SS	SS	SS
819	SS	SS	SS	SS	SS
820	SS	SS	SS	SS	-
821	SS	SS	SS	SS	-
822	SS	SS	SS	SS	-
823	SS	SS	SS	SS	SS
824	SS	SS	SS	SS	-
825	SS	SS	SS	SS	-
826	SS	SS	SS	SS	-
827	SS	SS	SS	SS	-
828	SS	SS	SS	SS	SS
829	SS	SS	SS	SS	SS
830	SS	SS	SS	SS	SS
831	SS	SS	SS	SS	SS
832	SS	SS	SS	SS	SS
833	SS	SS	SS	SS	SS
834	SS	SS	SS	SS	SS
835	SS	SS	SS	SS	SS
836	SS	SS	SS	SS	SS
837	-	-	-	SS	-
838	SS	SS	SS	SS	-
839	SS	SS	SS	SS	-
840	SS	SS	SS	SS	SS
841	SS	SS	SS	SS	-
842	SS	SS	SS	SS	SS
843	SS	SS	SS	SS	SS
844	SS	SS	SS	SS	SS
845	SS	SS	SS	SS	SS
846	SS	SS	SS	SS	-
847	SS	SS	SS	SS	SS
848	SS	SS	SS	SS	SS
849	SS	SS	SS	SS	SS
850	SS	SS	SS	SS	SS
851	SS	SS	SS	SS	-
852	SS	SS	SS	SS	SS
853	SS	SS	SS	SS	SS
854	SS	SS	SS	SS	-

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
193	SS	SS	SS	SS	-
194	SS	SS	SS	SS	-
195	SS	SS	SS	SS	-
196	SS	SS	SS	SS	-
197	SS	SS	SS	SS	-
198	SS	SS	SS	SS	-
199	SS	SS	SS	SS	SS
200	SS	SS	SS	SS	-
201	SS	SS	SS	SS	-
202	SS	SS	SS	SS	-
203	SS	SS	SS	SS	-
204	SS	SS	SS	SS	-
205	SS	SS	SS	SS	-
206	SS	SS	SS	SS	-
207	SS	SS	SS	SS	-
208	SS	SS	SS	SS	-
209	SS	SS	SS	SS	-
210	SS	SS	SS	SS	-
211	SS	SS	SS	SS	-
212	SS	SS	SS	SS	SS
213	SS	SS	SS	SS	RR
214	SS	SS	SS	SS	-
215	SS	SS	SS	SS	-
216	SS	SS	SS	SS	-
217	SS	SS	SS	SS	-
218	SS	SS	SS	SS	-
219	SS	SS	SS	SS	-
220	SS	SS	SS	SS	RR
221	SS	SS	SS	SS	-
222	SS	SS	SS	SS	-
223	SS	SS	SS	SS	-
224	SS	SS	SS	SS	SS
225	SS	SS	SS	SS	-
226	SS	SS	SS	SS	SS
227	SS	SS	SS	SS	-
228	SS	SS	SS	SS	-
229	SS	SS	SS	SS	-
230	SS	SS	SS	SS	RR
231	SS	SS	SS	SS	RS
232	SS	SS	SS	SS	RS
233	SS	SS	SS	SS	RR
234	SS	SS	SS	SS	-
235	SS	SS	SS	SS	RS
236	SS	SS	SS	SS	RS
237	SS	SS	SS	R	-
238	SS	SS	SS	SS	SS
239	SS	SS	SS	SS	-
240	SS	SS	SS	SS	-
241	SS	SS	SS	SS	-
242	SS	SS	SS	SS	-
243	SS	SS	SS	SS	-
244	SS	SS	SS	SS	-
245	SS	SS	SS	SS	-
246	SS	SS	SS	SS	-
247	SS	SS	-	SS	-
248	SS	SS	SS	SS	-
249	SS	SS	SS	SS	-
250	SS	SS	SS	SS	-
251	SS	SS	SS	SS	-
252	SS	SS	SS	SS	RS
253	SS	SS	SS	SS	-
254	SS	SS	SS	SS	-
255	SS	SS	SS	SS	-

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
524	RR	RS	SS	SS	-
525	RR	RR	SS	SS	-
526	RR	RR	SS	SS	-
527	RR	RS	SS	SS	-
528	SS	SS	SS	SS	-
529	RS	RS	SS	SS	-
530	SS	RR	SS	R	RR
531	RR	RR	SS	R	RR
532	SS	SS	SS	R	RR
533	RS	RS	SS	R	RR
534	RS	SS	SS	SS	-
535	SS	SS	SS	SS	-
536	SS	SS	SS	SS	-
537	RS	SS	SS	SS	-
538	RR	SS	SS	SS	-
539	RR	SS	SS	SS	-
540	RS	SS	SS	SS	-
541	RS	SS	-	SS	-
542	RR	RR	SS	SS	-
543	RS	RS	SS	SS	-
544	SS	RR	SS	SS	-
545	RS	RR	SS	SS	-
546	RR	RR	-	SS	-
547	SS	RR	SS	SS	-
548	RR	RR	SS	SS	-
549	RS	RR	SS	SS	-
550	SS	SS	SS	SS	-
551	SS	SS	SS	SS	-
552	SS	SS	SS	SS	-
553	SS	SS	SS	SS	-
554	SS	SS	SS	SS	-
555	SS	SS	-	SS	-
556	SS	SS	SS	SS	-
557	SS	SS	SS	SS	-
558	-	-	SS	SS	-
559	SS	SS	SS	SS	-
560	SS	-	SS	SS	-
561	SS	SS	SS	SS	-
562	SS	SS	SS	SS	-
563	SS	SS	SS	SS	-
564	SS	SS	SS	SS	-
565	SS	SS	SS	SS	-
566	SS	SS	SS	SS	-
567	SS	SS	SS	SS	-
568	SS	SS	SS	SS	-
569	SS	SS	SS	SS	-
570	SS	SS	SS	SS	-
571	SS	SS	SS	SS	-
572	SS	-	-	SS	-
573	SS	-	-	SS	-
574	SS	SS	SS	SS	-
575	SS	SS	SS	SS	-
576	SS	SS	SS	SS	-
577	SS	SS	SS	SS	-
578	SS	SS	SS	SS	-
579	SS	SS	SS	SS	-
580	SS	SS	SS	SS	-
581	SS	SS	SS	SS	-
582	SS	SS	SS	SS	-
583	SS	SS	SS	SS	-
584	SS	SS	SS	SS	-
585	SS	SS	SS	SS	-
586	SS	SS	SS	SS	-

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
855	SS	SS	SS	SS	SS
856	SS	SS	SS	SS	SS
857	SS	SS	SS	SS	SS
858	SS	SS	SS	SS	SS
859	SS	SS	SS	SS	SS
860	SS	SS	SS	SS	SS
861	SS	SS	SS	SS	SS
862	SS	SS	SS	SS	-
863	SS	SS	SS	SS	SS
864	SS	SS	SS	SS	SS
865	SS	SS	SS	SS	SS
866	SS	SS	SS	SS	-
867	SS	SS	SS	SS	SS
868	SS	SS	SS	SS	-
869	SS	SS	SS	SS	SS
870	SS	SS	SS	SS	SS
871	SS	SS	SS	SS	SS
872	SS	SS	SS	SS	-
873	SS	SS	SS	SS	SS
874	SS	SS	SS	SS	SS
875	SS	SS	SS	SS	SS
876	SS	SS	SS	SS	SS
877	SS	SS	SS	SS	SS
878	SS	SS	SS	SS	SS
879	SS	SS	SS	SS	SS
880	SS	SS	SS	SS	SS
881	SS	SS	SS	SS	SS
882	SS	SS	SS	SS	-
883	SS	SS	SS	SS	-
884	SS	SS	SS	SS	SS
885	SS	SS	SS	SS	-
886	SS	SS	SS	SS	-
887	SS	SS	SS	SS	SS
888	SS	SS	SS	SS	-
889	SS	SS	SS	SS	-
890	SS	SS	SS	SS	SS
891	SS	SS	SS	SS	-
892	SS	SS	SS	SS	-
893	SS	SS	SS	SS	SS
894	SS	SS	SS	SS	-
895	SS	SS	SS	SS	SS
896	SS	SS	SS	SS	SS
897	SS	SS	SS	SS	SS
898	SS	SS	SS	SS	SS
899	SS	SS	SS	SS	SS
900	SS	SS	SS	SS	SS
901	SS	SS	SS	SS	SS
902	SS	SS	SS	SS	SS
903	SS	SS	SS	SS	SS
904	SS	SS	SS	SS	SS
905	SS	SS	SS	SS	SS
906	SS	SS	SS	SS	-
907	SS	SS	SS	SS	-
908	SS	SS	SS	SS	SS
909	SS	SS	SS	SS	SS
910	SS	SS	SS	SS	SS
911	SS	SS	SS	SS	SS
912	SS	SS	SS	SS	-
913	SS	SS	SS	SS	SS
914	SS	SS	SS	SS	SS
915	SS	SS	SS	SS	SS
916	SS	SS	SS	SS	-
917	SS	SS	SS	SS	SS

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
256	SS	SS	SS	SS	RR
257	SS	SS	SS	SS	-
258	SS	SS	SS	SS	-
259	SS	SS	SS	SS	-
260	SS	SS	SS	SS	-
261	SS	SS	SS	SS	SS
262	SS	SS	SS	SS	RR
263	SS	SS	SS	SS	-
264	SS	SS	SS	SS	-
265	SS	SS	SS	SS	-
266	SS	RR	SS	SS	-
267	SS	SS	SS	SS	-
268	SS	SS	SS	SS	-
269	SS	SS	SS	SS	RS
270	SS	SS	SS	SS	-
271	SS	SS	SS	SS	-
272	SS	SS	SS	R	-
273	SS	SS	SS	SS	-
274	SS	SS	SS	SS	-
275	SS	SS	SS	SS	-
276	SS	SS	SS	SS	-
277	SS	SS	SS	SS	-
278	SS	SS	SS	SS	-
279	-	SS	SS	SS	-
280	SS	SS	SS	SS	-
281	SS	SS	-	SS	-
282	SS	SS	SS	SS	-
283	SS	SS	SS	SS	-
284	SS	SS	SS	SS	SS
285	SS	SS	SS	SS	-
286	SS	SS	SS	SS	-
287	SS	SS	SS	SS	-
288	SS	SS	SS	SS	RR
289	SS	SS	SS	SS	-
290	SS	SS	SS	SS	SS
291	SS	SS	SS	SS	-
292	SS	SS	SS	SS	-
293	SS	SS	SS	SS	-
294	SS	SS	SS	SS	-
295	SS	SS	SS	SS	-
296	SS	SS	SS	SS	-
297	SS	SS	SS	SS	-
298	SS	SS	SS	SS	-
299	SS	SS	SS	SS	-
300	SS	SS	SS	SS	-
301	SS	SS	SS	SS	-
302	SS	SS	SS	SS	-
303	SS	SS	SS	SS	-
304	SS	SS	SS	SS	-
305	SS	SS	SS	SS	-
306	SS	SS	SS	SS	RR
307	SS	SS	SS	SS	SS
308	SS	SS	SS	SS	RR
309	SS	SS	SS	SS	-
310	SS	SS	SS	SS	-
311	SS	SS	SS	SS	SS
312	SS	SS	SS	SS	SS
313	SS	SS	SS	SS	-
314	SS	SS	SS	SS	SS
315	SS	SS	SS	SS	RS
316	SS	SS	SS	SS	RS
317	SS	SS	SS	SS	-
318	SS	SS	SS	SS	RR

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
587	SS	SS	SS	SS	-
588	SS	SS	SS	SS	-
589	SS	SS	SS	SS	-
590	SS	SS	SS	SS	-
591	SS	SS	SS	SS	-
592	SS	SS	SS	SS	-
593	SS	SS	SS	SS	-
594	SS	SS	SS	SS	-
595	SS	SS	SS	SS	-
596	SS	SS	SS	SS	-
597	SS	SS	SS	SS	-
598	SS	SS	SS	SS	-
599	SS	SS	SS	SS	-
600	SS	SS	SS	SS	-
601	SS	SS	SS	SS	-
602	SS	SS	SS	SS	-
603	SS	SS	SS	SS	-
604	SS	SS	SS	SS	-
605	SS	SS	SS	SS	-
606	SS	SS	SS	SS	-
607	SS	-	SS	SS	-
608	SS	SS	SS	SS	-
609	SS	SS	SS	SS	-
610	SS	SS	SS	SS	-
611	SS	SS	SS	SS	-
612	SS	SS	SS	SS	-
613	SS	-	SS	SS	-
614	SS	SS	SS	SS	-
615	SS	-	SS	SS	-
616	SS	SS	SS	SS	-
617	SS	SS	SS	SS	-
618	SS	SS	SS	SS	-
619	SS	SS	SS	SS	-
620	SS	SS	SS	SS	-
621	SS	-	SS	SS	-
622	SS	RR	SS	SS	-
623	SS	RR	SS	SS	-
624	SS	RR	SS	SS	-
625	SS	RR	SS	SS	-
626	SS	SS	SS	SS	-
627	SS	SS	SS	SS	-
628	SS	SS	SS	SS	-
629	SS	-	SS	SS	-
630	SS	SS	SS	R	-
631	SS	SS	SS	R	-
632	SS	SS	SS	R	-
633	SS	SS	SS	R	-
634	SS	SS	SS	SS	-
635	SS	SS	SS	SS	-
636	SS	SS	SS	SS	-
637	SS	SS	SS	SS	-
638	SS	SS	SS	SS	-
639	SS	SS	SS	SS	-
640	SS	SS	SS	SS	-
641	SS	SS	SS	SS	-
642	SS	SS	SS	SS	-
643	SS	SS	SS	SS	-
644	SS	SS	SS	SS	-
645	SS	SS	SS	SS	-
646	SS	-	SS	SS	-
647	SS	-	SS	SS	-
648	SS	SS	SS	SS	-
649	SS	SS	SS	SS	-

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
918	SS	SS	SS	SS	-
919	SS	SS	SS	SS	-
920	SS	SS	SS	SS	SS
921	SS	SS	SS	SS	-
922	SS	SS	SS	SS	-
923	SS	SS	SS	SS	-
924	SS	SS	SS	SS	-
925	SS	SS	SS	SS	-
926	SS	SS	SS	SS	-
927	SS	SS	SS	SS	-
928	SS	SS	SS	SS	-
929	SS	SS	SS	SS	SS
930	SS	SS	SS	SS	SS
931	SS	SS	SS	SS	SS
932	SS	SS	SS	SS	SS
933	SS	SS	SS	SS	SS
934	SS	SS	SS	SS	-
935	SS	SS	SS	SS	-
936	SS	SS	SS	SS	-
937	SS	SS	SS	SS	-
938	SS	SS	SS	SS	SS
939	SS	SS	SS	SS	-
940	SS	SS	SS	SS	-
941	SS	SS	SS	SS	-
942	SS	SS	SS	SS	SS
943	SS	SS	SS	SS	-
944	SS	SS	SS	SS	-
945	SS	SS	SS	SS	SS
946	SS	SS	SS	SS	SS
947	SS	SS	SS	SS	SS
948	SS	SS	SS	SS	-
949	SS	SS	SS	SS	-
950	SS	SS	SS	SS	SS
951	SS	SS	SS	SS	SS
952	SS	SS	SS	SS	SS
953	SS	SS	SS	SS	SS
954	SS	SS	SS	SS	SS
955	SS	SS	SS	SS	-
956	SS	SS	SS	SS	SS
957	SS	SS	SS	SS	-
958	SS	SS	SS	SS	SS
959	SS	SS	SS	SS	-
960	SS	RR	SS	R	-
961	SS	RR	SS	R	-
962	SS	RR	SS	R	-
963	SS	RR	SS	R	-
964	SS	RS	SS	R	-
965	SS	RS	SS	R	-
966	SS	RS	SS	R	-
967	SS	RS	SS	-	-
968	RS	RS	SS	R	-
969	RR	RS	SS	R	-
970	SS	RR	SS	R	-
971	SS	SS	SS	R	-
972	RS	RS	SS	-	-
973	RS	RS	SS	-	-
974	RS	RS	SS	-	SS
975	RS	RS	SS	-	SS
976	RS	RS	SS	R	RR
977	RS	RS	SS	R	RR
978	RS	RS	SS	R	RR
979	RS	RS	SS	R	RR
980	SS	RS	SS	SS	SS

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
319	SS	SS	SS	SS	-
320	SS	SS	SS	SS	-
321	SS	SS	SS	SS	-
322	SS	SS	SS	R	-
323	SS	SS	SS	SS	-
324	SS	SS	SS	SS	RR
325	SS	SS	SS	SS	-
326	SS	SS	SS	SS	-
327	SS	SS	SS	SS	-
328	SS	SS	SS	SS	-
329	SS	SS	SS	SS	-
330	SS	SS	SS	SS	-
331	SS	SS	SS	SS	-

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
650	SS	SS	SS	SS	-
651	SS	SS	SS	SS	-
652	SS	SS	SS	SS	-
653	SS	SS	SS	SS	-
654	SS	SS	SS	SS	-
655	SS	SS	SS	SS	-
656	SS	SS	SS	SS	-
657	SS	SS	SS	SS	-
658	SS	SS	SS	SS	-
659	SS	SS	SS	SS	-
660	SS	SS	SS	SS	-
661	SS	SS	SS	SS	-
662	SS	SS	SS	SS	-

No.	Mi-Rex	Tm2a	Ty1	I-2	Cf-9
981	SS	RS	SS	SS	SS
982	SS	RS	SS	SS	SS
983	SS	RS	SS	SS	SS
984	SS	RR	SS	SS	SS
985	SS	RR	SS	SS	SS
986	SS	RR	SS	SS	SS
987	SS	RR	SS	SS	SS
988	RR	RS	SS	R	RR
989	RR	RS	SS	R	RR
990	RR	RS	SS	R	RR
991	-	RS	SS	R	RR

⑩ 씨드이플랫폼

씨드이플랫폼으로부터 총 504점의 시료를 받아 7번의 서비스를 진행하였다. 처음 18점의 시료에 대하여, 병 관련 7종의 마커로 서비스를 진행하였다(표 25). 두 번째로는 88점의 시료에 대하여, 병 관련 5종의 마커로 서비스를 진행하였다(표 26). 세 번째로는 88점의 시료에 대하여, 병 관련 5종의 마커로 서비스를 진행하였다(표 27). 네 번째로는 82점의 시료에 대하여, 병 관련 4종의 마커로 서비스를 진행하였다(표 28). 다섯 번째로는 68점의 시료에 대하여, 병 관련 3종의 마커로 서비스를 진행하였다(표 29). 여섯 번째로는 72점의 시료에 대하여, 병 관련 2종의 마커로 서비스를 진행하였다(표 30). 마지막으로는 88점의 시료에 대하여, 병 관련 2종의 마커로 서비스를 진행하였다(표 31). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 25, 26, 27, 28, 29, 30, 31).

표 25. 씨드이플랫폼 18점의 시료에 대하여, 병 관련 7종의 마커를 이용한 서비스 결과

No.	Tm2a	Bw12	Mi-Rex	Ve2	J3	I2	I3
1	H	H	H	H	H	S	R
2	H	H	H	H	H	S	R
3	H	H	H	H	H	S	R
4	H	S	H	H	H	R	H
5	H	S	H	H	H	R	H
6	H	S	H	H	H	R	H
7	H	S	R	H	H	R	H
8	H	S	R	H	H	R	H
9	H	S	R	H	H	R	H

No.	Tm2a	Bw12	Mi-Rex	Ve2	J3	I2	I3
10	H	R/H	R/H	H	R	R	H
11	H	R/H	R/H	H	R	R	H
12	H	R/H	R/H	H	R	R	H
13	R	S	R	H	H	S	R
14	R	S	R	H	H	S	R
15	R	S	R	H	H	S	R
16	R	H	R	H	R	R	H
17	R	H	R	H	R	R	H
18	R	H	R	H	R	R	H

표 26. 씨드이플랫폼 88점의 시료에 대하여, 병 관련 5종(Tm2a, Ve2, Bw12, Mi-Rex, J3)의 마커를 이용한 서비스 결과

No.	Tm2a	Ve2	Bw12	Mi-Rex	J3
1	H	H	H	H	H
2	H	H	H	H	H
3	H	H	H	H	H
4	H	H	H	H	H
5	H	H	H	H	H
6	H	H	H	H	H
7	H	H	H	H	H
8	H	H	H	H	H
9	H	H	H	H	H
10	H	H	H	H	H
11	H	H	H	H	H

No.	Tm2a	Ve2	Bw12	Mi-Rex	J3
31	H	H	H	H	H
32	H	H	H	H	H
33	H	H	H	H	H
34	H	H	H	H	H
35	H	H	H	H	H
36	H	H	H	H	H
37	H	H	H	H	H
38	H	H	H	H	H
39	H	H	H	H	H
40	H	H	H	H	H
41	H	H	H	H	H

No.	Tm2a	Ve2	Bw12	Mi-Rex	J3
61	H	H	H	H	H
62	H	H	H	H	H
63	H	H	H	H	H
64	H	H	H	H	H
65	H	H	H	H	H
66	H	H	H	H	H
67	H	H	H	H	H
68	H	H	H	H	H
69	H	H	H	H	H
70	H	H	H	H	H
71	H	H	H	H	H

No.	Tm2a	Ve2	Bw12	Mi-Rex	J3
12	H	H	H	H	H
13	H	H	H	H	H
14	H	H	H	H	H
15	H	H	H	H	H
16	H	H	H	H	H
17	H	H	H	H	H
18	H	H	H	H	H
19	H	H	H	H	H
20	H	H	H	H	H
21	H	H	H	H	H
22	H	H	H	H	H
23	H	H	H	H	H
24	H	H	H	H	H
25	H	H	H	H	H
26	H	H	H	H	H
27	H	H	H	H	H
28	H	H	H	H	H
29	H	H	H	H	H
30	H	H	H	H	H

No.	Tm2a	Ve2	Bw12	Mi-Rex	J3
42	H	H	H	H	H
43	H	H	H	H	H
44	H	H	H	H	H
45	H	H	H	H	H
46	H	H	H	H	H
47	H	H	H	H	H
48	H	H	H	H	H
49	H	H	H	H	H
50	H	H	H	H	H
51	H	H	H	H	H
52	H	H	H	H	H
53	H	H	H	H	H
54	H	H	H	H	H
55	H	H	H	H	H
56	H	H	H	H	H
57	H	H	H	H	H
58	H	H	H	H	H
59	H	H	H	H	H
60	H	H	H	H	H

No.	Tm2a	Ve2	Bw12	Mi-Rex	J3
72	H	H	H	H	H
73	H	H	H	H	H
74	H	H	H	H	H
75	H	H	H	H	H
76	H	H	H	H	H
77	H	H	H	H	H
78	H	H	H	H	H
79	H	H	H	H	H
80	H	H	H	H	H
81	H	H	H	H	H
82	H	H	H	H	H
83	H	H	H	H	H
84	H	H	H	H	H
85	H	H	H	H	H
86	H	H	H	H	H
87	H	H	H	H	H
88	H	H	H	H	H

표 27. 씨드이플랫폼 88점의 시료에 대하여, 병 관련 5종(Tm2a, Ve2, Mi-Rex, J3, I3)의 마커를 이용한 서비스 결과

No.	Tm2a	Ve2	Mi-Rex	J3	I3
1	H	H	H	H	H
2	H	H	H	H	H
3	H	H	H	H	H
4	H	H	H	H	H
5	H	H	H	H	H
6	H	H	H	H	H
7	H	H	H	H	H
8	H	H	H	H	H
9	H	H	H	H	H
10	H	H	H	H	H
11	H	H	H	H	H
12	H	H	H	H	H
13	H	H	H	H	H
14	H	H	H	H	H
15	H	H	H	H	H
16	H	H	H	H	H
17	H	H	H	H	H
18	H	H	H	H	H
19	H	H	H	H	H
20	H	H	H	H	H
21	H	H	H	H	H
22	H	H	H	H	H
23	H	H	H	H	H
24	H	H	H	H	H
25	H	H	H	H	H
26	H	H	H	H	H
27	H	H	H	H	H
28	H	H	H	H	H
29	H	H	H	H	H
30	H	H	H	H	H

No.	Tm2a	Ve2	Mi-Rex	J3	I3
31	H	H	H	H	H
32	H	H	H	H	H
33	H	H	H	H	H
34	H	H	H	H	H
35	H	H	H	H	H
36	H	H	H	H	H
37	H	H	H	H	H
38	H	H	H	H	H
39	H	H	H	H	H
40	H	H	H	H	H
41	H	H	H	H	H
42	H	H	H	H	H
43	H	H	H	H	H
44	H	H	H	H	H
45	H	H	H	H	H
46	H	H	H	H	H
47	H	H	H	H	H
48	H	H	H	H	H
49	H	H	H	H	H
50	H	H	H	H	H
51	H	H	H	H	H
52	H	H	H	H	H
53	H	H	H	H	H
54	H	H	H	H	H
55	H	H	H	H	H
56	H	H	H	H	H
57	H	H	H	H	H
58	H	H	H	H	H
59	H	H	H	H	H
60	H	H	H	H	H

No.	Tm2a	Ve2	Mi-Rex	J3	I3
61	H	H	H	H	H
62	H	H	H	H	H
63	H	H	H	H	H
64	H	H	H	H	H
65	H	H	H	H	H
66	H	H	H	H	H
67	H	H	H	H	H
68	H	H	H	H	H
69	H	H	H	H	H
70	H	H	H	H	H
71	H	H	H	H	H
72	H	H	H	H	H
73	H	H	H	H	H
74	H	H	H	H	H
75	H	H	H	H	H
76	H	H	H	H	H
77	H	H	H	H	H
78	H	H	H	H	H
79	H	H	H	H	H
80	H	H	H	H	H
81	H	H	H	H	H
82	H	H	H	H	H
83	H	H	H	H	H
84	H	H	H	H	H
85	H	H	H	H	H
86	H	H	H	H	H
87	H	H	H	H	H
88	H	H	H	H	H

표 28. 씨드이플랫폼 82점의 시료에 대하여, 병 관련 4종(Tm2a, Ve2, J3, I3)의 마커를 이용한 서비스 결과

No.	Tm2a	Ve2	J3	I3
-----	------	-----	----	----

No.	Tm2a	Ve2	J3	I3
-----	------	-----	----	----

No.	Tm2a	Ve2	J3	I3
-----	------	-----	----	----

No.	Tm2a	Ve2	J3	I3
1	H	H	H	H
2	H	H	H	H
3	H	H	H	H
4	H	H	H	H
5	H	H	H	H
6	H	H	H	H
7	H	H	H	H
8	H	H	H	H
9	H	H	H	H
10	H	H	H	H
11	H	H	H	H
12	H	H	H	H
13	H	H	H	H
14	H	H	H	H
15	H	H	H	H
16	H	H	H	H
17	H	H	H	H
18	H	H	H	H
19	H	H	H	H
20	H	H	H	H
21	H	H	H	H
22	H	H	H	H
23	H	H	H	H
24	H	H	H	H
25	H	H	H	H
26	H	H	H	H
27	H	H	H	H
28	H	H	H	H

No.	Tm2a	Ve2	J3	I3
29	H	H	H	H
30	H	H	H	H
31	H	H	H	H
32	H	H	H	H
33	H	H	H	H
34	H	H	H	H
35	H	H	H	H
36	H	H	H	H
37	H	H	H	H
38	H	H	H	H
39	H	H	H	H
40	H	H	H	H
41	H	H	H	H
42	H	H	H	H
43	H	H	H	H
44	H	H	H	H
45	H	H	H	H
46	H	H	H	H
47	H	H	H	H
48	H	H	H	H
49	H	H	H	H
50	H	H	H	H
51	H	H	H	H
52	H	H	H	H
53	H	H	H	H
54	H	H	H	H
55	H	H	H	H
56	H	H	H	H

No.	Tm2a	Ve2	J3	I3
57	H	H	H	H
58	H	H	H	H
59	H	H	H	H
60	H	H	H	H
61	H	H	H	H
62	H	H	H	H
63	H	H	H	H
64	H	H	H	H
65	H	H	H	H
66	H	H	H	H
67	H	H	H	H
68	H	H	H	H
69	H	H	H	H
70	H	H	H	H
71	H	H	H	H
72	H	H	H	H
73	H	H	H	H
74	H	H	H	H
75	H	H	H	H
76	H	H	H	H
77	H	H	H	H
78	H	H	H	H
79	H	H	H	H
80	H	H	H	H
81	H	H	H	H
82	H	H	H	H

표 29. 씨드이플랫폼 68점의 시료에 대하여, 병 관련 3중(Tm2a, Ve2 I3)의 마커를 이용한 서비스 결과

No.	Tm2a	Ve2	I3
1	H	H	H
2	H	H	H
3	H	H	H
4	H	H	H
5	H	H	H
6	H	H	H
7	H	H	H
8	H	H	H
9	H	H	H
10	H	H	H
11	H	H	H
12	H	H	H
13	H	H	H
14	H	H	H
15	H	H	H
16	H	H	H
17	H	H	H

No.	Tm2a	Ve2	I3
18	H	H	H
19	H	H	H
20	H	H	H
21	H	H	H
22	H	H	H
23	H	H	H
24	H	H	H
25	H	H	H
26	H	H	H
27	H	H	H
28	H	H	H
29	H	H	H
30	H	H	H
31	H	H	H
32	H	H	H
33	H	H	H
34	H	H	H

No.	Tm2a	Ve2	I3
35	H	H	H
36	H	H	H
37	H	H	H
38	H	H	H
39	H	H	H
40	H	H	H
41	H	H	H
42	H	H	H
43	H	H	H
44	H	H	H
45	H	H	H
46	H	H	H
47	H	H	H
48	H	H	H
49	H	H	H
50	H	H	H
51	H	H	H

No.	Tm2a	Ve2	I3
52	H	H	H
53	H	H	H
54	H	H	H
55	H	H	H
56	H	H	H
57	H	H	H
58	H	H	H
59	H	H	H
60	H	H	H
61	H	H	H
62	H	H	H
63	H	H	H
64	H	H	H
65	H	H	H
66	H	H	H
67	H	H	H
68	H	H	H

표 30. 씨드이플랫폼 72점의 시료에 대하여, 병 관련 2중(J3, Ve2)의 마커를 이용한 서비스 결과

No.	J3	Ve2
1	H	H
2	H	H
3	H	H
4	H	H
5	H	H

No.	J3	Ve2
16	H	H
17	H	H
18	H	H
19	H	H
20	H	H

No.	J3	Ve2
31	H	H
32	H	H
33	H	H
34	H	H
35	H	H

No.	J3	Ve2
46	H	H
47	H	H
48	H	H
49	H	H
50	H	H

No.	J3	Ve2
61	H	H
62	H	H
63	H	H
64	H	H
65	H	H

No.	J3	Ve2
6	H	H
7	H	H
8	H	H
9	H	H
10	H	H
11	H	H
12	H	H
13	H	H
14	H	H
15	H	H

No.	J3	Ve2
21	H	H
22	H	H
23	H	H
24	H	H
25	H	H
26	H	H
27	H	H
28	H	R
29	H	H
30	H	H

No.	J3	Ve2
36	H	H
37	H	H
38	H	H
39	H	H
40	H	H
41	H	H
42	H	H
43	H	H
44	H	H
45	H	H

No.	J3	Ve2
51	H	H
52	H	H
53	H	H
54	H	H
55	H	H
56	H	H
57	H	H
58	H	H
59	H	H
60	H	H

No.	J3	Ve2
66	H	H
67	H	H
68	H	H
69	H	H
70	H	H
71	H	H
72	R	H

표 31. 씨드이플랫폼 88점의 시료에 대하여, 병 관련 3종(I3, Ve2, Bw12)의 마커를 이용한 서비스 결과

No.	I3	Ve2	Bw12
1	H	H	H
2	H	H	H
3	H	H	H
4	H	H	H
5	H	H	H
6	H	H	H
7	H	H	H
8	H	H	H
9	H	H	H
10	H	H	H
11	H	H	H
12	H	H	H
13	H	H	H
14	H	H	H
15	H	H	H
16	H	H	H
17	H	H	H
18	H	H	H
19	H	H	H
20	H	H	H
21	H	H	H
22	H	H	H

No.	I3	Ve2	Bw12
23	H	H	H
24	H	H	H
25	H	H	H
26	H	H	H
27	H	H	H
28	H	H	H
29	H	H	H
30	H	H	H
31	H	H	H
32	H	H	H
33	H	H	H
34	H	H	H
35	H	H	H
36	H	H	H
37	H	H	H
38	H	H	H
39	H	H	H
40	H	H	H
41	H	H	H
42	H	H	H
43	H	H	H
44	H	H	H

No.	I3	Ve2	Bw12
45	H	H	H
46	H	H	H
47	H	H	H
48	H	H	H
49	H	H	H
50	H	H	H
51	H	H	H
52	H	H	H
53	H	H	H
54	H	H	H
55	H	H	H
56	H	H	H
57	H	H	H
58	H	H	H
59	H	H	H
60	H	H	H
61	H	H	H
62	H	H	H
63	H	H	H
64	H	H	H
65	H	H	H
66	H	H	H

No.	I3	Ve2	Bw12
67	H	H	H
68	H	H	H
69	H	H	H
70	H	H	H
71	H	H	H
72	H	H	H
73	H	H	H
74	H	H	H
75	H	H	H
76	H	H	H
77	H	H	H
78	H	H	H
79	H	H	H
80	H	H	H
81	H	H	H
82	H	H	H
83	H	H	H
84	H	H	H
85	H	H	H
86	H	H	H
87	H	H	H
88	H	H	H

㉑ 바이오통

바이오통으로부터 총 915점의 시료를 받아 5번의 서비스를 진행하였다. 처음 16점의 시료에 대하여, 병 관련 15종의 마커로 서비스를 진행하였다(표 32). 두 번째로는 201점의 시료에 대하여, 병 관련 3종의 마커로 서비스를 진행하였다(표 33). 세 번째로는 146점의 시료에 대하여, 병 관련 1종의 마커로 서비스를 진행하였다(표 34). 네 번째로는 234점의 시료에 대하여, 병 관련 1종의 마커로 서비스를 진행하였다(표 35). 마지막으로 318점의 시료에 대하여, 병 관련 2종의 마커로 서비스를 진행하였다(표 36). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 32, 33, 34, 35, 36).

표 32. 바이오통 16점의 시료에 대하여, 병 관련 15종의 마커를 이용한 서비스 결과

No.	Ph3	Bw12	I2	I3	Ve2	J3	Mi-Rex	Tm2a	Ty1/3	Ty2	Ty5	Ol2	Lv	Cf9	Sw5
1	S	S	R	R	H	S	S	R	S	S	S	R	S	S	S
2	S	S	R	R	H	S	S	R	S	S	S	R	S	S	S
3	S	S	R	R	H	S	S	R	S	S	S	R	S	S	S
4	S	S	R	R	H	S	S	R	S	S	S	R	S	S	S
5	S	S	R	R	R	H	S	H	S	S	S	R	S	S	S
6	S	S	R	R	R	H	S	H	S	S	S	R	S	S	S

No.	Ph3	Bw12	I2	I3	Ve2	J3	Mi-Rex	Tm2a	Ty1/3	Ty2	Ty5	OI2	Lv	Cf9	Sw5
7	S	S	R	R	R	H	S	H	S	S	S	R	S	S	S
8	S	S	R	R	R	H	S	H	S	S	S	R	S	S	S
9	S	S	R	R	R	S	H	S	H	S	S	R	S	S	S
10	S	S	R	R	R	S	H	S	H	S	S	R	S	S	S
11	S	S	R	R	R	S	H	S	H	S	S	R	S	S	S
12	S	S	R	R	R	S	H	S	H	S	S	R	S	S	S
13	S	H	R	R	H	H	H	H	H	S	S	R	S	R	H
14	S	H	R	R	H	H	H	H	H	S	S	R	S	R	H
15	S	H	R	R	H	H	H	H	H	S	S	R	S	R	H
16	S	H	R	R	H	H	H	H	H	S	S	R	S	R	H

표 33. 바이오통 201점의 시료에 대하여, 병 관련 3종의 마커를 이용한 서비스 결과

No.	Tm2a	Bw12	Ve2	No.	Tm2a	Bw12	Ve2	No.	Tm2a	Bw12	Ve2	No.	Tm2a	Bw12	Ve2
#001	H	H	H	#052	H	H	H	#103	H	H	H	#154	H	H	H
#002	H	H	H	#053	H	H	H	#104	H	H	H	#155	H	H	H
#003	H	H	H	#054	H	H	H	#105	H	H	H	#156	H	H	H
#004	H	H	H	#055	H	H	H	#106	H	H	H	#157	H	H	H
#005	H	H	H	#056	H	H	H	#107	H	H	H	#158	H	H	H
#006	H	H	H	#057	H	H	H	#108	H	H	H	#159	H	H	H
#007	H	H	H	#058	H	H	H	#109	H	H	H	#160	H	H	H
#008	H	H	H	#059	H	H	H	#110	H	H	H	#161	H	H	H
#009	H	H	H	#060	H	H	H	#111	H	H	H	#162	H	H	H
#010	H	H	H	#061	H	H	H	#112	H	H	H	#163	H	H	H
#011	H	H	H	#062	H	H	H	#113	H	H	H	#164	H	H	H
#012	H	H	H	#063	H	H	H	#114	H	H	H	#165	H	H	H
#013	H	H	H	#064	H	H	H	#115	H	H	H	#166	H	H	H
#014	H	H	H	#065	H	H	H	#116	H	H	H	#167	H	H	H
#015	H	H	H	#066	H	H	H	#117	H	H	H	#168	H	H	H
#016	H	H	H	#067	H	H	H	#118	H	H	H	#169	H	H	H
#017	H	H	H	#068	H	H	H	#119	H	H	H	#170	H	H	H
#018	H	H	H	#069	H	H	H	#120	H	H	H	#171	H	H	H
#019	H	H	H	#070	H	H	H	#121	H	H	H	#172	H	H	H
#020	H	H	H	#071	H	H	H	#122	H	H	H	#173	H	H	H
#021	H	H	H	#072	H	H	H	#123	H	H	H	#174	H	H	H
#022	H	H	H	#073	H	H	H	#124	H	H	H	#175	H	H	H
#023	H	H	H	#074	H	H	H	#125	H	H	H	#176	H	H	H
#024	H	H	H	#075	H	H	H	#126	H	H	H	#177	H	H	H
#025	H	H	H	#076	H	H	H	#127	H	H	H	#178	H	H	H
#026	H	H	H	#077	H	H	H	#128	H	H	H	#179	H	H	H
#027	H	H	H	#078	H	H	H	#129	H	H	H	#180	H	H	H
#028	H	H	H	#079	H	H	H	#130	H	H	H	#181	H	H	H
#029	H	H	H	#080	H	H	H	#131	H	H	H	#182	H	H	H
#030	H	H	H	#081	H	H	H	#132	H	H	H	#183	H	H	H
#031	H	H	H	#082	H	H	H	#133	H	H	H	#184	H	H	H
#032	H	H	H	#083	H	H	H	#134	H	H	H	#185	H	H	H
#033	H	H	H	#084	H	H	H	#135	H	H	H	#186	H	H	H
#034	H	H	H	#085	H	H	H	#136	H	H	H	#187	H	H	S
#035	H	H	H	#086	H	H	H	#137	H	H	H	#188	H	H	H
#036	H	H	H	#087	H	H	H	#138	H	H	H	#189	H	H	H
#037	H	H	H	#088	H	H	H	#139	H	H	H	#190	H	H	H
#038	H	H	H	#089	H	H	H	#140	H	H	H	#191	H	H	H
#039	H	H	H	#090	H	H	H	#141	H	H	H	#192	H	H	H
#040	H	H	H	#091	H	H	H	#142	H	H	H	#193	H	H	H
#041	H	H	H	#092	H	H	H	#143	H	H	H	#194	H	H	H
#042	H	H	H	#093	H	H	H	#144	H	H	H	#195	H	H	H
#043	H	H	H	#094	H	H	H	#145	H	H	H	#196	H	H	H
#044	H	H	H	#095	H	H	H	#146	H	H	H	#197	H	H	H
#045	H	H	H	#096	H	H	H	#147	H	H	H	#198	H	H	H
#046	H	H	H	#097	H	H	H	#148	H	H	H	#199	H	H	H

No.	Tm2a	Bw12	Ve2	No.	Tm2a	Bw12	Ve2	No.	Tm2a	Bw12	Ve2	No.	Tm2a	Bw12	Ve2
#047	H	H	H	#098	H	H	H	#149	H	H	H	#200	H	H	H
#048	H	H	H	#099	H	H	H	#150	H	H	H	#201	H	H	H
#049	H	H	H	#100	H	H	H	#151	H	H	H				
#050	H	H	H	#101	H	H	H	#152	H	H	H				
#051	H	H	H	#102	H	H	H	#153	H	H	H				

표 34. 바이오통 146점의 시료에 대하여, 병 관련 1종의 마커를 이용한 서비스 결과

No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2
#001	S	#022	H	#043	S	#064	H	#085	H	#106	H	#127	H
#002	H	#023	H	#044	H	#065	H	#086	H	#107	H	#128	H
#003	H	#024	H	#045	H	#066	H	#087	H	#108	H	#129	H
#004	H	#025	H	#046	H	#067	H	#088	H	#109	H	#130	S
#005	H	#026	S	#047	H	#068	H	#089	S	#110	H	#131	H
#006	H	#027	H	#048	H	#069	H	#090	H	#111	H	#132	H
#007	H	#028	S	#049	H	#070	H	#091	H	#112	H	#133	H
#008	H	#029	H	#050	H	#071	H	#092	H	#113	H	#134	R
#009	H	#030	H	#051	S	#072	S	#093	H	#114	H	#135	H
#010	H	#031	H	#052	H	#073	H	#094	H	#115	S	#136	H
#011	H	#032	H	#053	H	#074	H	#095	H	#116	H	#137	H
#012	H	#033	H	#054	H	#075	H	#096	H	#117	H	#138	H
#013	H	#034	H	#055	H	#076	H	#097	H	#118	H	#139	S
#014	S	#035	H	#056	H	#077	H	#098	H	#119	H	#140	H
#015	S	#036	H	#057	S	#078	H	#099	S	#120	H	#141	H
#016	H	#037	H	#058	H	#079	H	#100	H	#121	H	#142	H
#017	S	#038	H	#059	H	#080	H	#101	H	#122	H	#143	S
#018	H	#039	S	#060	H	#081	H	#102	H	#123	H	#144	H
#019	S	#040	H	#061	H	#082	H	#103	H	#124	S	#145	H
#020	H	#041	H	#062	H	#083	H	#104	H	#125	H	#146	H
#021	H	#042	H	#063	H	#084	H	#105	H	#126	H		

표 35. 바이오통 234점의 시료에 대하여, 병 관련 1종의 마커를 이용한 서비스 결과

No.	J3	No.	J3	No.	J3	No.	J3	No.	J3	No.	J3	No.	J3
#001	H	#035	H	#069	H	#103	H	#137	H	#171	H	#205	H
#002	H	#036	H	#070	H	#104	H	#138	H	#172	H	#206	H
#003	H	#037	H	#071	H	#105	H	#139	H	#173	H	#207	H
#004	H	#038	H	#072	H	#106	H	#140	H	#174	H	#208	H
#005	H	#039	H	#073	H	#107	H	#141	H	#175	H	#209	H
#006	H	#040	H	#074	H	#108	H	#142	H	#176	H	#210	H
#007	H	#041	H	#075	H	#109	H	#143	H	#177	H	#211	H
#008	H	#042	H	#076	H	#110	S	#144	H	#178	H	#212	H
#009	H	#043	H	#077	H	#111	H	#145	H	#179	H	#213	H
#010	H	#044	H	#078	H	#112	H	#146	H	#180	H	#214	H
#011	H	#045	H	#079	H	#113	H	#147	H	#181	H	#215	H
#012	H	#046	H	#080	H	#114	H	#148	H	#182	H	#216	H
#013	H	#047	H	#081	H	#115	H	#149	H	#183	H	#217	H
#014	S	#048	H	#082	H	#116	H	#150	H	#184	H	#218	H
#015	H	#049	H	#083	H	#117	H	#151	H	#185	H	#219	H
#016	H	#050	H	#084	H	#118	H	#152	H	#186	H	#220	H
#017	H	#051	H	#085	H	#119	H	#153	H	#187	H	#221	H
#018	H	#052	H	#086	H	#120	H	#154	H	#188	H	#222	H
#019	H	#053	H	#087	H	#121	H	#155	H	#189	H	#223	H
#020	H	#054	H	#088	H	#122	H	#156	H	#190	H	#224	H
#021	H	#055	H	#089	H	#123	H	#157	R	#191	H	#225	H
#022	H	#056	H	#090	H	#124	H	#158	H	#192	H	#226	H
#023	H	#057	H	#091	H	#125	H	#159	H	#193	H	#227	H
#024	H	#058	H	#092	H	#126	H	#160	H	#194	H	#228	-

No.	J3	No.	J3	No.	J3	No.	J3	No.	J3	No.	J3	No.	J3
#025	H	#059	H	#093	H	#127	H	#161	H	#195	H	#229	H
#026	H	#060	H	#094	H	#128	H	#162	H	#196	H	#230	H
#027	H	#061	H	#095	H	#129	H	#163	H	#197	H	#231	H
#028	H	#062	H	#096	H	#130	H	#164	H	#198	H	#232	H
#029	H	#063	H	#097	H	#131	H	#165	H	#199	H	#233	H
#030	H	#064	H	#098	H	#132	H	#166	H	#200	H	#234	H
#031	H	#065	H	#099	H	#133	H	#167	H	#201	H		
#032	H	#066	S	#100	H	#134	H	#168	H	#202	H		
#033	H	#067	H	#101	H	#135	H	#169	H	#203	S		
#034	H	#068	H	#102	H	#136	H	#170	H	#204	H		

표 36. 바이오통 318점의 시료에 대하여, 병 관련 2종의 마커를 이용한 서비스 결과

No.	Mi-Rex	Ty1	No.	Mi-Rex	Ty1	No.	Mi-Rex	Ty1	No.	Mi-Rex	Ty1	No.	Mi-Rex	Ty1
#001	-	H	#065	H	H	#129	H	H	#193	H	H	#257	H	H
#002	H	H	#066	H	H	#130	H	H	#194	H	H	#258	H	H
#003	H	H	#067	H	H	#131	H	H	#195	H	H	#259	H	H
#004	H	H	#068	H	H	#132	H	H	#196	H	H	#260	H	H
#005	H	H	#069	H	H	#133	H	H	#197	H	H	#261	H	H
#006	H	H	#070	H	H	#134	H	H	#198	H	H	#262	H	H
#007	-	H	#071	H	H	#135	H	H	#199	H	H	#263	H	H
#008	H	H	#072	H	H	#136	H	H	#200	H	H	#264	H	H
#009	H	H	#073	H	H	#137	H	H	#201	H	H	#265	H	H
#010	H	H	#074	H	H	#138	H	H	#202	H	H	#266	H	H
#011	H	H	#075	H	H	#139	H	H	#203	H	H	#267	H	H
#012	H	H	#076	H	H	#140	H	H	#204	H	H	#268	H	H
#013	H	H	#077	H	H	#141	H	H	#205	H	H	#269	H	H
#014	H	H	#078	H	H	#142	H	H	#206	H	H	#270	H	H
#015	H	H	#079	H	H	#143	H	H	#207	H	H	#271	H	H
#016	H	H	#080	H	H	#144	H	H	#208	H	H	#272	H	H
#017	H	H	#081	H	H	#145	H	H	#209	H	H	#273	H	H
#018	H	H	#082	H	H	#146	H	H	#210	H	H	#274	H	H
#019	H	H	#083	H	H	#147	H	H	#211	H	H	#275	H	H
#020	H	H	#084	H	H	#148	H	H	#212	H	H	#276	H	H
#021	H	H	#085	H	H	#149	H	H	#213	H	H	#277	H	H
#022	H	H	#086	H	H	#150	H	H	#214	H	H	#278	H	H
#023	H	H	#087	H	H	#151	H	H	#215	H	H	#279	H	H
#024	H	H	#088	H	H	#152	H	H	#216	H	H	#280	H	H
#025	H	H	#089	H	H	#153	H	H	#217	H	H	#281	H	H
#026	H	H	#090	H	H	#154	H	H	#218	H	H	#282	H	H
#027	H	H	#091	H	H	#155	H	H	#219	H	H	#283	H	H
#028	H	H	#092	H	H	#156	H	H	#220	H	H	#284	H	H
#029	H	H	#093	H	H	#157	H	H	#221	H	H	#285	H	H
#030	H	H	#094	H	H	#158	H	H	#222	H	H	#286	H	H
#031	H	H	#095	H	H	#159	H	H	#223	H	H	#287	H	H
#032	H	H	#096	H	H	#160	H	H	#224	H	H	#288	H	H
#033	H	H	#097	H	H	#161	H	H	#225	H	H	#289	H	H
#034	H	H	#098	H	H	#162	H	H	#226	H	H	#290	H	H
#035	H	H	#099	H	H	#163	H	H	#227	H	H	#291	H	H
#036	H	H	#100	H	H	#164	H	H	#228	H	H	#292	H	H
#037	H	H	#101	H	H	#165	H	H	#229	H	H	#293	H	H
#038	H	H	#102	H	H	#166	H	H	#230	H	H	#294	H	H
#039	H	H	#103	H	H	#167	H	H	#231	H	H	#295	H	H
#040	H	H	#104	H	H	#168	H	H	#232	H	H	#296	H	H
#041	H	H	#105	H	H	#169	H	H	#233	H	H	#297	H	H
#042	H	H	#106	H	H	#170	H	H	#234	H	H	#298	H	H
#043	H	H	#107	H	H	#171	H	H	#235	H	H	#299	H	H
#044	H	H	#108	H	H	#172	H	H	#236	H	H	#300	H	H
#045	H	H	#109	H	H	#173	H	H	#237	H	H	#301	H	H
#046	H	H	#110	H	H	#174	H	H	#238	H	H	#302	H	H

No.	Mi-Rex	Ty1
#047	H	H
#048	H	H
#049	H	H
#050	H	H
#051	H	H
#052	H	H
#053	H	H
#054	H	H
#055	H	H
#056	H	H
#057	H	H
#058	H	H
#059	H	H
#060	H	H
#061	H	H
#062	H	H
#063	H	H
#064	H	H

No.	Mi-Rex	Ty1
#111	H	H
#112	H	H
#113	H	H
#114	H	H
#115	H	H
#116	H	H
#117	H	H
#118	H	H
#119	H	H
#120	H	H
#121	H	H
#122	H	H
#123	H	H
#124	H	H
#125	H	H
#126	H	H
#127	H	H
#128	H	H

No.	Mi-Rex	Ty1
#175	H	H
#176	H	H
#177	H	H
#178	H	H
#179	H	H
#180	H	H
#181	H	H
#182	H	H
#183	H	H
#184	H	H
#185	H	H
#186	H	H
#187	H	H
#188	H	H
#189	H	H
#190	H	H
#191	H	H
#192	H	H

No.	Mi-Rex	Ty1
#239	H	H
#240	H	H
#241	H	H
#242	H	H
#243	H	H
#244	H	H
#245	H	H
#246	H	H
#247	H	H
#248	H	H
#249	H	H
#250	H	H
#251	H	H
#252	H	H
#253	H	H
#254	H	H
#255	H	H
#256	H	H

No.	Mi-Rex	Ty1
#303	H	H
#304	H	H
#305	H	H
#306	H	H
#307	H	H
#308	H	H
#309	H	H
#310	H	H
#311	H	H
#312	H	H
#313	H	H
#314	H	H
#315	H	H
#316	H	H
#317	H	H
#318	H	H

㉓ 해피바이오텍

해피바이오텍으로부터 총 80점의 시료를 받아 2번의 서비스를 진행하였다. 처음 40점의 시료에 대하여, 병 관련 5종의 마커로 서비스를 진행하였다(표 37). 두 번째로는 40점의 시료에 대하여, 병 관련 9종의 마커로 서비스를 진행하였다(표 38). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 37, 38).

표 37. 해피바이오텍 40점의 시료에 대하여, 병 관련 5종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	ty5	Sw5	Mi-Rex
1	H	S	S	S	S
2	H	S	S	H	S
3	H	S	S	H	S
4	S	S	S	H	H
5	S	S	S	H	H
6	H	S	S	H	S
7	H	S	S	S	H
8	H	S	S	S	S
9	S	S	S	S	S
10	S	S	S	H	S
11	S	S	S	S	S
12	S	S	S	S	S
13	R	S	S	S	S
14	R	S	S	S	S
15	S	S	S	R	S
16	S	S	S	S	S
17	R	S	S	S	S
18	S	S	S	S	R
19	S	S	S	S	R
20	S	S	S	S	R

No.	Ty1	Ty2	ty5	Sw5	Mi-Rex
21	S	S	S	R	S
22	S	S	S	S	S
23	S	S	S	R	S
24	S	S	S	R	S
25	S	S	S	S	S
26	S	S	S	S	S
27	S	S	S	S	S
28	H	S	S	S	S
29	R	S	S	S	S
30	S	S	S	S	R
31	S	S	S	S	R
32	H	S	S	S	H
33	R	S	S	S	S
34	H	S	S	S	S
35	S	S	S	S	H
36	S	S	S	S	S
37	R	S	S	S	S
38	S	S	S	S	R
39	R	S	S	S	R
40	H	S	S	S	H

표 38. 해피바이오텍 40점의 시료에 대하여, 병 관련 9종의 마커를 이용한 서비스 결과

No.	Cf9	I2	I3	Bw 06	Bw 12	Tm2a	Ph3	Ve2	J3
1	S	S	R	S	S	H	S	R	S
2	S	S	R	S	S	H	H	H	H

No.	Cf9	I2	I3	Bw 06	Bw 12	Tm2a	Ph3	Ve2	J3
21	S	R/H	R	S	S	R	R	S	R
22	S	R/H	R	S	S	R	S	S	R

No.	Cf9	I2	I3	Bw 06	Bw 12	Tm2a	Ph3	Ve2	J3
3	S	S	R	S	S	H	H	H	H
4	S	S	R	S	S	H	H	S	H
5	S	S	R	S	S	H	H	H	H
6	S	S	R	S	S	R	H	H	H
7	S	S	R	S	S	H	S	R	S
8	R/H	S	R	S	S	H	S	R	S
9	S	S	R	S	S	H	S	R	S
10	R/H	R/H	R	S	S	R	H	H	H
11	S	R/H	R	S	S	H	S	H	H
12	S	S	R	S	S	R	S	R	S
13	S	S	R	S	S	S	S	R	S
14	S	S	R	S	S	S	S	R	S
15	S	S	R	S	S	R	R	S	R
16	S	S	R	S	S	R	S	R	S
17	S	S	R	S	S	S	S	R	S
18	S	S	R	S	S	S	S	R	S
19	S	S	R	S	S	S	S	R	S
20	S	S	R	S	S	H	S	R	S

No.	Cf9	I2	I3	Bw 06	Bw 12	Tm2a	Ph3	Ve2	J3
23	S	S	R	S	S	R	R	S	R
24	S	S	R	S	S	R	R	S	R
25	S	S	R	S	S	R	S	R	S
26	S	S	R	S	S	R	S	R	S
27	S	S	R	S	S	R	S	R	S
28	S	S	R	S	S	R	S	R	S
29	S	S	R	S	S	S	S	R	S
30	S	S	R	S	S	S	S	R	S
31	S	S	R	S	S	S	S	R	S
32	S	S	R	S	S	S	S	R	S
33	S	S	R	S	S	R	S	S	S
34	S	S	R	S	S	R	S	R	S
35	S	S	R	S	S	H	S	R	S
36	R/H	S	R	S	S	H	S	R	H
37	S	S	R	S	S	R	S	R	S
38	S	S	R	S	S	R	S	R	S
39	S	S	R	S	S	R	S	R	S
40	S	S	R	S	S	R	S	S	R

1-2) 2차년도 토마토 분자마커 서비스

2차년도에 토마토 분자마커 서비스는 순천대학교, 아시아종묘, 토마토생명과학연구소, 가나종묘, 환경대학교, 부농종묘, 바이오통 등으로 총 7곳에서 의뢰를 받아 실시하였다.

① 순천대학교

순천대학교로부터 총 8,518점의 시료를 받아 5번의 서비스를 진행하였다. 처음 1,344점의 시료에 대하여, 병 관련 10종의 마커로 서비스를 진행하였다(표 1). 두 번째로는 727점의 시료에 대하여, 병 관련 10종의 마커로 서비스를 진행하였다(표 2). 세 번째로는 5점의 시료에 대하여, 병 관련 10종의 마커로 서비스를 진행하였다(표 3). 네 번째로는 6,001점의 시료에 대하여, 각기 다른 병 마커(Bw6, Ve2, J3, Tm2a)에 대하여 서비스를 진행하였다(표 4). 다섯 번째로는 441점의 시료에 대하여, 형질 관련 1종의 마커에 대하여 서비스를 진행하였다(표 5). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 1, 2, 3, 4, 5).

표 1. 순천대학교 1,344점의 시료에 대하여, 병 관련 10종의 마커를 이용한 서비스 결과

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-rex	Sw 5	Sm (CT 55)
1	S	S	R	S	S	S	R	S	S	R
2	S	S	R	S	S	S	R	S	S	R
3	S	S	R	S	S	S	R	S	S	R
4	S	S	R	S	S	S	R	S	S	R
5	S	S	R	S	S	S	R	S	S	R
6	S	S	R	S	S	S	R	S	S	R
7	S	S	R	S	S	S	R	S	S	R
8	S	S	R	S	S	S	R	S	S	R
9	S	S	R	S	S	S	R	S	S	R
10	S	S	R	S	S	S	R	S	S	R
11	S	S	R	S	S	S	R	S	S	R
12	S	S	R	S	S	S	R	S	S	R
13	S	R	S	S	S	S	R	R	S	S
14	S	R	S	S	S	S	R	R	S	S
15	S	R	S	S	S	S	R	R	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-rex	Sw 5	Sm (CT 55)
673	R	R	H	S	S	S	H	S	S	S
674	R	R	R	S	S	S	H	S	S	S
675	R	R	R	S	S	S	H	S	S	S
676	H	R	R	S	S	S	H	H	S	S
677	H	R	R	S	S	S	H	H	S	S
678	H	R	H	S	S	S	H	H	S	S
679	H	R	R	S	S	S	H	H	S	S
680	H	R	R	S	S	S	S	H	S	S
681	H	R	R	S	S	S	H	H	S	S
682	H	R	R	S	S	S	H	H	S	S
683	H	R	R	S	S	S	H	H	S	S
684	R	H	R	R	S	S	R	S	S	S
685	R	S	R	R	S	S	R	S	S	S
686	R	S	R	R	S	S	R	S	S	S
687	R	R	R	R	S	S	R	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
16	S	R	S	S	S	S	R	R	S	S
17	S	R	S	S	S	S	R	R	S	S
18	S	R	S	S	S	S	R	R	S	S
19	S	R	S	S	S	S	R	R	S	S
20	S	R	S	S	S	S	R	R	S	S
21	S	R	S	S	S	S	R	R	S	S
22	S	R	S	S	S	S	R	R	S	S
23	S	R	S	S	S	S	R	R	S	S
24	S	R	S	S	S	S	R	R	S	S
25	S	R	S	S	S	S	R	R	S	S
26	S	R	S	S	S	S	R	R	S	S
27	S	R	S	S	S	S	R	R	S	S
28	S	R	S	S	S	S	R	R	S	S
29	S	R	S	S	S	S	R	R	S	S
30	S	R	S	S	S	S	R	R	S	S
31	S	R	S	S	S	S	R	R	S	S
32	S	R	S	S	S	S	R	R	S	S
33	S	S	S	S	S	S	H	S	S	H
34	S	S	S	S	S	S	S	H	S	S
35	S	S	S	S	S	S	H	H	S	H
36	S	S	S	S	S	S	H	H	S	R
37	S	S	S	S	S	S	H	S	S	S
38	S	S	S	S	S	S	S	R	S	R
39	S	S	S	S	S	S	H	S	S	H
40	S	S	S	N/A	S	S	H	H	S	R
41	S	S	S	S	S	S	H	H	S	H
42	S	S	S	S	S	S	S	S	S	H
43	S	S	S	S	S	S	S	H	S	S
44	S	S	S	S	S	S	R	H	S	H
45	S	S	S	S	S	S	R	H	S	H
46	S	S	S	S	S	S	R	H	S	S
47	S	S	S	S	S	S	H	H	S	S
48	S	S	S	S	S	S	R	R	S	H
49	S	S	S	S	S	S	S	S	S	H
50	S	S	S	S	S	S	S	R	S	H
51	S	S	S	S	S	S	H	H	S	H
52	H	H	H	S	S	S	H	S	H	H
53	R	R	R	S	S	S	S	S	R	S
54	H	R	R	S	S	S	S	H	R	S
55	R	R	R	S	S	S	S	N/A	R	S
56	R	R	R	S	S	S	S	S	R	S
57	R	R	R	S	S	S	S	S	R	S
58	R	R	R	S	S	S	S	S	R	S
59	R	R	R	S	S	S	S	S	R	S
60	R	R	R	S	S	S	S	S	R	S
61	R	R	R	S	S	S	S	S	R	S
62	R	R	R	S	S	S	S	S	R	S
63	R	R	R	S	S	S	S	S	R	S
64	R	R	R	S	S	S	S	S	R	S
65	H	R	R	S	S	S	S	H	R	S
66	H	R	R	S	S	S	S	H	R	S
67	H	R	R	S	S	S	S	H	R	S
68	H	R	R	S	S	S	S	H	R	S
69	H	R	R	S	S	S	S	H	R	S
70	H	R	R	S	S	N/A	S	H	R	S
71	H	R	R	S	S	S	S	H	R	S
72	H	R	R	S	S	S	S	H	R	S
73	R	R	R	S	S	S	S	S	H	S
74	R	R	R	H	S	S	H	S	R	S
75	R	R	R	H	S	S	R	S	H	S
76	R	R	R	R	S	S	R	S	H	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
688	H	H	R	R	S	S	R	S	S	S
689	H	H	R	R	S	S	R	S	S	S
690	H	S	R	R	S	S	R	S	S	S
691	H	H	R	R	S	S	R	S	S	S
692	H	R	R	R	S	S	R	S	S	S
693	H	R	R	R	S	S	R	S	S	S
694	H	H	R	R	S	S	R	S	S	S
695	H	S	R	R	S	S	R	S	S	S
696	H	R	R	R	S	S	R	S	S	S
697	H	R	R	R	S	S	R	S	S	S
698	H	H	R	R	S	S	R	S	S	S
699	H	R	R	R	S	S	R	S	S	S
700	H	H	R	R	S	S	R	S	S	S
701	H	H	R	R	S	S	R	S	S	S
702	H	R	R	R	S	S	R	S	S	S
703	H	S	R	R	S	S	R	S	S	S
704	R	R	R	S	S	S	R	S	H	H
705	R	R	R	S	S	S	R	S	H	R
706	R	R	R	S	S	S	R	S	R	H
707	R	R	R	S	S	S	R	S	S	R
708	R	R	R	S	S	S	R	S	R	S
709	R	R	R	S	S	S	R	S	R	H
710	R	R	R	S	S	S	R	S	H	H
711	R	R	R	S	S	S	R	S	H	R
712	R	R	R	S	S	S	R	S	R	S
713	R	R	R	S	S	S	R	S	H	S
714	H	R	R	S	S	S	R	S	H	H
715	H	R	R	S	S	S	R	S	R	R
716	H	R	R	S	S	S	R	S	R	R
717	H	R	R	S	S	S	R	S	S	S
718	H	R	R	S	S	S	R	S	R	H
719	H	R	R	S	S	S	R	S	H	H
720	H	R	R	S	S	S	R	S	S	S
721	H	R	R	S	S	S	R	S	H	S
722	H	R	R	S	S	S	R	S	S	R
723	H	R	R	S	S	S	R	S	R	R
724	R	R	R	R	S	S	R	R	R	S
725	R	S	R	S	S	S	R	R	H	S
726	R	H	R	H	S	S	R	R	H	S
727	R	H	R	H	S	S	R	H	H	S
728	R	H	R	H	S	S	R	R	S	S
729	R	H	R	H	S	S	R	H	H	S
730	R	H	R	H	S	S	R	R	R	S
731	R	R	R	S	R/H	S	R	H	S	S
732	R	H	R	H	S	S	R	H	H	S
733	R	R	R	R	S	S	R	S	H	S
734	R	S	R	S	S	S	R	R	R	S
735	R	H	R	H	S	S	R	R	R	S
736	R	H	R	H	S	S	R	H	H	S
737	R	H	R	H	S	S	R	R	R	S
738	R	R	R	R	S	S	R	R	H	S
739	R	H	R	S	R/H	S	R	S	S	S
740	R	H	R	S	S	R	R	S	S	S
741	H	H	R	S	R/H	R	R	H	S	S
742	H	H	R	S	S	S	R	H	S	S
743	R	H	R	S	S	H	R	S	S	S
744	R	H	R	S	R/H	R	R	S	S	S
745	R	H	R	S	R/H	H	R	S	S	S
746	R	S	R	S	R/H	H	R	S	S	S
747	R	H	R	S	S	R	R	S	S	S
748	R	R	R	S	R/H	H	R	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
77	R	R	R	H	S	S	H	S	H	S
78	R	R	R	H	S	S	S	S	H	S
79	R	R	R	S	S	S	H	S	R	S
80	R	R	R	H	S	S	H	S	H	S
81	R	R	R	H	S	S	H	S	R	S
82	R	R	R	R	S	S	R	S	H	S
83	R	R	R	H	S	S	R	S	H	S
84	H	R	R	S	S	S	S	H	H	S
85	H	R	R	H	S	S	S	H	S	S
86	H	R	R	H	S	S	H	H	R	S
87	H	R	R	H	S	S	S	H	S	S
88	H	R	R	S	S	S	S	H	S	S
89	H	R	R	S	S	S	S	H	H	S
90	H	R	R	S	S	S	H	H	H	S
91	H	R	R	H	S	S	H	H	R	S
92	H	R	R	H	S	S	S	H	H	S
93	S	H	R	H	S	S	S	R	S	S
94	S	H	R	H	S	S	H	R	S	R
95	S	S	R	S	S	S	R	S	S	H
96	S	H	R	H	S	S	H	H	S	S
97	S	R	R	R	S	S	S	S	S	R
98	S	R	R	R	S	S	S	S	S	R
99	S	H	R	H	S	S	S	R	S	S
100	S	H	R	H	S	S	H	H	S	S
101	S	R	R	R	S	S	R	R	S	R
102	S	H	R	H	S	S	H	H	S	R
103	S	S	R	S	S	S	R	H	S	S
104	S	S	R	S	S	S	S	S	S	H
105	S	R	R	S	S	S	S	H	S	S
106	S	R	R	S	S	S	S	R	S	S
107	S	R	R	S	S	S	S	H	S	S
108	S	R	R	S	S	S	S	S	S	S
109	S	R	R	S	S	S	S	S	S	S
110	S	R	R	S	S	S	S	S	S	S
111	S	R	R	S	S	S	S	H	S	S
112	S	R	R	S	S	S	S	H	S	S
113	S	R	R	S	S	S	S	S	S	S
114	S	R	R	S	S	S	S	H	S	S
115	S	R	R	S	S	S	S	S	S	S
116	S	R	R	S	S	S	S	H	S	S
117	S	R	R	S	S	S	S	H	S	S
118	S	R	R	S	S	S	S	H	S	S
119	S	R	R	S	S	S	S	H	S	S
120	S	R	R	S	S	S	S	S	S	S
121	S	R	R	S	S	S	S	R	S	S
122	S	R	R	S	S	S	S	H	S	S
123	S	R	R	S	S	S	S	H	S	S
124	S	R	R	S	S	S	S	S	S	S
125	S	S	S	R	S	S	R	H	S	S
126	S	S	H	R	S	S	H	H	S	S
127	S	S	R	R	S	S	H	R	S	S
128	S	S	S	S	S	S	H	H	S	S
129	S	S	R	R	S	S	R	S	S	S
130	S	S	S	R	S	S	S	S	S	S
131	S	S	S	R	S	S	H	H	S	S
132	S	S	H	R	S	S	R	H	S	S
133	S	S	S	R	S	S	H	H	S	S
134	S	S	R	R	S	S	H	H	S	S
135	S	H	H	H	S	S	R	S	S	S
136	S	H	H	H	S	S	H	R	S	S
137	S	H	S	H	S	S	H	R	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
749	H	S	R	S	S	R	R	H	S	S
750	H	H	R	S	R/H	H	R	H	S	S
751	R	H	R	S	R/H	S	R	S	S	S
752	H	R	R	S	S	R	R	H	S	S
753	H	H	R	S	R/H	H	R	H	S	S
754	H	H	R	S	R/H	H	R	H	S	S
755	H	R	R	S	R/H	H	R	H	S	S
756	H	H	R	S	R/H	H	R	H	S	S
757	H	R	R	S	R/H	R	R	H	S	S
758	H	H	R	S	S	H	R	H	S	S
759	H	H	R	H	S	S	S	S	H	S
760	H	S	R	S	S	S	S	S	S	S
761	S	S	R	S	S	S	H	R	H	H
762	S	H	R	H	S	S	H	S	H	H
763	S	H	R	H	S	S	S	H	S	H
764	S	S	R	S	S	S	S	H	H	H
765	S	H	R	H	S	S	H	R	H	H
766	S	S	R	S	S	S	S	H	H	R
767	S	H	R	H	S	S	R	H	R	S
768	S	H	R	H	S	S	H	S	S	S
769	S	H	R	H	S	S	R	R	H	H
770	S	S	R	S	S	S	H	H	H	H
771	S	R	R	R	S	S	H	S	R	S
772	S	S	R	S	S	S	S	S	S	R
773	S	S	R	S	S	S	R	H	S	S
774	S	H	R	H	S	S	H	S	R	H
775	S	S	R	S	S	S	R	R	H	S
776	S	H	R	H	S	S	S	H	H	R
777	S	H	R	H	S	S	S	H	H	R
778	S	H	R	H	S	S	H	H	S	S
779	R	H	R	H	S	S	R	S	S	S
780	R	H	R	H	S	S	R	S	S	S
781	R	H	R	H	S	S	R	S	S	S
782	R	H	R	H	S	S	R	S	S	S
783	R	H	R	H	S	S	R	S	S	S
784	R	H	R	H	S	S	R	S	S	S
785	R	H	R	H	S	S	R	S	S	S
786	H	H	R	H	S	S	R	H	S	S
787	H	R	R	R	S	S	R	H	S	S
788	H	H	R	H	S	S	R	H	S	S
789	H	R	R	R	S	S	R	H	S	S
790	H	H	R	H	S	S	R	H	S	S
791	H	H	R	H	S	S	R	H	S	S
792	H	H	R	H	S	S	R	H	S	S
793	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
794	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
795	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
796	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
797	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
798	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
799	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
800	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
801	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
803	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
804	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
805	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
806	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
807	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
808	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
809	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
138	S	H	S	H	S	S	R	H	S	S
139	S	H	S	H	S	S	R	H	S	S
140	S	H	R	H	S	S	H	H	S	S
141	S	H	H	H	S	S	H	R	S	S
142	S	H	R	H	S	S	S	H	S	S
143	S	H	R	H	S	S	H	R	S	S
144	S	H	H	H	S	S	R	S	S	S
145	S	R	S	R	S	S	S	S	S	S
146	S	R	S	R	S	S	S	S	S	S
147	S	R	S	R	S	H	S	S	S	S
148	S	R	S	R	S	H	S	S	S	S
149	S	R	S	R	S	H	S	S	S	S
150	S	R	S	R	S	S	S	S	S	S
151	S	R	S	R	S	H	S	S	S	S
152	S	R	S	R	S	H	S	S	S	S
153	S	R	S	R	S	H	S	S	S	S
154	S	R	S	R	S	S	S	S	S	S
155	S	R	S	R	S	R	S	S	S	S
156	S	R	S	R	S	H	S	S	S	S
157	S	R	S	R	S	H	S	S	S	S
158	S	R	S	R	S	H	S	S	S	S
159	S	R	S	R	S	H	S	S	S	S
160	S	R	S	R	S	H	S	S	S	S
161	S	R	S	R	S	S	S	S	S	S
162	S	R	S	R	S	H	S	S	S	S
163	S	R	S	R	S	H	S	S	S	S
164	S	H	S	H	S	H	S	S	S	R
165	S	S	S	S	S	H	S	S	S	H
166	S	S	S	S	S	S	S	S	S	H
167	S	H	S	H	S	H	S	S	S	H
168	S	H	S	H	S	R	S	S	S	H
169	S	H	S	H	S	H	S	S	S	H
170	S	S	S	S	S	H	S	S	S	H
171	S	H	S	H	S	H	S	S	S	H
172	S	S	S	S	S	H	S	S	S	H
173	S	S	S	S	S	H	S	S	S	R
174	S	S	S	S	S	S	S	S	S	H
175	S	H	S	H	S	R	S	S	S	H
176	S	H	S	H	S	S	S	S	S	H
177	S	H	S	H	S	R	S	S	S	R
178	S	H	S	H	S	S	S	S	S	S
179	S	S	S	S	S	H	S	S	S	H
180	S	H	S	H	S	R	S	S	S	H
181	S	R	S	S	S	S	R	S	S	S
182	S	R	S	S	S	S	R	S	S	S
183	S	R	S	S	S	S	R	S	S	S
184	S	R	S	S	S	S	R	S	S	S
185	S	R	S	S	S	S	R	S	S	S
186	S	R	S	S	S	S	R	S	S	S
187	S	R	S	S	S	S	R	S	S	S
188	S	R	S	S	S	S	R	S	S	S
189	S	R	S	S	S	S	R	S	S	S
190	S	S	S	S	S	S	R	S	S	S
191	S	S	S	S	S	S	R	S	S	R
192	N/A	S	S	S	S	S	N/A	S	S	R
193	S	S	S	S	S	S	R	S	S	R
194	S	S	S	S	S	S	R	S	S	S
195	S	S	S	S	S	S	R	S	S	H
196	S	S	S	S	S	S	R	S	S	H
197	S	S	S	S	S	S	R	S	S	S
198	S	S	S	S	S	S	R	S	S	R

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
810	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
811	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
812	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
813	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
814	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
815	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
816	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
817	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
818	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
819	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
820	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
821	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
822	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
823	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
824	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
825	H	H	R	H	S	S	R	H	S	S
826	H	H	R	H	S	S	R	H	S	S
827	H	H	R	H	S	S	R	H	S	S
828	H	H	R	H	S	S	R	H	S	S
829	S	H	S	H	S	R	S	S	S	H
830	S	S	S	S	S	H	S	S	S	S
831	S	H	S	H	S	H	S	H	S	S
832	S	H	S	H	S	H	S	H	S	R
833	S	H	S	H	S	H	S	H	S	H
834	S	S	S	S	S	R	S	R	S	H
835	S	S	S	S	S	H	S	H	S	H
836	S	S	S	S	S	H	S	H	S	S
837	S	H	S	H	S	S	S	H	S	H
838	S	S	S	S	S	S	S	H	S	R
839	S	H	S	H	S	H	S	S	S	S
840	S	S	S	S	S	S	S	S	S	R
841	S	S	S	S	S	H	S	H	S	H
842	S	H	S	H	S	H	S	H	S	H
843	S	S	S	S	S	S	S	S	S	R
844	S	H	S	H	S	H	S	H	S	H
845	S	H	S	H	S	H	S	H	S	H
846	S	H	S	H	S	H	S	H	S	H
847	S	H	S	H	S	S	S	S	S	R
848	S	S	S	S	S	H	S	H	S	H
849	R	H	R	S	S	S	H	S	H	S
850	R	H	R	S	S	S	H	S	S	S
851	R	S	R	S	S	S	H	S	R	S
852	R	H	R	S	S	S	R	S	H	S
853	R	H	R	S	S	S	H	S	H	S
854	R	H	R	S	S	S	S	S	S	S
855	R	S	R	S	S	S	R	S	R	S
856	R	S	R	S	S	S	H	S	R	S
857	R	H	R	S	S	S	H	S	R	S
858	R	H	R	S	S	S	H	S	S	S
859	R	H	R	S	S	S	S	S	S	S
860	R	H	R	S	S	S	S	S	R	S
861	H	S	R	S	S	S	H	H	H	S
862	H	S	R	S	S	S	R	H	S	S
863	H	H	R	S	S	S	S	H	S	S
864	H	S	R	S	S	S	H	R	R	S
865	H	R	R	S	S	S	H	H	R	S
866	H	H	R	S	S	S	R	H	H	S
867	S	S	S	S	S	S	R	H	R	S
868	S	S	H	S	S	S	R	R	R	R
869	S	S	S	N/A	S	S	R	S	R	S
870	S	S	H	N/A	S	S	R	H	R	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
199	S	S	S	S	S	S	R	S	S	H
200	S	S	S	S	S	S	R	S	S	H
201	S	S	H	S	S	S	R	S	S	S
202	S	H	H	S	S	S	R	S	S	S
203	S	H	H	S	S	S	R	S	S	S
204	S	H	H	S	S	S	R	S	S	S
205	S	R	S	S	S	S	R	S	S	S
206	S	S	H	S	S	S	R	S	S	S
207	S	H	S	S	S	S	R	S	S	S
208	S	S	S	S	S	S	R	S	S	S
209	S	H	H	S	S	S	R	S	S	S
210	S	S	R	S	S	S	R	S	S	S
211	S	H	H	S	S	S	R	S	S	S
212	S	H	S	S	S	S	R	S	S	S
213	S	S	H	S	S	S	R	S	S	S
214	S	S	H	S	S	S	R	S	S	S
215	S	H	H	S	S	S	R	S	S	S
216	S	H	H	S	S	S	R	S	S	S
217	S	S	H	S	S	S	R	S	S	S
218	S	S	R	S	S	S	R	S	S	S
219	S	S	R	S	S	S	R	S	S	S
220	S	S	H	S	S	S	R	S	S	S
221	S	S	R	S	S	S	H	H	S	S
222	S	R	H	S	R/H	S	S	S	S	S
223	S	S	H	S	R/H	S	R	R	S	S
224	S	S	R	S	S	S	H	S	S	S
225	S	H	H	S	S	S	R	H	S	S
226	S	S	R	S	R/H	S	H	R	S	S
227	S	S	R	S	R/H	S	H	H	S	S
228	S	H	R	S	R/H	S	S	H	S	S
229	S	H	R	S	R/H	S	S	H	S	S
230	S	R	H	S	R/H	S	S	R	S	S
231	S	H	H	S	S	S	H	R	S	S
232	S	H	H	S	R/H	S	H	H	S	S
233	S	H	H	S	R/H	S	H	R	S	S
234	S	S	H	S	R/H	S	R	S	S	S
235	S	R	H	S	R/H	S	S	H	S	S
236	S	R	S	S	S	S	S	S	S	S
237	S	R	S	S	S	S	S	S	S	S
238	S	R	S	S	S	S	S	S	S	S
239	S	R	S	S	S	S	S	S	S	S
240	H	R	S	S	S	S	S	S	S	S
241	H	R	S	S	S	S	S	S	S	S
242	H	R	S	S	S	S	S	S	S	S
243	R	R	S	S	S	S	S	S	S	S
244	H	R	S	S	S	S	S	S	S	S
245	H	R	S	S	S	S	S	S	S	S
246	S	R	S	S	S	S	S	S	S	S
247	H	R	S	S	S	S	S	S	S	S
248	H	R	S	S	S	S	S	S	S	S
249	H	R	S	S	S	S	S	S	S	S
250	H	R	S	S	S	S	S	S	S	S
251	H	R	S	S	S	S	S	S	S	S
252	H	R	S	S	S	S	S	S	S	S
253	H	R	S	S	S	S	S	S	S	S
254	S	R	S	S	S	S	S	S	S	S
255	H	R	S	S	S	S	S	S	S	S
256	R	R	S	H	S	S	H	S	S	S
257	R	R	S	H	S	S	H	S	S	S
258	R	R	S	S	S	S	S	S	S	S
259	R	R	S	H	N/A	S	R	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
871	S	S	R	N/A	S	S	R	S	S	S
872	S	S	H	N/A	S	S	R	S	R	S
873	S	S	R	S	S	S	R	S	R	S
874	S	S	H	S	S	S	R	H	R	H
875	S	S	R	S	S	N/A	R	S	R	S
876	S	S	S	S	S	S	R	S	H	S
877	S	S	H	S	S	S	R	H	R	S
878	S	S	R	S	S	S	H	R	H	S
879	S	S	H	S	S	S	R	R	H	H
880	S	S	R	S	S	S	R	H	R	S
881	S	S	H	S	S	N/A	R	H	H	S
882	S	S	H	S	S	N/A	H	R	H	S
883	S	S	H	S	S	S	R	S	H	S
884	S	S	H	S	S	S	R	R	H	H
885	S	S	H	S	S	S	R	H	H	H
886	S	S	R	S	S	S	R	H	H	S
887	R	S	R	S	S	S	S	S	H	S
888	R	S	R	S	S	S	R	S	H	S
889	R	S	R	S	S	S	R	H	R	S
890	R	S	R	S	S	S	H	H	S	S
891	R	S	R	S	S	S	H	S	S	S
892	R	S	R	S	S	S	H	S	R	S
893	R	S	R	S	S	S	H	S	H	S
894	R	S	R	S	S	S	S	S	H	S
895	R	S	R	S	S	S	S	S	H	S
896	R	S	R	S	S	S	S	S	H	S
897	R	S	R	S	S	S	S	S	H	S
898	R	S	R	S	S	S	R	S	R	S
899	H	S	R	S	S	S	R	H	S	S
900	H	S	R	S	S	S	H	H	S	S
901	H	S	R	S	S	S	R	H	H	S
902	H	S	R	S	S	S	R	H	H	S
903	H	S	R	S	S	S	H	H	H	S
904	H	S	R	S	S	S	S	H	H	S
905	S	S	R	S	S	S	S	R	R	S
906	S	S	R	S	S	S	S	H	R	S
907	S	S	R	S	S	S	R	H	R	R
908	S	S	R	S	S	S	R	H	R	S
909	S	S	R	S	S	S	H	H	R	S
910	S	S	R	S	S	S	H	S	R	R
911	S	S	R	S	S	S	S	H	R	H
912	S	S	R	S	S	S	R	H	R	R
913	S	S	R	S	S	S	H	H	H	H
914	S	S	R	S	S	S	H	R	H	H
915	S	S	R	S	S	S	H	R	H	H
916	S	S	R	S	S	S	H	H	H	R
917	S	S	R	S	S	S	R	R	H	H
918	S	S	R	S	S	S	S	S	H	H
919	S	S	R	S	S	S	H	H	H	S
920	S	S	R	S	S	S	R	R	H	R
921	S	S	R	S	S	S	S	H	H	H
922	S	S	R	S	S	S	S	H	H	S
923	R	S	H	S	S	S	R	R	H	H
924	R	S	R	S	S	S	S	R	S	S
925	R	S	R	S	S	S	H	R	H	S
926	R	S	R	S	S	S	R	R	R	H
927	R	S	H	S	S	S	H	R	H	S
928	R	S	R	S	S	S	H	R	S	S
929	R	S	S	S	S	S	S	R	H	R
930	R	S	H	S	S	S	H	R	S	H
931	R	S	R	S	S	S	H	R	R	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
260	R	R	S	H	S	S	R	S	S	S
261	R	R	S	H	S	S	H	S	S	S
262	R	R	S	R	S	S	R	S	S	S
263	R	R	S	S	S	S	S	S	S	S
264	R	R	S	H	S	S	R	S	S	S
265	H	R	S	H	S	S	H	S	S	S
266	H	R	S	H	S	S	R	S	S	S
267	H	R	S	S	S	S	H	S	S	S
268	H	R	S	H	S	S	S	S	S	S
269	R	H	S	S	S	S	S	S	S	S
270	R	S	S	S	S	S	S	S	S	S
271	R	H	S	S	S	S	H	S	S	S
272	R	H	S	S	S	S	H	S	S	S
273	R	H	S	S	S	S	H	S	S	S
274	R	H	S	S	S	S	H	S	S	S
275	R	H	S	S	S	S	H	S	S	S
276	R	H	S	S	S	S	S	S	S	S
277	R	R	S	S	S	S	R	S	S	S
278	H	S	S	S	S	S	H	S	S	S
279	H	R	S	S	S	S	S	S	S	S
280	H	H	S	S	S	S	H	S	S	S
281	H	S	S	S	S	S	H	S	S	S
282	H	H	S	S	S	S	R	S	S	S
283	H	H	S	S	S	S	H	S	S	S
284	R	R	S	S	S	S	S	S	S	S
285	R	R	S	H	S	S	S	S	S	S
286	R	R	S	R	S	S	S	S	S	S
287	R	R	S	S	S	S	S	S	S	S
288	N/A	R	S	H	S	S	N/A	S	S	S
289	R	R	S	H	S	S	S	S	S	S
290	R	R	S	H	S	S	S	S	S	S
291	R	R	S	R	S	S	S	S	S	S
292	R	R	S	H	S	S	S	S	S	S
293	R	R	S	H	S	S	S	S	S	S
294	R	R	S	H	S	S	S	S	S	S
295	R	R	S	S	S	S	S	S	S	S
296	R	R	S	R	S	S	S	S	S	S
297	R	R	S	S	S	S	S	S	S	S
298	R	R	S	H	S	S	S	S	S	S
299	R	R	S	S	S	S	S	S	S	S
300	R	R	S	S	S	S	S	S	S	S
301	R	R	S	R	S	S	S	S	S	S
302	R	R	S	R	S	S	S	S	S	S
303	R	R	S	S	N/A	S	S	S	S	S
304	R	R	R	S	S	S	R	S	S	S
305	H	R	R	S	S	S	R	S	S	S
306	S	R	R	S	S	S	R	S	S	S
307	N/A	R	R	S	S	S	R	S	S	S
308	R	R	R	S	S	S	R	S	S	S
309	S	R	R	S	S	S	R	S	S	S
310	S	R	R	S	S	S	R	S	S	S
311	H	R	R	S	S	S	R	S	S	S
312	S	R	R	S	S	S	R	S	S	S
313	H	R	R	S	S	S	R	S	S	S
314	S	R	R	S	S	S	R	S	S	S
315	H	R	R	S	S	S	R	S	S	S
316	H	R	R	S	S	S	R	S	S	S
317	S	R	R	S	S	S	R	S	S	S
318	S	R	R	S	S	S	R	S	S	S
319	S	R	R	S	S	S	R	S	S	S
320	S	R	R	S	S	S	R	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
932	R	S	S	S	S	S	S	R	R	R
933	H	S	H	S	S	S	R	H	S	H
934	H	S	H	S	S	S	S	H	H	R
935	H	S	R	S	S	S	H	H	H	S
936	H	S	S	S	S	S	R	H	H	H
937	H	S	H	S	S	S	H	S	H	S
938	H	S	H	S	S	S	H	H	R	S
939	H	S	S	S	S	S	R	H	S	S
940	H	S	S	S	S	S	S	H	S	R
941	H	S	H	S	S	S	H	H	H	H
942	S	S	R	S	S	S	R	S	S	S
943	S	S	R	S	S	S	R	S	S	S
944	S	S	R	S	S	S	R	S	S	S
945	S	S	R	S	S	S	R	S	S	S
946	S	S	R	S	S	S	R	S	S	S
947	S	S	R	S	S	S	R	S	S	S
948	S	S	R	S	S	S	R	S	S	S
949	S	S	R	S	S	S	R	S	S	S
950	S	S	R	S	S	S	R	S	S	S
951	S	S	R	S	S	S	R	S	S	S
952	R	R	R	R	S	R	R	S	S	S
953	R	R	R	R	S	R	R	S	S	H
954	R	R	R	R	S	R	R	S	S	S
955	R	R	R	R	S	R	R	S	S	S
956	R	R	R	R	S	R	R	S	S	S
957	R	R	R	R	S	R	R	S	S	S
958	R	R	R	R	N/A	R	R	S	S	S
959	R	R	R	R	S	R	R	S	S	S
960	R	R	R	R	S	R	R	S	S	S
961	S	S	S	S	S	R	S	S	S	R
962	S	S	S	S	S	R	S	S	S	R
963	S	S	S	S	S	R	S	S	S	R
964	S	S	S	S	S	R	S	S	S	R
965	S	S	S	S	S	R	S	S	S	R
966	S	S	S	S	S	R	S	S	S	R
967	S	S	S	S	S	R	S	S	S	R
968	S	S	S	S	S	R	S	S	S	R
969	S	S	S	S	S	R	S	S	S	R
970	S	S	S	S	S	R	S	S	S	R
971	S	S	S	S	S	R	S	S	S	R
972	S	S	S	S	S	R	S	S	S	R
973	S	S	S	S	S	R	S	S	S	R
974	S	S	S	S	S	R	S	S	S	R
975	S	S	S	S	S	R	S	S	S	R
976	S	S	S	S	S	R	S	S	S	R
977	S	S	S	S	S	R	S	S	S	R
978	S	S	S	S	S	R	S	S	S	R
979	S	S	S	S	S	R	S	S	S	R
980	S	R	R	S	S	S	R	S	S	S
981	S	S	S	S	S	S	S	S	S	S
982	S	R	S	S	R/H	S	R	R	S	S
983	S	R	R	S	S	S	R	S	S	S
984	S	R	R	S	S	S	R	S	S	S
985	S	R	R	S	S	S	R	S	S	S
986	S	R	R	S	S	S	R	S	S	S
987	S	R	R	S	S	S	R	S	S	S
988	S	S	R	S	S	S	R	S	S	S
989	S	S	S	S	S	S	R	S	S	S
990	S	S	S	S	S	S	R	S	S	S
991	S	S	S	S	S	S	R	S	S	S
992	S	S	H	S	S	S	R	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
321	S	H	R	S	S	S	R	S	S	S
322	S	R	R	S	S	S	R	S	S	S
323	S	S	R	S	S	S	R	S	S	S
324	S	R	R	S	S	S	R	S	S	S
325	S	H	R	S	S	S	R	S	S	S
326	S	R	R	S	S	S	R	S	S	S
327	S	S	R	S	S	S	R	S	S	S
328	S	R	R	S	S	S	R	S	S	S
329	S	H	R	S	S	S	R	S	S	S
330	S	H	R	S	S	S	R	S	S	S
331	S	H	N/A	S	S	S	R	S	S	S
332	S	S	R	S	S	S	R	S	S	S
333	S	S	R	S	S	S	R	S	S	S
334	S	H	R	S	S	S	R	S	S	S
335	S	H	R	S	S	S	R	S	S	S
336	S	S	R	S	S	S	R	S	S	S
337	S	H	R	S	S	S	R	S	S	S
338	S	R	R	H	S	S	H	S	S	S
339	S	R	R	H	S	S	H	S	S	S
340	S	R	R	H	S	S	R	S	S	S
341	S	R	R	S	S	S	R	S	S	S
342	S	R	R	S	S	S	S	S	S	S
343	S	R	R	S	S	S	R	S	S	S
344	S	R	R	H	S	S	H	S	S	S
345	S	R	R	R	S	S	S	S	S	S
346	S	R	R	H	S	S	H	S	S	S
347	S	R	R	R	S	S	S	S	S	S
348	S	R	R	R	S	S	S	S	S	S
349	S	R	R	H	S	S	H	S	S	S
350	S	R	R	H	S	S	H	S	S	S
351	S	R	R	S	S	S	R	S	S	S
352	S	R	R	R	S	S	S	S	S	S
353	S	R	R	H	S	S	H	S	S	S
354	S	R	R	H	S	S	H	S	S	S
355	S	R	R	H	S	S	N/A	S	S	S
356	S	R	R	S	S	S	H	S	S	S
357	R	H	R	S	S	S	R	S	S	S
358	R	R	R	S	S	S	S	S	S	S
359	R	H	R	S	S	S	H	S	S	S
360	R	H	R	S	S	S	R	S	S	S
361	R	R	R	S	S	S	H	S	S	S
362	R	R	R	S	S	S	H	S	S	S
363	R	H	R	S	S	S	S	S	S	S
364	R	H	R	S	S	S	R	S	S	S
365	R	H	R	S	S	S	S	S	S	S
366	R	S	R	S	S	S	H	S	S	S
367	R	H	R	S	S	S	S	S	S	S
368	R	R	R	S	S	S	H	S	S	S
369	R	R	R	S	S	S	R	S	S	S
370	H	R	R	S	S	S	R	S	S	S
371	H	H	R	S	S	S	S	S	S	S
372	H	H	R	S	S	S	H	S	S	S
373	H	H	R	S	S	S	H	S	S	S
374	H	S	R	S	S	S	R	S	S	S
375	H	R	R	S	S	S	H	S	S	S
376	R	R	R	H	S	S	R	H	H	S
377	R	R	R	S	S	S	R	S	R	S
378	R	R	R	R	S	S	R	S	H	S
379	R	R	R	R	S	S	R	S	H	S
380	R	R	R	H	S	S	R	S	H	S
381	R	R	R	R	S	S	R	S	H	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
993	S	S	S	S	S	S	R	S	S	S
994	S	S	S	S	S	S	R	S	S	S
995	S	S	S	S	S	S	R	S	S	S
996	S	S	R	S	S	S	R	S	S	S
997	S	S	S	S	S	S	R	S	S	S
998	S	S	S	S	S	S	R	S	S	S
999	S	S	S	S	S	S	R	S	S	S
1000	S	S	S	S	S	S	R	S	S	S
1001	S	S	H	S	S	S	R	S	S	S
1002	S	S	S	S	S	S	R	R	S	S
1003	S	S	S	S	S	S	R	R	S	S
1004	S	S	S	S	S	S	R	R	S	S
1005	S	S	S	S	S	S	R	R	S	S
1006	S	S	S	S	S	S	R	R	S	S
1007	S	S	S	S	S	S	R	R	S	S
1008	S	S	S	S	S	S	R	R	S	S
1009	S	S	S	S	S	S	R	R	S	S
1010	S	S	S	S	S	S	R	R	S	S
1011	S	S	S	S	S	S	R	R	S	S
1012	S	S	S	S	S	S	R	S	S	R
1013	S	S	S	S	S	S	R	S	S	R
1014	S	S	S	S	S	S	R	S	S	R
1015	S	S	S	S	S	S	R	S	S	R
1016	S	S	S	S	S	S	R	S	S	R
1017	S	S	S	S	S	S	R	S	S	R
1018	S	S	S	S	S	S	R	S	S	R
1019	S	S	S	S	S	S	R	S	S	R
1020	S	S	S	S	S	S	R	S	S	R
1021	S	S	S	S	S	S	R	S	S	R
1022	S	S	S	S	S	S	R	S	S	R
1023	S	S	S	S	S	S	R	S	S	R
1024	S	S	S	S	S	S	R	S	S	R
1025	S	S	S	S	S	S	R	S	S	R
1026	S	S	S	S	S	S	R	S	S	R
1027	S	S	S	S	S	S	R	S	S	R
1028	S	S	S	S	S	S	R	S	S	R
1029	S	S	S	S	S	S	R	S	S	R
1030	S	R	S	S	S	S	R	S	S	S
1031	S	R	S	S	S	S	R	S	S	S
1032	S	R	S	S	S	S	R	S	S	S
1033	S	R	S	S	S	S	R	S	S	S
1034	S	S	S	S	S	S	R	S	S	S
1035	S	R	S	S	S	S	R	S	S	S
1036	S	R	S	S	S	S	R	S	S	S
1037	S	R	S	S	S	S	R	S	S	S
1038	S	R	S	S	S	S	R	S	S	S
1039	S	R	S	S	S	S	R	S	S	S
1040	S	S	R	S	S	S	S	S	S	S
1041	S	S	R	S	S	S	S	S	S	S
1042	S	S	R	S	S	S	S	S	S	S
1043	S	S	R	S	S	S	S	S	S	S
1044	S	S	R	S	S	S	S	S	S	S
1045	R	R	R	R	S	S	R	S	S	S
1046	R	R	R	R	S	S	R	S	S	S
1047	R	R	R	R	S	S	R	S	S	S
1048	R	R	R	R	S	S	R	S	S	S
1049	R	R	R	R	S	S	R	S	S	S
1050	R	R	R	R	S	S	R	S	S	S
1051	S	S	S	S	S	S	R	S	S	S
1052	S	S	S	S	S	S	R	S	S	S
1053	S	S	S	S	S	S	R	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
382	R	R	R	H	S	S	R	S	S	S
383	R	R	R	S	S	S	R	S	S	S
384	R	R	R	H	S	S	R	S	H	S
385	R	R	R	H	S	S	R	H	H	S
386	H	R	R	S	S	S	R	H	H	S
387	H	R	R	R	S	S	R	H	S	S
388	H	R	R	H	S	S	R	H	S	S
389	H	R	R	R	S	S	R	H	H	S
390	H	R	R	H	S	S	R	H	H	S
391	H	R	R	R	S	S	R	H	H	S
392	H	R	R	H	S	S	R	S	S	S
393	R	R	R	H	S	S	R	S	H	S
394	H	R	R	H	S	S	R	H	H	S
395	H	R	R	R	S	S	R	H	R	S
396	R	H	R	S	S	S	H	S	S	S
397	R	H	R	S	S	S	R	S	S	S
398	R	S	R	S	S	S	H	S	S	S
399	R	S	R	S	S	S	S	S	S	S
400	R	R	R	S	S	S	S	S	S	S
401	R	S	R	S	S	S	H	S	S	S
402	R	H	R	S	S	S	S	S	S	S
403	R	H	R	S	S	S	H	S	S	S
404	R	S	R	S	S	S	S	S	S	S
405	R	H	R	S	S	S	R	S	S	S
406	R	S	R	S	S	S	S	S	S	S
407	R	H	R	S	S	S	H	S	S	S
408	R	S	R	S	S	S	S	S	S	S
409	H	H	R	S	S	S	R	S	S	S
410	H	S	R	S	S	S	H	S	S	S
411	H	S	R	S	S	S	H	S	S	S
412	H	H	R	S	S	S	R	S	S	S
413	H	H	R	S	S	S	H	S	S	S
414	H	H	R	S	S	S	R	S	S	S
415	H	S	R	S	S	S	S	S	S	S
416	R	R	R	R	S	S	R	S	H	S
417	R	R	R	S	S	S	R	S	R	S
418	R	R	H	S	S	S	R	S	H	S
419	R	R	S	S	S	S	R	S	R	S
420	R	R	H	H	S	S	R	S	S	S
421	R	R	R	H	S	S	R	S	H	S
422	R	R	R	R	S	S	R	S	S	S
423	R	R	S	R	S	S	R	S	H	S
424	R	R	R	R	S	S	R	S	H	S
425	R	R	H	R	S	S	R	S	S	S
426	R	R	H	S	S	S	R	S	H	S
427	R	R	R	H	S	S	R	S	H	S
428	R	R	H	S	S	S	R	S	H	S
429	R	R	H	H	S	S	R	S	H	S
430	R	R	R	R	S	S	R	S	H	S
431	H	R	R	H	S	S	R	H	H	S
432	H	R	S	R	S	S	R	H	H	S
433	H	R	R	H	S	S	R	H	R	S
434	R	S	R	S	S	S	R	S	S	S
435	R	R	R	R	S	S	R	S	S	H
436	R	S	R	S	S	S	R	S	S	S
437	R	R	R	R	S	S	R	S	S	S
438	R	H	R	H	S	S	R	S	S	S
439	R	S	R	S	S	S	R	S	S	S
440	R	H	R	H	S	S	R	S	S	S
441	R	R	R	R	S	S	R	S	S	S
442	H	H	R	H	S	S	R	H	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
1054	S	S	S	S	S	S	R	S	S	S
1055	S	S	S	S	S	S	R	S	S	S
1056	S	S	S	S	S	S	R	S	S	S
1057	S	S	S	S	S	S	R	S	S	S
1058	S	S	S	S	S	S	R	S	S	S
1059	S	S	S	S	S	S	R	S	S	S
1060	S	S	S	S	S	S	R	S	S	S
1061	S	S	S	S	S	R	S	S	S	S
1062	S	S	S	S	S	R	S	S	S	S
1063	S	S	S	S	S	R	S	S	S	S
1064	S	S	S	S	S	R	S	S	S	S
1065	S	S	S	S	S	R	S	S	S	S
1066	S	S	S	S	S	R	S	S	S	S
1067	S	S	S	S	S	R	S	S	S	S
1068	S	S	S	S	S	R	S	S	S	S
1069	S	S	S	S	S	R	S	S	S	S
1070	S	S	S	S	S	R	S	S	S	S
1071	S	S	S	S	S	S	S	S	S	S
1072	S	S	S	S	S	S	S	S	S	S
1073	S	S	S	S	S	S	S	S	S	S
1074	S	S	S	S	S	S	S	S	S	S
1075	S	S	S	S	S	S	S	S	S	S
1076	S	S	S	S	S	S	S	S	S	S
1077	S	S	S	S	S	S	S	S	S	S
1078	S	S	S	S	S	S	S	S	S	S
1079	S	S	S	S	S	S	S	S	S	S
1080	S	S	S	S	S	S	S	S	S	S
1081	S	S	S	S	S	S	S	S	S	S
1082	S	S	S	S	S	S	S	S	S	S
1083	S	S	S	S	S	S	S	S	S	S
1084	S	R	S	R	S	R	S	S	S	S
1085	S	R	S	R	S	R	S	S	S	S
1086	S	R	S	R	S	R	S	S	S	S
1087	S	R	S	R	S	R	S	S	S	S
1088	S	R	S	R	S	R	S	S	S	S
1089	S	R	S	R	S	R	S	S	S	S
1090	S	R	S	R	S	R	S	S	S	S
1091	S	R	S	R	S	R	S	S	S	S
1092	S	R	S	R	S	R	S	S	S	S
1093	S	R	S	R	S	R	S	S	S	S
1094	S	R	R	R	S	S	R	S	S	S
1095	S	R	R	R	S	S	R	S	S	S
1096	S	R	R	R	S	S	R	S	S	S
1097	S	R	R	R	S	S	R	S	S	S
1098	S	R	R	R	S	S	R	S	S	S
1099	S	R	R	R	S	S	R	S	S	S
1100	S	R	R	R	S	S	R	S	S	S
1101	S	R	R	R	S	S	R	S	S	S
1102	S	R	R	R	S	S	R	S	S	S
1103	S	R	R	R	S	S	R	S	S	S
1104	S	R	R	R	S	S	R	S	S	S
1105	S	R	R	R	S	S	R	S	S	S
1106	S	R	R	R	S	S	R	S	S	S
1107	S	R	R	R	S	S	R	S	S	S
1108	S	R	R	R	S	S	R	S	S	S
1109	S	R	R	R	S	S	R	S	S	S
1110	S	R	R	R	S	S	R	S	S	S
1111	S	R	R	R	S	S	R	S	S	S
1112	S	R	R	R	S	S	R	S	S	S
1113	S	R	R	R	S	S	R	S	S	S
1114	S	R	S	S	S	S	R	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
443	R	H	R	H	S	S	R	S	S	S
444	H	S	R	S	S	S	R	H	S	S
445	H	S	R	S	S	S	R	R	S	S
446	H	H	R	H	S	S	R	H	S	S
447	H	R	R	R	S	S	R	H	S	S
448	H	H	R	H	S	S	R	H	S	S
449	H	R	R	R	S	S	R	H	S	S
450	H	H	R	H	S	S	R	H	S	S
451	H	S	R	S	S	S	R	H	S	S
452	R	S	R	S	S	S	R	S	S	S
453	R	H	R	H	S	S	R	S	S	S
454	R	H	R	H	S	S	R	S	S	S
455	R	S	R	S	S	S	R	S	S	S
456	R	S	R	S	S	S	R	S	S	S
457	R	S	R	S	S	S	R	S	S	S
458	R	S	R	S	S	S	R	S	S	S
459	R	S	R	S	S	S	R	S	S	S
460	R	H	R	H	S	S	R	S	S	S
461	R	S	R	S	S	S	R	S	S	S
462	H	H	R	H	S	S	R	H	S	S
463	H	S	R	S	S	S	R	H	S	S
464	H	S	R	S	S	S	R	H	S	S
465	H	R	R	R	S	S	R	H	S	S
466	H	S	R	S	S	S	R	H	S	S
467	H	H	R	H	S	S	R	H	S	S
468	H	S	R	S	S	S	R	H	S	S
469	H	H	R	H	S	S	R	H	S	S
470	H	H	R	H	S	S	R	H	S	S
471	H	S	R	S	S	S	R	H	S	S
472	H	S	R	S	S	S	R	H	S	S
473	R	H	R	H	S	S	H	S	S	S
474	R	H	R	H	S	S	S	S	H	S
475	H	S	R	S	S	S	R	H	S	S
476	R	R	R	R	S	S	H	S	R	S
477	S	R	R	R	S	S	R	R	H	S
478	R	H	R	H	S	S	H	S	S	S
479	R	S	R	S	S	S	H	S	R	S
480	R	R	R	R	S	S	R	S	S	S
481	R	S	R	S	S	S	H	S	H	S
482	H	S	R	S	S	S	H	H	R	S
483	H	S	R	S	S	S	R	H	H	S
484	H	S	R	S	S	S	S	H	R	S
485	H	S	R	S	S	S	H	H	R	S
486	H	H	R	H	S	S	R	H	H	S
487	H	S	R	S	S	S	S	H	H	S
488	H	S	R	S	S	S	H	H	H	S
489	H	H	R	H	S	S	R	H	H	S
490	H	H	R	H	S	S	R	H	S	S
491	H	S	R	S	S	S	H	H	S	S
492	S	H	R	S	S	S	H	H	S	R
493	S	H	R	S	S	S	R	H	S	H
494	S	S	R	S	S	S	R	R	S	R
495	S	R	R	S	S	S	H	H	S	R
496	S	R	R	S	S	S	H	H	S	H
497	S	S	N/A	S	S	S	R	H	S	H
498	S	H	R	S	S	S	H	S	S	S
499	S	R	R	S	S	S	H	S	S	H
500	S	H	R	S	S	S	S	S	S	H
501	S	H	R	S	S	S	S	R	S	H
502	S	R	R	S	S	S	S	H	S	R
503	S	H	R	S	S	S	R	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
1115	R	R	S	S	R/H	S	S	S	H	S
1116	S	R	S	S	S	S	R	S	S	S
1117	S	R	S	S	S	S	R	S	S	S
1118	S	R	S	S	S	S	R	S	S	S
1119	S	R	S	S	S	S	S	S	S	S
1120	H	R	S	S	N/A	S	S	S	S	S
1121	S	R	S	S	S	S	S	S	S	S
1122	S	R	S	S	S	S	S	S	S	S
1123	R	R	S	S	R/H	S	S	S	S	S
1124	S	R	S	S	S	S	S	S	S	S
1125	S	S	S	S	S	R	S	S	S	S
1126	S	S	S	S	S	R	S	S	S	S
1127	S	S	S	S	S	R	S	S	S	S
1128	S	S	S	S	S	R	S	S	S	S
1129	S	S	S	S	S	R	S	S	S	S
1130	S	S	S	S	S	R	S	S	S	S
1131	S	S	S	S	S	R	S	S	S	S
1132	H	R	S	S	R/H	S	S	H	S	S
1133	S	S	S	S	S	R	S	S	S	S
1134	S	S	S	S	S	R	S	S	S	S
1135	S	S	N/A	S	S	S	S	S	S	S
1136	S	S	S	S	R/H	S	S	S	S	S
1137	S	S	S	S	S	S	S	S	S	S
1138	S	S	S	S	S	S	S	S	S	S
1139	S	S	S	S	S	S	S	S	S	S
1140	S	S	S	S	S	S	S	S	S	S
1141	S	S	S	S	S	S	S	S	S	S
1142	S	S	S	S	S	S	S	S	S	S
1143	S	S	S	S	S	S	S	S	S	S
1144	S	S	S	S	S	S	S	S	S	S
1145	S	S	S	S	S	S	S	S	S	S
1146	S	S	S	S	S	S	S	S	S	S
1147	S	S	S	S	S	S	S	S	S	S
1148	S	S	S	S	S	S	S	S	S	S
1149	S	S	S	S	S	S	S	S	S	S
1150	S	S	S	S	S	S	S	S	S	S
1151	S	S	S	S	S	S	S	S	S	S
1152	S	S	S	S	S	S	S	S	S	S
1153	S	S	S	S	S	S	S	S	S	S
1154	S	S	S	S	S	S	S	S	S	S
1155	S	R	S	S	R/H	S	S	S	S	S
1156	S	S	S	S	S	S	R	S	S	S
1157	S	S	S	S	S	S	R	S	S	S
1158	S	S	S	S	S	S	R	S	S	S
1159	S	H	S	S	R/H	S	S	S	S	S
1160	S	R	S	R	S	S	S	S	S	S
1161	S	R	S	R	S	S	S	S	S	S
1162	S	R	S	R	S	S	S	S	S	S
1163	S	R	S	R	S	S	S	S	S	S
1164	S	R	S	R	S	S	S	S	S	S
1165	S	R	S	R	S	S	S	S	S	S
1166	S	R	S	R	S	S	S	S	S	S
1167	S	R	S	R	S	S	S	S	S	S
1168	S	R	S	R	S	S	S	S	S	S
1169	S	R	S	R	S	S	S	S	S	S
1170	S	R	S	R	S	S	S	S	S	S
1171	S	R	S	R	S	S	S	S	S	S
1172	S	R	R	R	R/H	S	H	R	S	S
1173	S	R	R	R	R/H	S	R	R	S	S
1174	S	R	R	R	R/H	S	H	R	S	S
1175	S	R	R	R	R/H	S	H	R	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
504	S	R	R	S	S	S	H	H	S	R
505	S	H	R	S	S	S	S	H	S	H
506	S	H	R	S	S	S	H	H	S	S
507	S	R	R	S	S	S	H	R	S	S
508	S	S	R	S	S	S	H	H	S	H
509	S	R	R	S	S	S	H	S	S	R
510	S	H	R	S	S	S	R	S	S	H
511	S	S	R	S	S	S	R	R	S	S
512	S	H	R	H	S	S	R	R	S	S
513	S	H	R	H	S	S	R	R	S	S
514	S	H	R	H	S	S	R	R	S	S
515	S	S	R	S	S	S	R	R	S	S
516	S	S	R	S	S	S	R	R	S	S
517	S	H	R	H	S	S	R	R	S	S
518	S	H	R	H	S	S	R	R	S	S
519	S	R	R	R	S	S	R	R	S	S
520	S	H	R	H	S	S	R	R	S	S
521	S	S	R	S	S	S	R	R	S	S
522	S	R	R	R	S	S	R	R	S	S
523	S	H	R	H	S	S	R	R	S	S
524	S	H	R	H	S	S	R	R	S	S
525	S	H	R	H	S	S	R	R	S	S
526	S	H	R	H	S	S	R	R	S	S
527	S	S	R	S	S	S	R	R	S	S
528	S	H	R	H	S	S	R	R	S	S
529	S	S	R	S	S	S	R	R	S	S
530	S	R	R	R	S	S	R	H	S	S
531	S	S	R	S	S	S	R	H	S	S
532	S	S	R	S	S	S	R	H	S	S
533	S	H	R	H	S	S	R	S	S	S
534	S	H	R	H	S	S	R	H	S	S
535	S	N/A	R	H	S	S	R	R	S	S
536	S	H	R	H	S	S	R	S	S	S
537	S	S	R	S	S	S	R	S	S	S
538	S	H	R	H	S	S	R	H	S	S
539	S	S	R	S	S	S	R	H	S	S
540	S	S	R	S	S	S	R	H	S	S
541	S	R	R	R	S	S	R	S	S	S
542	S	R	R	R	S	S	R	H	S	S
543	S	H	R	H	S	S	R	H	S	S
544	S	H	R	S	S	S	R	R	S	S
545	S	H	S	H	S	S	R	H	S	S
546	S	H	S	H	S	S	R	H	S	S
547	S	S	S	S	S	S	R	H	S	S
548	S	S	R	S	S	S	R	S	S	S
549	S	S	R	S	S	S	R	R	S	S
550	S	S	R	S	S	S	S	S	S	S
551	S	S	R	S	S	S	S	S	S	S
552	S	S	R	S	S	R	S	S	S	R
553	S	S	N/A	S	S	S	S	S	S	S
554	S	S	S	S	S	S	S	S	S	S
555	S	S	S	S	S	R	S	S	S	R
556	S	S	S	S	S	S	S	S	S	S
557	S	S	S	S	S	S	S	S	S	S
558	S	S	S	S	S	S	S	S	S	S
559	S	S	S	S	S	S	S	S	S	S
560	N/A	N/A	S	N/A	N/A	N/A	N/A	N/A	N/A	N/A
561	S	S	S	S	S	S	S	S	S	S
562	S	S	S	S	S	S	S	S	S	S
563	S	S	S	S	S	S	S	S	S	S
564	S	S	S	S	S	S	S	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
1176	S	R	R	R	R/H	S	H	R	S	S
1177	S	R	R	R	R/H	S	H	R	S	S
1178	S	R	R	R	R/H	S	H	R	S	S
1179	S	R	R	R	R/H	S	N/A	R	S	S
1180	S	R	R	R	R/H	S	S	R	S	S
1181	H	R	R	S	S	S	R	H	S	S
1182	H	R	R	S	R/H	S	R	H	S	S
1183	S	R	R	S	R/H	S	R	R	S	S
1184	H	R	R	S	R/H	S	R	H	S	S
1185	R	R	R	S	R/H	S	R	S	S	S
1186	H	R	R	S	S	S	R	H	S	S
1187	S	R	R	S	S	S	R	R	S	S
1188	H	R	R	S	R/H	S	R	H	S	S
1189	S	H	R	H	R/H	S	R	R	H	H
1190	S	H	R	H	R/H	S	R	R	H	H
1191	H	H	R	H	R/H	S	R	H	H	H
1192	S	H	H	H	R/H	S	R	R	H	H
1193	H	H	H	H	R/H	S	R	H	H	H
1194	S	H	H	H	S	S	R	R	H	H
1195	S	H	H	H	S	S	R	R	H	H
1196	S	H	H	H	R/H	S	R	R	H	H
1197	H	H	R	H	R/H	S	R	H	H	H
1198	R	R	R	S	S	S	R	S	S	S
1199	H	R	R	S	N/A	S	R	H	S	S
1200	H	R	R	S	S	S	R	H	S	S
1201	H	R	R	S	R/H	S	R	H	S	S
1202	R	R	R	S	R/H	S	R	S	S	S
1203	S	R	R	S	R/H	S	R	R	S	S
1204	S	R	R	S	R/H	S	R	R	S	S
1205	S	R	R	S	R/H	S	R	R	S	S
1206	H	R	R	S	R/H	S	R	H	S	S
1207	H	R	R	S	R/H	S	R	H	S	S
1208	S	R	S	S	S	S	R	S	S	S
1209	S	R	S	S	S	S	R	S	S	S
1210	S	R	S	S	S	S	R	S	S	S
1211	S	R	S	S	S	S	R	S	S	S
1212	S	R	S	S	S	S	R	S	S	S
1213	S	R	S	S	S	S	R	S	S	S
1214	S	R	S	S	S	S	R	S	S	S
1215	S	R	S	S	S	S	R	S	S	S
1216	S	R	S	S	S	S	R	S	S	S
1217	S	H	S	S	S	S	S	S	S	S
1218	S	H	R	S	S	S	S	S	S	S
1219	S	H	H	S	S	S	S	S	S	S
1220	S	R	S	S	S	R	S	S	S	S
1221	S	S	H	H	S	R	H	H	S	S
1222	S	H	H	H	S	S	H	H	H	S
1223	S	H	H	H	N/A	H	H	H	S	S
1224	S	S	H	N/A	S	R	H	H	H	S
1225	S	R	R	R	S	H	R	S	S	S
1226	S	R	R	R	S	H	R	S	S	S
1227	S	R	R	R	S	R	R	S	S	S
1228	S	R	R	R	S	H	R	S	S	S
1229	S	R	R	R	S	R	R	S	S	S
1230	S	R	R	R	S	H	R	S	S	S
1231	S	R	R	R	S	S	R	S	S	S
1232	S	R	R	R	S	R	R	S	S	S
1233	S	R	R	R	S	H	R	S	S	S
1234	S	R	R	R	S	H	R	S	S	S
1235	S	S	H	S	S	H	R	H	R	S
1236	S	S	H	S	S	H	H	H	H	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
565	S	S	S	S	S	S	S	S	S	S
566	S	S	S	S	S	S	S	S	S	S
567	S	S	S	S	S	S	S	S	S	S
568	S	S	S	S	S	S	S	S	S	S
569	S	S	H	S	S	S	R	H	H	S
570	S	S	H	S	S	S	R	H	H	H
571	S	S	H	S	S	S	R	S	S	H
572	S	S	S	S	S	S	R	S	R	H
573	S	S	H	S	S	S	R	R	S	S
574	S	S	R	S	S	S	R	S	R	H
575	S	S	H	S	S	S	R	H	H	H
576	S	S	H	S	S	S	R	S	R	R
577	S	S	S	S	S	S	R	H	S	H
578	S	S	R	S	S	S	R	S	R	H
579	S	S	R	S	S	S	R	H	H	H
580	S	S	H	S	S	S	R	H	H	S
581	S	S	R	S	S	S	R	H	H	R
582	S	S	R	S	S	S	R	S	R	R
583	S	S	H	S	S	S	R	H	R	S
584	S	S	R	S	S	S	R	S	H	R
585	R	R	R	H	S	S	R	R	N/A	S
586	R	R	R	H	S	S	R	S	N/A	S
587	R	R	R	H	S	S	R	H	S	S
588	R	R	R	R	S	S	R	R	S	S
589	R	R	R	H	S	S	R	S	S	S
590	R	R	R	S	S	S	R	R	S	S
591	R	R	R	H	S	S	R	H	S	S
592	R	R	R	R	S	S	R	R	S	S
593	R	R	R	H	S	S	R	R	S	S
594	R	R	R	H	S	S	R	R	S	S
595	R	R	R	H	S	S	R	R	S	S
596	R	R	R	H	S	S	R	R	S	S
597	R	R	R	H	S	S	R	R	S	S
598	R	R	R	S	S	S	R	R	S	S
599	R	R	R	S	S	S	R	H	S	S
600	R	R	R	H	S	S	R	R	S	S
601	R	R	R	H	S	S	R	R	S	S
602	R	R	R	H	S	N/A	R	R	S	S
603	R	R	R	H	S	S	R	R	S	S
604	R	R	R	H	S	S	R	H	S	S
605	R	H	R	H	S	S	R	R	S	S
606	R	S	R	S	S	S	R	R	S	S
607	R	S	R	S	S	S	R	R	S	S
608	R	H	R	H	S	S	R	R	H	S
609	R	H	R	H	S	S	R	R	N/A	S
610	R	H	R	H	S	S	R	R	H	S
611	R	H	R	H	S	S	R	R	R	S
612	R	H	R	H	S	S	R	R	H	S
613	R	R	R	R	S	S	R	R	R	S
614	R	S	R	S	S	S	R	R	H	S
615	R	H	R	H	S	S	R	R	S	S
616	R	H	R	H	S	S	R	R	S	S
617	H	H	R	H	S	S	R	H	S	S
618	H	S	R	S	S	S	R	H	H	S
619	H	R	R	R	N/A	S	R	H	H	S
620	H	R	R	R	S	S	R	H	R	S
621	R	H	R	H	S	S	R	R	R	S
622	H	S	R	S	S	S	R	H	S	S
623	H	H	R	H	S	S	R	H	R	S
624	R	R	R	S	S	S	R	R	S	S
625	R	R	R	S	S	S	R	H	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi- rex	Sw 5	Sm (CT 55)
1237	S	S	R	S	S	R	R	R	S	S
1238	S	S	H	S	S	H	R	S	H	S
1239	S	R	H	H	N/A	S	R	H	H	S
1240	S	R	R	H	S	S	R	H	S	H
1241	S	R	H	H	S	S	R	H	H	H
1242	S	R	H	H	S	S	R	H	H	H
1243	S	R	R	H	R/H	S	R	H	H	H
1244	S	R	H	H	S	S	R	H	S	H
1245	S	R	H	H	S	S	R	H	H	H
1246	S	R	H	H	S	S	R	H	H	H
1247	S	R	R	H	R/H	S	R	H	S	S
1248	S	R	R	H	S	S	R	H	S	S
1249	H	H	S	H	S	S	H	S	S	S
1250	R	H	S	H	R/H	S	S	S	S	S
1251	S	R	S	S	S	S	S	S	S	S
1252	S	H	S	S	S	S	S	S	S	S
1253	S	H	S	S	R/H	S	S	S	S	S
1254	S	H	S	S	R/H	S	S	S	S	S
1255	S	S	R	S	R/H	S	S	S	S	S
1256	S	H	R	N/A	S	S	S	N/A	S	S
1257	S	R	S	S	S	S	S	S	S	S
1258	S	H	S	S	S	S	S	S	S	S
1259	S	H	S	S	R/H	S	S	S	S	S
1260	S	H	S	S	R/H	S	S	S	S	S
1261	S	H	S	S	S	S	S	S	S	S
1262	S	H	S	S	R/H	S	S	S	S	S
1263	S	R	S	S	R/H	S	S	S	S	S
1264	S	H	S	N/A	R/H	S	S	N/A	S	S
1265	S	H	S	S	R/H	S	S	S	S	S
1266	S	R	S	S	R/H	S	S	S	S	S
1267	S	H	S	S	R/H	S	S	S	S	S
1268	S	S	S	S	S	S	S	S	S	S
1269	S	R	S	S	R/H	S	S	S	S	S
1270	S	H	S	S	R/H	S	S	S	S	S
1271	S	H	S	S	R/H	S	S	S	S	S
1272	S	H	S	S	R/H	S	S	S	S	S
1273	S	S	S	S	R/H	S	S	S	S	S
1274	S	S	S	S	R/H	S	S	S	S	S
1275	S	H	S	S	S	S	S	S	S	S
1276	S	H	S	S	S	S	S	S	S	S
1277	S	H	S	S	R/H	S	S	S	S	S
1278	S	S	S	S	R/H	S	S	S	S	S
1279	S	S	S	S	R/H	S	S	S	S	S
1280	S	H	S	S	R/H	S	S	S	S	S
1281	S	S	S	S	S	S	S	S	S	S
1282	S	H	S	S	R/H	S	S	S	S	S
1283	S	H	S	S	R/H	S	S	S	S	S
1284	S	H	S	S	R/H	S	S	S	S	S
1285	S	H	S	S	R/H	S	S	S	S	S
1286	S	S	S	S	R/H	S	S	S	S	S
1287	S	H	S	S	R/H	S	S	S	S	S
1288	S	H	S	S	R/H	S	S	S	S	S
1289	S	H	S	S	R/H	S	S	S	S	S
1290	S	H	S	S	R/H	S	S	S	S	S
1291	S	H	S	S	R/H	S	S	S	S	S
1292	S	H	S	S	R/H	S	S	S	S	S
1293	S	H	S	S	R/H	S	S	S	S	S
1294	S	H	S	S	R/H	S	S	S	S	S
1295	S	H	S	S	R/H	S	S	S	S	S
1296	S	H	S	S	R/H	S	S	S	S	S
1297	S	H	S	S	R/H	S	S	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-rex	Sw 5	Sm (CT 55)
626	R	S	R	S	S	S	R	S	S	S
627	R	R	R	S	S	S	R	H	S	S
628	R	S	R	S	S	S	R	R	S	S
629	R	R	R	S	S	S	R	H	S	S
630	R	R	R	S	S	S	R	R	S	S
631	R	R	R	S	S	S	R	H	S	S
632	R	R	R	H	S	S	R	H	S	S
633	R	R	R	S	S	S	R	R	S	S
634	R	R	R	S	S	S	R	R	S	S
635	R	H	R	S	S	S	R	H	S	S
636	R	H	R	S	S	S	R	S	S	S
637	R	R	R	H	S	S	R	H	S	S
638	R	R	R	R	S	S	R	S	S	S
639	R	H	R	S	S	S	R	R	S	S
640	R	H	R	S	S	S	R	H	S	S
641	R	R	R	H	S	S	R	S	S	S
642	R	R	R	H	S	S	R	R	S	S
643	R	H	R	S	S	S	R	S	S	S
644	R	R	R	S	S	S	H	S	S	S
645	R	R	R	S	S	S	H	S	S	S
646	R	R	R	S	S	S	H	S	S	S
647	R	R	R	S	S	S	N/A	S	S	S
648	R	R	R	S	S	S	H	S	S	S
649	R	R	R	S	S	S	S	S	S	S
650	R	R	R	S	S	S	H	S	S	S
651	R	R	R	S	S	S	R	S	S	S
652	H	R	R	S	S	S	S	S	S	S
653	H	R	R	S	S	S	S	S	S	S
654	H	R	R	S	S	S	H	S	S	S
655	H	R	R	S	S	S	H	S	S	S
656	H	R	R	S	S	S	S	S	S	S
657	H	R	H	S	S	S	H	S	S	S
658	H	R	R	S	S	S	S	S	S	S
659	N/A	R	R	S	S	S	S	S	S	S
660	H	R	R	S	S	S	H	S	S	S
661	H	R	R	S	S	S	H	S	S	S
662	R	R	R	S	S	S	S	S	S	S
663	H	R	R	S	S	S	H	S	S	S
664	R	R	R	S	S	S	H	S	S	S
665	R	R	H	S	S	S	S	S	S	S
666	R	R	S	S	S	S	S	S	S	S
667	R	R	R	S	S	S	H	S	S	S
668	R	R	R	S	S	S	H	S	S	S
669	R	R	R	S	S	S	R	S	S	S
670	R	R	R	S	S	S	H	S	S	S
671	R	R	R	S	S	S	S	S	S	S
672	R	R	H	S	S	S	R	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-rex	Sw 5	Sm (CT 55)
1298	S	H	S	S	R/H	S	S	S	S	S
1299	S	H	S	S	R/H	S	S	S	S	S
1300	S	H	S	S	R/H	S	S	S	S	S
1301	S	H	S	S	R/H	S	S	S	S	S
1302	S	H	S	S	R/H	S	S	S	S	S
1303	S	H	S	S	R/H	S	S	S	S	S
1304	S	H	S	S	R/H	S	S	S	S	S
1305	S	H	R	S	R/H	S	S	S	S	S
1306	S	H	S	S	R/H	S	S	S	S	S
1307	S	H	S	S	R/H	S	S	S	S	S
1308	S	H	S	S	R/H	S	S	S	S	S
1309	S	H	S	S	R/H	S	S	S	S	S
1310	S	H	S	S	R/H	S	S	S	S	S
1311	S	H	S	S	R/H	S	S	S	S	S
1312	H	H	S	S	S	S	R	S	S	H
1313	H	H	R	S	S	S	R	S	S	H
1314	H	H	R	S	S	S	R	S	S	H
1315	H	H	R	S	S	S	R	S	S	H
1316	H	H	R	S	S	S	R	S	S	H
1317	H	H	R	S	S	S	R	S	S	H
1318	H	H	R	S	S	S	R	S	S	H
1319	H	H	R	S	S	S	R	S	S	H
1320	H	H	R	S	S	S	R	S	S	H
1321	H	H	S	S	S	S	R	S	S	H
1322	H	H	R	S	S	S	R	S	S	H
1323	H	H	R	S	S	S	R	S	S	H
1324	H	H	R	S	S	S	R	S	S	H
1325	H	H	R	S	S	S	R	S	S	H
1326	H	H	R	S	S	S	R	S	S	N/A
1327	H	H	R	S	S	S	R	S	S	H
1328	S	S	R	R	S	S	R	R	S	S
1329	S	S	R	R	S	S	R	R	S	S
1330	S	S	R	R	S	S	R	R	S	S
1331	S	S	R	R	S	S	R	R	S	S
1332	S	S	R	R	S	S	R	R	S	S
1333	S	S	S	S	S	S	S	S	S	S
1334	S	S	S	S	S	S	S	S	S	S
1335	S	S	S	S	S	S	S	S	S	S
1336	S	S	S	S	S	S	S	S	S	S
1337	S	S	R	S	S	S	S	S	S	S
1338	S	R	H	S	S	S	R	S	S	S
1339	S	R	R	S	S	S	R	S	S	S
1340	S	R	R	S	S	S	R	S	S	S
1341	S	R	R	S	S	S	R	S	S	S
1342	S	R	R	S	S	S	R	S	S	S
1343	R	R	R	R	S	H	S	S	S	S
1344	H	S	R	S	S	H	S	S	S	S

표 2. 순천대학교 727의 시료에 대하여, 병 관련 10종의 마커를 이용한 서비스 결과

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-Rex	Sw 5	Sm (CT 55)
1	H	H	S	H	S	H	S	S	S	S
2	R	H	S	H	S	S	S	S	S	S
3	H	H	H	H	S	H	S	S	S	S
4	S	S	S	S	S	S	H	H	S	S
5	S	S	S	S	S	S	H	H	S	S
6	S	S	S	S	S	S	H	S	S	S
7	S	S	S	S	S	S	R	R	S	S
8	S	S	S	S	S	S	R	H	S	S
9	S	S	S	S	S	S	R	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-Rex	Sw 5	Sm (CT 55)
365	S	S	N/A	S	S	R	S	S	S	R
366	S	S	S	S	S	R	S	S	S	R
367	S	S	S	S	S	R	S	S	S	R
368	S	S	S	S	S	S	R	S	S	S
369	S	S	S	S	S	S	R	S	S	S
370	S	S	S	S	S	S	R	S	S	S
371	S	S	S	S	S	S	R	S	S	S
372	S	S	S	S	S	S	R	S	S	S
373	S	S	S	S	S	S	S	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-Rex	Sw 5	Sm (CT 55)
10	S	S	S	S	S	S	R	S	S	S
11	S	S	S	S	S	S	R	S	S	S
12	S	S	S	S	S	S	R	S	S	S
13	S	S	S	S	S	S	R	S	S	S
14	S	S	R	S	S	S	R	S	S	S
15	S	S	R	S	N/A	S	R	S	S	S
16	S	S	R	S	S	S	R	S	S	S
17	S	S	R	S	S	S	R	S	S	S
18	S	S	R	S	S	S	R	S	S	S
19	S	S	R	S	S	S	R	S	S	S
20	S	R	S	R	S	R	S	S	S	S
21	S	R	S	R	S	R	S	S	S	S
22	S	R	S	R	S	R	S	S	S	S
23	R	R	S	R	S	R	S	S	S	S
24	R	R	S	R	S	R	S	S	S	S
25	R	R	S	R	S	R	S	S	S	S
26	R	R	S	R	S	R	S	S	S	S
27	R	R	S	R	S	R	S	S	S	S
28	R	R	R	R	S	R	S	S	S	R
29	R	R	R	R	S	R	R	S	S	R
30	R	R	R	R	S	R	R	S	S	R
31	R	R	R	R	S	R	R	S	S	R
32	R	R	R	R	S	R	R	S	S	N/A
33	S	R	S	R	S	R	S	S	S	S
34	S	R	S	R	S	R	S	S	S	S
35	S	R	S	R	S	R	S	S	S	S
36	S	R	S	R	S	R	S	S	S	S
37	S	R	S	R	S	R	S	S	S	S
38	R	S	S	S	S	R	S	S	S	S
39	R	S	S	S	S	R	R	S	S	S
40	R	S	S	S	N/A	R	R	S	S	S
41	R	S	S	S	S	R	R	S	S	S
42	R	S	S	S	S	R	R	S	S	S
43	R	R	S	R	S	S	S	S	S	S
44	R	R	S	R	S	S	S	S	S	S
45	R	R	S	R	S	S	S	S	S	S
46	R	R	S	R	S	S	S	S	S	S
47	R	R	S	R	S	S	S	S	S	S
48	R	R	R	R	S	R	S	S	S	R
49	R	R	R	R	S	R	R	S	S	R
50	R	R	R	R	S	R	R	S	S	R
51	R	R	R	R	S	R	R	S	S	R
52	R	R	R	R	S	R	R	S	S	R
53	R	R	R	R	S	R	S	S	S	S
54	R	R	R	R	N/A	R	S	S	S	S
55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
56	R	R	H	R	S	R	S	S	S	S
57	R	R	R	R	S	R	S	S	S	S
58	S	S	S	S	S	S	S	S	S	S
59	S	S	S	S	S	S	S	S	S	S
60	S	S	S	S	S	S	S	S	S	S
61	S	S	S	S	S	S	S	S	S	S
62	S	S	S	S	S	S	S	S	S	S
63	S	S	S	S	S	S	R	S	S	S
64	S	S	S	S	S	S	R	S	S	S
65	S	S	S	S	S	S	R	S	S	S
66	S	S	S	S	S	S	R	S	S	S
67	S	S	S	S	S	S	R	S	S	S
68	S	S	S	S	S	S	R	S	S	S
69	S	S	S	S	S	S	R	S	S	S
70	S	S	S	S	S	S	R	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-Rex	Sw 5	Sm (CT 55)
374	S	S	S	S	S	S	S	S	S	S
375	S	S	S	S	S	S	S	S	S	S
376	S	S	S	S	S	S	S	S	S	S
377	S	S	S	S	S	S	S	S	S	S
378	S	S	S	S	S	S	R	R	S	S
379	S	S	S	S	S	S	R	R	S	S
380	S	S	S	S	S	S	R	R	S	S
381	S	S	S	S	S	S	R	R	S	S
382	S	S	S	S	S	S	R	R	S	S
383	H	S	S	S	S	H	R	S	S	S
384	S	S	S	S	S	S	R	S	S	S
385	S	S	S	S	S	S	R	H	S	S
386	S	S	S	S	S	S	R	S	S	S
387	S	S	S	S	S	S	R	S	S	S
388	S	S	S	S	S	R	S	S	S	R
389	S	S	S	S	S	R	S	S	S	R
390	S	S	S	S	S	R	S	S	N/A	R
391	S	S	S	S	S	R	S	S	S	N/A
392	S	S	S	S	S	R	S	S	S	R
393	R	R	S	R	S	R	R	S	S	S
394	R	R	S	R	S	R	R	S	S	S
395	R	R	S	R	S	R	R	S	S	S
396	R	R	S	R	S	R	R	S	S	S
397	R	R	S	R	S	R	R	S	S	S
398	R	R	S	R	S	R	H	S	S	S
399	R	R	S	R	S	R	H	S	S	S
400	R	R	S	R	S	R	H	S	S	S
401	R	R	S	R	S	R	H	S	S	S
402	R	R	S	R	S	R	H	S	S	S
403	S	S	R	S	S	S	R	S	R	R
404	S	S	R	S	S	S	R	S	R	R
405	S	S	R	S	S	S	R	S	R	R
406	S	S	R	S	S	S	R	S	R	R
407	S	S	R	S	S	S	R	S	R	R
408	R	R	S	R	S	R	R	S	S	S
409	R	R	S	R	S	R	R	S	S	S
410	R	R	S	R	S	R	R	S	S	S
411	R	R	S	R	S	R	R	S	S	S
412	H	H	H	H	S	H	R	S	H	H
413	H	H	H	H	S	H	R	S	H	H
414	H	H	H	H	S	H	R	S	H	H
415	H	H	H	H	S	H	R	S	H	H
416	H	H	H	H	S	H	R	S	H	H
417	S	S	R	S	S	S	N/A	S	R	N/A
418	S	S	R	S	S	S	R	S	R	R
419	S	S	R	S	S	S	R	S	R	R
420	S	S	S	S	S	S	S	S	S	S
421	S	S	S	S	S	S	S	S	S	S
422	S	S	S	S	S	S	S	S	S	S
423	S	S	S	S	S	S	S	S	S	S
424	S	S	S	S	S	S	S	S	S	S
425	S	S	H	S	S	S	H	S	H	H
426	S	S	H	S	S	S	H	S	H	H
427	S	S	H	S	S	S	H	S	H	H
428	S	S	H	S	S	S	H	S	H	H
429	S	S	H	S	S	S	H	S	H	H
430	S	S	S	S	S	R	S	S	S	S
431	R	R	S	R	S	R	S	S	S	S
432	R	S	S	S	S	S	R	S	S	S
433	S	R	R	S	S	S	S	R	S	N/A
434	S	R	S	S	R/H	S	S	R	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-Rex	Sw 5	Sm (CT 55)
71	S	S	S	S	S	S	R	S	S	S
72	S	S	S	S	S	S	R	S	S	S
73	R	R	S	R	S	S	R	S	S	S
74	R	R	S	R	S	S	R	S	S	S
75	R	R	S	R	S	S	R	S	S	S
76	R	R	S	R	S	S	R	S	S	S
77	S	S	R	S	S	S	S	S	S	S
78	S	S	R	S	S	S	S	S	S	S
79	S	S	R	S	S	S	S	S	S	S
80	S	S	R	S	S	S	S	S	S	S
81	S	S	R	S	S	S	S	S	S	S
82	S	R	S	R	S	R	S	S	S	S
83	S	R	S	R	S	R	S	S	S	S
84	S	R	S	R	S	R	S	S	S	S
85	S	R	S	R	S	R	S	S	S	S
86	S	R	S	R	S	R	S	S	S	S
87	S	R	S	R	S	R	S	S	S	S
88	S	R	S	R	S	R	S	S	H	S
89	S	R	S	R	S	R	R	S	S	S
90	S	R	S	R	S	R	H	S	R	S
91	S	R	S	R	S	R	S	S	R	S
92	S	S	N/A	S	S	S	R	S	S	S
93	S	S	S	S	S	S	R	S	S	S
94	S	S	S	S	S	S	R	S	S	S
95	S	S	S	S	S	S	R	S	S	S
96	R	R	S	R	S	S	S	S	S	S
97	R	R	S	R	S	S	S	S	S	S
98	S	R	S	R	S	S	S	S	S	S
99	R	R	S	R	S	S	S	S	S	S
100	R	R	S	R	S	S	S	S	S	S
101	S	R	S	R	S	R	S	S	S	S
102	S	R	S	R	S	R	S	S	S	S
103	S	R	S	R	S	R	S	S	S	S
104	S	R	S	R	S	R	S	S	S	S
105	S	R	S	R	S	R	S	S	S	S
106	S	R	R	R	S	S	S	S	S	R
107	S	R	R	R	S	S	S	S	S	R
108	S	R	R	R	S	S	S	S	S	R
109	S	R	R	R	S	S	S	S	S	R
110	S	R	R	R	S	S	S	S	S	R
111	S	S	R	S	S	S	R	S	S	S
112	S	S	R	S	S	S	R	S	S	S
113	S	S	R	S	S	S	R	S	S	S
114	S	S	R	S	S	S	R	S	S	S
115	S	S	R	S	S	S	R	S	S	S
116	R	S	R	S	S	S	S	S	S	S
117	R	S	R	S	S	S	S	S	S	S
118	R	S	R	S	S	S	S	S	S	S
119	R	S	R	S	S	S	S	S	S	S
120	R	S	R	S	S	S	S	S	S	S
121	S	S	S	S	S	S	R	S	S	S
122	S	S	S	S	S	S	R	S	S	S
123	S	S	S	S	S	S	R	S	S	S
124	S	S	S	S	S	S	R	S	S	S
125	S	S	S	S	S	S	R	S	S	S
126	S	R	R	R	S	R	R	S	S	S
127	S	R	R	R	S	R	R	S	S	S
128	S	R	R	R	N/A	R	R	S	S	S
129	S	S	S	S	S	S	S	S	S	S
130	S	S	S	S	S	S	S	S	S	S
131	S	S	S	S	S	S	S	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-Rex	Sw 5	Sm (CT 55)
435	H	R	S	S	R/H	S	S	H	S	S
436	H	R	S	S	R/H	S	H	H	S	S
437	S	H	S	S	R/H	S	H	H	S	S
438	S	H	S	S	R/H	S	S	S	S	S
439	S	H	S	S	R/H	S	S	S	S	S
440	H	R	S	S	R/H	S	S	S	H	S
441	H	R	S	S	R/H	S	S	S	H	S
442	S	R	R	R	R/H	R	H	R	S	S
443	R	R	S	R	S	R	S	S	S	N/A
444	R	R	S	R	S	R	S	S	S	S
445	R	R	S	R	S	R	S	S	S	S
446	R	R	S	R	S	R	S	S	S	S
447	R	R	R	R	S	H	S	S	S	S
448	H	H	H	H	S	H	S	S	S	S
449	R	R	S	R	S	H	S	S	S	S
450	H	S	S	S	S	S	S	S	S	S
451	H	H	H	H	S	H	S	S	S	H
452	H	H	H	H	S	H	S	S	S	H
453	H	H	H	H	S	H	S	S	S	H
454	H	H	H	H	S	H	S	S	S	H
455	H	H	H	H	S	H	S	S	S	H
456	S	S	R	S	S	S	R	S	R	R
457	S	S	R	S	S	S	R	S	R	R
458	S	S	R	S	S	S	R	S	R	R
459	S	S	R	S	S	S	R	S	R	R
460	R	S	S	S	S	R	R	S	S	S
461	R	S	S	S	S	R	R	S	S	S
462	R	S	S	S	S	R	R	S	S	S
463	R	S	S	S	S	R	R	S	S	S
464	R	S	S	S	S	R	R	S	S	S
465	H	S	H	S	S	H	R	S	H	H
466	H	S	H	S	S	H	R	S	H	H
467	H	S	H	S	S	H	R	S	H	H
468	H	S	H	S	S	H	R	S	H	H
469	H	S	H	S	S	H	R	S	H	H
470	S	R	S	S	S	S	S	R	S	R
471	S	R	S	S	S	S	S	R	S	R
472	S	R	S	S	S	S	S	R	S	R
473	S	R	S	S	S	S	S	R	S	R
474	S	R	S	S	S	S	S	R	S	R
475	R	S	R	S	S	S	S	S	R	S
476	R	S	R	S	S	S	S	S	R	S
477	R	S	R	S	S	S	S	S	R	S
478	R	S	R	S	S	S	S	S	R	S
479	R	S	R	S	S	S	S	S	R	S
480	S	S	S	S	S	S	R	S	S	R
481	S	S	S	S	S	S	R	S	S	R
482	S	S	S	S	S	S	R	S	S	R
483	S	S	S	S	S	S	R	S	S	R
484	S	S	S	S	S	S	R	S	S	R
485	S	R	S	S	S	S	R	S	S	S
486	S	R	S	S	S	S	R	S	S	S
487	S	R	S	S	S	S	R	S	S	S
488	S	R	S	S	S	S	R	S	S	S
489	S	R	S	S	S	S	R	S	S	S
490	S	S	S	S	S	R	S	S	S	S
491	S	S	S	S	S	R	S	S	S	S
492	S	S	S	S	S	R	S	S	S	S
493	S	S	S	S	S	R	S	S	S	S
494	S	S	S	S	S	R	S	S	S	S
495	S	S	R	S	S	S	S	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-Rex	Sw 5	Sm (CT 55)
132	S	S	S	S	S	S	S	S	S	S
133	S	S	S	S	S	S	S	S	S	S
134	R	R	S	R	S	R	R	S	S	S
135	R	R	S	R	S	R	R	S	S	S
136	R	R	S	R	S	R	R	S	S	S
137	R	R	S	R	S	R	R	S	S	S
138	R	R	S	R	S	R	R	S	S	S
139	S	S	S	S	S	S	S	S	S	S
140	S	S	S	S	S	S	S	S	S	S
141	S	S	S	S	S	S	S	S	S	S
142	S	S	S	S	S	S	S	S	S	S
143	S	S	S	S	S	S	S	S	S	S
144	S	S	R	S	S	S	R	S	S	S
145	S	S	R	S	S	S	R	S	S	S
146	S	S	R	S	S	S	R	S	S	S
147	S	S	R	S	S	S	R	S	S	S
148	S	S	R	S	S	S	R	S	S	S
149	S	S	R	S	S	S	R	S	S	S
150	S	S	R	S	S	S	R	S	S	S
151	S	S	R	S	S	S	R	S	S	S
152	S	S	R	S	S	S	R	S	S	S
153	R	R	S	R	S	R	S	S	S	S
154	R	R	S	R	S	R	S	S	S	S
155	R	R	S	R	S	R	S	S	S	S
156	R	R	S	R	S	R	S	S	S	S
157	R	R	S	R	S	R	S	S	S	S
158	S	S	S	S	S	R	S	S	S	S
159	S	S	S	S	S	R	S	S	S	S
160	S	S	S	S	S	R	S	S	S	S
161	S	S	S	S	S	R	S	S	S	S
162	R	R	S	R	S	R	S	S	S	S
163	R	R	S	R	S	R	S	S	S	S
164	N/A	R	S	R	S	R	S	S	S	S
165	R	R	S	R	S	R	S	S	S	S
166	R	S	S	S	S	S	R	S	S	S
167	R	S	S	S	S	S	R	S	S	S
168	R	S	S	S	S	S	R	S	S	S
169	R	S	S	S	S	S	R	S	S	S
170	R	R	S	R	S	R	S	S	S	S
171	R	R	S	R	S	R	S	S	S	S
172	R	R	S	R	S	R	S	S	S	S
173	R	R	S	R	S	R	S	S	S	S
174	S	R	R	S	S	S	S	R	S	S
175	S	R	R	S	S	S	S	R	S	S
176	S	R	R	S	S	S	S	R	S	S
177	S	S	S	S	S	S	R	S	S	S
178	S	S	S	S	S	S	R	S	S	S
179	S	S	S	S	S	S	R	S	S	S
180	S	S	S	S	S	S	R	S	S	S
181	S	S	S	S	S	S	R	S	S	S
182	S	S	S	S	S	S	R	S	S	S
183	S	S	S	S	S	S	R	S	S	N/A
184	S	S	S	S	S	S	R	S	S	S
185	S	S	S	S	S	S	R	S	S	S
186	S	S	S	S	S	S	R	S	S	S
187	S	S	S	S	S	S	R	S	S	S
188	S	S	S	S	S	S	R	S	S	S
189	S	S	S	S	S	S	R	S	S	S
190	S	H	H	S	S	S	H	S	S	S
191	S	S	S	S	S	S	S	S	S	S
192	S	R	R	S	S	S	R	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-Rex	Sw 5	Sm (CT 55)
496	R	R	R	R	S	S	R	S	S	S
497	R	R	R	R	S	S	R	S	S	S
498	R	R	R	R	S	S	R	S	S	S
499	R	R	R	R	S	S	R	S	S	S
500	R	R	R	R	S	S	R	S	S	S
501	S	R	R	R	S	S	R	S	S	S
502	S	R	R	R	S	S	R	S	S	S
503	S	R	R	R	S	S	R	S	S	S
504	S	R	R	R	S	S	R	S	S	N/A
505	S	R	R	R	S	S	R	S	S	S
506	S	S	S	S	S	R	S	S	S	R
507	S	S	S	S	S	R	S	S	S	R
508	S	S	S	S	S	R	S	S	S	R
509	S	S	S	S	S	R	S	S	S	R
510	S	S	S	S	S	R	S	S	S	R
511	S	R	R	S	S	S	R	S	S	S
512	S	S	R	S	S	S	R	S	S	S
513	S	S	R	S	S	S	R	S	S	S
514	S	S	R	S	S	S	R	S	S	S
515	S	S	R	S	S	S	R	S	S	S
516	R	R	R	R	S	R	R	S	S	S
517	R	R	R	R	S	R	R	S	S	S
518	R	R	R	R	S	R	R	S	S	S
519	R	R	R	R	S	R	R	S	S	S
520	R	R	R	R	S	R	R	S	S	S
521	R	R	R	R	S	R	R	S	S	S
522	S	S	S	S	S	S	R	S	S	S
523	S	S	S	S	S	S	R	S	S	S
524	S	S	S	S	S	S	R	S	S	S
525	S	S	S	S	S	S	R	S	S	S
526	S	S	S	S	S	R	S	S	S	S
527	S	S	S	S	S	R	S	S	S	S
528	S	S	S	S	S	R	S	S	S	S
529	S	S	S	S	S	R	S	S	S	S
530	S	S	S	S	S	R	S	S	S	S
531	S	S	S	S	S	S	S	S	S	S
532	S	S	S	S	S	S	S	S	S	S
533	S	S	S	S	S	S	S	S	S	S
534	S	R	S	R	S	R	S	S	S	S
535	S	R	S	R	S	R	S	S	S	S
536	S	R	S	R	S	R	S	S	S	S
537	S	R	S	R	S	R	S	S	S	S
538	S	R	S	R	S	R	S	S	S	S
539	S	S	H	S	S	S	R	S	S	S
540	S	S	S	S	S	S	R	S	S	S
541	S	S	H	S	S	S	R	S	S	S
542	S	S	H	S	S	S	R	S	S	S
543	S	S	S	S	S	S	R	S	S	S
544	S	S	S	S	S	S	R	R	S	S
545	S	S	S	S	S	S	R	R	S	S
546	S	S	S	S	S	S	R	R	S	S
547	S	S	S	S	S	S	R	R	S	S
548	H	H	H	S	S	S	R	S	S	S
549	H	H	H	S	N/A	S	R	S	S	S
550	H	H	H	S	S	S	R	S	S	S
551	H	H	H	S	S	S	R	S	S	S
552	H	H	H	S	S	S	R	S	S	S
553	S	H	H	H	S	S	H	S	S	S
554	S	H	H	H	S	S	H	S	S	S
555	S	H	H	H	S	S	H	S	S	S
556	S	H	H	H	S	S	H	S	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-Rex	Sw 5	Sm (CT 55)
193	S	H	R	S	S	S	R	S	S	S
194	S	H	R	S	S	S	H	S	S	S
195	S	S	S	S	S	S	R	S	S	S
196	S	S	S	S	S	S	R	S	S	S
197	S	S	S	S	S	S	R	S	S	S
198	S	S	S	S	S	S	R	S	S	S
199	S	S	S	S	S	S	R	S	S	S
200	S	S	S	S	S	S	R	S	S	S
201	S	S	S	S	N/A	S	R	S	S	S
202	S	S	S	S	S	S	R	S	S	S
203	S	S	S	S	S	S	R	S	S	S
204	S	S	S	S	S	R	S	S	S	R
205	S	S	S	S	S	R	S	S	S	R
206	S	S	S	S	S	R	S	S	S	R
207	S	S	S	S	S	R	S	S	S	R
208	S	S	S	S	S	R	S	S	S	R
209	H	R	S	R	S	S	H	S	S	S
210	H	S	H	S	S	S	H	S	S	S
211	R	S	H	S	S	S	H	S	S	S
212	N/A	S	N/A	S	N/A	S	H	S	S	S
213	H	R	S	R	S	S	H	S	S	N/A
214	S	S	S	S	S	S	R	S	S	S
215	S	S	S	S	S	S	R	S	S	S
216	S	S	N/A	S	S	S	R	S	S	S
217	S	S	S	S	S	S	R	S	S	S
218	S	S	S	N/A	S	S	R	N/A	S	N/A
219	S	R	H	R	S	R	S	S	S	S
220	S	R	S	R	S	R	S	S	S	S
221	S	R	S	R	S	R	S	S	S	S
222	S	R	S	N/A	S	R	S	N/A	S	N/A
223	S	R	R	R	S	R	S	S	S	S
224	S	R	S	R	S	R	S	S	S	S
225	S	R	S	R	S	R	S	S	S	S
226	S	R	S	R	S	R	S	S	S	S
227	S	R	S	N/A	S	R	S	S	S	N/A
228	S	R	S	R	S	R	S	S	S	S
229	S	S	S	S	S	S	R	S	S	S
230	S	S	S	S	S	S	R	S	S	S
231	S	S	S	S	S	S	R	S	S	S
232	S	S	S	S	S	S	R	S	S	S
233	R	R	S	R	S	R	S	S	S	S
234	R	R	S	R	S	R	S	S	S	S
235	R	R	S	R	S	R	S	S	S	S
236	R	R	S	R	S	R	S	S	S	S
237	R	R	S	R	S	R	S	S	S	S
238	S	S	S	S	S	S	R	S	S	S
239	S	S	S	S	S	S	R	S	S	S
240	S	S	S	S	S	S	R	S	S	S
241	S	S	R	S	S	S	R	S	R	N/A
242	S	S	R	S	S	S	R	S	R	R
243	S	S	R	S	S	S	R	S	R	R
244	S	S	R	S	S	S	R	S	R	R
245	S	S	R	S	S	S	R	S	R	R
246	S	S	S	R	S	S	S	S	S	S
247	S	S	S	R	S	S	S	S	S	S
248	S	S	S	R	S	S	S	S	S	S
249	S	S	R	S	S	S	R	S	R	R
250	S	S	R	S	S	S	R	S	R	R
251	S	S	R	S	S	S	R	S	R	R
252	S	S	R	S	S	S	R	S	R	R
253	S	R	S	S	S	S	R	R	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-Rex	Sw 5	Sm (CT 55)
557	S	H	R	R	R/H	S	H	S	S	S
558	S	H	R	R	R/H	S	H	S	S	S
559	S	H	R	R	R/H	S	H	S	S	S
560	S	H	R	R	R/H	S	H	S	S	S
561	S	H	R	R	R/H	S	H	S	S	S
562	H	H	R	H	R/H	S	R	H	H	S
563	H	H	R	H	R/H	S	R	H	H	S
564	H	H	R	H	R/H	S	R	H	H	S
565	H	H	R	H	R/H	S	R	H	H	S
566	H	H	R	H	R/H	S	R	H	H	S
567	S	R	R	R	R/H	S	H	S	S	S
568	S	R	R	R	R/H	S	H	S	S	S
569	S	R	R	R	R/H	S	H	S	S	S
570	S	R	R	R	R/H	S	H	S	S	S
571	S	R	R	R	R/H	S	H	S	S	S
572	H	H	R	H	R/H	S	H	S	S	H
573	H	H	R	H	R/H	S	H	S	S	H
574	H	H	R	H	R/H	S	H	S	S	H
575	H	H	R	H	R/H	S	H	S	S	H
576	H	H	R	H	R/H	S	H	S	S	H
577	H	H	R	H	S	H	R	H	H	S
578	H	H	R	H	S	H	R	H	H	S
579	H	H	R	H	S	H	R	H	H	S
580	H	H	R	H	S	H	R	H	H	S
581	H	R	R	H	S	S	H	H	S	H
582	H	R	R	H	S	S	H	H	S	H
583	H	R	R	H	S	S	H	H	S	H
584	H	R	R	H	S	S	H	H	S	H
585	H	R	R	N/A	S	S	H	H	S	H
586	H	H	R	S	R/H	S	R	H	H	S
587	H	H	R	S	R/H	S	R	H	H	S
588	H	H	R	N/A	R/H	S	R	H	H	S
589	H	H	R	S	R/H	S	R	H	H	S
590	H	H	R	S	R/H	S	R	H	H	S
591	S	H	R	H	R/H	S	R	H	H	S
592	S	H	R	H	R/H	S	R	H	H	S
593	S	H	R	H	R/H	S	R	H	H	S
594	S	H	R	H	R/H	S	R	H	H	S
595	H	R	R	H	S	S	R	S	H	S
596	H	R	R	H	S	S	R	S	H	S
597	H	R	R	H	S	S	R	S	H	S
598	H	R	R	H	S	S	R	S	H	S
599	H	R	R	H	S	S	R	S	H	S
600	H	R	H	S	S	S	R	S	S	S
601	H	R	H	S	S	S	R	S	S	S
602	H	R	H	S	S	S	R	S	S	S
603	H	R	H	S	S	S	R	S	S	S
604	H	R	H	S	S	S	R	S	S	S
605	H	R	R	S	S	H	H	S	S	H
606	H	R	R	H	S	H	H	S	S	H
607	H	R	R	H	S	H	H	S	S	H
608	H	H	R	H	S	S	H	S	S	S
609	H	R	R	S	S	H	H	S	S	H
610	S	R	H	H	R/H	S	S	H	S	H
611	S	R	H	H	R/H	S	S	H	S	H
612	S	R	H	H	R/H	S	S	H	S	H
613	S	R	H	H	R/H	S	S	H	S	H
614	S	R	H	H	R/H	S	S	H	S	H
615	H	H	H	H	R/H	S	R	R	S	H
616	H	H	H	H	R/H	S	R	R	S	H
617	H	H	H	H	R/H	N/A	R	R	S	H

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-Rex	Sw 5	Sm (CT 55)
254	S	R	S	S	S	S	R	R	S	S
255	S	R	S	S	S	S	R	R	S	S
256	S	H	S	H	N/A	S	H	R	S	S
257	S	H	S	H	S	S	H	R	S	S
258	S	H	S	H	S	S	H	R	S	S
259	S	H	S	H	S	S	H	R	S	S
260	S	H	S	H	S	S	H	R	S	S
261	S	S	S	R	S	S	S	S	S	S
262	S	S	S	R	S	S	S	S	S	S
263	S	S	S	R	S	S	S	S	S	S
264	S	S	S	R	S	S	S	S	S	S
265	S	S	S	R	S	S	S	S	S	S
266	S	R	S	S	S	S	R	R	S	S
267	S	R	S	S	S	S	R	R	S	S
268	S	R	S	S	S	S	R	R	S	S
269	S	R	S	S	S	S	R	R	S	S
270	R	R	S	R	S	S	R	S	S	S
271	R	R	S	R	S	S	R	S	S	S
272	R	R	S	R	S	S	R	S	S	S
273	R	R	S	R	S	S	R	S	S	S
274	R	R	S	R	S	S	R	S	S	S
275	S	S	R	S	S	S	R	S	S	S
276	S	S	R	S	S	S	R	S	S	S
277	S	S	R	S	S	S	R	S	S	S
278	S	S	R	S	S	S	R	S	S	S
279	S	S	R	S	S	S	R	S	S	S
280	S	R	S	R	S	R	S	S	S	S
281	S	R	S	R	S	R	S	S	S	S
282	S	R	S	R	S	R	S	S	S	S
283	S	R	S	R	S	R	S	S	S	S
284	S	R	S	R	S	R	S	S	S	S
285	S	S	R	S	S	R	H	S	S	S
286	S	S	R	S	S	S	R	S	S	S
287	S	S	R	S	S	S	R	S	S	S
288	S	S	R	S	S	S	R	S	S	S
289	R	R	H	R	S	R	S	S	S	S
290	R	R	R	R	S	R	S	S	S	S
291	R	R	S	R	S	R	S	S	S	S
292	R	R	H	R	S	R	S	S	S	S
293	R	R	H	R	S	R	S	S	S	S
294	R	R	N/A	R	S	H	S	S	S	S
295	R	R	R	R	S	S	S	S	S	S
296	R	H	S	H	S	S	S	S	S	S
297	R	S	S	S	S	S	S	S	S	S
298	H	R	H	R	S	H	S	S	S	S
299	S	S	S	S	S	S	S	S	S	S
300	S	S	S	S	S	S	S	S	S	S
301	S	S	S	S	S	S	S	S	S	S
302	S	S	S	S	S	S	S	S	S	S
303	S	S	S	S	S	S	S	S	S	S
304	S	S	S	S	S	S	S	S	S	S
305	S	S	S	S	S	S	S	S	S	S
306	S	S	S	S	S	S	S	S	S	S
307	S	S	S	S	S	S	S	S	S	S
308	S	S	S	S	S	S	S	S	S	S
309	R	R	S	R	S	R	R	S	S	S
310	R	R	S	R	S	R	R	S	S	S
311	R	R	S	R	S	R	R	S	S	S
312	R	R	S	R	S	R	R	S	S	S
313	S	S	S	S	S	S	R	R	S	S
314	S	S	S	S	S	S	R	R	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-Rex	Sw 5	Sm (CT 55)
618	H	H	H	H	R/H	S	R	R	S	H
619	H	H	H	H	R/H	S	R	R	S	H
620	H	H	R	S	R/H	S	H	H	S	H
621	H	H	R	S	R/H	S	H	H	S	H
622	H	H	R	S	R/H	S	H	H	S	H
623	H	H	R	S	R/H	S	H	H	S	H
624	H	H	R	S	R/H	S	H	H	S	H
625	H	H	H	H	R/H	S	R	H	S	S
626	H	H	H	H	R/H	S	R	H	S	S
627	H	H	H	H	R/H	S	R	H	S	S
628	H	H	H	H	R/H	S	R	H	S	S
629	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
630	S	H	H	H	R/H	S	R	R	S	S
631	H	H	H	H	R/H	S	R	H	S	S
632	S	H	H	H	R/H	S	R	R	S	S
633	S	H	H	H	R/H	S	R	R	S	S
634	S	H	H	H	R/H	S	R	R	S	S
635	S	H	H	H	R/H	S	R	R	S	S
636	S	R	H	H	R/H	S	R	H	S	H
637	S	R	H	H	R/H	S	R	H	S	H
638	S	R	H	H	R/H	S	R	H	S	H
639	S	R	H	H	R/H	S	R	H	S	H
640	S	R	H	H	R/H	S	R	H	S	H
641	S	H	H	S	R/H	S	R	H	S	R
642	S	H	H	S	R/H	S	R	H	S	R
643	S	H	H	S	R/H	S	R	H	S	R
644	S	H	H	S	R/H	S	R	H	S	R
645	S	H	H	S	R/H	S	R	H	S	R
646	S	H	H	S	R/H	S	R	H	S	H
647	S	H	H	S	R/H	S	R	H	S	H
648	S	H	H	S	R/H	S	R	H	S	H
649	S	H	H	S	R/H	S	R	H	S	H
650	S	H	H	S	R/H	S	R	H	S	H
651	S	H	H	S	R/H	S	R	H	S	S
652	S	H	H	S	R/H	S	R	H	S	S
653	S	H	H	S	R/H	S	R	H	S	S
654	S	H	H	S	R/H	S	R	H	S	S
655	S	H	H	S	R/H	S	R	H	S	S
656	S	H	H	S	R/H	S	R	R	S	H
657	S	H	H	S	R/H	S	R	R	S	H
658	S	H	H	S	R/H	S	R	R	S	H
659	S	H	H	S	R/H	S	R	R	S	H
660	H	H	H	H	R/H	H	R	H	S	H
661	H	H	H	H	R/H	H	R	H	S	H
662	H	H	R	H	R/H	H	R	H	S	H
663	H	H	H	H	R/H	H	R	H	S	H
664	H	H	H	H	R/H	H	R	H	S	H
665	S	H	H	H	R/H	S	H	R	S	S
666	S	H	H	H	R/H	S	H	R	S	S
667	S	H	H	H	R/H	S	H	R	S	S
668	S	H	H	H	R/H	S	H	R	S	S
669	S	H	H	H	R/H	S	H	R	S	S
670	S	H	H	H	R/H	S	H	R	S	S
671	S	H	H	H	R/H	S	H	R	S	S
672	S	H	H	H	R/H	S	H	R	S	S
673	S	H	S	H	R/H	S	R	R	S	S
674	S	H	S	H	R/H	S	R	R	S	S
675	S	H	S	H	R/H	S	R	R	S	S
676	S	H	S	H	R/H	S	R	R	S	S
677	S	H	N/A	H	R/H	S	H	R	S	S
678	S	H	H	H	R/H	S	H	R	S	S

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-Rex	Sw 5	Sm (CT 55)
315	S	S	S	S	S	S	R	R	S	S
316	S	S	S	S	S	S	R	R	S	S
317	S	S	S	S	S	S	R	R	S	S
318	S	R	S	R	S	R	S	S	S	S
319	S	R	S	R	S	R	S	S	S	S
320	S	R	S	R	S	R	S	S	S	S
321	S	R	S	R	S	R	S	S	S	S
322	S	R	S	R	S	R	S	S	S	S
323	S	R	S	R	S	R	S	S	S	S
324	S	R	S	R	S	R	S	S	S	S
325	S	R	S	R	S	R	S	S	S	S
326	S	R	S	R	S	R	S	S	S	S
327	S	R	S	R	S	R	S	S	S	S
328	S	H	H	H	S	H	H	S	S	S
329	S	H	H	H	S	H	H	S	S	S
330	S	H	H	H	S	H	H	S	S	S
331	S	H	H	H	S	H	H	S	S	S
332	S	H	H	H	S	H	H	S	S	S
333	S	S	S	S	S	S	R	R	S	S
334	S	S	S	S	S	S	R	R	S	S
335	S	S	S	S	S	S	R	R	S	S
336	S	S	S	S	S	S	R	R	S	S
337	S	S	S	S	S	S	R	R	S	S
338	S	S	S	S	S	S	R	S	S	S
339	S	S	S	S	S	S	R	S	S	S
340	S	S	S	S	S	S	R	S	S	S
341	S	S	S	S	S	S	R	S	S	S
342	S	S	S	S	S	S	R	S	S	S
343	S	R	S	R	S	R	S	S	S	S
344	S	R	S	R	S	R	S	S	S	S
345	S	R	S	R	S	R	S	S	S	S
346	S	R	S	R	S	R	S	S	S	S
347	S	R	S	R	S	R	S	S	S	S
348	S	S	S	S	S	S	R	R	S	S
349	S	S	S	S	S	S	R	R	S	S
350	S	S	S	S	S	S	R	R	S	S
351	S	S	S	S	S	S	R	R	S	S
352	S	S	S	S	S	S	S	S	S	S
353	S	S	S	S	S	S	S	S	S	S
354	S	S	S	S	S	S	S	S	S	S
355	S	S	S	S	S	S	S	S	S	S
356	S	S	S	S	S	S	S	S	S	S
357	S	S	S	S	S	S	S	S	S	S
358	S	R	S	R	S	R	S	S	S	S
359	S	R	S	R	S	R	S	S	S	S
360	S	R	S	R	S	R	S	S	S	S
361	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
362	S	R	S	R	S	R	S	S	S	S
363	S	S	S	S	S	R	S	S	S	R
364	S	S	S	S	S	R	S	S	S	R

No.	Ty1	Tm 2a	I2	J3	Cf9	Bw 12	Ve 2	Mi-Rex	Sw 5	Sm (CT 55)
679	S	N/A	H	H	R/H	S	H	R	S	S
680	S	H	H	H	R/H	S	H	R	S	S
681	S	H	H	H	R/H	S	H	R	S	S
682	H	H	H	H	S	S	H	H	S	H
683	H	H	H	H	S	S	H	H	S	H
684	H	H	H	H	S	S	H	H	S	H
685	H	H	H	H	S	S	H	H	S	H
686	H	H	H	H	S	S	H	H	S	H
687	S	R	S	S	R/H	S	S	R	S	S
688	S	R	S	S	R/H	S	S	R	S	S
689	S	R	S	S	R/H	S	S	R	S	S
690	H	R	S	S	R/H	S	S	H	S	S
691	H	R	S	S	R/H	S	S	H	S	S
692	H	R	S	S	R/H	S	S	H	S	S
693	H	R	S	S	R/H	S	S	H	S	S
694	H	R	S	S	R/H	S	H	H	S	S
695	H	R	S	S	R/H	S	H	H	S	S
696	H	R	S	S	R/H	S	H	H	S	S
697	H	R	S	S	R/H	S	H	H	S	S
698	S	H	S	S	R/H	S	H	H	S	S
699	S	H	S	S	R/H	S	H	H	S	S
700	S	H	S	S	R/H	S	H	H	S	S
701	S	H	S	S	R/H	S	H	H	S	S
702	S	H	S	S	R/H	S	S	S	S	S
703	S	H	S	S	R/H	S	S	S	S	S
704	S	H	S	S	R/H	S	S	S	S	S
705	S	H	S	S	R/H	S	S	S	S	S
706	S	H	S	S	R/H	S	S	S	S	S
707	S	H	S	S	R/H	S	S	S	S	S
708	S	H	S	S	R/H	S	S	S	S	S
709	H	R	S	S	R/H	S	S	S	H	S
710	H	R	S	S	R/H	S	S	S	H	S
711	H	R	S	S	R/H	S	S	S	H	S
712	H	R	S	S	R/H	S	S	S	H	S
713	H	R	S	S	R/H	S	S	S	H	S
714	H	R	S	S	R/H	S	S	S	H	S
715	H	R	S	S	R/H	S	S	S	H	S
716	H	R	S	S	R/H	S	S	S	H	S
717	S	R	R	R	R/H	R	H	R	S	S
718	S	R	R	R	R/H	R	H	R	S	S
719	S	R	R	R	R/H	R	H	R	S	S
720	S	R	R	R	R/H	R	H	R	S	S
721	S	R	S	H	S	H	H	R	S	H
722	S	R	S	H	S	H	H	R	S	H
723	S	R	S	H	S	H	H	R	S	H
724	S	R	S	H	S	H	H	R	S	H
725	S	R	S	H	S	H	H	R	S	H
726	S	H	R	R	R/H	S	H	H	R	S
727	S	H	R	R	R/H	S	H	H	R	S

표 3. 순천대학교 5점의 시료에 대하여, 병 관련 10종의 마커를 이용한 서비스 결과

No.	Ty1	Tm2a	I2	J3	Bw12	Ve2	Mi-23	Sw5	Sm (CT55)	Cf9
1	S	R	S	S	S	S	S	S	S	R
2	S	S	S	S	S	S	S	S	S	S
3	S	H	S	S	S	S	S	S	S	S
4	S	H	S	S	S	S	S	S	S	H
5	S	R	S	S	S	S	S	S	S	S

표 4. 순천대학교 6,001점의 시료에 대하여, 네 종의 병 마커(Bw6, Ve2, J3, Tm2a)를 이용한 서비스 결과

No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6
J1-001	H	J1-065	H	J1-129	H	J1-193	H	J1-257	H	J1-321	H
J1-002	H	J1-066	H	J1-130	H	J1-194	H	J1-258	H	J1-322	H
J1-003	H	J1-067	H	J1-131	H	J1-195	H	J1-259	H	J1-323	H
J1-004	H	J1-068	H	J1-132	H	J1-196	H	J1-260	H	J1-324	H
J1-005	H	J1-069	H	J1-133	H	J1-197	H	J1-261	H	J1-325	H
J1-006	H	J1-070	H	J1-134	H	J1-198	H	J1-262	H	J1-326	H
J1-007	H	J1-071	H	J1-135	H	J1-199	H	J1-263	H	J1-327	H
J1-008	H	J1-072	H	J1-136	H	J1-200	H	J1-264	H	J1-328	H
J1-009	H	J1-073	H	J1-137	H	J1-201	H	J1-265	H	J1-329	H
J1-010	H	J1-074	H	J1-138	H	J1-202	H	J1-266	H	J1-330	H
J1-011	H	J1-075	H	J1-139	H	J1-203	H	J1-267	H	J1-331	H
J1-012	H	J1-076	H	J1-140	H	J1-204	H	J1-268	H	J1-332	H
J1-013	H	J1-077	H	J1-141	H	J1-205	H	J1-269	H	J1-333	H
J1-014	H	J1-078	H	J1-142	H	J1-206	H	J1-270	H	J1-334	H
J1-015	H	J1-079	H	J1-143	H	J1-207	H	J1-271	H	J1-335	H
J1-016	H	J1-080	H	J1-144	H	J1-208	H	J1-272	H	J1-336	H
J1-017	H	J1-081	H	J1-145	H	J1-209	H	J1-273	H	J1-337	H
J1-018	H	J1-082	H	J1-146	H	J1-210	H	J1-274	H	J1-338	H
J1-019	H	J1-083	H	J1-147	H	J1-211	H	J1-275	H	J1-339	H
J1-020	H	J1-084	H	J1-148	H	J1-212	H	J1-276	H	J1-340	H
J1-021	H	J1-085	H	J1-149	H	J1-213	H	J1-277	H	J1-341	H
J1-022	H	J1-086	H	J1-150	H	J1-214	H	J1-278	H	J1-342	H
J1-023	H	J1-087	H	J1-151	H	J1-215	H	J1-279	H	J1-343	H
J1-024	H	J1-088	H	J1-152	H	J1-216	H	J1-280	H	J1-344	H
J1-025	H	J1-089	H	J1-153	H	J1-217	H	J1-281	H	J1-345	H
J1-026	H	J1-090	H	J1-154	H	J1-218	H	J1-282	H	J1-346	H
J1-027	H	J1-091	H	J1-155	H	J1-219	H	J1-283	H	J1-347	H
J1-028	H	J1-092	H	J1-156	H	J1-220	H	J1-284	H	J1-348	H
J1-029	H	J1-093	H	J1-157	H	J1-221	H	J1-285	H	J1-349	H
J1-030	H	J1-094	H	J1-158	H	J1-222	H	J1-286	H	J1-350	H
J1-031	H	J1-095	H	J1-159	H	J1-223	H	J1-287	H	J1-351	H
J1-032	H	J1-096	H	J1-160	H	J1-224	H	J1-288	H	J1-352	H
J1-033	H	J1-097	H	J1-161	H	J1-225	H	J1-289	H	J1-353	H
J1-034	H	J1-098	H	J1-162	H	J1-226	H	J1-290	H	J1-354	H
J1-035	H	J1-099	H	J1-163	H	J1-227	H	J1-291	H	J1-355	H
J1-036	H	J1-100	H	J1-164	H	J1-228	H	J1-292	H	J1-356	H
J1-037	H	J1-101	H	J1-165	H	J1-229	H	J1-293	H	J1-357	H
J1-038	H	J1-102	H	J1-166	H	J1-230	H	J1-294	H	J1-358	H
J1-039	H	J1-103	H	J1-167	H	J1-231	H	J1-295	H	J1-359	H
J1-040	H	J1-104	H	J1-168	H	J1-232	H	J1-296	H	J1-360	H
J1-041	H	J1-105	H	J1-169	H	J1-233	H	J1-297	H	J1-361	H
J1-042	H	J1-106	H	J1-170	H	J1-234	H	J1-298	H	J1-362	H
J1-043	H	J1-107	H	J1-171	H	J1-235	H	J1-299	H	J1-363	H
J1-044	H	J1-108	H	J1-172	H	J1-236	H	J1-300	H	J1-364	H
J1-045	H	J1-109	H	J1-173	H	J1-237	H	J1-301	H	J1-365	H
J1-046	H	J1-110	H	J1-174	H	J1-238	H	J1-302	H	J1-366	H
J1-047	H	J1-111	H	J1-175	H	J1-239	H	J1-303	H	J1-367	H
J1-048	H	J1-112	H	J1-176	H	J1-240	H	J1-304	H	J1-368	H
J1-049	H	J1-113	H	J1-177	H	J1-241	H	J1-305	H	J1-369	H
J1-050	H	J1-114	H	J1-178	H	J1-242	H	J1-306	H	J1-370	H
J1-051	H	J1-115	H	J1-179	H	J1-243	H	J1-307	H	J1-371	H
J1-052	H	J1-116	H	J1-180	H	J1-244	H	J1-308	H	J1-372	H
J1-053	H	J1-117	H	J1-181	H	J1-245	H	J1-309	H	J1-373	H
J1-054	H	J1-118	H	J1-182	H	J1-246	H	J1-310	H	J1-374	H
J1-055	H	J1-119	H	J1-183	H	J1-247	H	J1-311	H	J1-375	H
J1-056	H	J1-120	H	J1-184	H	J1-248	H	J1-312	H	J1-376	H
J1-057	H	J1-121	H	J1-185	H	J1-249	H	J1-313	H	J1-377	H
J1-058	H	J1-122	H	J1-186	H	J1-250	H	J1-314	H	J1-378	H
J1-059	H	J1-123	H	J1-187	H	J1-251	H	J1-315	H	J1-379	H
J1-060	H	J1-124	H	J1-188	H	J1-252	H	J1-316	H	J1-380	H

J1-061	H	J1-125	H	J1-189	H	J1-253	H	J1-317	H	J1-381	H
J1-062	H	J1-126	H	J1-190	H	J1-254	H	J1-318	H	J1-382	H
J1-063	H	J1-127	H	J1-191	H	J1-255	H	J1-319	H	J1-383	H
J1-064	H	J1-128	H	J1-192	H	J1-256	H	J1-320	H	J1-384	H
No.	J3	No.	J3	No.	J3	No.	J3	No.	J3	No.	J3
J2-001	H	J2-065	H	J2-129	H	J2-193	H	J2-257	H	J2-321	H
J2-002	H	J2-066	H	J2-130	H	J2-194	H	J2-258	H	J2-322	H
J2-003	H	J2-067	H	J2-131	H	J2-195	H	J2-259	H	J2-323	H
J2-004	H	J2-068	H	J2-132	H	J2-196	H	J2-260	H	J2-324	H
J2-005	H	J2-069	H	J2-133	H	J2-197	H	J2-261	H	J2-325	H
J2-006	H	J2-070	H	J2-134	H	J2-198	H	J2-262	H	J2-326	H
J2-007	H	J2-071	H	J2-135	H	J2-199	H	J2-263	H	J2-327	H
J2-008	H	J2-072	H	J2-136	H	J2-200	H	J2-264	H	J2-328	H
J2-009	H	J2-073	H	J2-137	H	J2-201	H	J2-265	H	J2-329	H
J2-010	H	J2-074	H	J2-138	H	J2-202	H	J2-266	H	J2-330	H
J2-011	H	J2-075	H	J2-139	H	J2-203	H	J2-267	H	J2-331	H
J2-012	H	J2-076	H	J2-140	H	J2-204	H	J2-268	H	J2-332	H
J2-013	H	J2-077	H	J2-141	H	J2-205	H	J2-269	H	J2-333	H
J2-014	H	J2-078	H	J2-142	H	J2-206	H	J2-270	H	J2-334	H
J2-015	H	J2-079	H	J2-143	H	J2-207	H	J2-271	H	J2-335	H
J2-016	H	J2-080	H	J2-144	H	J2-208	H	J2-272	H	J2-336	H
J2-017	H	J2-081	H	J2-145	H	J2-209	H	J2-273	H	J2-337	H
J2-018	H	J2-082	H	J2-146	H	J2-210	H	J2-274	H	J2-338	H
J2-019	H	J2-083	H	J2-147	H	J2-211	H	J2-275	H	J2-339	H
J2-020	H	J2-084	H	J2-148	H	J2-212	H	J2-276	H	J2-340	H
J2-021	H	J2-085	H	J2-149	H	J2-213	H	J2-277	H	J2-341	H
J2-022	H	J2-086	H	J2-150	H	J2-214	H	J2-278	H	J2-342	H
J2-023	H	J2-087	H	J2-151	H	J2-215	H	J2-279	H	J2-343	H
J2-024	H	J2-088	H	J2-152	H	J2-216	H	J2-280	H	J2-344	H
J2-025	H	J2-089	H	J2-153	H	J2-217	H	J2-281	H	J2-345	H
J2-026	H	J2-090	H	J2-154	H	J2-218	H	J2-282	H	J2-346	H
J2-027	H	J2-091	H	J2-155	H	J2-219	H	J2-283	H	J2-347	H
J2-028	H	J2-092	H	J2-156	H	J2-220	H	J2-284	H	J2-348	H
J2-029	H	J2-093	H	J2-157	H	J2-221	H	J2-285	H	J2-349	H
J2-030	H	J2-094	H	J2-158	H	J2-222	H	J2-286	H	J2-350	H
J2-031	H	J2-095	H	J2-159	H	J2-223	H	J2-287	H	J2-351	H
J2-032	H	J2-096	H	J2-160	H	J2-224	H	J2-288	H	J2-352	H
J2-033	H	J2-097	H	J2-161	H	J2-225	H	J2-289	H	J2-353	H
J2-034	H	J2-098	H	J2-162	H	J2-226	H	J2-290	H	J2-354	H
J2-035	H	J2-099	H	J2-163	H	J2-227	H	J2-291	H	J2-355	H
J2-036	H	J2-100	H	J2-164	H	J2-228	H	J2-292	H	J2-356	H
J2-037	H	J2-101	H	J2-165	H	J2-229	H	J2-293	H	J2-357	H
J2-038	H	J2-102	H	J2-166	H	J2-230	H	J2-294	H	J2-358	H
J2-039	H	J2-103	H	J2-167	H	J2-231	H	J2-295	H	J2-359	H
J2-040	H	J2-104	H	J2-168	H	J2-232	H	J2-296	H	J2-360	H
J2-041	H	J2-105	H	J2-169	H	J2-233	H	J2-297	H	J2-361	H
J2-042	H	J2-106	H	J2-170	H	J2-234	H	J2-298	H	J2-362	H
J2-043	H	J2-107	H	J2-171	H	J2-235	H	J2-299	H	J2-363	H
J2-044	H	J2-108	H	J2-172	H	J2-236	H	J2-300	H	J2-364	H
J2-045	H	J2-109	H	J2-173	H	J2-237	H	J2-301	H	J2-365	H
J2-046	H	J2-110	H	J2-174	H	J2-238	H	J2-302	H	J2-366	H
J2-047	H	J2-111	H	J2-175	H	J2-239	H	J2-303	H	J2-367	H
J2-048	H	J2-112	H	J2-176	H	J2-240	H	J2-304	H	J2-368	H
J2-049	H	J2-113	H	J2-177	H	J2-241	H	J2-305	H	J2-369	H
J2-050	H	J2-114	H	J2-178	H	J2-242	H	J2-306	H	J2-370	H
J2-051	H	J2-115	H	J2-179	H	J2-243	H	J2-307	H	J2-371	H
J2-052	H	J2-116	H	J2-180	H	J2-244	H	J2-308	H	J2-372	H
J2-053	H	J2-117	H	J2-181	H	J2-245	H	J2-309	H	J2-373	H
J2-054	H	J2-118	H	J2-182	H	J2-246	H	J2-310	H	J2-374	H
J2-055	H	J2-119	H	J2-183	H	J2-247	H	J2-311	H	J2-375	H
J2-056	H	J2-120	H	J2-184	H	J2-248	H	J2-312	H	J2-376	H
J2-057	H	J2-121	H	J2-185	H	J2-249	H	J2-313	H	J2-377	H

J2-058	H	J2-122	H	J2-186	H	J2-250	H	J2-314	H	J2-378	H
J2-059	H	J2-123	H	J2-187	H	J2-251	H	J2-315	H	J2-379	H
J2-060	H	J2-124	H	J2-188	H	J2-252	H	J2-316	H	J2-380	H
J2-061	H	J2-125	H	J2-189	H	J2-253	H	J2-317	H	J2-381	H
J2-062	N/A	J2-126	H	J2-190	H	J2-254	H	J2-318	H	J2-382	H
J2-063	H	J2-127	H	J2-191	H	J2-255	H	J2-319	H	J2-383	H
J2-064	H	J2-128	H	J2-192	H	J2-256	H	J2-320	H	J2-384	H
No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2
J3-001	H	J3-065	N/A	J3-129	H	J3-193	H	J3-257	H	J3-321	H
J3-002	H	J3-066	H	J3-130	H	J3-194	H	J3-258	H	J3-322	H
J3-003	H	J3-067	H	J3-131	H	J3-195	H	J3-259	H	J3-323	H
J3-004	H	J3-068	H	J3-132	H	J3-196	H	J3-260	H	J3-324	H
J3-005	H	J3-069	H	J3-133	H	J3-197	H	J3-261	H	J3-325	H
J3-006	H	J3-070	H	J3-134	H	J3-198	H	J3-262	H	J3-326	H
J3-007	H	J3-071	H	J3-135	H	J3-199	H	J3-263	H	J3-327	H
J3-008	H	J3-072	H	J3-136	H	J3-200	H	J3-264	H	J3-328	H
J3-009	H	J3-073	H	J3-137	H	J3-201	H	J3-265	H	J3-329	H
J3-010	H	J3-074	H	J3-138	H	J3-202	H	J3-266	H	J3-330	H
J3-011	H	J3-075	H	J3-139	H	J3-203	H	J3-267	H	J3-331	H
J3-012	H	J3-076	H	J3-140	H	J3-204	H	J3-268	H	J3-332	H
J3-013	H	J3-077	H	J3-141	H	J3-205	H	J3-269	H	J3-333	H
J3-014	H	J3-078	H	J3-142	H	J3-206	H	J3-270	H	J3-334	H
J3-015	H	J3-079	H	J3-143	H	J3-207	H	J3-271	H	J3-335	H
J3-016	H	J3-080	H	J3-144	H	J3-208	H	J3-272	H	J3-336	H
J3-017	H	J3-081	H	J3-145	H	J3-209	H	J3-273	H	J3-337	H
J3-018	H	J3-082	H	J3-146	H	J3-210	H	J3-274	H	J3-338	H
J3-019	H	J3-083	H	J3-147	H	J3-211	H	J3-275	H	J3-339	H
J3-020	H	J3-084	H	J3-148	H	J3-212	H	J3-276	H	J3-340	H
J3-021	H	J3-085	H	J3-149	H	J3-213	H	J3-277	H	J3-341	H
J3-022	H	J3-086	H	J3-150	H	J3-214	H	J3-278	H	J3-342	H
J3-023	H	J3-087	H	J3-151	H	J3-215	H	J3-279	H	J3-343	H
J3-024	H	J3-088	H	J3-152	H	J3-216	H	J3-280	H	J3-344	H
J3-025	H	J3-089	H	J3-153	H	J3-217	H	J3-281	H	J3-345	H
J3-026	H	J3-090	H	J3-154	H	J3-218	H	J3-282	H	J3-346	H
J3-027	H	J3-091	H	J3-155	H	J3-219	H	J3-283	H	J3-347	H
J3-028	H	J3-092	H	J3-156	H	J3-220	H	J3-284	H	J3-348	H
J3-029	H	J3-093	H	J3-157	H	J3-221	H	J3-285	H	J3-349	H
J3-030	H	J3-094	H	J3-158	H	J3-222	H	J3-286	H	J3-350	H
J3-031	H	J3-095	H	J3-159	H	J3-223	H	J3-287	H	J3-351	H
J3-032	H	J3-096	H	J3-160	H	J3-224	H	J3-288	H	J3-352	H
J3-033	H	J3-097	H	J3-161	H	J3-225	H	J3-289	H	J3-353	H
J3-034	H	J3-098	H	J3-162	H	J3-226	H	J3-290	H	J3-354	H
J3-035	H	J3-099	H	J3-163	H	J3-227	H	J3-291	H	J3-355	H
J3-036	H	J3-100	H	J3-164	H	J3-228	H	J3-292	H	J3-356	H
J3-037	H	J3-101	H	J3-165	H	J3-229	H	J3-293	H	J3-357	H
J3-038	H	J3-102	H	J3-166	H	J3-230	H	J3-294	H	J3-358	H
J3-039	H	J3-103	H	J3-167	H	J3-231	H	J3-295	H	J3-359	H
J3-040	H	J3-104	H	J3-168	H	J3-232	H	J3-296	H	J3-360	H
J3-041	H	J3-105	H	J3-169	H	J3-233	H	J3-297	H	J3-361	H
J3-042	H	J3-106	H	J3-170	H	J3-234	H	J3-298	H	J3-362	H
J3-043	H	J3-107	H	J3-171	H	J3-235	H	J3-299	H	J3-363	H
J3-044	H	J3-108	H	J3-172	H	J3-236	H	J3-300	H	J3-364	H
J3-045	H	J3-109	H	J3-173	H	J3-237	H	J3-301	H	J3-365	H
J3-046	H	J3-110	H	J3-174	H	J3-238	H	J3-302	H	J3-366	H
J3-047	H	J3-111	H	J3-175	H	J3-239	H	J3-303	H	J3-367	H
J3-048	H	J3-112	H	J3-176	H	J3-240	H	J3-304	H	J3-368	H
J3-049	H	J3-113	H	J3-177	H	J3-241	H	J3-305	H	J3-369	H
J3-050	H	J3-114	H	J3-178	H	J3-242	H	J3-306	H	J3-370	H
J3-051	H	J3-115	H	J3-179	H	J3-243	H	J3-307	H	J3-371	H
J3-052	H	J3-116	H	J3-180	H	J3-244	H	J3-308	H	J3-372	H
J3-053	H	J3-117	H	J3-181	H	J3-245	H	J3-309	H	J3-373	H
J3-054	H	J3-118	H	J3-182	H	J3-246	H	J3-310	H	J3-374	H

J3-055	H	J3-119	H	J3-183	H	J3-247	H	J3-311	H	J3-375	H
J3-056	H	J3-120	H	J3-184	H	J3-248	H	J3-312	H	J3-376	H
J3-057	H	J3-121	H	J3-185	H	J3-249	H	J3-313	H	J3-377	H
J3-058	H	J3-122	H	J3-186	H	J3-250	H	J3-314	H	J3-378	H
J3-059	H	J3-123	H	J3-187	H	J3-251	H	J3-315	H	J3-379	H
J3-060	H	J3-124	H	J3-188	H	J3-252	H	J3-316	H	J3-380	H
J3-061	H	J3-125	H	J3-189	H	J3-253	H	J3-317	H	J3-381	H
J3-062	H	J3-126	H	J3-190	H	J3-254	H	J3-318	H		
J3-063	H	J3-127	H	J3-191	H	J3-255	H	J3-319	H		
J3-064	H	J3-128	H	J3-192	H	J3-256	H	J3-320	H		
No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6
J4-001	H	J4-060	H	J4-119	H	J4-178	H	J4-237	H	J4-296	H
J4-002	H	J4-061	H	J4-120	H	J4-179	H	J4-238	H	J4-297	H
J4-003	H	J4-062	H	J4-121	H	J4-180	H	J4-239	H	J4-298	H
J4-004	H	J4-063	H	J4-122	H	J4-181	H	J4-240	H	J4-299	H
J4-005	H	J4-064	H	J4-123	H	J4-182	H	J4-241	H	J4-300	H
J4-006	H	J4-065	H	J4-124	H	J4-183	H	J4-242	H	J4-301	H
J4-007	H	J4-066	H	J4-125	H	J4-184	H	J4-243	H	J4-302	H
J4-008	H	J4-067	H	J4-126	H	J4-185	H	J4-244	H	J4-303	H
J4-009	H	J4-068	H	J4-127	H	J4-186	H	J4-245	H	J4-304	H
J4-010	H	J4-069	H	J4-128	H	J4-187	H	J4-246	H	J4-305	H
J4-011	H	J4-070	H	J4-129	H	J4-188	H	J4-247	H	J4-306	H
J4-012	H	J4-071	H	J4-130	H	J4-189	H	J4-248	H	J4-307	H
J4-013	H	J4-072	H	J4-131	H	J4-190	H	J4-249	H	J4-308	H
J4-014	H	J4-073	H	J4-132	H	J4-191	H	J4-250	H	J4-309	H
J4-015	H	J4-074	H	J4-133	H	J4-192	H	J4-251	H	J4-310	H
J4-016	H	J4-075	H	J4-134	H	J4-193	H	J4-252	H	J4-311	H
J4-017	H	J4-076	H	J4-135	H	J4-194	H	J4-253	H	J4-312	H
J4-018	H	J4-077	H	J4-136	H	J4-195	H	J4-254	H	J4-313	H
J4-019	H	J4-078	H	J4-137	H	J4-196	H	J4-255	H	J4-314	H
J4-020	H	J4-079	H	J4-138	H	J4-197	H	J4-256	H	J4-315	H
J4-021	H	J4-080	H	J4-139	H	J4-198	H	J4-257	H	J4-316	H
J4-022	H	J4-081	H	J4-140	H	J4-199	H	J4-258	H	J4-317	H
J4-023	H	J4-082	H	J4-141	H	J4-200	H	J4-259	H	J4-318	H
J4-024	H	J4-083	H	J4-142	H	J4-201	H	J4-260	H	J4-319	H
J4-025	H	J4-084	H	J4-143	H	J4-202	H	J4-261	H	J4-320	H
J4-026	H	J4-085	H	J4-144	H	J4-203	H	J4-262	H	J4-321	H
J4-027	H	J4-086	H	J4-145	H	J4-204	H	J4-263	H	J4-322	H
J4-028	H	J4-087	H	J4-146	H	J4-205	H	J4-264	H	J4-323	H
J4-029	H	J4-088	H	J4-147	H	J4-206	H	J4-265	H	J4-324	H
J4-030	H	J4-089	H	J4-148	H	J4-207	H	J4-266	H	J4-325	H
J4-031	H	J4-090	H	J4-149	H	J4-208	H	J4-267	H	J4-326	H
J4-032	H	J4-091	H	J4-150	H	J4-209	H	J4-268	H	J4-327	H
J4-033	H	J4-092	H	J4-151	H	J4-210	H	J4-269	H	J4-328	H
J4-034	H	J4-093	H	J4-152	H	J4-211	H	J4-270	H	J4-329	H
J4-035	H	J4-094	H	J4-153	H	J4-212	H	J4-271	H	J4-330	H
J4-036	H	J4-095	H	J4-154	H	J4-213	H	J4-272	H	J4-331	H
J4-037	H	J4-096	H	J4-155	H	J4-214	H	J4-273	H	J4-332	H
J4-038	H	J4-097	H	J4-156	H	J4-215	H	J4-274	H	J4-333	H
J4-039	H	J4-098	H	J4-157	H	J4-216	H	J4-275	H	J4-334	H
J4-040	H	J4-099	H	J4-158	H	J4-217	H	J4-276	H	J4-335	H
J4-041	H	J4-100	H	J4-159	H	J4-218	H	J4-277	H	J4-336	H
J4-042	H	J4-101	H	J4-160	H	J4-219	H	J4-278	H	J4-337	H
J4-043	H	J4-102	H	J4-161	H	J4-220	H	J4-279	H	J4-338	H
J4-044	H	J4-103	H	J4-162	H	J4-221	H	J4-280	H	J4-339	H
J4-045	H	J4-104	H	J4-163	H	J4-222	H	J4-281	H	J4-340	H
J4-046	H	J4-105	H	J4-164	H	J4-223	H	J4-282	H	J4-341	H
J4-047	H	J4-106	H	J4-165	H	J4-224	H	J4-283	H	J4-342	H
J4-048	H	J4-107	H	J4-166	H	J4-225	H	J4-284	H	J4-343	H
J4-049	H	J4-108	H	J4-167	H	J4-226	H	J4-285	H	J4-344	H
J4-050	H	J4-109	H	J4-168	H	J4-227	H	J4-286	H	J4-345	H
J4-051	H	J4-110	H	J4-169	H	J4-228	H	J4-287	H	J4-346	H

J4-052	H	J4-111	H	J4-170	H	J4-229	H	J4-288	H	J4-347	H
J4-053	H	J4-112	H	J4-171	H	J4-230	H	J4-289	H	J4-348	H
J4-054	H	J4-113	H	J4-172	H	J4-231	H	J4-290	H	J4-349	H
J4-055	H	J4-114	H	J4-173	H	J4-232	H	J4-291	H	J4-350	H
J4-056	H	J4-115	H	J4-174	H	J4-233	H	J4-292	H	J4-351	H
J4-057	H	J4-116	H	J4-175	N/A	J4-234	H	J4-293	H	J4-352	H
J4-058	H	J4-117	H	J4-176	H	J4-235	H	J4-294	H	J4-353	H
J4-059	H	J4-118	H	J4-177	H	J4-236	H	J4-295	H		
No.	J3	No.	J3	No.	J3	No.	J3	No.	J3	No.	J3
J5-001	H	J5-063	H	J5-125	H	J5-187	H	J5-249	H	J5-311	H
J5-002	H	J5-064	H	J5-126	H	J5-188	H	J5-250	H	J5-312	H
J5-003	H	J5-065	H	J5-127	H	J5-189	H	J5-251	H	J5-313	H
J5-004	H	J5-066	H	J5-128	H	J5-190	H	J5-252	H	J5-314	H
J5-005	H	J5-067	H	J5-129	H	J5-191	H	J5-253	H	J5-315	H
J5-006	H	J5-068	H	J5-130	H	J5-192	H	J5-254	H	J5-316	H
J5-007	H	J5-069	H	J5-131	H	J5-193	H	J5-255	H	J5-317	H
J5-008	H	J5-070	H	J5-132	H	J5-194	H	J5-256	H	J5-318	H
J5-009	H	J5-071	H	J5-133	H	J5-195	H	J5-257	H	J5-319	H
J5-010	H	J5-072	H	J5-134	H	J5-196	H	J5-258	H	J5-320	H
J5-011	H	J5-073	H	J5-135	H	J5-197	H	J5-259	H	J5-321	H
J5-012	H	J5-074	H	J5-136	H	J5-198	H	J5-260	H	J5-322	H
J5-013	H	J5-075	H	J5-137	H	J5-199	H	J5-261	H	J5-323	H
J5-014	H	J5-076	H	J5-138	H	J5-200	H	J5-262	H	J5-324	H
J5-015	H	J5-077	H	J5-139	H	J5-201	H	J5-263	H	J5-325	H
J5-016	H	J5-078	H	J5-140	H	J5-202	H	J5-264	H	J5-326	H
J5-017	H	J5-079	H	J5-141	H	J5-203	H	J5-265	H	J5-327	H
J5-018	H	J5-080	H	J5-142	H	J5-204	H	J5-266	H	J5-328	H
J5-019	H	J5-081	H	J5-143	H	J5-205	H	J5-267	H	J5-329	H
J5-020	H	J5-082	H	J5-144	H	J5-206	H	J5-268	H	J5-330	H
J5-021	H	J5-083	H	J5-145	H	J5-207	H	J5-269	H	J5-331	H
J5-022	H	J5-084	H	J5-146	H	J5-208	H	J5-270	H	J5-332	H
J5-023	H	J5-085	H	J5-147	H	J5-209	H	J5-271	H	J5-333	H
J5-024	H	J5-086	H	J5-148	H	J5-210	H	J5-272	H	J5-334	H
J5-025	H	J5-087	H	J5-149	H	J5-211	H	J5-273	H	J5-335	H
J5-026	H	J5-088	H	J5-150	H	J5-212	H	J5-274	H	J5-336	H
J5-027	H	J5-089	H	J5-151	H	J5-213	H	J5-275	H	J5-337	H
J5-028	H	J5-090	H	J5-152	H	J5-214	H	J5-276	H	J5-338	H
J5-029	H	J5-091	H	J5-153	H	J5-215	H	J5-277	H	J5-339	H
J5-030	H	J5-092	H	J5-154	H	J5-216	H	J5-278	H	J5-340	H
J5-031	H	J5-093	H	J5-155	H	J5-217	H	J5-279	H	J5-341	H
J5-032	H	J5-094	H	J5-156	H	J5-218	H	J5-280	H	J5-342	H
J5-033	H	J5-095	H	J5-157	H	J5-219	H	J5-281	H	J5-343	H
J5-034	H	J5-096	H	J5-158	H	J5-220	H	J5-282	H	J5-344	H
J5-035	H	J5-097	H	J5-159	H	J5-221	H	J5-283	H	J5-345	H
J5-036	H	J5-098	H	J5-160	H	J5-222	H	J5-284	H	J5-346	H
J5-037	H	J5-099	H	J5-161	H	J5-223	H	J5-285	H	J5-347	H
J5-038	H	J5-100	H	J5-162	H	J5-224	H	J5-286	H	J5-348	H
J5-039	H	J5-101	H	J5-163	H	J5-225	H	J5-287	H	J5-349	H
J5-040	H	J5-102	H	J5-164	H	J5-226	H	J5-288	H	J5-350	H
J5-041	H	J5-103	H	J5-165	H	J5-227	H	J5-289	H	J5-351	H
J5-042	H	J5-104	H	J5-166	H	J5-228	H	J5-290	H	J5-352	H
J5-043	H	J5-105	H	J5-167	H	J5-229	H	J5-291	H	J5-353	H
J5-044	H	J5-106	H	J5-168	H	J5-230	H	J5-292	H	J5-354	H
J5-045	H	J5-107	H	J5-169	H	J5-231	H	J5-293	H	J5-355	H
J5-046	H	J5-108	H	J5-170	H	J5-232	H	J5-294	H	J5-356	H
J5-047	H	J5-109	H	J5-171	H	J5-233	H	J5-295	H	J5-357	H
J5-048	H	J5-110	H	J5-172	H	J5-234	H	J5-296	H	J5-358	H
J5-049	H	J5-111	H	J5-173	H	J5-235	H	J5-297	H	J5-359	H
J5-050	H	J5-112	H	J5-174	H	J5-236	H	J5-298	H	J5-360	H
J5-051	H	J5-113	H	J5-175	H	J5-237	H	J5-299	H	J5-361	H
J5-052	H	J5-114	H	J5-176	H	J5-238	H	J5-300	H	J5-362	H
J5-053	H	J5-115	H	J5-177	H	J5-239	H	J5-301	H	J5-363	H

J5-054	H	J5-116	H	J5-178	H	J5-240	H	J5-302	H	J5-364	H
J5-055	H	J5-117	H	J5-179	H	J5-241	H	J5-303	H	J5-365	H
J5-056	H	J5-118	H	J5-180	H	J5-242	H	J5-304	H	J5-366	H
J5-057	H	J5-119	H	J5-181	H	J5-243	H	J5-305	H	J5-367	H
J5-058	H	J5-120	H	J5-182	H	J5-244	H	J5-306	H		
J5-059	H	J5-121	H	J5-183	H	J5-245	H	J5-307	H		
J5-060	H	J5-122	H	J5-184	H	J5-246	H	J5-308	H		
J5-061	H	J5-123	H	J5-185	H	J5-247	H	J5-309	H		
J5-062	H	J5-124	H	J5-186	H	J5-248	H	J5-310	H		
No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6
J6-001	H	J6-065	H	J6-129	H	J6-193	H	J6-257	H	J6-321	H
J6-002	H	J6-066	H	J6-130	H	J6-194	H	J6-258	H	J6-322	H
J6-003	H	J6-067	H	J6-131	H	J6-195	H	J6-259	H	J6-323	H
J6-004	H	J6-068	H	J6-132	H	J6-196	H	J6-260	H	J6-324	H
J6-005	H	J6-069	H	J6-133	H	J6-197	H	J6-261	H	J6-325	H
J6-006	H	J6-070	H	J6-134	H	J6-198	H	J6-262	H	J6-326	H
J6-007	H	J6-071	H	J6-135	H	J6-199	H	J6-263	H	J6-327	H
J6-008	H	J6-072	H	J6-136	H	J6-200	H	J6-264	H	J6-328	H
J6-009	H	J6-073	H	J6-137	H	J6-201	H	J6-265	H	J6-329	H
J6-010	H	J6-074	H	J6-138	H	J6-202	H	J6-266	H	J6-330	H
J6-011	H	J6-075	H	J6-139	H	J6-203	H	J6-267	H	J6-331	H
J6-012	H	J6-076	H	J6-140	H	J6-204	H	J6-268	H	J6-332	H
J6-013	H	J6-077	H	J6-141	H	J6-205	H	J6-269	H	J6-333	H
J6-014	H	J6-078	H	J6-142	H	J6-206	H	J6-270	H	J6-334	H
J6-015	H	J6-079	H	J6-143	H	J6-207	H	J6-271	H	J6-335	H
J6-016	H	J6-080	H	J6-144	H	J6-208	H	J6-272	H	J6-336	H
J6-017	H	J6-081	H	J6-145	H	J6-209	H	J6-273	H	J6-337	H
J6-018	H	J6-082	H	J6-146	H	J6-210	H	J6-274	H	J6-338	H
J6-019	H	J6-083	H	J6-147	H	J6-211	H	J6-275	H	J6-339	H
J6-020	H	J6-084	H	J6-148	H	J6-212	H	J6-276	H	J6-340	H
J6-021	H	J6-085	H	J6-149	H	J6-213	H	J6-277	H	J6-341	H
J6-022	H	J6-086	H	J6-150	H	J6-214	H	J6-278	H	J6-342	H
J6-023	H	J6-087	H	J6-151	H	J6-215	H	J6-279	H	J6-343	H
J6-024	H	J6-088	H	J6-152	H	J6-216	H	J6-280	H	J6-344	H
J6-025	H	J6-089	H	J6-153	H	J6-217	H	J6-281	H	J6-345	H
J6-026	H	J6-090	H	J6-154	H	J6-218	H	J6-282	H	J6-346	H
J6-027	H	J6-091	H	J6-155	H	J6-219	H	J6-283	H	J6-347	H
J6-028	H	J6-092	H	J6-156	H	J6-220	H	J6-284	H	J6-348	H
J6-029	H	J6-093	H	J6-157	H	J6-221	H	J6-285	H	J6-349	H
J6-030	H	J6-094	H	J6-158	H	J6-222	H	J6-286	H	J6-350	H
J6-031	H	J6-095	H	J6-159	H	J6-223	H	J6-287	H	J6-351	H
J6-032	H	J6-096	H	J6-160	H	J6-224	H	J6-288	H	J6-352	H
J6-033	H	J6-097	H	J6-161	H	J6-225	H	J6-289	H	J6-353	H
J6-034	H	J6-098	H	J6-162	H	J6-226	H	J6-290	H	J6-354	H
J6-035	H	J6-099	H	J6-163	H	J6-227	H	J6-291	H	J6-355	H
J6-036	H	J6-100	H	J6-164	H	J6-228	H	J6-292	H	J6-356	H
J6-037	H	J6-101	H	J6-165	H	J6-229	H	J6-293	H	J6-357	H
J6-038	H	J6-102	H	J6-166	H	J6-230	H	J6-294	H	J6-358	H
J6-039	H	J6-103	H	J6-167	H	J6-231	H	J6-295	H	J6-359	H
J6-040	H	J6-104	H	J6-168	H	J6-232	H	J6-296	H	J6-360	H
J6-041	H	J6-105	H	J6-169	H	J6-233	H	J6-297	H	J6-361	H
J6-042	H	J6-106	H	J6-170	H	J6-234	H	J6-298	H	J6-362	H
J6-043	H	J6-107	H	J6-171	H	J6-235	H	J6-299	H	J6-363	H
J6-044	H	J6-108	H	J6-172	H	J6-236	H	J6-300	H	J6-364	H
J6-045	H	J6-109	H	J6-173	H	J6-237	H	J6-301	H	J6-365	H
J6-046	H	J6-110	H	J6-174	H	J6-238	H	J6-302	H	J6-366	H
J6-047	H	J6-111	H	J6-175	H	J6-239	H	J6-303	H	J6-367	H
J6-048	H	J6-112	H	J6-176	H	J6-240	H	J6-304	H	J6-368	H
J6-049	H	J6-113	H	J6-177	H	J6-241	H	J6-305	H	J6-369	H
J6-050	H	J6-114	H	J6-178	H	J6-242	H	J6-306	H	J6-370	H
J6-051	H	J6-115	H	J6-179	H	J6-243	H	J6-307	H	J6-371	H
J6-052	H	J6-116	H	J6-180	H	J6-244	H	J6-308	H	J6-372	H

J6-053	H	J6-117	H	J6-181	H	J6-245	H	J6-309	H	J6-373	H
J6-054	H	J6-118	H	J6-182	H	J6-246	H	J6-310	H	J6-374	H
J6-055	H	J6-119	H	J6-183	H	J6-247	H	J6-311	H	J6-375	H
J6-056	H	J6-120	H	J6-184	H	J6-248	H	J6-312	H	J6-376	H
J6-057	H	J6-121	H	J6-185	H	J6-249	H	J6-313	H	J6-377	H
J6-058	H	J6-122	H	J6-186	H	J6-250	H	J6-314	H	J6-378	H
J6-059	H	J6-123	H	J6-187	H	J6-251	H	J6-315	H	J6-379	H
J6-060	H	J6-124	H	J6-188	H	J6-252	H	J6-316	H	J6-380	H
J6-061	H	J6-125	H	J6-189	H	J6-253	H	J6-317	H	J6-381	H
J6-062	H	J6-126	H	J6-190	H	J6-254	H	J6-318	H	J6-382	H
J6-063	H	J6-127	H	J6-191	H	J6-255	H	J6-319	H	J6-383	H
J6-064	H	J6-128	H	J6-192	H	J6-256	H	J6-320	H	J6-384	H
No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6
J7-001	H	J7-065	H	J7-129	H	J7-193	H	J7-257	H	J7-321	H
J7-002	H	J7-066	H	J7-130	H	J7-194	H	J7-258	H	J7-322	H
J7-003	H	J7-067	H	J7-131	H	J7-195	H	J7-259	H	J7-323	H
J7-004	H	J7-068	H	J7-132	H	J7-196	H	J7-260	H	J7-324	H
J7-005	H	J7-069	H	J7-133	H	J7-197	H	J7-261	H	J7-325	H
J7-006	H	J7-070	H	J7-134	H	J7-198	H	J7-262	H	J7-326	H
J7-007	H	J7-071	H	J7-135	H	J7-199	H	J7-263	H	J7-327	H
J7-008	H	J7-072	H	J7-136	H	J7-200	H	J7-264	H	J7-328	H
J7-009	H	J7-073	H	J7-137	H	J7-201	H	J7-265	H	J7-329	H
J7-010	H	J7-074	H	J7-138	H	J7-202	H	J7-266	H	J7-330	H
J7-011	H	J7-075	H	J7-139	H	J7-203	H	J7-267	H	J7-331	H
J7-012	H	J7-076	H	J7-140	H	J7-204	H	J7-268	H	J7-332	H
J7-013	H	J7-077	H	J7-141	H	J7-205	H	J7-269	H	J7-333	H
J7-014	H	J7-078	H	J7-142	H	J7-206	H	J7-270	H	J7-334	H
J7-015	H	J7-079	H	J7-143	N/A	J7-207	H	J7-271	H	J7-335	H
J7-016	H	J7-080	H	J7-144	H	J7-208	H	J7-272	H	J7-336	H
J7-017	H	J7-081	H	J7-145	H	J7-209	H	J7-273	H	J7-337	H
J7-018	H	J7-082	H	J7-146	H	J7-210	H	J7-274	H	J7-338	H
J7-019	H	J7-083	N/A	J7-147	H	J7-211	H	J7-275	H	J7-339	H
J7-020	H	J7-084	H	J7-148	H	J7-212	H	J7-276	H	J7-340	H
J7-021	H	J7-085	H	J7-149	H	J7-213	H	J7-277	H	J7-341	H
J7-022	H	J7-086	H	J7-150	H	J7-214	H	J7-278	H	J7-342	H
J7-023	H	J7-087	N/A	J7-151	H	J7-215	H	J7-279	H	J7-343	H
J7-024	H	J7-088	H	J7-152	H	J7-216	H	J7-280	H	J7-344	H
J7-025	H	J7-089	H	J7-153	H	J7-217	H	J7-281	H	J7-345	H
J7-026	H	J7-090	H	J7-154	H	J7-218	H	J7-282	H	J7-346	H
J7-027	H	J7-091	H	J7-155	H	J7-219	H	J7-283	H	J7-347	H
J7-028	H	J7-092	H	J7-156	H	J7-220	H	J7-284	H	J7-348	H
J7-029	H	J7-093	H	J7-157	H	J7-221	H	J7-285	H	J7-349	H
J7-030	H	J7-094	H	J7-158	H	J7-222	H	J7-286	H	J7-350	H
J7-031	H	J7-095	H	J7-159	H	J7-223	H	J7-287	H	J7-351	H
J7-032	H	J7-096	H	J7-160	H	J7-224	H	J7-288	H	J7-352	H
J7-033	H	J7-097	H	J7-161	H	J7-225	H	J7-289	H	J7-353	H
J7-034	H	J7-098	H	J7-162	H	J7-226	H	J7-290	H	J7-354	H
J7-035	H	J7-099	H	J7-163	H	J7-227	H	J7-291	H	J7-355	H
J7-036	H	J7-100	H	J7-164	H	J7-228	H	J7-292	N/A	J7-356	H
J7-037	H	J7-101	H	J7-165	H	J7-229	H	J7-293	H	J7-357	N/A
J7-038	H	J7-102	H	J7-166	H	J7-230	H	J7-294	H	J7-358	H
J7-039	H	J7-103	H	J7-167	H	J7-231	H	J7-295	H	J7-359	H
J7-040	H	J7-104	H	J7-168	H	J7-232	H	J7-296	H	J7-360	H
J7-041	H	J7-105	H	J7-169	H	J7-233	H	J7-297	H	J7-361	N/A
J7-042	H	J7-106	H	J7-170	H	J7-234	H	J7-298	H	J7-362	H
J7-043	H	J7-107	H	J7-171	H	J7-235	H	J7-299	H	J7-363	H
J7-044	H	J7-108	H	J7-172	H	J7-236	N/A	J7-300	H	J7-364	H
J7-045	H	J7-109	H	J7-173	H	J7-237	H	J7-301	H	J7-365	H
J7-046	H	J7-110	H	J7-174	H	J7-238	H	J7-302	H	J7-366	H
J7-047	N/A	J7-111	H	J7-175	H	J7-239	N/A	J7-303	H	J7-367	H
J7-048	H	J7-112	H	J7-176	H	J7-240	H	J7-304	H	J7-368	H
J7-049	H	J7-113	H	J7-177	H	J7-241	H	J7-305	H	J7-369	H

J7-050	H	J7-114	H	J7-178	H	J7-242	N/A	J7-306	H	J7-370	H
J7-051	H	J7-115	H	J7-179	H	J7-243	H	J7-307	H	J7-371	H
J7-052	H	J7-116	H	J7-180	H	J7-244	H	J7-308	H	J7-372	H
J7-053	H	J7-117	H	J7-181	H	J7-245	H	J7-309	H	J7-373	H
J7-054	H	J7-118	H	J7-182	H	J7-246	H	J7-310	H	J7-374	H
J7-055	H	J7-119	H	J7-183	H	J7-247	H	J7-311	H	J7-375	H
J7-056	H	J7-120	H	J7-184	H	J7-248	H	J7-312	H	J7-376	H
J7-057	H	J7-121	H	J7-185	H	J7-249	H	J7-313	H	J7-377	H
J7-058	H	J7-122	H	J7-186	H	J7-250	N/A	J7-314	H	J7-378	H
J7-059	H	J7-123	H	J7-187	H	J7-251	H	J7-315	H	J7-379	H
J7-060	H	J7-124	H	J7-188	H	J7-252	H	J7-316	H	J7-380	H
J7-061	H	J7-125	H	J7-189	H	J7-253	H	J7-317	H	J7-381	H
J7-062	H	J7-126	H	J7-190	H	J7-254	H	J7-318	H	J7-382	H
J7-063	H	J7-127	H	J7-191	H	J7-255	H	J7-319	H	J7-383	H
J7-064	H	J7-128	H	J7-192	H	J7-256	H	J7-320	H	J7-384	H
No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6
J8-001	H	J8-065	H	J8-129	H	J8-193	H	J8-257	H	J8-321	H
J8-002	H	J8-066	H	J8-130	H	J8-194	H	J8-258	H	J8-322	H
J8-003	H	J8-067	H	J8-131	H	J8-195	H	J8-259	H	J8-323	H
J8-004	H	J8-068	H	J8-132	H	J8-196	H	J8-260	H	J8-324	H
J8-005	H	J8-069	H	J8-133	H	J8-197	H	J8-261	H	J8-325	H
J8-006	H	J8-070	H	J8-134	H	J8-198	H	J8-262	H	J8-326	H
J8-007	H	J8-071	H	J8-135	H	J8-199	H	J8-263	H	J8-327	H
J8-008	H	J8-072	H	J8-136	H	J8-200	H	J8-264	H	J8-328	H
J8-009	H	J8-073	H	J8-137	H	J8-201	H	J8-265	H	J8-329	H
J8-010	H	J8-074	H	J8-138	H	J8-202	H	J8-266	H	J8-330	H
J8-011	H	J8-075	H	J8-139	H	J8-203	H	J8-267	H	J8-331	H
J8-012	H	J8-076	H	J8-140	H	J8-204	H	J8-268	H	J8-332	H
J8-013	H	J8-077	H	J8-141	H	J8-205	H	J8-269	H	J8-333	H
J8-014	H	J8-078	H	J8-142	H	J8-206	H	J8-270	H	J8-334	H
J8-015	H	J8-079	H	J8-143	H	J8-207	H	J8-271	H	J8-335	H
J8-016	H	J8-080	H	J8-144	H	J8-208	H	J8-272	H	J8-336	H
J8-017	H	J8-081	H	J8-145	H	J8-209	H	J8-273	H	J8-337	H
J8-018	H	J8-082	H	J8-146	H	J8-210	H	J8-274	H	J8-338	H
J8-019	H	J8-083	H	J8-147	H	J8-211	H	J8-275	H	J8-339	H
J8-020	H	J8-084	H	J8-148	H	J8-212	H	J8-276	H	J8-340	H
J8-021	H	J8-085	H	J8-149	H	J8-213	H	J8-277	H	J8-341	H
J8-022	H	J8-086	H	J8-150	H	J8-214	H	J8-278	H	J8-342	H
J8-023	H	J8-087	H	J8-151	H	J8-215	H	J8-279	H	J8-343	H
J8-024	H	J8-088	H	J8-152	H	J8-216	H	J8-280	H	J8-344	H
J8-025	H	J8-089	H	J8-153	H	J8-217	H	J8-281	H	J8-345	H
J8-026	H	J8-090	H	J8-154	H	J8-218	H	J8-282	H	J8-346	H
J8-027	H	J8-091	H	J8-155	H	J8-219	H	J8-283	H	J8-347	H
J8-028	H	J8-092	H	J8-156	H	J8-220	H	J8-284	H	J8-348	H
J8-029	H	J8-093	H	J8-157	H	J8-221	H	J8-285	H	J8-349	H
J8-030	H	J8-094	H	J8-158	H	J8-222	H	J8-286	H	J8-350	H
J8-031	H	J8-095	H	J8-159	H	J8-223	H	J8-287	H	J8-351	N/A
J8-032	H	J8-096	H	J8-160	H	J8-224	H	J8-288	H	J8-352	H
J8-033	H	J8-097	H	J8-161	H	J8-225	H	J8-289	H	J8-353	H
J8-034	H	J8-098	H	J8-162	H	J8-226	H	J8-290	H	J8-354	H
J8-035	H	J8-099	H	J8-163	H	J8-227	H	J8-291	H	J8-355	H
J8-036	H	J8-100	H	J8-164	H	J8-228	H	J8-292	H	J8-356	H
J8-037	H	J8-101	H	J8-165	H	J8-229	H	J8-293	H	J8-357	H
J8-038	H	J8-102	H	J8-166	H	J8-230	H	J8-294	H	J8-358	H
J8-039	H	J8-103	H	J8-167	H	J8-231	H	J8-295	H	J8-359	H
J8-040	H	J8-104	H	J8-168	H	J8-232	H	J8-296	H	J8-360	H
J8-041	H	J8-105	H	J8-169	H	J8-233	H	J8-297	H	J8-361	H
J8-042	H	J8-106	H	J8-170	H	J8-234	H	J8-298	H	J8-362	H
J8-043	H	J8-107	H	J8-171	H	J8-235	H	J8-299	H	J8-363	H
J8-044	H	J8-108	H	J8-172	H	J8-236	H	J8-300	H	J8-364	H
J8-045	H	J8-109	H	J8-173	H	J8-237	H	J8-301	H	J8-365	H
J8-046	H	J8-110	H	J8-174	H	J8-238	H	J8-302	H	J8-366	H

J8-047	H	J8-111	H	J8-175	H	J8-239	H	J8-303	H	J8-367	H
J8-048	H	J8-112	H	J8-176	H	J8-240	H	J8-304	H	J8-368	H
J8-049	H	J8-113	H	J8-177	H	J8-241	H	J8-305	H	J8-369	H
J8-050	H	J8-114	H	J8-178	H	J8-242	H	J8-306	H	J8-370	H
J8-051	H	J8-115	H	J8-179	H	J8-243	H	J8-307	H	J8-371	H
J8-052	H	J8-116	H	J8-180	H	J8-244	H	J8-308	H	J8-372	H
J8-053	H	J8-117	H	J8-181	H	J8-245	H	J8-309	H	J8-373	N/A
J8-054	H	J8-118	H	J8-182	H	J8-246	H	J8-310	H	J8-374	H
J8-055	H	J8-119	H	J8-183	H	J8-247	H	J8-311	H	J8-375	H
J8-056	H	J8-120	H	J8-184	H	J8-248	H	J8-312	H	J8-376	H
J8-057	H	J8-121	H	J8-185	H	J8-249	H	J8-313	H	J8-377	H
J8-058	H	J8-122	H	J8-186	H	J8-250	H	J8-314	H	J8-378	H
J8-059	H	J8-123	H	J8-187	H	J8-251	H	J8-315	H	J8-379	H
J8-060	H	J8-124	H	J8-188	H	J8-252	H	J8-316	H	J8-380	H
J8-061	H	J8-125	H	J8-189	H	J8-253	H	J8-317	H	J8-381	H
J8-062	H	J8-126	H	J8-190	H	J8-254	H	J8-318	H	J8-382	H
J8-063	H	J8-127	H	J8-191	H	J8-255	H	J8-319	H	J8-383	H
J8-064	H	J8-128	H	J8-192	H	J8-256	H	J8-320	H	J8-384	H
No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6
J9-001	H	J9-065	H	J9-129	H	J9-193	H	J9-257	H	J9-321	H
J9-002	H	J9-066	H	J9-130	H	J9-194	H	J9-258	H	J9-322	H
J9-003	H	J9-067	H	J9-131	H	J9-195	H	J9-259	H	J9-323	H
J9-004	H	J9-068	H	J9-132	H	J9-196	H	J9-260	H	J9-324	H
J9-005	H	J9-069	H	J9-133	H	J9-197	H	J9-261	H	J9-325	H
J9-006	H	J9-070	H	J9-134	H	J9-198	H	J9-262	H	J9-326	H
J9-007	H	J9-071	H	J9-135	H	J9-199	H	J9-263	H	J9-327	H
J9-008	H	J9-072	H	J9-136	H	J9-200	H	J9-264	H	J9-328	H
J9-009	H	J9-073	H	J9-137	H	J9-201	H	J9-265	H	J9-329	H
J9-010	H	J9-074	H	J9-138	H	J9-202	H	J9-266	H	J9-330	H
J9-011	H	J9-075	H	J9-139	H	J9-203	H	J9-267	H	J9-331	H
J9-012	H	J9-076	H	J9-140	H	J9-204	H	J9-268	H	J9-332	H
J9-013	H	J9-077	H	J9-141	H	J9-205	H	J9-269	H	J9-333	H
J9-014	H	J9-078	H	J9-142	H	J9-206	H	J9-270	H	J9-334	H
J9-015	H	J9-079	H	J9-143	H	J9-207	H	J9-271	H	J9-335	H
J9-016	H	J9-080	H	J9-144	H	J9-208	H	J9-272	H	J9-336	H
J9-017	H	J9-081	H	J9-145	H	J9-209	H	J9-273	H	J9-337	H
J9-018	H	J9-082	H	J9-146	H	J9-210	H	J9-274	H	J9-338	H
J9-019	H	J9-083	H	J9-147	H	J9-211	H	J9-275	H	J9-339	H
J9-020	H	J9-084	H	J9-148	H	J9-212	H	J9-276	H	J9-340	H
J9-021	H	J9-085	H	J9-149	H	J9-213	H	J9-277	H	J9-341	H
J9-022	H	J9-086	H	J9-150	H	J9-214	H	J9-278	H	J9-342	H
J9-023	H	J9-087	H	J9-151	H	J9-215	H	J9-279	H	J9-343	H
J9-024	H	J9-088	H	J9-152	H	J9-216	H	J9-280	H	J9-344	H
J9-025	H	J9-089	H	J9-153	H	J9-217	H	J9-281	H	J9-345	H
J9-026	H	J9-090	H	J9-154	H	J9-218	H	J9-282	H	J9-346	H
J9-027	H	J9-091	H	J9-155	H	J9-219	H	J9-283	H	J9-347	H
J9-028	H	J9-092	H	J9-156	H	J9-220	H	J9-284	H	J9-348	H
J9-029	H	J9-093	H	J9-157	H	J9-221	H	J9-285	H	J9-349	H
J9-030	H	J9-094	H	J9-158	H	J9-222	H	J9-286	H	J9-350	H
J9-031	H	J9-095	H	J9-159	H	J9-223	H	J9-287	H	J9-351	H
J9-032	H	J9-096	H	J9-160	H	J9-224	H	J9-288	H	J9-352	H
J9-033	H	J9-097	H	J9-161	H	J9-225	H	J9-289	H	J9-353	H
J9-034	H	J9-098	H	J9-162	H	J9-226	H	J9-290	H	J9-354	H
J9-035	H	J9-099	H	J9-163	H	J9-227	H	J9-291	H	J9-355	H
J9-036	H	J9-100	H	J9-164	H	J9-228	H	J9-292	H	J9-356	H
J9-037	H	J9-101	H	J9-165	H	J9-229	H	J9-293	H	J9-357	H
J9-038	H	J9-102	H	J9-166	H	J9-230	H	J9-294	H	J9-358	H
J9-039	H	J9-103	H	J9-167	H	J9-231	H	J9-295	H	J9-359	H
J9-040	H	J9-104	H	J9-168	H	J9-232	H	J9-296	H	J9-360	H
J9-041	H	J9-105	H	J9-169	H	J9-233	H	J9-297	H	J9-361	H
J9-042	H	J9-106	H	J9-170	H	J9-234	H	J9-298	H	J9-362	H
J9-043	H	J9-107	H	J9-171	H	J9-235	H	J9-299	H	J9-363	H

J9-044	H	J9-108	H	J9-172	H	J9-236	H	J9-300	H	J9-364	H
J9-045	H	J9-109	H	J9-173	H	J9-237	H	J9-301	H	J9-365	H
J9-046	H	J9-110	H	J9-174	H	J9-238	H	J9-302	H	J9-366	H
J9-047	H	J9-111	H	J9-175	H	J9-239	H	J9-303	H	J9-367	H
J9-048	H	J9-112	H	J9-176	H	J9-240	H	J9-304	H	J9-368	H
J9-049	H	J9-113	H	J9-177	H	J9-241	H	J9-305	H	J9-369	H
J9-050	H	J9-114	H	J9-178	H	J9-242	H	J9-306	H	J9-370	H
J9-051	H	J9-115	H	J9-179	H	J9-243	H	J9-307	H	J9-371	H
J9-052	H	J9-116	H	J9-180	H	J9-244	H	J9-308	H	J9-372	H
J9-053	H	J9-117	H	J9-181	H	J9-245	H	J9-309	H	J9-373	H
J9-054	H	J9-118	H	J9-182	H	J9-246	H	J9-310	H	J9-374	H
J9-055	H	J9-119	H	J9-183	H	J9-247	H	J9-311	H	J9-375	H
J9-056	H	J9-120	H	J9-184	H	J9-248	H	J9-312	H	J9-376	H
J9-057	H	J9-121	H	J9-185	H	J9-249	H	J9-313	H	J9-377	H
J9-058	H	J9-122	H	J9-186	H	J9-250	H	J9-314	H	J9-378	H
J9-059	H	J9-123	H	J9-187	H	J9-251	H	J9-315	H	J9-379	H
J9-060	H	J9-124	H	J9-188	H	J9-252	H	J9-316	H	J9-380	H
J9-061	H	J9-125	H	J9-189	H	J9-253	H	J9-317	H	J9-381	H
J9-062	H	J9-126	H	J9-190	H	J9-254	H	J9-318	H	J9-382	H
J9-063	H	J9-127	H	J9-191	H	J9-255	H	J9-319	H	J9-383	H
J9-064	H	J9-128	H	J9-192	H	J9-256	H	J9-320	H	J9-384	H
No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6	No.	Bw6
J10-001	H	J10-065	H	J10-129	H	J10-193	H	J10-257	H	J10-321	H
J10-002	H	J10-066	H	J10-130	H	J10-194	H	J10-258	H	J10-322	H
J10-003	H	J10-067	H	J10-131	H	J10-195	H	J10-259	H	J10-323	H
J10-004	H	J10-068	H	J10-132	H	J10-196	H	J10-260	H	J10-324	H
J10-005	H	J10-069	H	J10-133	H	J10-197	H	J10-261	H	J10-325	H
J10-006	H	J10-070	H	J10-134	H	J10-198	H	J10-262	H	J10-326	H
J10-007	H	J10-071	H	J10-135	H	J10-199	H	J10-263	H	J10-327	H
J10-008	H	J10-072	H	J10-136	H	J10-200	H	J10-264	H	J10-328	H
J10-009	H	J10-073	H	J10-137	H	J10-201	H	J10-265	H	J10-329	H
J10-010	H	J10-074	H	J10-138	H	J10-202	H	J10-266	H	J10-330	H
J10-011	H	J10-075	H	J10-139	H	J10-203	H	J10-267	H	J10-331	H
J10-012	H	J10-076	H	J10-140	H	J10-204	H	J10-268	H	J10-332	H
J10-013	H	J10-077	H	J10-141	H	J10-205	H	J10-269	H	J10-333	H
J10-014	H	J10-078	H	J10-142	H	J10-206	H	J10-270	H	J10-334	H
J10-015	H	J10-079	H	J10-143	H	J10-207	H	J10-271	H	J10-335	H
J10-016	H	J10-080	H	J10-144	H	J10-208	H	J10-272	H	J10-336	H
J10-017	H	J10-081	H	J10-145	H	J10-209	H	J10-273	H	J10-337	H
J10-018	H	J10-082	H	J10-146	H	J10-210	H	J10-274	H	J10-338	H
J10-019	H	J10-083	H	J10-147	H	J10-211	H	J10-275	H	J10-339	H
J10-020	H	J10-084	H	J10-148	H	J10-212	H	J10-276	H	J10-340	H
J10-021	H	J10-085	H	J10-149	H	J10-213	H	J10-277	H	J10-341	H
J10-022	H	J10-086	H	J10-150	H	J10-214	H	J10-278	H	J10-342	H
J10-023	H	J10-087	H	J10-151	H	J10-215	H	J10-279	H	J10-343	H
J10-024	H	J10-088	H	J10-152	H	J10-216	H	J10-280	H	J10-344	H
J10-025	H	J10-089	H	J10-153	H	J10-217	H	J10-281	H	J10-345	H
J10-026	H	J10-090	H	J10-154	H	J10-218	H	J10-282	H	J10-346	H
J10-027	H	J10-091	H	J10-155	H	J10-219	H	J10-283	H	J10-347	H
J10-028	H	J10-092	H	J10-156	H	J10-220	H	J10-284	H	J10-348	H
J10-029	H	J10-093	H	J10-157	H	J10-221	H	J10-285	H	J10-349	H
J10-030	H	J10-094	H	J10-158	H	J10-222	H	J10-286	H	J10-350	H
J10-031	H	J10-095	H	J10-159	H	J10-223	H	J10-287	H	J10-351	H
J10-032	H	J10-096	H	J10-160	H	J10-224	H	J10-288	H	J10-352	H
J10-033	H	J10-097	H	J10-161	H	J10-225	H	J10-289	H	J10-353	H
J10-034	H	J10-098	H	J10-162	H	J10-226	H	J10-290	H	J10-354	H
J10-035	H	J10-099	H	J10-163	H	J10-227	H	J10-291	H	J10-355	H
J10-036	H	J10-100	H	J10-164	H	J10-228	H	J10-292	H	J10-356	H
J10-037	H	J10-101	H	J10-165	H	J10-229	H	J10-293	H	J10-357	H
J10-038	H	J10-102	H	J10-166	H	J10-230	H	J10-294	H	J10-358	H
J10-039	H	J10-103	H	J10-167	H	J10-231	H	J10-295	H	J10-359	H
J10-040	H	J10-104	H	J10-168	H	J10-232	H	J10-296	H	J10-360	H

J10-041	H	J10-105	H	J10-169	H	J10-233	H	J10-297	H	J10-361	H
J10-042	H	J10-106	H	J10-170	H	J10-234	H	J10-298	H	J10-362	H
J10-043	H	J10-107	H	J10-171	H	J10-235	H	J10-299	H	J10-363	H
J10-044	H	J10-108	H	J10-172	H	J10-236	H	J10-300	H	J10-364	H
J10-045	H	J10-109	H	J10-173	H	J10-237	H	J10-301	H	J10-365	H
J10-046	H	J10-110	H	J10-174	H	J10-238	H	J10-302	H	J10-366	H
J10-047	H	J10-111	H	J10-175	H	J10-239	H	J10-303	H	J10-367	H
J10-048	H	J10-112	H	J10-176	H	J10-240	H	J10-304	H	J10-368	H
J10-049	H	J10-113	H	J10-177	H	J10-241	H	J10-305	H	J10-369	H
J10-050	H	J10-114	H	J10-178	H	J10-242	H	J10-306	H	J10-370	H
J10-051	H	J10-115	H	J10-179	H	J10-243	H	J10-307	H	J10-371	H
J10-052	H	J10-116	H	J10-180	H	J10-244	H	J10-308	H	J10-372	H
J10-053	H	J10-117	H	J10-181	H	J10-245	H	J10-309	H	J10-373	H
J10-054	H	J10-118	H	J10-182	H	J10-246	H	J10-310	H	J10-374	H
J10-055	H	J10-119	H	J10-183	H	J10-247	H	J10-311	H	J10-375	H
J10-056	H	J10-120	H	J10-184	H	J10-248	H	J10-312	H	J10-376	H
J10-057	H	J10-121	H	J10-185	H	J10-249	H	J10-313	H	J10-377	H
J10-058	H	J10-122	H	J10-186	H	J10-250	H	J10-314	H	J10-378	H
J10-059	H	J10-123	H	J10-187	H	J10-251	H	J10-315	H	J10-379	H
J10-060	H	J10-124	H	J10-188	H	J10-252	H	J10-316	H	J10-380	H
J10-061	H	J10-125	H	J10-189	H	J10-253	H	J10-317	H	J10-381	H
J10-062	H	J10-126	H	J10-190	H	J10-254	H	J10-318	H	J10-382	H
J10-063	H	J10-127	H	J10-191	H	J10-255	H	J10-319	H	J10-383	H
J10-064	H	J10-128	H	J10-192	H	J10-256	H	J10-320	H	J10-384	H
No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2
J11-001	H	J11-065	H	J11-129	H	J11-193	H	J11-257	H	J11-321	H
J11-002	H	J11-066	H	J11-130	H	J11-194	H	J11-258	H	J11-322	H
J11-003	H	J11-067	H	J11-131	H	J11-195	H	J11-259	H	J11-323	H
J11-004	H	J11-068	H	J11-132	H	J11-196	H	J11-260	H	J11-324	H
J11-005	H	J11-069	H	J11-133	H	J11-197	H	J11-261	H	J11-325	H
J11-006	H	J11-070	H	J11-134	H	J11-198	H	J11-262	H	J11-326	H
J11-007	H	J11-071	H	J11-135	H	J11-199	H	J11-263	H	J11-327	H
J11-008	H	J11-072	H	J11-136	H	J11-200	H	J11-264	H	J11-328	H
J11-009	H	J11-073	H	J11-137	H	J11-201	H	J11-265	H	J11-329	H
J11-010	H	J11-074	H	J11-138	H	J11-202	H	J11-266	H	J11-330	H
J11-011	H	J11-075	H	J11-139	H	J11-203	H	J11-267	H	J11-331	H
J11-012	H	J11-076	H	J11-140	H	J11-204	H	J11-268	H	J11-332	H
J11-013	H	J11-077	H	J11-141	H	J11-205	H	J11-269	H	J11-333	H
J11-014	H	J11-078	H	J11-142	H	J11-206	H	J11-270	H	J11-334	H
J11-015	H	J11-079	H	J11-143	H	J11-207	H	J11-271	H	J11-335	H
J11-016	H	J11-080	H	J11-144	H	J11-208	H	J11-272	H	J11-336	H
J11-017	H	J11-081	H	J11-145	H	J11-209	H	J11-273	H	J11-337	H
J11-018	H	J11-082	H	J11-146	H	J11-210	H	J11-274	H	J11-338	H
J11-019	H	J11-083	H	J11-147	H	J11-211	H	J11-275	H	J11-339	H
J11-020	H	J11-084	H	J11-148	H	J11-212	H	J11-276	H	J11-340	H
J11-021	H	J11-085	H	J11-149	H	J11-213	H	J11-277	H	J11-341	H
J11-022	H	J11-086	H	J11-150	H	J11-214	H	J11-278	H	J11-342	H
J11-023	H	J11-087	H	J11-151	H	J11-215	H	J11-279	H	J11-343	H
J11-024	H	J11-088	H	J11-152	H	J11-216	H	J11-280	H	J11-344	H
J11-025	H	J11-089	H	J11-153	H	J11-217	H	J11-281	H	J11-345	H
J11-026	H	J11-090	H	J11-154	H	J11-218	H	J11-282	H	J11-346	H
J11-027	H	J11-091	H	J11-155	H	J11-219	H	J11-283	H	J11-347	H
J11-028	H	J11-092	H	J11-156	H	J11-220	H	J11-284	H	J11-348	H
J11-029	H	J11-093	H	J11-157	H	J11-221	H	J11-285	H	J11-349	H
J11-030	H	J11-094	H	J11-158	H	J11-222	H	J11-286	H	J11-350	H
J11-031	H	J11-095	H	J11-159	H	J11-223	H	J11-287	H	J11-351	H
J11-032	H	J11-096	H	J11-160	H	J11-224	H	J11-288	H	J11-352	H
J11-033	H	J11-097	H	J11-161	H	J11-225	H	J11-289	H	J11-353	H
J11-034	H	J11-098	H	J11-162	H	J11-226	H	J11-290	H	J11-354	H
J11-035	H	J11-099	H	J11-163	H	J11-227	H	J11-291	H	J11-355	H
J11-036	H	J11-100	H	J11-164	H	J11-228	H	J11-292	H	J11-356	H
J11-037	H	J11-101	H	J11-165	H	J11-229	H	J11-293	H	J11-357	H

J11-038	H	J11-102	H	J11-166	H	J11-230	H	J11-294	H	J11-358	H
J11-039	H	J11-103	H	J11-167	H	J11-231	H	J11-295	H	J11-359	H
J11-040	H	J11-104	H	J11-168	H	J11-232	H	J11-296	H	J11-360	H
J11-041	H	J11-105	H	J11-169	H	J11-233	H	J11-297	H	J11-361	H
J11-042	H	J11-106	H	J11-170	H	J11-234	H	J11-298	H	J11-362	H
J11-043	H	J11-107	H	J11-171	H	J11-235	H	J11-299	H	J11-363	H
J11-044	H	J11-108	H	J11-172	H	J11-236	H	J11-300	H	J11-364	H
J11-045	H	J11-109	H	J11-173	H	J11-237	H	J11-301	H	J11-365	H
J11-046	H	J11-110	H	J11-174	H	J11-238	H	J11-302	H	J11-366	H
J11-047	H	J11-111	H	J11-175	H	J11-239	H	J11-303	H	J11-367	H
J11-048	H	J11-112	H	J11-176	H	J11-240	H	J11-304	H	J11-368	H
J11-049	H	J11-113	H	J11-177	H	J11-241	H	J11-305	H	J11-369	H
J11-050	H	J11-114	H	J11-178	H	J11-242	H	J11-306	H	J11-370	H
J11-051	H	J11-115	H	J11-179	H	J11-243	H	J11-307	H	J11-371	H
J11-052	H	J11-116	H	J11-180	H	J11-244	H	J11-308	H	J11-372	H
J11-053	H	J11-117	H	J11-181	H	J11-245	H	J11-309	H	J11-373	H
J11-054	H	J11-118	H	J11-182	H	J11-246	H	J11-310	H	J11-374	H
J11-055	H	J11-119	H	J11-183	H	J11-247	H	J11-311	H	J11-375	H
J11-056	H	J11-120	H	J11-184	H	J11-248	H	J11-312	H	J11-376	H
J11-057	H	J11-121	H	J11-185	H	J11-249	H	J11-313	H	J11-377	H
J11-058	H	J11-122	H	J11-186	H	J11-250	H	J11-314	H	J11-378	H
J11-059	H	J11-123	H	J11-187	H	J11-251	H	J11-315	H	J11-379	H
J11-060	H	J11-124	H	J11-188	H	J11-252	H	J11-316	H	J11-380	H
J11-061	H	J11-125	H	J11-189	H	J11-253	H	J11-317	H	J11-381	H
J11-062	H	J11-126	H	J11-190	H	J11-254	H	J11-318	H	J11-382	H
J11-063	H	J11-127	H	J11-191	H	J11-255	H	J11-319	H	J11-383	H
J11-064	H	J11-128	H	J11-192	H	J11-256	H	J11-320	H	J11-384	H
No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2
J12-001	H	J12-065	H	J12-129	H	J12-193	H	J12-257	H	J12-321	H
J12-002	H	J12-066	H	J12-130	H	J12-194	H	J12-258	H	J12-322	H
J12-003	H	J12-067	H	J12-131	H	J12-195	H	J12-259	H	J12-323	H
J12-004	H	J12-068	H	J12-132	H	J12-196	H	J12-260	H	J12-324	H
J12-005	H	J12-069	H	J12-133	H	J12-197	H	J12-261	H	J12-325	H
J12-006	H	J12-070	H	J12-134	H	J12-198	H	J12-262	H	J12-326	H
J12-007	H	J12-071	H	J12-135	H	J12-199	H	J12-263	H	J12-327	H
J12-008	H	J12-072	H	J12-136	H	J12-200	H	J12-264	H	J12-328	H
J12-009	H	J12-073	H	J12-137	H	J12-201	H	J12-265	H	J12-329	H
J12-010	H	J12-074	H	J12-138	H	J12-202	H	J12-266	H	J12-330	H
J12-011	H	J12-075	H	J12-139	H	J12-203	H	J12-267	H	J12-331	H
J12-012	H	J12-076	H	J12-140	H	J12-204	H	J12-268	H	J12-332	H
J12-013	H	J12-077	H	J12-141	H	J12-205	H	J12-269	H	J12-333	H
J12-014	H	J12-078	H	J12-142	H	J12-206	H	J12-270	H	J12-334	H
J12-015	H	J12-079	H	J12-143	H	J12-207	H	J12-271	H	J12-335	H
J12-016	H	J12-080	H	J12-144	H	J12-208	H	J12-272	H	J12-336	H
J12-017	H	J12-081	H	J12-145	H	J12-209	H	J12-273	H	J12-337	H
J12-018	H	J12-082	H	J12-146	H	J12-210	H	J12-274	H	J12-338	H
J12-019	H	J12-083	H	J12-147	H	J12-211	H	J12-275	H	J12-339	H
J12-020	H	J12-084	H	J12-148	H	J12-212	H	J12-276	H	J12-340	H
J12-021	H	J12-085	H	J12-149	H	J12-213	H	J12-277	H	J12-341	H
J12-022	H	J12-086	H	J12-150	H	J12-214	H	J12-278	H	J12-342	H
J12-023	H	J12-087	H	J12-151	H	J12-215	H	J12-279	H	J12-343	H
J12-024	H	J12-088	H	J12-152	H	J12-216	H	J12-280	H	J12-344	H
J12-025	H	J12-089	H	J12-153	H	J12-217	H	J12-281	H	J12-345	H
J12-026	H	J12-090	H	J12-154	H	J12-218	H	J12-282	H	J12-346	H
J12-027	H	J12-091	H	J12-155	H	J12-219	H	J12-283	H	J12-347	H
J12-028	H	J12-092	H	J12-156	H	J12-220	H	J12-284	H	J12-348	H
J12-029	H	J12-093	H	J12-157	H	J12-221	H	J12-285	H	J12-349	H
J12-030	H	J12-094	H	J12-158	H	J12-222	H	J12-286	H	J12-350	H
J12-031	H	J12-095	H	J12-159	H	J12-223	H	J12-287	H	J12-351	H
J12-032	H	J12-096	H	J12-160	H	J12-224	H	J12-288	H	J12-352	H
J12-033	H	J12-097	H	J12-161	H	J12-225	H	J12-289	H	J12-353	H
J12-034	H	J12-098	H	J12-162	H	J12-226	H	J12-290	H	J12-354	H

J12-035	H	J12-099	H	J12-163	H	J12-227	H	J12-291	H	J12-355	H
J12-036	H	J12-100	H	J12-164	H	J12-228	H	J12-292	H	J12-356	H
J12-037	H	J12-101	H	J12-165	H	J12-229	H	J12-293	H	J12-357	H
J12-038	H	J12-102	H	J12-166	H	J12-230	H	J12-294	H	J12-358	H
J12-039	H	J12-103	H	J12-167	H	J12-231	H	J12-295	H	J12-359	H
J12-040	H	J12-104	H	J12-168	H	J12-232	H	J12-296	H	J12-360	H
J12-041	H	J12-105	H	J12-169	H	J12-233	H	J12-297	H	J12-361	H
J12-042	H	J12-106	H	J12-170	H	J12-234	H	J12-298	H	J12-362	H
J12-043	H	J12-107	H	J12-171	H	J12-235	H	J12-299	H	J12-363	H
J12-044	H	J12-108	H	J12-172	H	J12-236	H	J12-300	H	J12-364	H
J12-045	H	J12-109	H	J12-173	H	J12-237	H	J12-301	H	J12-365	H
J12-046	H	J12-110	H	J12-174	H	J12-238	H	J12-302	H	J12-366	H
J12-047	H	J12-111	H	J12-175	H	J12-239	H	J12-303	H	J12-367	H
J12-048	H	J12-112	H	J12-176	H	J12-240	H	J12-304	H	J12-368	H
J12-049	H	J12-113	H	J12-177	H	J12-241	H	J12-305	H	J12-369	H
J12-050	H	J12-114	H	J12-178	H	J12-242	H	J12-306	H	J12-370	H
J12-051	H	J12-115	H	J12-179	H	J12-243	H	J12-307	H	J12-371	H
J12-052	H	J12-116	H	J12-180	H	J12-244	H	J12-308	H	J12-372	H
J12-053	H	J12-117	H	J12-181	H	J12-245	H	J12-309	H	J12-373	H
J12-054	H	J12-118	H	J12-182	H	J12-246	H	J12-310	H	J12-374	H
J12-055	H	J12-119	H	J12-183	H	J12-247	H	J12-311	H	J12-375	H
J12-056	H	J12-120	H	J12-184	H	J12-248	H	J12-312	H	J12-376	H
J12-057	H	J12-121	H	J12-185	H	J12-249	H	J12-313	H	J12-377	H
J12-058	H	J12-122	H	J12-186	H	J12-250	H	J12-314	H	J12-378	H
J12-059	H	J12-123	H	J12-187	H	J12-251	H	J12-315	H	J12-379	H
J12-060	H	J12-124	H	J12-188	H	J12-252	H	J12-316	H	J12-380	H
J12-061	H	J12-125	H	J12-189	H	J12-253	H	J12-317	H	J12-381	H
J12-062	H	J12-126	H	J12-190	H	J12-254	H	J12-318	H	J12-382	H
J12-063	H	J12-127	H	J12-191	H	J12-255	H	J12-319	H	J12-383	H
J12-064	H	J12-128	H	J12-192	H	J12-256	H	J12-320	H		
No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2
J13-001	H	J13-065	H	J13-129	H	J13-193	H	J13-257	H	J13-321	H
J13-002	H	J13-066	H	J13-130	H	J13-194	H	J13-258	H	J13-322	H
J13-003	H	J13-067	H	J13-131	H	J13-195	H	J13-259	H	J13-323	H
J13-004	H	J13-068	H	J13-132	H	J13-196	H	J13-260	H	J13-324	H
J13-005	H	J13-069	H	J13-133	H	J13-197	H	J13-261	H	J13-325	H
J13-006	H	J13-070	H	J13-134	H	J13-198	H	J13-262	H	J13-326	H
J13-007	H	J13-071	H	J13-135	H	J13-199	H	J13-263	H	J13-327	H
J13-008	H	J13-072	H	J13-136	H	J13-200	H	J13-264	H	J13-328	H
J13-009	H	J13-073	H	J13-137	H	J13-201	H	J13-265	H	J13-329	H
J13-010	H	J13-074	H	J13-138	H	J13-202	H	J13-266	H	J13-330	H
J13-011	H	J13-075	H	J13-139	H	J13-203	H	J13-267	H	J13-331	H
J13-012	H	J13-076	H	J13-140	H	J13-204	H	J13-268	H	J13-332	H
J13-013	H	J13-077	H	J13-141	H	J13-205	H	J13-269	H	J13-333	H
J13-014	H	J13-078	H	J13-142	H	J13-206	H	J13-270	H	J13-334	H
J13-015	H	J13-079	H	J13-143	H	J13-207	H	J13-271	H	J13-335	H
J13-016	H	J13-080	H	J13-144	H	J13-208	H	J13-272	H	J13-336	H
J13-017	H	J13-081	H	J13-145	H	J13-209	H	J13-273	H	J13-337	H
J13-018	H	J13-082	H	J13-146	H	J13-210	H	J13-274	H	J13-338	H
J13-019	H	J13-083	H	J13-147	H	J13-211	H	J13-275	H	J13-339	H
J13-020	H	J13-084	H	J13-148	H	J13-212	H	J13-276	H	J13-340	H
J13-021	H	J13-085	H	J13-149	H	J13-213	H	J13-277	H	J13-341	H
J13-022	H	J13-086	H	J13-150	H	J13-214	H	J13-278	H	J13-342	H
J13-023	H	J13-087	H	J13-151	H	J13-215	H	J13-279	H	J13-343	H
J13-024	H	J13-088	H	J13-152	H	J13-216	H	J13-280	H	J13-344	H
J13-025	H	J13-089	H	J13-153	H	J13-217	H	J13-281	H	J13-345	H
J13-026	H	J13-090	H	J13-154	H	J13-218	H	J13-282	H	J13-346	H
J13-027	H	J13-091	H	J13-155	H	J13-219	H	J13-283	H	J13-347	H
J13-028	H	J13-092	H	J13-156	H	J13-220	H	J13-284	H	J13-348	H
J13-029	H	J13-093	H	J13-157	H	J13-221	H	J13-285	H	J13-349	H
J13-030	H	J13-094	H	J13-158	H	J13-222	H	J13-286	H	J13-350	H
J13-031	H	J13-095	H	J13-159	H	J13-223	H	J13-287	H	J13-351	H

J13-032	H	J13-096	H	J13-160	H	J13-224	H	J13-288	H	J13-352	H
J13-033	H	J13-097	H	J13-161	H	J13-225	H	J13-289	H	J13-353	H
J13-034	H	J13-098	H	J13-162	H	J13-226	H	J13-290	H	J13-354	H
J13-035	H	J13-099	H	J13-163	H	J13-227	H	J13-291	H	J13-355	H
J13-036	H	J13-100	H	J13-164	H	J13-228	H	J13-292	H	J13-356	H
J13-037	H	J13-101	H	J13-165	H	J13-229	H	J13-293	H	J13-357	H
J13-038	H	J13-102	H	J13-166	H	J13-230	H	J13-294	H	J13-358	H
J13-039	H	J13-103	H	J13-167	H	J13-231	H	J13-295	H	J13-359	H
J13-040	H	J13-104	H	J13-168	H	J13-232	H	J13-296	H	J13-360	H
J13-041	H	J13-105	H	J13-169	H	J13-233	H	J13-297	H	J13-361	H
J13-042	H	J13-106	H	J13-170	H	J13-234	H	J13-298	H	J13-362	H
J13-043	H	J13-107	H	J13-171	H	J13-235	H	J13-299	H	J13-363	H
J13-044	H	J13-108	H	J13-172	H	J13-236	H	J13-300	H	J13-364	H
J13-045	H	J13-109	H	J13-173	H	J13-237	H	J13-301	H	J13-365	H
J13-046	H	J13-110	H	J13-174	H	J13-238	H	J13-302	H	J13-366	H
J13-047	H	J13-111	H	J13-175	H	J13-239	H	J13-303	H	J13-367	H
J13-048	H	J13-112	H	J13-176	H	J13-240	H	J13-304	H	J13-368	H
J13-049	H	J13-113	H	J13-177	H	J13-241	H	J13-305	H	J13-369	H
J13-050	H	J13-114	H	J13-178	H	J13-242	H	J13-306	H	J13-370	H
J13-051	H	J13-115	H	J13-179	H	J13-243	H	J13-307	H	J13-371	H
J13-052	H	J13-116	H	J13-180	H	J13-244	H	J13-308	H	J13-372	H
J13-053	H	J13-117	H	J13-181	H	J13-245	H	J13-309	H	J13-373	H
J13-054	H	J13-118	H	J13-182	H	J13-246	H	J13-310	H	J13-374	N/A
J13-055	H	J13-119	H	J13-183	H	J13-247	H	J13-311	H	J13-375	N/A
J13-056	H	J13-120	H	J13-184	H	J13-248	H	J13-312	H	J13-376	H
J13-057	H	J13-121	H	J13-185	H	J13-249	H	J13-313	H	J13-377	H
J13-058	H	J13-122	H	J13-186	H	J13-250	H	J13-314	H	J13-378	H
J13-059	H	J13-123	H	J13-187	H	J13-251	H	J13-315	H	J13-379	H
J13-060	H	J13-124	H	J13-188	H	J13-252	H	J13-316	H	J13-380	H
J13-061	H	J13-125	H	J13-189	H	J13-253	H	J13-317	H	J13-381	H
J13-062	H	J13-126	H	J13-190	H	J13-254	H	J13-318	H	J13-382	H
J13-063	H	J13-127	H	J13-191	H	J13-255	H	J13-319	H	J13-383	H
J13-064	H	J13-128	H	J13-192	H	J13-256	H	J13-320	H		
No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2
J14-001	H	J14-065	H	J14-129	H	J14-193	H	J14-257	H	J14-321	H
J14-002	H	J14-066	H	J14-130	H	J14-194	H	J14-258	H	J14-322	H
J14-003	H	J14-067	H	J14-131	H	J14-195	H	J14-259	H	J14-323	H
J14-004	H	J14-068	H	J14-132	H	J14-196	H	J14-260	H	J14-324	H
J14-005	H	J14-069	H	J14-133	H	J14-197	H	J14-261	H	J14-325	H
J14-006	H	J14-070	H	J14-134	H	J14-198	H	J14-262	H	J14-326	H
J14-007	H	J14-071	H	J14-135	H	J14-199	H	J14-263	H	J14-327	H
J14-008	H	J14-072	H	J14-136	H	J14-200	H	J14-264	H	J14-328	H
J14-009	H	J14-073	H	J14-137	H	J14-201	H	J14-265	H	J14-329	H
J14-010	H	J14-074	H	J14-138	H	J14-202	H	J14-266	H	J14-330	H
J14-011	H	J14-075	H	J14-139	H	J14-203	H	J14-267	H	J14-331	H
J14-012	H	J14-076	H	J14-140	H	J14-204	H	J14-268	H	J14-332	H
J14-013	H	J14-077	H	J14-141	H	J14-205	H	J14-269	H	J14-333	H
J14-014	H	J14-078	H	J14-142	H	J14-206	H	J14-270	H	J14-334	H
J14-015	H	J14-079	H	J14-143	H	J14-207	H	J14-271	H	J14-335	H
J14-016	H	J14-080	H	J14-144	H	J14-208	H	J14-272	H	J14-336	H
J14-017	H	J14-081	H	J14-145	H	J14-209	H	J14-273	H	J14-337	H
J14-018	H	J14-082	H	J14-146	H	J14-210	H	J14-274	H	J14-338	H
J14-019	H	J14-083	H	J14-147	H	J14-211	H	J14-275	H	J14-339	H
J14-020	H	J14-084	H	J14-148	H	J14-212	H	J14-276	H	J14-340	H
J14-021	H	J14-085	H	J14-149	H	J14-213	H	J14-277	H	J14-341	H
J14-022	H	J14-086	H	J14-150	H	J14-214	H	J14-278	H	J14-342	H
J14-023	H	J14-087	H	J14-151	H	J14-215	H	J14-279	H	J14-343	H
J14-024	H	J14-088	H	J14-152	H	J14-216	H	J14-280	H	J14-344	H
J14-025	H	J14-089	H	J14-153	H	J14-217	H	J14-281	H	J14-345	H
J14-026	H	J14-090	H	J14-154	H	J14-218	H	J14-282	H	J14-346	H
J14-027	H	J14-091	H	J14-155	H	J14-219	H	J14-283	H	J14-347	H
J14-028	H	J14-092	H	J14-156	H	J14-220	H	J14-284	H	J14-348	H

J14-029	H	J14-093	H	J14-157	H	J14-221	H	J14-285	H	J14-349	H
J14-030	H	J14-094	H	J14-158	H	J14-222	H	J14-286	H	J14-350	H
J14-031	H	J14-095	H	J14-159	H	J14-223	H	J14-287	H	J14-351	H
J14-032	H	J14-096	H	J14-160	H	J14-224	H	J14-288	H	J14-352	H
J14-033	H	J14-097	H	J14-161	H	J14-225	H	J14-289	H	J14-353	H
J14-034	H	J14-098	H	J14-162	H	J14-226	H	J14-290	H	J14-354	H
J14-035	H	J14-099	H	J14-163	H	J14-227	H	J14-291	H	J14-355	H
J14-036	H	J14-100	H	J14-164	H	J14-228	H	J14-292	H	J14-356	H
J14-037	H	J14-101	H	J14-165	H	J14-229	H	J14-293	H	J14-357	H
J14-038	H	J14-102	H	J14-166	H	J14-230	H	J14-294	H	J14-358	H
J14-039	H	J14-103	H	J14-167	H	J14-231	H	J14-295	H	J14-359	H
J14-040	H	J14-104	H	J14-168	H	J14-232	H	J14-296	H	J14-360	H
J14-041	H	J14-105	H	J14-169	H	J14-233	R	J14-297	H	J14-361	H
J14-042	H	J14-106	H	J14-170	H	J14-234	H	J14-298	H	J14-362	H
J14-043	H	J14-107	H	J14-171	H	J14-235	H	J14-299	H	J14-363	H
J14-044	H	J14-108	H	J14-172	H	J14-236	H	J14-300	H	J14-364	H
J14-045	H	J14-109	H	J14-173	H	J14-237	H	J14-301	H	J14-365	H
J14-046	H	J14-110	N/A	J14-174	H	J14-238	H	J14-302	H	J14-366	H
J14-047	H	J14-111	H	J14-175	H	J14-239	H	J14-303	H	J14-367	H
J14-048	H	J14-112	H	J14-176	H	J14-240	H	J14-304	H	J14-368	H
J14-049	H	J14-113	H	J14-177	H	J14-241	H	J14-305	H	J14-369	H
J14-050	H	J14-114	H	J14-178	H	J14-242	H	J14-306	H	J14-370	H
J14-051	H	J14-115	H	J14-179	H	J14-243	H	J14-307	H	J14-371	H
J14-052	H	J14-116	H	J14-180	H	J14-244	H	J14-308	H	J14-372	H
J14-053	H	J14-117	H	J14-181	H	J14-245	H	J14-309	H	J14-373	H
J14-054	H	J14-118	H	J14-182	H	J14-246	H	J14-310	H	J14-374	H
J14-055	H	J14-119	H	J14-183	H	J14-247	H	J14-311	H	J14-375	H
J14-056	H	J14-120	H	J14-184	H	J14-248	H	J14-312	H	J14-376	H
J14-057	H	J14-121	H	J14-185	H	J14-249	H	J14-313	H	J14-377	H
J14-058	H	J14-122	H	J14-186	H	J14-250	H	J14-314	H	J14-378	H
J14-059	H	J14-123	H	J14-187	H	J14-251	H	J14-315	H	J14-379	H
J14-060	H	J14-124	H	J14-188	H	J14-252	H	J14-316	H	J14-380	H
J14-061	H	J14-125	H	J14-189	H	J14-253	H	J14-317	H	J14-381	H
J14-062	H	J14-126	H	J14-190	H	J14-254	H	J14-318	H	J14-382	H
J14-063	H	J14-127	H	J14-191	H	J14-255	H	J14-319	H	J14-383	H
J14-064	H	J14-128	H	J14-192	H	J14-256	H	J14-320	H		
No.	J3	No.	J3	No.	J3	No.	J3	No.	J3	No.	J3
J15-001	H	J15-063	H	J15-125	H	J15-187	H	J15-249	H	J15-311	H
J15-002	H	J15-064	H	J15-126	H	J15-188	H	J15-250	H	J15-312	H
J15-003	H	J15-065	H	J15-127	H	J15-189	H	J15-251	H	J15-313	H
J15-004	H	J15-066	H	J15-128	H	J15-190	H	J15-252	H	J15-314	H
J15-005	H	J15-067	H	J15-129	H	J15-191	H	J15-253	H	J15-315	H
J15-006	H	J15-068	H	J15-130	H	J15-192	H	J15-254	H	J15-316	H
J15-007	H	J15-069	H	J15-131	H	J15-193	H	J15-255	H	J15-317	H
J15-008	H	J15-070	H	J15-132	H	J15-194	H	J15-256	H	J15-318	H
J15-009	H	J15-071	H	J15-133	H	J15-195	H	J15-257	H	J15-319	H
J15-010	H	J15-072	H	J15-134	H	J15-196	H	J15-258	H	J15-320	H
J15-011	H	J15-073	H	J15-135	H	J15-197	H	J15-259	H	J15-321	H
J15-012	H	J15-074	H	J15-136	H	J15-198	H	J15-260	H	J15-322	H
J15-013	H	J15-075	H	J15-137	H	J15-199	H	J15-261	H	J15-323	H
J15-014	H	J15-076	H	J15-138	H	J15-200	H	J15-262	H	J15-324	H
J15-015	H	J15-077	H	J15-139	H	J15-201	H	J15-263	H	J15-325	H
J15-016	H	J15-078	H	J15-140	H	J15-202	H	J15-264	H	J15-326	H
J15-017	H	J15-079	H	J15-141	H	J15-203	H	J15-265	H	J15-327	H
J15-018	H	J15-080	H	J15-142	H	J15-204	H	J15-266	H	J15-328	H
J15-019	H	J15-081	H	J15-143	H	J15-205	H	J15-267	H	J15-329	H
J15-020	H	J15-082	H	J15-144	H	J15-206	H	J15-268	H	J15-330	H
J15-021	H	J15-083	H	J15-145	H	J15-207	H	J15-269	H	J15-331	H
J15-022	H	J15-084	H	J15-146	H	J15-208	H	J15-270	H	J15-332	H
J15-023	H	J15-085	H	J15-147	H	J15-209	H	J15-271	H	J15-333	H
J15-024	H	J15-086	H	J15-148	H	J15-210	H	J15-272	H	J15-334	H
J15-025	S	J15-087	H	J15-149	H	J15-211	H	J15-273	H	J15-335	H

J15-026	H	J15-088	H	J15-150	H	J15-212	H	J15-274	H	J15-336	H
J15-027	H	J15-089	H	J15-151	H	J15-213	H	J15-275	H	J15-337	H
J15-028	H	J15-090	H	J15-152	H	J15-214	H	J15-276	H	J15-338	H
J15-029	H	J15-091	H	J15-153	H	J15-215	H	J15-277	H	J15-339	H
J15-030	H	J15-092	H	J15-154	H	J15-216	H	J15-278	H	J15-340	H
J15-031	H	J15-093	H	J15-155	H	J15-217	H	J15-279	H	J15-341	H
J15-032	H	J15-094	H	J15-156	H	J15-218	H	J15-280	H	J15-342	H
J15-033	H	J15-095	H	J15-157	H	J15-219	H	J15-281	H	J15-343	H
J15-034	H	J15-096	H	J15-158	H	J15-220	H	J15-282	H	J15-344	H
J15-035	H	J15-097	H	J15-159	H	J15-221	H	J15-283	H	J15-345	H
J15-036	H	J15-098	H	J15-160	H	J15-222	H	J15-284	H	J15-346	H
J15-037	H	J15-099	H	J15-161	H	J15-223	H	J15-285	H	J15-347	H
J15-038	H	J15-100	H	J15-162	H	J15-224	H	J15-286	H	J15-348	H
J15-039	H	J15-101	H	J15-163	H	J15-225	H	J15-287	H	J15-349	H
J15-040	H	J15-102	H	J15-164	H	J15-226	H	J15-288	H	J15-350	H
J15-041	H	J15-103	H	J15-165	H	J15-227	H	J15-289	H	J15-351	H
J15-042	H	J15-104	H	J15-166	H	J15-228	H	J15-290	H	J15-352	H
J15-043	H	J15-105	H	J15-167	H	J15-229	H	J15-291	H	J15-353	H
J15-044	H	J15-106	H	J15-168	H	J15-230	H	J15-292	H	J15-354	H
J15-045	H	J15-107	H	J15-169	H	J15-231	H	J15-293	H	J15-355	H
J15-046	H	J15-108	H	J15-170	H	J15-232	H	J15-294	H	J15-356	H
J15-047	H	J15-109	H	J15-171	H	J15-233	H	J15-295	H	J15-357	H
J15-048	H	J15-110	H	J15-172	H	J15-234	H	J15-296	H	J15-358	H
J15-049	H	J15-111	H	J15-173	H	J15-235	H	J15-297	H	J15-359	H
J15-050	H	J15-112	H	J15-174	H	J15-236	H	J15-298	H	J15-360	H
J15-051	H	J15-113	H	J15-175	H	J15-237	H	J15-299	H	J15-361	H
J15-052	H	J15-114	H	J15-176	H	J15-238	H	J15-300	H	J15-362	H
J15-053	H	J15-115	H	J15-177	H	J15-239	H	J15-301	H	J15-363	H
J15-054	H	J15-116	H	J15-178	H	J15-240	H	J15-302	H	J15-364	H
J15-055	H	J15-117	H	J15-179	H	J15-241	H	J15-303	H	J15-365	N/A
J15-056	H	J15-118	H	J15-180	H	J15-242	H	J15-304	H	J15-366	H
J15-057	H	J15-119	H	J15-181	H	J15-243	H	J15-305	H	J15-367	H
J15-058	H	J15-120	H	J15-182	H	J15-244	H	J15-306	H	J15-368	H
J15-059	H	J15-121	H	J15-183	H	J15-245	H	J15-307	H		
J15-060	H	J15-122	H	J15-184	H	J15-246	H	J15-308	H		
J15-061	H	J15-123	H	J15-185	H	J15-247	H	J15-309	H		
J15-062	H	J15-124	H	J15-186	H	J15-248	H	J15-310	H		
No.	Tm2a	No.	Tm2a	No.	Tm2a	No.	Tm2a	No.	Tm2a	No.	Tm2a
J16-001	H	J16-053	H	J16-105	H	J16-157	H	J16-209	H	J16-261	H
J16-002	H	J16-054	H	J16-106	H	J16-158	H	J16-210	H	J16-262	H
J16-003	H	J16-055	H	J16-107	H	J16-159	H	J16-211	H	J16-263	H
J16-004	H	J16-056	H	J16-108	H	J16-160	H	J16-212	H	J16-264	H
J16-005	H	J16-057	H	J16-109	H	J16-161	H	J16-213	H	J16-265	H
J16-006	H	J16-058	H	J16-110	H	J16-162	H	J16-214	H	J16-266	H
J16-007	H	J16-059	H	J16-111	H	J16-163	H	J16-215	H	J16-267	H
J16-008	H	J16-060	H	J16-112	H	J16-164	H	J16-216	H	J16-268	H
J16-009	H	J16-061	H	J16-113	H	J16-165	H	J16-217	H	J16-269	H
J16-010	H	J16-062	H	J16-114	H	J16-166	H	J16-218	H	J16-270	H
J16-011	H	J16-063	H	J16-115	H	J16-167	H	J16-219	H	J16-271	H
J16-012	H	J16-064	H	J16-116	H	J16-168	H	J16-220	H	J16-272	H
J16-013	H	J16-065	H	J16-117	H	J16-169	H	J16-221	H	J16-273	H
J16-014	H	J16-066	H	J16-118	H	J16-170	H	J16-222	H	J16-274	H
J16-015	H	J16-067	H	J16-119	H	J16-171	H	J16-223	H	J16-275	H
J16-016	H	J16-068	H	J16-120	H	J16-172	H	J16-224	H	J16-276	N/A
J16-017	H	J16-069	H	J16-121	H	J16-173	H	J16-225	H	J16-277	H
J16-018	H	J16-070	H	J16-122	H	J16-174	H	J16-226	H	J16-278	H
J16-019	H	J16-071	H	J16-123	H	J16-175	H	J16-227	H	J16-279	H
J16-020	H	J16-072	H	J16-124	H	J16-176	H	J16-228	H	J16-280	H
J16-021	H	J16-073	H	J16-125	H	J16-177	H	J16-229	H	J16-281	H
J16-022	H	J16-074	H	J16-126	H	J16-178	H	J16-230	H	J16-282	H
J16-023	H	J16-075	H	J16-127	H	J16-179	H	J16-231	H	J16-283	H
J16-024	H	J16-076	H	J16-128	H	J16-180	H	J16-232	H	J16-284	H

J16-025	H	J16-077	H	J16-129	H	J16-181	H	J16-233	H	J16-285	H
J16-026	H	J16-078	H	J16-130	H	J16-182	H	J16-234	H	J16-286	H
J16-027	H	J16-079	H	J16-131	H	J16-183	H	J16-235	H	J16-287	H
J16-028	H	J16-080	H	J16-132	H	J16-184	H	J16-236	H	J16-288	H
J16-029	H	J16-081	H	J16-133	H	J16-185	H	J16-237	H	J16-289	H
J16-030	H	J16-082	H	J16-134	H	J16-186	H	J16-238	H	J16-290	H
J16-031	H	J16-083	H	J16-135	H	J16-187	H	J16-239	H	J16-291	H
J16-032	H	J16-084	H	J16-136	H	J16-188	H	J16-240	H	J16-292	H
J16-033	H	J16-085	H	J16-137	H	J16-189	H	J16-241	H	J16-293	H
J16-034	H	J16-086	H	J16-138	H	J16-190	H	J16-242	H	J16-294	H
J16-035	H	J16-087	H	J16-139	H	J16-191	H	J16-243	H	J16-295	H
J16-036	H	J16-088	H	J16-140	H	J16-192	H	J16-244	H	J16-296	H
J16-037	H	J16-089	H	J16-141	H	J16-193	H	J16-245	H	J16-297	H
J16-038	H	J16-090	H	J16-142	H	J16-194	H	J16-246	H	J16-298	H
J16-039	H	J16-091	H	J16-143	H	J16-195	H	J16-247	H	J16-299	H
J16-040	H	J16-092	H	J16-144	H	J16-196	H	J16-248	H	J16-300	H
J16-041	H	J16-093	H	J16-145	H	J16-197	H	J16-249	H	J16-301	H
J16-042	H	J16-094	H	J16-146	H	J16-198	H	J16-250	H	J16-302	H
J16-043	H	J16-095	H	J16-147	H	J16-199	H	J16-251	H	J16-303	H
J16-044	H	J16-096	H	J16-148	H	J16-200	H	J16-252	H	J16-304	H
J16-045	H	J16-097	H	J16-149	H	J16-201	H	J16-253	H	J16-305	H
J16-046	H	J16-098	H	J16-150	H	J16-202	H	J16-254	H	J16-306	H
J16-047	H	J16-099	H	J16-151	H	J16-203	H	J16-255	H	J16-307	H
J16-048	H	J16-100	H	J16-152	H	J16-204	H	J16-256	H	J16-308	H
J16-049	H	J16-101	H	J16-153	H	J16-205	H	J16-257	H	J16-309	H
J16-050	H	J16-102	H	J16-154	H	J16-206	H	J16-258	H	J16-310	H
J16-051	H	J16-103	H	J16-155	H	J16-207	H	J16-259	H		
J16-052	H	J16-104	H	J16-156	H	J16-208	H	J16-260	H		

표 5. 순천대학교 441점의 시료에 대하여, 형질 관련 1종의 마커를 이용한 서비스 결과

No.	MS10	No.	MS10	No.	MS10	No.	MS10	No.	MS10	No.	MS10
1	MsMs	75	msms	149	H	223	H	297	MsMs	371	MsMs
2	MsMs	76	MsMs	150	H	224	MsMs	298	H	372	H
3	MsMs	77	H	151	H	225	MsMs	299	MsMs	373	H
4	MsMs	78	MsMs	152	MsMs	226	MsMs	300	H	374	H
5	MsMs	79	msms	153	MsMs	227	MsMs	301	msms	375	H
6	MsMs	80	MsMs	154	MsMs	228	msms	302	H	376	msms
7	MsMs	81	msms	155	H	229	MsMs	303	H	377	H
8	MsMs	82	H	156	MsMs	230	H	304	msms	378	msms
9	MsMs	83	msms	157	MsMs	231	MsMs	305	msms	379	msms
10	MsMs	84	H	158	H	232	H	306	MsMs	380	msms
11	MsMs	85	msms	159	H	233	msms	307	msms	381	H
12	MsMs	86	msms	160	H	234	msms	308	H	382	msms
13	MsMs	87	H	161	H	235	MsMs	309	msms	383	msms
14	MsMs	88	H	162	H	236	MsMs	310	MsMs	384	H
15	MsMs	89	msms	163	H	237	msms	311	msms	385	H
16	MsMs	90	msms	164	H	238	msms	312	H	386	H
17	MsMs	91	H	165	MsMs	239	H	313	H	387	H
18	MsMs	92	MsMs	166	MsMs	240	N/A	314	H	388	MsMs
19	MsMs	93	msms	167	MsMs	241	H	315	MsMs	389	MsMs
20	MsMs	94	N/A	168	H	242	MsMs	316	msms	390	MsMs
21	MsMs	95	msms	169	H	243	MsMs	317	H	391	msms
22	MsMs	96	MsMs	170	MsMs	244	H	318	H	392	H
23	MsMs	97	MsMs	171	MsMs	245	MsMs	319	msms	393	H
24	MsMs	98	H	172	MsMs	246	H	320	MsMs	394	H
25	MsMs	99	msms	173	H	247	H	321	msms	395	MsMs
26	MsMs	100	H	174	MsMs	248	H	322	MsMs	396	msms
27	MsMs	101	MsMs	175	MsMs	249	H	323	H	397	H
28	MsMs	102	MsMs	176	MsMs	250	MsMs	324	H	398	H
29	MsMs	103	N/A	177	MsMs	251	msms	325	H	399	H
30	MsMs	104	H	178	MsMs	252	MsMs	326	H	400	msms
31	MsMs	105	N/A	179	H	253	H	327	H	401	MsMs

No.	MS10	No.	MS10	No.	MS10	No.	MS10	No.	MS10	No.	MS10
32	N/A	106	MsMs	180	MsMs	254	H	328	H	402	msms
33	MsMs	107	MsMs	181	MsMs	255	msms	329	H	403	H
34	msms	108	MsMs	182	H	256	MsMs	330	MsMs	404	H
35	MsMs	109	msms	183	H	257	MsMs	331	MsMs	405	MsMs
36	MsMs	110	MsMs	184	MsMs	258	msms	332	msms	406	H
37	H	111	MsMs	185	MsMs	259	H	333	MsMs	407	MsMs
38	H	112	H	186	H	260	H	334	H	408	MsMs
39	msms	113	msms	187	MsMs	261	H	335	H	409	MsMs
40	H	114	msms	188	MsMs	262	msms	336	H	410	H
41	MsMs	115	MsMs	189	MsMs	263	H	337	msms	411	H
42	MsMs	116	H	190	MsMs	264	H	338	H	412	H
43	msms	117	H	191	H	265	msms	339	msms	413	H
44	H	118	MsMs	192	MsMs	266	H	340	MsMs	414	msms
45	H	119	msms	193	H	267	MsMs	341	MsMs	415	H
46	H	120	H	194	H	268	MsMs	342	H	416	msms
47	MsMs	121	MsMs	195	MsMs	269	H	343	H	417	MsMs
48	N/A	122	H	196	MsMs	270	H	344	H	418	H
49	MsMs	123	H	197	MsMs	271	MsMs	345	msms	419	H
50	H	124	H	198	H	272	MsMs	346	MsMs	420	MsMs
51	H	125	N/A	199	H	273	MsMs	347	H	421	H
52	msms	126	H	200	H	274	MsMs	348	MsMs	422	msms
53	H	127	MsMs	201	MsMs	275	msms	349	H	423	msms
54	MsMs	128	MsMs	202	MsMs	276	H	350	msms	424	H
55	H	129	MsMs	203	MsMs	277	msms	351	MsMs	425	msms
56	H	130	H	204	MsMs	278	H	352	msms	426	MsMs
57	msms	131	MsMs	205	N/A	279	H	353	MsMs	427	H
58	msms	132	MsMs	206	H	280	H	354	N/A	428	H
59	H	133	MsMs	207	MsMs	281	H	355	msms	429	MsMs
60	msms	134	H	208	H	282	msms	356	MsMs	430	MsMs
61	H	135	MsMs	209	MsMs	283	H	357	msms	431	msms
62	H	136	H	210	N/A	284	H	358	msms	432	MsMs
63	MsMs	137	H	211	H	285	H	359	msms	433	msms
64	H	138	MsMs	212	H	286	H	360	msms	434	H
65	msms	139	H	213	H	287	H	361	H	435	H
66	H	140	MsMs	214	H	288	H	362	H	436	H
67	H	141	MsMs	215	MsMs	289	H	363	MsMs	437	H
68	MsMs	142	H	216	MsMs	290	H	364	H	438	H
69	H	143	H	217	H	291	msms	365	MsMs	439	H
70	H	144	H	218	H	292	MsMs	366	MsMs	440	H
71	H	145	MsMs	219	MsMs	293	H	367	H	441	H
72	msms	146	H	220	H	294	MsMs	368	H		
73	msms	147	H	221	MsMs	295	H	369	MsMs		
74	msms	148	MsMs	222	H	296	msms	370	msms		

② 아시아종묘

아시아종묘로부터 총 2,328점의 시료를 받아 5번의 서비스를 진행하였다. 처음 39점의 시료에 대하여, 병 관련 2종의 마커로 서비스를 진행하였다(표 6). 두 번째로는 42점의 시료에 대하여, 병 관련 2종의 마커로 서비스를 진행하였다(표 7). 세 번째로는 510점의 시료에 대하여, 각기 다른 병 마커(Ph3, Ty1, Tm2a, Mi-*rex*, Ve2, J3) 및 형질 마커 2종에 대하여 서비스를 진행하였다(표 8). 네 번째로는 603점의 시료에 대하여, 각기 다른 병 마커(I2, Ty2, Cf9, Sw5, Ty1, Ve2, Tm2a, Mi-*rex*, Sw5, Ph3, J3)에 대하여 서비스를 진행하였다(표 9). 다섯 번째로는 1,134점의 시료에 대하여, 병 관련 11종의 마커로 서비스를 진행하였다(표 10). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 6, 7, 8, 9, 10).

표 6. 아시아종묘 39점의 시료에 대하여, 병 관련 2종의 마커를 이용한 서비스 결과

No.	BW06	BW12	No.	BW06	BW12	No.	BW06	BW12	No.	BW06	BW12	No.	BW06	BW12			
1	S	S	8	S	S	15	S	S	22	S	S	29	H	R	36	S	S

No.	BW06	BW12	No.	BW06	BW12	No.	BW06	BW12	No.	BW06	BW12	No.	BW06	BW12	No.	BW06	BW12
2	S	S	9	S	S	16	S	S	23	S	S	30	H	R	37	H	R
3	S	S	10	S	H	17	S	S	24	S	S	31	H	R	38	H	H
4	S	H	11	N/A	N/A	18	S	S	25	R	H	32	H	R	39	H	R
5	S	H	12	S	H	19	S	S	26	R	H	33	H	R			
6	S	H	13	S	S	20	S	S	27	R	H	34	S	S			
7	S	S	14	S	S	21	S	S	28	H	R	35	S	S			

표 7. 아시아종묘 42점의 시료에 대하여, 병 관련 2종의 마커를 이용한 서비스 결과

No.	BW06	BW12	No.	BW06	BW12	No.	BW06	BW12	No.	BW06	BW12	No.	BW06	BW12	No.	BW06	BW12
1	S	H	8	S	H	15	S	S	22	S	S	29	S	S	36	R	H
2	S	H	9	S	H	16	S	H	23	S	S	30	S	S	37	S	R
3	S	H	10	S	H	17	S	H	24	S	S	31	H	R	38	S	R
4	S	H	11	S	H	18	S	H	25	S	S	32	R	H	39	S	R
5	S	H	12	S	H	19	S	S	26	S	S	33	R	H	40	R	R
6	S	H	13	S	S	20	S	S	27	S	S	34	R	H	41	R	R
7	S	H	14	S	S	21	S	S	28	S	S	35	R	H	42	R	R

표 8. 아시아종묘 510점의 시료에 대하여, 각기 다른 병 마커(Ph3, Ty1, Tm2a, Mi-r ex, Ve2, J3) 및 형질 마커 2종을 이용한 서비스 결과

No.	Ph3	Ty1	Tm2a	Mi-r ex	Ve2	J3	No.	Ph3	Ty1	Tm2a	Mi-r ex	Ve2	J3	No.	Ph3	Ty1	Tm2a	Mi-r ex	Ve2	J3
1	H	S	H	H	S	S	41	S	S	H	S	H	H	81	H	S	S	S	R	S
2	H	S	H	H	S	S	42	H	S	R	H	S	S	82	R	S	H	S	S	S
3	H	S	H	H	S	S	43	H	S	R	H	S	S	83	R	S	H	S	S	S
4	H	S	H	H	S	S	44	H	S	R	H	S	S	84	R	S	H	S	S	S
5	H	S	H	H	S	S	45	S	S	H	S	R	S	85	R	S	H	S	S	S
6	S	R	H	S	R	S	46	H	S	R	H	S	S	86	R	S	H	S	S	S
7	H	S	H	H	S	S	47	H	S	R	H	S	S	87	R	S	H	S	S	S
8	S	H	R	S	H	S	48	H	S	R	H	S	S	88	R	S	H	S	S	S
9	H	S	H	H	S	S	49	H	S	R	H	S	S	89	R	S	H	S	S	S
10	H	S	H	H	S	S	50	H	S	R	H	S	S	90	R	S	H	S	S	S
11	H	S	H	H	S	S	51	R	S	S	S	S	S	91	R	S	H	S	S	S
12	H	S	H	H	S	S	52	R	S	S	S	S	S	92	R	S	H	S	S	S
13	H	S	H	H	S	S	53	R	S	S	S	S	S	93	R	S	H	S	S	S
14	H	S	H	H	S	S	54	H	S	H	S	H	H	94	R	S	H	S	S	S
15	H	S	H	H	S	S	55	R	S	S	S	S	S	95	R	S	H	S	S	S
16	H	S	H	H	S	S	56	R	S	S	S	S	S	96	H	S	H	S	S	H
17	H	S	H	H	S	S	57	R	S	S	S	S	S	97	R	S	H	S	S	S
18	H	S	H	H	S	S	58	R	S	S	S	S	S	98	R	S	H	S	S	S
19	H	S	H	H	S	S	59	H	S	H	S	S	S	99	R	S	H	S	S	S
20	H	S	H	H	S	S	60	H	S	H	S	H	S	100	R	S	H	S	S	S
21	H	S	S	S	H	S	61	H	S	H	S	S	S	101	R	S	R	S	S	S
22	H	S	S	S	H	S	62	H	S	H	S	S	S	102	R	S	R	S	S	S
23	H	S	S	S	H	S	63	H	S	H	S	H	S	103	R	S	R	S	S	S
24	H	S	S	S	H	S	64	H	S	H	S	S	S	104	R	S	R	S	S	S
25	H	S	S	S	S	S	65	H	S	H	S	S	S	105	R	S	R	S	S	S
26	H	S	S	S	H	S	66	H	S	H	S	H	S	106	R	S	R	S	S	S
27	H	S	S	S	H	S	67	H	S	H	S	S	S	107	R	S	R	S	S	S
28	H	S	S	S	H	S	68	H	S	H	S	S	S	108	R	S	R	S	S	S
29	S	H	R	H	R	S	69	H	S	H	S	S	S	109	R	S	R	S	S	S
30	H	S	S	S	H	S	70	R	S	S	S	S	S	110	R	S	R	S	S	S
31	S	S	H	S	S	H	71	R	S	S	S	S	S	111	H	S	H	S	H	S
32	S	S	H	S	S	H	72	R	S	S	S	S	S	112	H	S	H	S	H	S
33	S	S	H	S	H	H	73	R	S	S	S	S	S	113	H	S	H	S	S	S
34	S	S	H	S	H	H	74	R	S	S	S	S	S	114	H	S	H	S	H	S
35	S	S	H	S	S	H	75	R	S	S	S	S	S	115	H	S	H	S	H	S
36	S	S	H	S	S	H	76	R	S	S	S	S	S	116	H	S	H	S	H	S
37	S	S	H	S	S	H	77	N/A	N/A	N/A	N/A	N/A	N/A	117	H	S	H	S	H	S
38	S	S	H	S	H	H	78	R	S	S	S	S	S	118	H	S	H	S	H	S
39	S	S	H	S	S	H	79	R	S	S	S	S	S	119	H	S	H	S	H	S

40	S	S	H	S	H	H
No.	Ph3	Ty1	Tm2a	Mi-r ex	Ve2	J3
1	R	S	R	H	S	R
2	R	S	R	H	S	R
3	R	S	R	S	S	S
4	R	S	R	S	S	S
5	R	H	S	H	R	R
6	R	S	S	H	R	R
7	S	S	R	S	S	S
8	S	S	R	S	S	S
9	S	S	R	H	S	R
10	S	S	R	H	S	R
11	R	S	R	S	S	S
12	R	S	R	S	S	S
13	S	S	R	S	S	R
14	S	S	R	S	S	R
15	R	S	S	S	S	S
16	R	S	S	S	S	S

80	R	S	S	S	S	S
No.	Ph3	Ty1	Tm2a	Mi-r ex	Ve2	J3
17	S	S	S	S	R	S
18	S	S	S	S	R	S
19	S	R	R	S	R	R
20	S	R	R	S	R	R
21	S	S	S	S	R	S
22	S	S	S	S	R	S
23	S	S	S	H	R	S
24	N/A	N/A	N/A	N/A	N/A	N/A
25	S	S	S	S	S	S
26	S	S	S	S	S	S
27	S	S	N/A	S	H	S
28	S	S	H	S	S	S
29	S	S	S	S	R	S
30	S	S	S	S	R	S
31	S	S	R	S	R	S
32	S	S	R	S	R	S

120	H	S	H	S	S	S
No.	Ph3	Ty1	Tm2a	Mi-r ex	Ve2	J3
33	S	S	S	S	S	S
34	S	S	S	S	S	S
35	S	S	H	S	R	H
36	S	R	R	S	H	R
37	S	S	S	S	S	S
38	S	S	S	S	S	S
39	S	S	S	S	R	S
40	S	S	S	S	R	S
41	S	S	S	S	R	S
42	S	S	S	S	R	S
43	S	S	S	S	R	S
44	R	S	S	S	S	S
45	R	S	S	S	S	S
46	R	S	S	S	S	S
47	S	S	R	S	S	R
48	S	S	R	S	S	R

No.	J3	No.	J3	No.	J3	No.	J3	No.	J3	No.	J3	No.	J3	No.	J3
1	H	10	H	19	H	28	H	37	H	46	H	55	H	64	H
2	H	11	H	20	H	29	H	38	H	47	H	56	H	65	H
3	H	12	H	21	H	30	H	39	H	48	H	57	H	66	H
4	H	13	H	22	H	31	H	40	H	49	H	58	H	67	H
5	H	14	H	23	H	32	H	41	H	50	H	59	H	68	H
6	H	15	H	24	H	33	H	42	H	51	H	60	H	69	H
7	H	16	H	25	H	34	H	43	H	52	H	61	H	70	H
8	H	17	H	26	H	35	N/A	44	H	53	H	62	H		
9	H	18	H	27	H	36	H	45	H	54	H	63	H		

No.	Ph3	No.	Ph3	No.	Ph3	No.	Ph3	No.	Ph3	No.	Ph3	No.	Ph3	No.	Ph3
1	H	9	H	17	H	25	N/A	33	H	41	H	49	H	57	H
2	H	10	H	18	H	26	H	34	H	42	H	50	H	58	H
3	H	11	H	19	H	27	H	35	H	43	H	51	H	59	H
4	H	12	H	20	H	28	H	36	H	44	H	52	H	60	H
5	H	13	H	21	H	29	H	37	H	45	H	53	H		
6	H	14	H	22	H	30	H	38	H	46	H	54	H		
7	H	15	H	23	H	31	H	39	H	47	H	55	H		
8	H	16	H	24	H	32	H	40	H	48	H	56	H		

No.	Tm2a	No.	Tm2a	No.	Tm2a	No.	Tm2a	No.	Tm2a	No.	Tm2a	No.	Tm2a	No.	Tm2a
1	H	8	H	15	H	22	H	29	H	36	H	43	H	50	H
2	H	9	H	16	H	23	R	30	H	37	H	44	H		
3	H	10	H	17	H	24	H	31	H	38	H	45	H		
4	H	11	H	18	H	25	H	32	H	39	H	46	H		
5	H	12	H	19	H	26	H	33	H	40	H	47	H		
6	H	13	H	20	H	27	H	34	H	41	H	48	H		
7	H	14	H	21	H	28	R	35	H	42	H	49	H		

No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2	No.	Ve2
1	H	5	H	9	H	13	H	17	H	21	H	25	H	29	H
2	H	6	H	10	H	14	H	18	H	22	H	26	H	30	H
3	H	7	H	11	H	15	H	19	H	23	H	27	H		
4	H	8	H	12	H	16	H	20	H	24	H	28	H		

No.	Mi-rex	No.	Mi-rex	No.	Mi-rex	No.	Mi-rex	No.	Mi-rex	No.	Mi-rex
1	H	3	H	5	H	7	H	9	H		
2	H	4	H	6	H	8	H	10	H		

No.	J2-TE	EJ2	No.	J2-TE	EJ2	No.	J2-TE	EJ2	No.	J2-TE	EJ2	No.	J2-TE	EJ2	No.	J2-TE	EJ2
1	M	N	22	M	N	43	M	N	64	M	N	85	N	N	106	N	M
2	N	N	23	M	N	44	N	M	65	M	N	86	N	N	107	N	N
3	H	N	24	M	N	45	N	M	66	M	N	87	N	H	108	N	N
4	H	N	25	M	N	46	N	M	67	N	H	88	N	H	109	N/A	N/A
5	H	N	26	M	N	47	N	M	68	N	H	89	N	M	110	N/A	N/A
6	H	N	27	M	N	48	N	M	69	N	M	90	N	M	111	N	N
7	N	H	28	M	N	49	N	M	70	N	M	91	M	N	112	N	N

8	N	H	29	M	N	50	N	M	71	N	H	92	M	N	113	N	M
9	N	H	30	M	N	51	N	M	72	N	H	93	N/A	N	114	N	M
10	N	H	31	M	N	52	N	M	73	N	H	94	N/A	N	115	N	M
11	N	H	32	M	N	53	N	M	74	N	H	95	N/A	N	116	N	M
12	N	H	33	M	N	54	N	M	75	N	M	96	N	N	117	N	M
13	N	H	34	M	N	55	N	M	76	N	M	97	N	N	118	N	N
14	N	H	35	M	N	56	N	M	77	N	N	98	N/A	N/A	119	N	N
15	M	N	36	N	N	57	N	M	78	N	N	99	N	N	120	N	N
16	M	N	37	M	N	58	N	N	79	N	N	100	N	N	121	N	N
17	M	N	38	M	N	59	M	N	80	N	N	101	N	H	122	N	N
18	M	N	39	M	N	60	M	N	81	N	N	102	N	H			
19	M	N	40	M	N	61	M	N	82	N	N	103	N	M			
20	M	N	41	M	N	62	M	N	83	N	N	104	N	M			
21	M	N	42	M	N	63	M	N	84	N	N	105	N	M			

표 9. 아시아종묘 603점의 시료에 대하여, 각기 다른 병 마커(I2, Ty2, Cf9, Sw5, Ty1, Ve2, Tm2a, Mi-rex, Sw5, Ph3, J3)를 이용한 서비스 결과

No.	I2	Ty2	Cf9	Sw5	No.	I2	Ty2	Cf9	Sw5	No.	I2	Ty2	Cf9	Sw5							
1	S	S	S	S	41	R/H	S	S	S	81	S	S	S	S							
2	S	S	S	S	42	S	S	S	S	82	S	S	S	S							
3	S	S	S	S	43	S	S	S	S	83	S	S	S	S							
4	S	S	S	S	44	S	S	S	S	84	S	S	S	S							
5	S	S	S	S	45	R/H	S	S	S	85	S	S	S	S							
6	R/H	S	S	S	46	S	S	S	S	86	S	S	S	S							
7	S	S	S	S	47	S	S	S	S	87	S	S	S	S							
8	R/H	S	S	S	48	S	S	S	S	88	S	S	S	S							
9	S	S	S	S	49	S	S	S	S	89	S	S	S	S							
10	S	S	S	S	50	S	S	S	S	90	S	S	S	S							
11	S	S	S	S	51	S	S	S	S	91	S	S	S	S							
12	S	S	S	S	52	S	S	S	S	92	S	S	S	S							
13	S	S	S	S	53	S	S	S	S	93	S	S	S	S							
14	S	S	S	S	54	R/H	S	S	S	94	S	S	S	S							
15	S	S	S	S	55	S	S	S	S	95	S	S	S	S							
16	S	S	S	S	56	S	S	S	S	96	S	S	S	S							
17	S	S	S	S	57	S	S	S	S	97	S	S	S	S							
18	S	S	S	S	58	S	S	S	S	98	S	S	S	S							
19	S	S	S	S	59	S	S	S	S	99	S	S	S	S							
20	S	S	S	S	60	S	S	S	S	100	S	S	S	S							
21	R/H	S	S	S	61	S	S	S	S	101	S	S	S	S							
22	R/H	S	S	S	62	S	S	S	S	102	S	S	S	S							
23	R/H	S	S	S	63	S	S	S	S	103	S	S	S	S							
24	R/H	S	S	S	64	S	S	S	S	104	S	S	S	S							
25	R/H	S	S	S	65	S	S	S	S	105	S	S	S	S							
26	R/H	S	S	S	66	S	S	S	S	106	S	S	S	S							
27	R/H	S	S	S	67	S	S	S	S	107	S	S	S	S							
28	R/H	S	S	S	68	S	S	S	S	108	S	S	S	S							
29	R/H	S	R/H	S	69	S	S	S	S	109	S	S	S	S							
30	R/H	S	S	S	70	S	S	S	S	110	S	S	S	S							
31	R/H	S	S	S	71	S	S	S	S	111	S	S	S	S							
32	R/H	S	S	S	72	S	S	S	S	112	S	S	S	S							
33	R/H	S	S	S	73	S	S	S	S	113	S	S	S	S							
34	R/H	S	S	S	74	S	S	S	S	114	S	S	S	S							
35	R/H	S	S	S	75	S	S	S	S	115	S	S	S	S							
36	R/H	S	S	S	76	S	S	S	S	116	S	S	S	S							
37	R/H	S	S	S	77	N/A	N/A	N/A	N/A	117	S	S	S	S							
38	R/H	S	S	S	78	S	S	S	S	118	S	S	S	S							
39	R/H	S	S	S	79	S	S	S	S	119	S	S	S	S							
40	R/H	S	S	S	80	S	S	S	S	120	S	S	S	S							
No.	Ty1	Ty2	I2	Cf9	Ve2	Tm2a	Mi-rex	Sw5	Ph3	J3	No.	Ty1	Ty2	I2	Cf9	Ve2	Tm2a	Mi-rex	Sw5	Ph3	J3
1	R	S	S	S	S	R	R	S	R	R	243	R	S	R/H	S	R	R	S	S	S	R
2	R	S	S	S	S	R	R	S	R	R	244	R	S	R/H	S	R	R	S	S	S	R

3	R	S	S	S	S	R	R	S	R	R
4	R	S	S	S	S	R	R	S	R	R
5	R	S	S	S	S	R	R	S	R	R
6	R	S	S	S	S	R	R	S	R	R
7	R	S	S	S	S	R	R	S	R	R
8	R	S	S	S	S	R	R	S	R	R
9	R	S	S	S	S	R	R	S	R	R
10	R	S	S	S	S	R	R	S	R	R
11	R	S	S	S	S	R	R	S	R	R
12	R	S	S	S	S	R	R	S	R	R
13	R	S	S	S	S	R	R	S	R	R
14	R	S	S	S	S	R	R	S	R	R
15	R	S	S	S	S	R	R	S	R	R
16	R	S	S	S	S	R	R	S	R	R
17	R	S	S	S	S	R	R	S	R	R
18	R	S	S	S	S	R	R	S	R	R
19	R	S	S	S	S	R	R	S	R	R
20	R	S	S	S	S	R	R	S	R	R
21	R	S	S	S	S	R	R	S	R	R
22	R	S	S	S	S	R	R	S	R	R
23	R	S	S	S	S	R	R	S	R	R
24	R	S	S	S	S	R	R	S	R	R
25	R	S	S	S	S	R	R	S	R	R
26	R	S	S	S	S	R	R	S	R	R
27	R	S	S	S	S	R	R	S	R	R
28	R	S	S	S	S	R	R	S	R	R
29	R	S	S	S	S	R	R	S	R	R
30	R	S	S	S	S	R	R	S	R	R
31	R	S	S	S	S	R	S	S	R	S
32	R	S	S	S	S	R	S	S	R	S
33	R	S	S	S	S	R	S	S	R	S
34	R	S	S	S	S	R	S	S	R	S
35	R	S	S	S	S	R	S	S	R	S
36	R	S	S	S	S	R	S	S	R	S
37	R	S	S	S	S	R	S	S	R	S
38	R	S	S	S	S	R	S	S	R	S
39	R	S	S	S	S	R	S	S	R	S
40	R	S	S	S	S	R	S	S	R	S
41	R	S	S	S	S	R	S	S	R	S
42	R	S	S	S	S	R	S	S	R	S
43	R	S	S	S	S	R	S	S	R	S
44	R	S	S	S	S	R	S	S	R	S
45	R	S	S	S	S	R	S	S	R	S
46	R	S	S	S	S	R	H	S	R	H
47	R	S	S	S	S	R	H	S	R	H
48	R	S	S	S	S	R	H	S	R	H
49	R	S	S	S	S	R	H	S	R	H
50	R	S	S	S	S	R	H	S	R	H
51	R	S	S	S	S	R	H	S	R	H
52	R	S	S	S	S	R	H	S	R	H
53	R	S	S	S	S	R	H	S	R	H
54	R	S	S	S	S	R	H	S	R	H
55	R	S	S	S	S	R	H	S	R	H
56	H	S	S	S	R	S	H	R	R	R
57	S	S	S	S	R	S	R	R	R	R
58	S	S	S	S	R	S	R	R	R	R
59	H	S	S	S	R	S	H	R	R	R
60	S	S	S	S	R	S	R	R	R	R
61	H	S	S	S	R	S	H	R	R	R
62	H	S	S	S	R	S	H	R	R	R
63	S	S	S	S	R	S	R	R	R	R
64	R	S	S	S	R	S	S	R	R	R
65	R	S	S	S	R	S	S	R	R	R
66	S	S	S	S	R	S	R	R	R	R

245	R	S	R/H	S	R	R	S	S	S	R
246	R	S	R/H	S	R	R	S	S	S	R
247	H	S	R/H	S	R	H	S	S	S	H
248	H	S	R/H	S	R	H	S	S	S	H
249	H	S	R/H	S	R	H	S	S	S	H
250	H	S	R/H	S	R	H	S	S	S	H
251	H	S	R/H	S	R	H	S	S	S	H
252	H	S	R/H	S	R	H	S	S	S	H
253	H	S	R/H	S	R	H	S	S	S	H
254	H	S	R/H	S	R	H	S	S	S	H
255	H	S	R/H	S	R	H	S	S	S	H
256	H	S	R/H	S	R	H	S	S	S	H
257	S	S	S	S	R	S	S	S	S	S
258	S	S	S	S	R	S	S	S	S	S
259	S	S	S	S	R	S	S	S	S	S
260	S	S	S	S	R	S	S	S	S	S
261	S	S	S	S	R	S	S	S	S	S
262	S	S	S	S	R	S	S	S	S	S
263	S	S	S	S	R	S	S	S	S	S
264	S	S	S	S	R	S	S	S	S	S
265	S	S	S	S	R	S	S	S	S	S
266	S	S	S	S	R	S	S	S	S	S
267	S	S	S	S	R	S	S	S	S	S
268	S	S	S	S	R	S	S	S	S	S
269	S	S	S	S	R	S	S	S	S	S
270	S	S	S	S	R	S	S	S	S	S
271	S	S	S	S	R	S	S	S	S	S
272	S	S	S	S	R	S	S	S	S	S
273	S	S	S	S	R	S	R	S	S	S
274	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
275	S	S	S	S	R	S	R	S	S	S
276	S	S	S	S	R	S	R	S	S	S
277	S	S	S	S	R	S	R	S	S	S
278	S	S	S	S	R	S	R	S	S	S
279	S	S	S	S	R	S	R	S	S	S
280	S	S	S	S	R	S	R	S	S	S
281	S	S	S	S	R	S	R	S	S	S
282	S	S	S	S	R	S	R	S	S	S
283	S	S	S	S	R	S	H	S	S	S
284	S	S	S	S	R	S	H	S	S	S
285	S	S	S	S	R	S	H	S	S	S
286	S	S	S	S	R	S	H	S	S	S
287	S	S	S	S	R	S	H	S	S	S
288	S	S	S	S	R	S	H	S	S	S
289	S	S	S	S	R	S	H	S	S	S
290	S	S	S	S	R	S	H	S	S	S
291	S	S	S	S	R	S	H	S	S	S
292	S	S	S	S	R	S	H	S	S	S
293	S	R	S	S	S	S	S	S	S	S
294	S	R	S	S	S	S	S	S	S	S
295	S	R	S	S	S	S	S	S	S	S
296	S	R	S	S	S	S	S	S	S	S
297	S	R	S	S	S	S	S	S	S	S
298	S	R	S	S	S	S	S	S	S	S
299	S	R	S	S	S	S	S	S	S	S
300	S	R	S	S	S	S	S	S	S	S
301	S	R	S	S	S	S	S	S	S	S
302	S	R	S	S	S	S	S	S	S	S
303	S	S	R/H	S	H	S	S	S	S	S
304	S	H	R/H	S	S	H	S	S	S	S
305	S	S	R/H	S	S	H	S	S	S	S
306	S	R	S	S	S	H	S	S	S	S
307	S	S	R/H	S	S	S	S	S	S	S
308	S	S	S	S	H	H	S	S	S	S

67	H	S	S	S	R	S	H	R	R	R
68	H	S	S	S	R	S	H	R	R	R
69	R	S	S	S	R	S	S	R	R	R
70	R	S	S	S	R	S	S	R	R	R
71	S	S	S	S	R	S	R	R	R	R
72	H	S	S	S	R	S	H	R	R	R
73	R	S	S	S	R	S	S	R	R	R
74	H	S	S	S	R	S	H	R	R	R
75	H	S	S	S	R	S	H	R	R	R
76	H	S	S	S	R	S	H	R	R	R
77	S	S	S	S	R	S	R	R	R	R
78	H	S	S	S	R	S	H	R	R	R
79	S	S	S	S	R	S	R	R	R	R
80	H	S	S	S	R	S	H	R	R	R
81	H	S	S	S	R	S	H	R	R	R
82	H	S	S	S	R	S	H	R	R	R
83	H	S	S	S	R	S	H	R	R	R
84	H	S	S	S	R	S	H	R	R	R
85	H	S	S	S	R	S	H	R	R	R
86	S	S	S	S	S	R	S	S	S	S
87	S	S	S	S	S	R	S	S	S	S
88	S	S	S	S	S	R	S	S	S	S
89	S	S	S	S	S	R	S	S	S	S
90	S	S	S	S	S	R	S	S	S	S
91	S	S	S	S	S	R	S	S	S	S
92	S	S	S	S	S	R	S	S	S	S
93	S	S	S	S	S	R	S	S	S	S
94	S	S	S	S	S	R	S	S	S	S
95	S	S	S	S	S	R	S	S	S	S
96	S	S	S	S	H	H	H	H	H	H
97	S	S	S	S	H	H	H	H	H	H
98	S	S	S	S	H	H	H	H	H	H
99	S	S	S	S	H	H	H	H	H	H
100	H	S	S	S	H	H	S	H	H	H
101	H	S	S	S	H	H	S	H	H	H
102	S	S	S	S	H	H	H	H	H	H
103	S	S	S	S	H	H	H	H	H	H
104	S	S	S	S	H	H	H	H	H	H
105	H	S	S	S	H	H	S	H	H	H
106	S	R	S	S	S	R	R	S	S	R
107	S	R	S	S	S	R	R	S	S	R
108	S	R	S	S	S	R	R	S	S	R
109	S	R	S	S	S	R	R	S	S	R
110	S	R	S	S	S	R	R	S	S	R
111	S	R	S	S	S	R	R	S	S	R
112	S	R	S	S	S	R	R	S	S	R
113	S	R	S	S	S	R	R	S	S	R
114	S	R	S	S	S	R	R	S	S	R
115	S	R	S	S	S	R	R	S	S	R
116	S	R	S	S	S	R	R	S	S	R
117	S	R	S	S	S	R	R	S	S	R
118	S	R	S	S	S	R	R	S	S	R
119	S	R	S	S	S	R	R	S	S	R
120	S	R	S	S	S	R	R	S	S	R
121	S	R	S	S	S	R	R	S	S	R
122	S	R	S	S	S	R	R	S	S	R
123	S	R	S	S	S	R	R	S	S	R
124	S	R	S	S	S	R	R	S	S	R
125	S	R	S	S	S	R	R	S	S	R
126	S	R	S	S	S	R	R	S	S	R
127	S	R	S	S	S	R	R	S	S	R
128	S	R	S	S	S	R	R	S	S	R
129	S	R	S	S	S	R	R	S	S	R
130	S	R	S	S	S	R	R	S	S	R

309	S	R	S	S	H	R	S	S	S	S
310	S	R	S	S	R	H	S	S	S	S
311	S	R	S	S	R	H	S	S	S	S
312	S	R	S	S	S	S	S	S	S	S
313	S	H	R/H	S	H	H	S	S	S	S
314	S	H	R/H	S	H	H	S	S	S	S
315	S	H	R/H	S	H	H	S	S	S	S
316	S	H	R/H	S	H	H	S	S	S	S
317	S	H	R/H	S	H	H	S	S	S	S
318	S	H	R/H	S	H	H	S	S	S	S
319	S	H	R/H	S	H	H	S	S	S	S
320	S	H	R/H	S	H	H	S	S	S	S
321	S	H	R/H	S	H	H	S	S	S	S
322	S	H	R/H	S	H	H	S	S	S	S
323	S	S	S	S	R	S	S	S	S	S
324	S	S	S	S	R	S	S	S	S	S
325	S	S	S	S	R	S	S	S	S	S
326	S	S	S	S	R	S	S	S	S	S
327	S	S	S	S	R	S	S	S	S	S
328	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
329	S	S	S	S	R	S	S	S	S	S
330	S	S	S	S	R	S	S	S	S	S
331	S	S	S	S	R	S	S	S	S	S
332	S	S	S	S	R	S	S	S	S	S
333	S	S	S	S	R	R	S	S	S	S
334	S	S	S	S	R	R	S	S	S	S
335	S	S	S	S	R	R	S	S	S	S
336	S	S	S	S	R	R	S	S	S	S
337	S	S	S	S	R	R	S	S	S	S
338	S	S	S	S	R	R	S	S	S	S
339	S	S	S	S	R	R	S	S	S	S
340	S	S	S	S	R	R	S	S	S	S
341	S	S	S	S	R	R	S	S	S	S
342	S	S	S	S	R	R	S	S	S	S
343	S	S	S	S	R	H	S	S	S	S
344	S	S	S	S	R	H	S	S	S	S
345	H	S	R/H	R/H	R	R	H	R	R	S
346	S	S	S	S	R	H	S	S	S	S
347	S	S	S	S	R	H	S	S	S	S
348	S	S	S	S	R	H	S	S	S	S
349	S	S	S	S	R	H	S	S	S	S
350	R	S	R/H	S	R	R	S	S	S	S
351	S	S	S	S	R	H	S	S	S	S
352	S	S	S	S	R	H	S	S	S	S
353	S	S	R/H	S	S	S	S	S	S	S
354	S	S	R/H	S	S	S	S	S	S	S
355	S	S	R/H	S	S	S	S	S	S	S
356	S	S	R/H	S	S	S	S	S	S	S
357	S	S	R/H	S	S	S	S	S	S	S
358	S	S	R/H	S	S	S	S	S	S	S
359	S	S	R/H	S	S	S	S	S	S	S
360	S	S	R/H	S	S	S	S	S	S	S
361	S	S	R/H	S	S	S	S	S	S	S
362	S	S	R/H	S	R	S	S	S	R	S
363	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
364	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
365	S	S	R/H	S	R	H	S	S	S	H
366	R	S	R/H	S	H	R	S	S	S	R
367	R	S	R/H	S	H	S	S	S	S	S
368	R	S	R/H	S	H	S	S	S	S	S
369	S	S	R/H	S	R	H	S	S	S	H
370	R	S	R/H	S	H	R	S	S	S	R
371	H	S	R/H	S	H	H	S	S	S	H
372	S	S	R/H	S	S	H	S	S	S	H

131	S	R	S	S	S	R	R	S	S	R
132	S	R	S	S	S	R	R	S	S	R
133	S	R	S	S	S	R	R	S	S	R
134	S	R	S	S	S	R	R	S	S	R
135	S	R	S	S	S	R	R	S	S	R
136	S	S	S	S	S	R	S	S	R	S
137	S	S	S	S	S	R	S	S	R	S
138	S	S	S	S	S	R	S	S	R	S
139	S	S	S	S	S	R	S	S	R	S
140	S	S	S	S	S	R	S	S	R	S
141	S	S	S	S	S	R	S	S	R	S
142	S	S	S	S	S	R	S	S	R	S
143	S	S	S	S	S	R	S	S	R	S
144	S	S	S	S	S	R	S	S	R	S
145	S	S	S	S	S	R	S	S	R	S
146	S	S	S	S	S	R	S	S	R	S
147	S	S	S	S	S	R	S	S	R	S
148	S	S	S	S	S	R	S	S	R	S
149	S	S	S	S	S	R	S	S	R	S
150	S	S	S	S	S	R	S	S	R	S
151	S	H	S	S	S	R	H	S	H	H
152	S	H	S	S	S	R	H	S	H	H
153	S	H	S	S	S	R	H	S	H	H
154	S	H	S	S	S	R	H	S	H	H
155	S	H	S	S	S	R	H	S	H	H
156	S	H	S	S	S	R	H	S	H	H
157	S	H	S	S	S	R	H	S	H	H
158	S	H	S	S	S	R	H	S	H	H
159	S	H	S	S	S	R	H	S	H	H
160	S	H	S	S	S	R	H	S	H	H
161	S	H	S	S	S	R	H	S	H	H
162	S	H	S	S	S	R	H	S	H	H
163	S	H	S	S	S	R	H	S	H	H
164	S	H	S	S	S	R	H	S	H	H
165	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
166	S	S	S	S	S	R	S	S	S	R
167	S	S	S	S	S	R	S	S	S	R
168	S	S	S	S	S	R	S	S	S	R
169	S	S	S	S	S	R	S	S	S	R
170	S	S	S	S	S	R	S	S	S	R
171	S	S	S	S	S	R	S	S	S	R
172	S	S	S	S	S	R	S	S	S	R
173	S	S	S	S	S	R	S	S	S	R
174	S	S	S	S	S	R	S	S	S	R
175	S	S	S	S	S	R	S	S	S	R
176	S	S	S	S	S	R	S	S	S	R
177	S	S	S	S	S	R	S	S	S	R
178	S	S	S	S	S	R	S	S	S	R
179	S	S	S	S	S	R	S	S	S	R
180	S	S	S	S	S	R	S	S	S	R
181	S	S	S	S	S	R	S	S	S	R
182	S	S	S	S	S	R	S	S	S	R
183	S	S	S	S	S	R	S	S	S	R
184	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
185	S	S	S	S	S	R	S	S	S	R
186	S	S	S	S	S	R	S	S	S	R
187	S	S	S	S	S	R	S	S	S	R
188	S	S	S	S	S	R	S	S	S	R
189	S	S	S	S	S	R	S	S	S	R
190	S	S	S	S	S	R	S	S	S	R
191	S	S	S	S	S	R	S	S	S	R
192	S	S	S	S	S	R	S	S	S	R
193	S	S	S	S	S	R	S	S	S	R
194	S	S	S	S	S	R	S	S	S	R

373	H	S	R/H	S	H	H	S	S	S	H
374	H	S	R/H	S	H	H	S	S	S	H
375	H	S	R/H	S	H	H	S	S	S	H
376	H	S	R/H	S	H	H	S	S	S	H
377	H	S	R/H	S	H	H	S	S	S	H
378	H	S	R/H	S	H	H	S	S	S	H
379	H	S	R/H	S	H	H	S	S	S	H
380	H	S	R/H	S	H	H	S	S	S	H
381	H	S	R/H	S	H	H	S	S	S	H
382	H	S	R/H	S	H	H	S	S	S	H
383	S	S	S	S	S	S	S	S	S	S
384	S	S	S	S	S	S	S	S	S	S
385	S	S	S	S	S	S	S	S	S	S
386	S	S	S	S	S	S	S	S	S	S
387	S	S	S	S	S	S	S	S	S	S
388	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
389	S	S	S	S	S	S	S	S	S	S
390	S	S	S	S	S	S	S	S	S	S
391	S	S	S	S	S	S	S	S	S	S
392	S	S	S	S	S	S	S	S	S	S
393	S	S	R/H	S	R	S	S	S	S	S
394	S	S	R/H	S	R	S	S	S	S	S
395	S	S	R/H	S	R	S	S	S	S	S
396	S	S	R/H	S	R	S	S	S	S	S
397	S	S	R/H	S	R	S	S	S	S	S
398	S	S	R/H	S	R	S	S	S	S	S
399	S	S	R/H	S	R	S	S	S	S	S
400	S	S	R/H	S	R	S	S	S	S	S
401	S	S	R/H	S	R	S	S	S	S	S
402	S	S	R/H	S	R	S	S	S	S	S
403	S	S	S	S	H	H	S	S	S	S
404	S	S	S	S	H	H	S	S	S	S
405	S	S	S	S	H	H	S	S	S	S
406	S	S	S	S	H	H	S	S	S	S
407	S	S	S	S	H	H	S	S	S	S
408	S	S	S	S	H	H	S	S	S	S
409	S	S	S	S	H	H	S	S	S	S
410	S	S	S	S	H	H	S	S	S	S
411	S	S	S	S	H	H	S	S	S	S
412	S	S	S	S	H	H	S	S	S	S
413	S	S	S	S	R	S	S	S	S	S
414	S	S	S	S	R	S	S	S	S	S
415	S	S	S	S	R	S	S	S	S	S
416	S	S	S	S	R	S	S	S	S	S
417	S	S	S	S	R	S	S	S	S	S
418	S	S	S	S	R	S	S	S	S	S
419	S	S	S	S	R	S	S	S	S	S
420	S	S	S	S	R	S	S	S	S	S
421	S	S	S	S	R	S	S	S	S	S
422	S	S	S	S	R	S	S	S	S	S
423	S	S	S	S	R	S	S	S	S	S
424	S	S	S	S	R	S	S	S	S	S
425	S	S	S	S	R	S	S	S	S	S
426	S	S	S	S	R	S	S	S	S	S
427	S	S	S	S	R	S	S	S	S	S
428	S	S	S	S	R	S	S	S	S	S
429	S	S	S	S	R	S	S	S	S	S
430	S	R	S	S	S	S	S	S	R	S
431	S	R	S	S	S	S	S	S	R	S
432	S	R	S	S	S	S	S	S	R	S
433	S	R	S	S	S	S	S	S	R	S
434	S	R	S	S	S	S	S	S	R	S
435	S	R	S	S	S	S	S	S	R	S
436	S	R	S	S	S	S	S	S	R	S

195	S	S	S	S	S	R	S	S	S	R
196	S	S	S	S	S	S	S	S	R	S
197	S	S	S	S	S	S	S	S	R	S
198	S	S	S	S	S	S	S	S	R	S
199	S	S	S	S	S	S	S	S	R	S
200	S	S	S	S	S	S	S	S	R	S
201	S	S	S	S	S	S	S	S	R	S
202	S	S	S	S	S	S	S	S	R	S
203	S	S	S	S	S	S	S	S	R	S
204	S	S	S	S	S	S	S	S	R	S
205	S	S	S	S	S	S	S	S	R	S
206	S	S	S	S	S	H	S	S	H	H
207	S	S	S	S	S	H	S	S	H	H
208	S	S	S	S	S	H	S	S	H	H
209	S	S	S	S	S	H	S	S	H	H
210	S	S	S	S	S	H	S	S	H	H
211	S	S	S	S	S	H	S	S	H	H
212	S	S	S	S	S	H	S	S	H	H
213	S	S	S	S	S	H	S	S	H	H
214	S	S	S	S	S	H	S	S	H	H
215	S	S	S	S	S	H	S	S	H	H
216	S	S	S	S	S	H	S	S	H	H
217	S	S	S	S	S	H	S	S	H	H
218	S	S	S	S	S	H	S	S	H	H
219	S	S	S	S	S	H	S	S	H	H
220	S	S	S	S	S	H	S	S	H	H
221	S	S	R/H	S	R	S	S	S	S	S
222	S	S	R/H	S	R	S	S	S	S	S
223	S	S	R/H	S	R	S	S	S	S	S
224	S	S	R/H	S	R	S	S	S	S	S
225	S	S	R/H	S	R	S	S	S	S	S
226	S	S	R/H	S	R	S	S	S	S	S
227	S	S	R/H	S	R	S	S	S	S	S
228	S	S	R/H	S	R	S	S	S	S	S
229	S	S	R/H	S	R	S	S	S	S	S
230	S	S	R/H	S	R	S	S	S	S	S
231	S	S	R/H	S	R	S	S	S	S	S
232	S	S	R/H	S	R	S	S	S	S	S
233	S	S	R/H	S	R	S	S	S	S	S
234	S	S	R/H	S	R	S	S	S	S	S
235	S	S	R/H	S	R	S	S	S	S	S
236	S	S	R/H	S	R	S	S	S	S	S
237	R	S	R/H	S	R	R	S	S	S	R
238	R	S	R/H	S	R	R	S	S	S	R
239	R	S	R/H	S	R	R	S	S	S	R
240	R	S	R/H	S	R	R	S	S	S	R
241	R	S	R/H	S	R	R	S	S	S	R
242	R	S	R/H	S	R	R	S	S	S	R

437	S	R	S	S	S	S	S	S	R	S
438	S	R	S	S	S	S	S	S	R	S
439	S	H	S	S	H	S	S	S	H	S
440	S	H	S	S	H	S	S	S	H	S
441	S	H	S	S	H	S	S	S	H	S
442	S	H	S	S	H	S	S	S	H	S
443	S	H	S	S	H	S	S	S	H	S
444	S	H	S	S	H	S	S	S	H	S
445	S	H	S	S	H	S	S	S	H	S
446	S	H	S	S	H	S	S	S	H	S
447	S	H	S	S	H	S	S	S	H	S
448	S	H	S	S	H	S	S	S	H	S
449	S	S	S	S	S	S	S	S	R	S
450	S	S	S	S	S	S	S	S	R	S
451	S	S	S	S	S	S	S	S	R	S
452	S	S	S	S	S	S	S	S	R	S
453	S	S	S	S	S	S	S	S	R	S
454	S	S	S	S	S	S	S	S	R	S
455	R	S	S	S	S	R	S	S	R	H
456	S	S	S	S	S	S	S	S	R	S
457	S	S	S	S	S	S	S	S	R	S
458	S	S	S	S	S	S	S	S	R	S
459	S	S	S	S	S	S	S	S	R	S
460	S	S	S	S	S	S	S	S	R	S
461	S	S	S	S	S	S	S	S	R	S
462	S	S	S	S	S	S	S	S	R	S
463	S	S	S	S	S	S	S	S	R	S
464	S	S	S	S	S	R	S	S	S	R
465	S	S	S	S	S	R	S	S	S	R
466	S	S	S	S	S	R	S	S	S	R
467	S	S	S	S	S	R	S	S	S	R
468	S	S	S	S	S	R	S	S	S	R
469	S	S	S	S	S	R	S	S	S	R
470	S	S	S	S	S	R	S	S	S	R
471	S	S	S	S	S	R	S	S	S	R
472	S	S	S	S	S	R	S	S	S	R
473	S	S	S	S	S	R	S	S	S	R
474	S	S	S	S	S	H	S	S	H	H
475	S	S	S	S	S	H	S	S	H	H
476	S	S	S	S	S	H	S	S	H	H
477	S	S	S	S	S	H	S	S	H	H
478	S	S	S	S	S	H	S	S	H	H
479	S	S	S	S	S	H	S	S	H	H
480	S	S	S	S	S	H	S	S	H	H
481	S	S	S	S	S	H	S	S	H	H
482	S	S	S	S	S	H	S	S	H	H
483	S	S	S	S	S	H	S	S	H	H

표 10. 아시아종묘 1,134점의 시료에 대하여, 병 관련 11종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	Sw5	Mi-R _{ex}	Rx3	Rx4	PH3	Cf9	J3	Bw1 ₂	Ve2
1	H	S	S	S	S	S	S	R/H	H	H	R
2	S	S	S	S	S	S	S	R/H	S	S	R
3	S	S	S	S	S	S	S	R/H	S	S	R
4	S	S	S	S	S	S	S	R/H	S	S	R
5	S	S	S	S	S	S	S	R/H	S	S	R
6	S	S	S	S	S	S	S	R/H	S	S	R
7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
11	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
12	H	S	S	H	S	S	S	S	S	S	R

No.	Ty1	Ty2	Sw5	Mi-R _{ex}	Rx3	Rx4	PH3	Cf9	J3	Bw12	Ve2
568	S	S	S	S	S	S	S	R/H	S	S	H
569	S	S	S	S	S	S	S	R/H	S	S	H
570	S	S	S	S	S	S	S	H	S	S	S
571	S	S	S	S	S	S	H	S	S	S	S
572	S	S	S	S	S	S	H	S	S	n/a	S
573	S	S	S	n/a	n/a	S	H	S	S	S	S
574	S	S	S	S	S	S	H	S	S	S	S
575	S	S	S	S	S	S	R	S	S	S	S
576	S	S	S	S	S	S	R	S	S	S	S
577	S	S	S	S	S	S	R	S	S	S	S
578	S	S	S	S	S	S	R	S	S	S	S
579	S	S	S	S	S	S	R	S	S	S	S

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw1 2	Ve2
13	H	S	S	H	S	S	S	S	S	S	R
14	H	S	S	n/a	S	n/a	S	S	n/a	S	R
15	H	S	S	H	S	S	S	S	S	S	R
16	H	S	S	H	S	S	S	S	S	S	R
17	H	S	S	H	S	S	H	S	H	S	H
18	H	S	S	H	S	S	H	S	H	S	H
19	H	S	S	H	S	S	H	S	H	S	H
20	H	S	S	n/a	S	n/a	H	S	n/a	S	H
21	H	S	S	H	S	S	H	S	H	S	H
22	H	S	S	S	S	S	S	S	S	S	R
23	H	S	S	S	S	S	S	S	S	S	R
24	H	S	S	S	S	S	S	S	S	S	R
25	H	S	S	S	S	S	S	S	S	S	R
26	H	S	S	S	S	S	S	S	S	S	R
27	H	S	H	S	S	S	S	S	S	S	H
28	H	S	H	S	S	S	S	S	S	S	H
29	H	S	H	S	S	S	S	S	S	S	H
30	H	S	H	S	S	S	S	S	S	S	H
31	n/a	S	n/a	n/a	S	n/a	S	n/a	n/a	S	n/a
32	n/a	S	n/a	n/a	S	n/a	S	n/a	n/a	S	n/a
33	n/a	n/a	n/a	n/a	S	n/a	n/a	n/a	n/a	n/a	n/a
34	S	S	S	S	S	S	S	S	S	S	R
35	S	S	S	S	S	S	S	S	S	S	R
36	S	S	S	S	S	S	S	S	S	S	R
37	S	S	S	H	S	S	S	S	S	S	R
38	S	S	S	H	S	S	S	S	S	S	R
39	S	S	S	H	S	S	S	S	S	S	R
40	S	S	S	H	S	S	S	S	S	S	R
41	S	S	S	H	S	S	S	S	S	S	R
42	S	S	S	H	S	S	S	S	H	S	H
43	S	S	S	S	S	S	S	S	H	S	H
44	S	S	S	S	S	S	S	S	H	S	H
45	S	S	S	S	S	S	S	S	H	S	H
46	S	S	S	H	S	S	S	S	H	S	H
47	n/a	H	n/a	n/a	S	n/a	H	n/a	n/a	S	n/a
48	S	H	S	H	S	S	H	S	H	S	S
49	S	H	S	H	S	S	H	S	H	S	S
50	S	H	S	H	S	S	H	S	H	S	S
51	S	H	S	H	S	S	H	S	H	S	S
52	S	S	S	H	S	S	R	S	H	S	S
53	S	S	S	H	S	S	R	S	H	S	S
54	S	S	S	H	S	S	R	S	H	S	S
55	S	S	n/a	H	S	n/a	R	n/a	n/a	S	S
56	S	S	S	H	S	S	R	S	H	S	S
57	H	S	S	H	S	S	R	S	S	S	H
58	H	S	H	H	S	S	R	S	S	S	H
59	H	S	H	H	S	S	R	S	S	S	H
60	H	S	H	H	S	S	R	S	S	S	H
61	H	S	H	H	S	S	R	S	S	S	H
62	S	S	S	R	S	S	R	S	S	S	S
63	S	S	S	H	S	S	R	S	S	S	S
64	S	S	S	R	S	S	R	S	S	S	S
65	S	S	S	H	S	S	R	S	S	S	S
66	S	S	S	R	S	S	R	S	S	S	S
67	S	S	S	H	S	S	R	S	S	S	S
68	S	S	S	H	S	S	H	S	S	S	S
69	S	S	S	H	S	S	H	S	S	S	S
70	S	S	n/a	n/a	S	n/a	H	n/a	n/a	S	S
71	S	S	S	H	S	S	H	S	S	S	S
72	S	S	S	R	S	S	R	R/H	S	S	S
73	S	S	S	R	S	S	R	R/H	S	S	S
74	S	S	S	R	S	S	R	R/H	S	S	S
75	S	S	S	R	S	S	R	R/H	S	S	S
76	S	S	S	R	S	S	R	R/H	S	S	S
77	H	S	S	S	S	S	H	S	S	S	S
78	H	S	S	S	S	S	H	S	S	S	S
79	n/a	S	n/a	n/a	S	n/a	H	n/a	n/a	S	n/a
80	H	S	S	S	S	S	H	S	S	S	S

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw12	Ve2
580	S	S	S	H	S	n/a	H	S	H	S	S
581	S	S	S	H	S	S	H	R/H	H	S	S
582	S	S	S	H	S	S	H	R/H	H	S	S
583	S	n/a	S	H	S	n/a	H	S	H	S	S
584	S	S	S	H	S	S	H	R/H	H	S	S
585	S	S	S	S	S	S	R	S	H	S	S
586	S	S	S	S	S	S	R	S	H	S	S
587	S	S	S	S	S	S	R	S	H	S	S
588	S	S	S	S	S	S	R	S	H	S	S
589	S	S	S	S	S	S	R	S	H	S	S
590	S	S	S	H	S	S	H	S	H	S	S
591	S	S	S	H	S	S	H	S	H	S	S
592	S	S	S	n/a	S	S	H	n/a	H	S	S
593	S	S	S	H	S	S	H	R/H	H	S	S
594	S	S	S	H	S	S	H	R/H	H	S	S
595	H	S	S	H	S	S	H	R/H	S	H	R
596	H	S	S	H	S	S	H	R/H	S	H	R
597	H	S	S	H	S	S	H	R/H	S	H	R
598	H	S	S	H	S	S	H	R/H	S	H	R
599	H	S	S	H	S	S	H	R/H	S	H	R
600	S	S	S	S	S	S	S	S	H	H	H
601	S	S	S	S	S	S	S	S	H	H	H
602	S	S	S	S	S	S	S	S	H	H	H
603	S	S	S	S	S	S	S	S	H	H	H
604	S	S	S	S	S	S	S	S	H	H	H
605	S	S	S	S	S	S	H	S	H	H	S
606	S	S	S	S	S	S	H	S	H	H	S
607	S	S	S	S	S	S	H	S	H	H	S
608	S	S	S	S	S	S	H	S	H	H	S
609	S	S	S	S	S	S	H	S	H	H	S
610	S	S	S	S	S	S	R	S	H	H	S
611	S	S	S	S	S	S	R	S	H	H	S
612	S	S	S	S	S	S	R	S	H	H	S
613	S	S	S	S	S	S	R	S	H	H	S
614	S	S	S	S	S	S	R	S	H	H	S
615	S	S	S	S	S	S	H	S	S	H	S
616	S	S	S	S	S	S	H	S	S	H	S
617	S	S	S	S	S	S	H	S	S	H	S
618	S	S	S	S	S	S	H	S	S	H	S
619	S	S	S	S	S	S	H	S	S	H	S
620	S	S	S	S	S	S	H	S	S	S	S
621	S	S	S	S	S	S	H	S	S	S	S
622	S	S	S	S	S	S	H	S	S	S	S
623	S	S	S	S	S	S	H	S	S	S	S
624	S	S	S	S	S	S	H	S	S	S	S
625	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
626	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
627	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
628	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
629	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
630	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
631	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
632	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
633	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
634	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
635	n/a	n/a	n/a	n/a	S	n/a	n/a	n/a	n/a	n/a	n/a
636	S	S	S	S	S	S	H	n/a	S	S	R
637	S	S	S	S	S	S	H	S	S	S	R
638	S	S	S	S	S	S	H	S	H	S	R
639	S	S	S	S	S	S	H	S	H	S	R
640	S	S	S	S	S	S	R	S	H	S	R
641	S	S	S	S	S	S	R	S	S	S	R
642	S	S	S	S	S	S	R	S	H	S	R
643	S	S	S	S	S	S	R	S	H	S	R
644	S	S	S	S	S	S	R	S	H	S	R
645	H	S	S	S	S	S	H	S	S	S	R
646	H	S	S	H	S	S	H	S	S	S	R
647	R	S	S	S	S	S	H	S	S	S	R

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw1 2	Ve2
81	H	S	S	S	S	S	H	S	S	S	S
82	H	S	S	S	S	S	R	S	S	S	H
83	H	S	S	S	S	S	R	S	S	S	H
84	n/a	S	n/a	n/a	S	n/a	R	n/a	n/a	S	n/a
85	H	S	S	S	S	S	R	S	S	S	S
86	H	S	S	S	S	S	R	R/H	S	S	H
87	H	H	S	S	S	S	R	R/H	H	S	H
88	H	H	S	S	S	S	R	S	H	S	S
89	H	H	S	S	S	S	R	R/H	H	S	S
90	H	H	S	S	S	S	R	S	H	S	S
91	H	H	S	S	S	S	R	R/H	H	S	H
92	S	S	S	S	S	S	R	R/H	S	S	S
93	S	S	S	S	S	S	R	R/H	S	S	S
94	S	S	S	S	S	S	R	R/H	S	S	S
95	S	S	S	S	S	S	R	n/a	S	S	S
96	S	S	S	S	S	S	R	R/H	S	S	S
97	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
98	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
99	H	S	S	S	S	S	H	S	H	S	S
100	S	S	S	S	S	S	H	S	H	S	S
101	S	S	S	S	S	S	H	S	H	S	S
102	H	S	S	S	S	S	H	S	H	S	S
103	H	S	S	S	S	S	H	S	H	S	S
104	S	S	S	H	S	S	H	R/H	H	S	S
105	S	S	S	H	S	S	H	R/H	H	S	S
106	S	S	S	H	S	S	H	R/H	H	S	S
107	S	S	S	H	S	S	H	R/H	H	S	S
108	n/a	n/a	n/a	n/a	n/a	n/a	H	n/a	n/a	n/a	n/a
109	S	S	S	R	S	S	H	S	H	S	S
110	S	S	S	R	S	S	H	S	H	S	S
111	S	S	S	R	S	S	H	S	H	S	S
112	n/a	n/a	n/a	n/a	n/a	n/a	H	n/a	n/a	n/a	n/a
113	S	S	S	R	S	S	H	S	H	S	S
114	S	S	S	S	S	S	R	S	H	S	S
115	n/a	S	n/a	n/a	n/a	n/a	R	n/a	n/a	n/a	S
116	S	S	S	S	S	S	R	S	H	S	S
117	S	S	S	S	S	S	R	S	H	S	S
118	S	S	S	S	S	S	R	S	H	S	S
119	S	S	S	S	S	S	R	S	H	S	S
120	S	S	S	S	S	S	R	S	H	S	S
121	S	S	S	S	S	S	R	S	H	S	S
122	S	S	S	S	S	S	R	S	H	S	S
123	S	S	S	S	S	S	R	S	H	S	S
124	S	S	S	R	S	S	S	H	S	S	H
125	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
126	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
127	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
128	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
129	S	S	S	R	S	S	H	R/H	H	S	H
130	S	S	S	R	S	S	H	R/H	H	S	H
131	S	S	S	R	S	S	H	R/H	H	S	H
132	S	S	S	R	S	S	H	R/H	H	S	H
133	S	S	S	R	S	S	H	R/H	H	S	H
134	S	S	S	H	S	S	R	R/H	H	S	H
135	S	S	S	H	S	S	R	R/H	H	S	H
136	S	S	S	H	S	S	R	R/H	H	S	H
137	S	S	S	H	S	S	R	R/H	H	S	H
138	S	S	S	H	S	S	R	R/H	H	S	H
139	S	S	S	H	S	S	H	R/H	H	S	S
140	S	S	S	H	S	S	H	R/H	H	S	S
141	S	S	S	H	S	S	H	R/H	H	S	S
142	S	S	S	H	S	S	H	R/H	H	S	S
143	S	S	S	H	S	S	H	R/H	H	S	S
144	S	S	S	H	S	S	H	S	H	S	S
145	S	S	S	H	S	S	H	S	H	S	S
146	S	S	S	H	S	S	H	S	H	S	S
147	S	S	S	H	S	S	H	S	H	S	S
148	S	S	S	H	S	S	H	S	H	S	S

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw12	Ve2
648	R	S	S	S	S	S	H	S	S	S	R
649	H	S	S	H	S	S	H	S	S	S	R
650	n/a	n/a	n/a	S	S	n/a	R	n/a	H	S	n/a
651	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
652	H	S	H	S	S	S	R	S	H	S	R
653	H	S	H	S	S	S	R	S	H	S	R
654	H	S	H	S	S	S	R	S	H	S	R
655	H	S	S	S	S	S	H	S	H	S	R
656	H	S	S	S	S	S	H	S	H	S	R
657	H	S	S	S	S	S	H	S	H	S	R
658	H	S	S	S	S	S	H	S	S	S	R
659	H	S	S	S	S	S	H	S	S	S	R
660	H	S	H	S	S	S	H	R/H	S	S	R
661	R	S	H	S	S	S	H	R/H	S	S	R
662	R	S	H	S	S	S	H	R/H	S	S	R
663	H	S	H	S	S	S	H	R/H	S	S	R
664	R	S	H	S	S	S	H	R/H	S	S	R
665	H	S	S	H	S	S	H	S	S	H	R
666	H	S	S	H	S	S	H	S	S	H	R
667	H	S	S	H	S	S	H	S	S	H	R
668	H	S	S	H	S	S	H	S	S	H	R
669	H	S	S	H	S	S	H	S	S	H	R
670	n/a	S	S	n/a	S	S	H	S	S	S	H
671	H	S	S	H	S	S	H	S	S	S	H
672	H	S	S	H	S	S	H	S	S	S	H
673	H	S	S	H	S	S	H	S	S	S	H
674	H	S	S	H	S	S	H	S	S	S	H
675	S	S	S	S	S	S	R/H	S	S	S	H
676	S	S	S	S	S	S	R/H	S	S	S	H
677	S	S	S	S	S	S	R/H	S	S	S	H
678	S	S	S	S	S	S	R/H	S	S	S	H
679	S	S	S	S	S	S	R/H	S	S	S	H
680	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
681	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
682	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
683	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
684	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
685	H	S	H	H	S	S	S	S	H	S	H
686	H	S	H	H	S	S	S	S	H	S	H
687	H	S	H	H	S	S	S	S	H	S	H
688	H	S	H	H	S	S	S	S	H	S	H
689	H	S	H	H	S	S	S	S	H	S	H
690	S	S	R	S	S	S	H	S	R	S	R
691	S	S	R	S	S	S	H	S	R	S	R
692	S	S	R	S	S	S	H	S	R	S	R
693	S	S	R	S	S	S	H	S	R	S	R
694	S	S	R	S	S	S	H	S	R	S	R
695	H	S	S	S	S	S	H	S	S	H	R
696	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
697	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
698	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
699	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
700	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
701	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
702	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
703	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
704	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
705	R	S	S	H	S	S	S	R/H	H	S	R
706	R	S	S	H	S	S	S	R/H	H	S	R
707	R	S	S	H	S	S	S	R/H	H	S	R
708	R	S	S	H	S	S	S	R/H	H	S	R
709	R	S	S	H	S	S	S	R/H	H	S	R
710	S	S	S	S	S	S	S	R/H	S	S	R
711	S	S	S	S	S	S	S	R/H	S	S	R
712	S	S	S	S	S	S	S	R/H	S	S	R
713	S	S	S	S	S	S	S	R/H	S	S	R
714	S	S	S	n/a	S	S	S	R/H	S	S	R
715	S	S	H	H	S	S	S	R/H	H	S	R

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw1 2	Ve2
149	S	S	S	S	S	S	H	S	H	S	S
150	S	S	S	S	S	S	H	S	H	S	S
151	S	S	S	S	S	S	H	S	H	S	S
152	S	S	S	S	S	S	H	S	H	S	S
153	S	S	S	S	S	S	H	S	n/a	S	S
154	S	S	S	R	S	S	H	S	n/a	S	H
155	S	S	S	R	S	S	H	S	n/a	S	H
156	S	S	S	R	S	S	H	S	n/a	S	H
157	S	S	S	R	S	S	H	S	n/a	S	H
158	n/a	n/a	n/a	n/a	n/a	n/a	H	n/a	n/a	n/a	n/a
159	S	S	S	S	S	S	H	S	n/a	S	S
160	S	S	S	S	S	S	H	S	n/a	S	S
161	S	S	S	S	S	S	H	S	H	S	S
162	S	S	S	S	S	S	H	S	H	S	S
163	S	S	S	S	S	S	H	S	H	S	S
164	S	S	S	H	S	S	H	S	H	S	S
165	S	S	S	H	S	S	H	S	H	S	S
166	S	S	S	H	S	S	H	S	H	S	S
167	S	S	S	H	S	S	H	S	H	S	S
168	S	S	S	H	S	S	H	S	H	S	S
169	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
170	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
171	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
172	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
173	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
174	H	S	S	H	S	S	S	S	H	S	R
175	H	S	S	H	S	S	S	S	H	S	R
176	H	S	S	H	S	S	S	S	H	S	R
177	H	S	S	H	S	S	S	S	H	S	R
178	n/a	n/a	n/a	n/a	n/a	n/a	S	n/a	n/a	n/a	n/a
179	H	S	S	H	S	S	H	S	H	S	R
180	H	S	S	H	S	S	H	S	H	S	R
181	H	S	S	H	S	S	H	S	H	S	R
182	H	S	S	H	S	S	H	S	H	S	R
183	n/a	n/a	n/a	n/a	n/a	n/a	H	n/a	n/a	n/a	n/a
184	S	S	S	S	S	S	S	R/H	H	S	H
185	S	S	S	S	S	S	S	R/H	H	S	H
186	S	S	S	S	S	S	S	R/H	H	S	H
187	S	S	S	S	S	S	S	n/a	H	S	H
188	S	S	S	S	S	S	S	R/H	H	S	H
189	H	S	S	S	S	S	S	R/H	H	H	R
190	H	S	S	S	S	S	S	R/H	H	H	R
191	H	S	S	S	S	S	S	R/H	H	H	R
192	H	S	n/a	S	S	S	S	R/H	H	H	R
193	S	S	S	S	S	S	S	S	S	S	H
194	S	S	S	S	S	S	S	S	S	S	H
195	S	S	S	S	S	S	S	S	S	S	H
196	S	S	S	S	S	S	S	S	S	S	S
197	S	S	S	S	S	S	S	S	S	S	S
198	S	S	S	S	S	S	S	S	S	S	S
199	S	S	S	S	S	S	S	S	S	S	S
200	S	S	S	S	S	S	S	S	S	S	S
201	S	S	S	S	S	S	S	S	S	S	S
202	S	S	S	S	S	S	S	S	S	S	S
203	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
204	S	S	S	S	S	S	S	S	S	S	S
205	S	S	S	S	S	S	S	S	S	S	S
206	S	S	S	S	S	S	S	R/H	S	S	S
207	S	S	S	S	S	S	S	R/H	S	S	S
208	S	S	S	S	S	S	S	R/H	S	S	S
209	S	S	S	S	S	S	S	R/H	S	S	S
210	S	S	S	S	S	S	S	R/H	S	S	S
211	S	S	S	S	S	S	S	R/H	S	S	S
212	S	S	S	S	S	S	S	R/H	S	S	S
213	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
214	S	S	S	S	S	S	S	R/H	S	S	S
215	S	n/a	S	S	S	S	S	R/H	S	S	S
216	S	S	S	H	S	S	R	S	S	S	R

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw12	Ve2
716	S	S	H	H	S	S	S	R/H	H	S	R
717	S	S	H	H	S	S	S	R/H	H	S	R
718	S	S	H	H	S	S	S	R/H	H	S	R
719	S	S	H	H	S	S	S	R/H	H	S	R
720	S	S	S	H	S	S	S	R/H	H	S	S
721	S	S	S	H	S	S	S	R/H	H	S	S
722	S	S	S	H	S	S	S	R/H	H	S	S
723	S	S	S	H	S	S	S	R/H	H	S	S
724	S	S	S	H	S	S	S	R/H	H	S	S
725	H	S	S	S	S	S	S	R/H	S	S	R
726	H	S	S	S	S	S	S	R/H	S	S	R
727	H	S	S	S	S	S	S	R/H	S	S	R
728	H	S	S	S	S	S	S	R/H	S	S	R
729	H	S	S	S	S	S	S	R/H	S	S	R
730	S	S	S	S	S	S	S	R/H	H	S	R
731	S	S	S	S	S	n/a	S	R/H	H	S	R
732	S	S	S	S	S	n/a	S	R/H	H	S	R
733	S	S	S	S	S	n/a	S	R/H	H	S	R
734	S	S	S	S	S	n/a	S	R/H	H	S	R
735	S	S	S	H	S	n/a	S	R/H	H	S	R
736	S	S	S	H	S	n/a	S	R/H	H	S	R
737	S	S	S	H	S	S	S	R/H	H	S	R
738	S	S	S	H	S	S	S	R/H	H	S	R
739	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
740	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
741	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
742	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
743	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
744	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
745	S	S	S	H	S	S	R	S	S	S	H
746	S	S	S	H	S	S	R	S	S	S	H
747	S	S	S	H	S	S	R	S	S	S	H
748	S	S	S	H	S	S	R	S	S	S	H
749	S	S	S	H	S	S	H	S	S	S	H
750	S	S	S	S	S	S	S	S	R	S	S
751	S	S	S	S	S	S	S	S	R	S	S
752	S	S	S	S	S	S	S	S	R	S	S
753	S	S	S	S	S	S	S	S	R	S	S
754	S	S	S	S	S	S	S	S	R	S	S
755	S	S	S	S	S	S	S	S	R	S	S
756	S	S	S	S	S	S	S	S	R	S	S
757	S	S	S	S	S	S	S	S	R	S	S
758	S	S	S	S	S	S	S	S	R	S	S
759	S	S	S	S	S	S	S	S	R	S	S
760	S	S	S	H	S	S	S	S	H	S	S
761	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
762	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
763	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
764	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
765	S	S	S	H	S	S	S	S	H	H	S
766	S	S	S	H	S	S	S	S	H	S	S
767	S	S	S	H	S	S	S	S	H	H	S
768	S	S	S	H	S	S	S	S	H	H	S
769	S	S	S	H	S	S	S	n/a	H	S	S
770	S	S	S	H	S	S	S	S	H	H	S
771	S	S	S	H	S	S	S	S	H	S	S
772	S	S	S	H	S	S	S	S	H	H	S
773	S	S	S	H	S	S	S	S	H	S	S
774	S	S	S	H	S	S	S	S	H	S	S
775	S	S	S	H	S	S	S	S	H	S	S
776	S	S	S	H	S	S	S	S	H	S	S
777	S	S	S	H	S	S	S	S	H	S	S
778	S	S	S	H	S	S	S	S	H	H	S
779	S	S	S	H	S	S	S	S	n/a	S	S
780	S	S	S	S	S	S	S	S	R	S	S
781	S	S	S	S	S	S	S	S	R	S	S
782	S	n/a	S	n/a	n/a	n/a	n/a	n/a	n/a	S	S
783	S	S	S	S	S	S	S	S	R	S	S

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw1 2	Ve2
217	S	S	S	H	S	S	R	S	S	S	R
218	S	S	S	H	S	S	R	S	S	S	R
219	S	S	S	H	S	S	R	S	S	S	R
220	S	S	S	H	S	S	R	S	S	S	R
221	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
222	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
223	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
224	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
225	S	S	S	S	S	S	R/H	S	S	S	H
226	S	S	S	H	S	S	R	S	H	S	R
227	S	S	n/a	H	S	S	R	S	H	S	R
228	S	S	S	H	S	S	R	S	H	S	R
229	S	S	S	H	S	S	R	S	H	S	R
230	S	S	S	H	S	S	R	S	H	S	R
231	S	S	S	H	S	S	R	S	H	S	R
232	S	S	S	H	S	S	R	S	H	S	R
233	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
234	S	S	S	H	S	S	R	S	H	S	R
235	S	S	S	H	S	S	R	S	H	S	R
236	S	S	S	S	S	S	H	S	H	S	S
237	S	S	S	S	S	S	H	S	H	S	S
238	S	S	S	S	S	S	H	S	H	S	S
239	S	S	S	S	S	S	H	S	H	S	S
240	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
241	S	S	S	S	S	S	H	S	H	S	S
242	S	S	S	S	S	S	H	S	H	S	S
243	S	S	S	S	S	S	H	S	H	S	S
244	S	S	S	S	S	S	H	S	H	S	S
245	S	S	S	S	S	S	H	S	H	S	S
246	S	S	S	S	S	S	R	S	H	S	S
247	S	S	S	S	S	S	R	S	H	S	S
248	S	S	S	S	S	S	R	S	H	S	S
249	S	S	S	S	S	S	R	S	H	S	S
250	S	S	S	S	S	S	R	S	H	S	S
251	S	S	S	S	S	S	H	S	S	S	S
252	S	S	S	S	S	S	H	S	S	S	S
253	S	S	S	S	S	S	H	S	S	S	S
254	S	S	S	S	S	S	H	S	S	S	S
255	S	S	S	S	S	S	H	S	S	S	S
256	S	H	S	H	S	S	R/H	H	S	S	S
257	S	H	S	H	S	S	R/H	H	S	S	S
258	S	H	S	H	S	S	R/H	H	S	S	S
259	S	H	S	H	S	S	R/H	H	S	S	S
260	S	H	S	H	S	S	R/H	H	S	S	S
261	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
262	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
263	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
264	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
265	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
266	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
267	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
268	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
269	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
270	S	S	S	S	S	S	R/H	S	S	S	S
271	S	S	S	S	S	S	R/H	S	S	S	S
272	S	S	S	S	S	S	R/H	S	S	S	S
273	S	S	S	S	S	S	R/H	S	S	S	S
274	S	S	S	S	S	S	R/H	S	S	S	S
275	S	S	S	S	S	S	R/H	S	S	S	S
276	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
277	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
278	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
279	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
280	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
281	S	S	S	S	S	H	R/H	S	H	H	H
282	S	S	S	S	S	H	R/H	S	H	H	H
283	S	S	S	S	S	H	R/H	S	H	H	H
284	S	S	S	S	S	H	R/H	S	H	H	H

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw12	Ve2
784	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
785	S	S	S	S	S	S	S	S	R	S	S
786	S	S	S	n/a	S	n/a	S	S	R	S	S
787	S	S	S	S	S	S	S	S	R	S	S
788	S	S	S	S	S	S	S	S	R	S	S
789	S	S	S	S	S	S	S	S	R	S	S
790	S	S	S	H	S	S	S	S	H	S	S
791	S	S	S	H	S	S	S	S	H	S	S
792	S	S	S	H	S	S	S	S	H	S	S
793	S	S	S	H	n/a	S	S	S	H	S	S
794	S	S	S	H	n/a	S	S	S	H	S	S
795	S	S	S	H	n/a	S	S	S	H	S	S
796	S	S	S	H	n/a	S	S	S	H	S	S
797	S	S	S	H	n/a	S	S	S	H	S	S
798	S	S	S	H	n/a	S	S	S	H	S	S
799	S	S	S	H	n/a	S	S	S	H	S	S
800	S	S	S	H	n/a	S	S	S	R	H	S
801	S	S	S	R	S	S	S	S	R	H	S
802	S	S	S	H	S	S	S	S	R	H	S
803	S	S	S	H	S	S	S	S	R	H	S
804	S	S	S	H	S	S	S	S	R	H	S
805	S	S	S	H	S	S	S	S	R	H	S
806	S	S	S	R	S	S	S	S	R	H	S
807	S	S	S	R	S	S	S	S	R	H	S
808	S	S	S	H	S	S	S	S	R	H	S
809	S	S	S	H	S	S	S	S	R	H	S
810	S	S	S	S	S	S	S	S	R	S	S
811	S	S	S	S	S	S	S	S	R	S	H
812	S	S	S	S	S	S	S	S	H	S	S
813	S	S	S	S	S	S	S	S	H	S	H
814	S	S	S	S	S	S	S	S	R	S	S
815	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
816	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
817	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
818	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
819	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
820	S	S	S	S	S	S	S	S	R	S	S
821	S	S	S	S	S	S	S	S	R	S	S
822	S	S	S	S	S	S	S	S	R	S	S
823	S	S	S	S	S	S	S	S	R	S	S
824	S	S	S	n/a	S	n/a	H	S	n/a	S	S
825	S	S	S	S	S	S	S	S	R	S	S
826	S	S	S	S	S	S	S	S	R	S	S
827	S	S	S	S	S	S	S	S	R	S	S
828	S	S	S	S	S	S	S	S	R	S	S
829	S	S	S	S	S	S	S	S	R	S	S
830	S	S	S	H	S	S	S	S	R	S	S
831	S	S	S	H	S	S	S	S	R	S	S
832	S	S	S	H	S	S	S	S	R	S	S
833	S	S	S	H	S	S	S	S	R	S	S
834	S	S	S	H	S	S	S	S	R	S	S
835	S	S	S	R	S	S	S	S	H	S	S
836	S	S	S	R	S	S	S	S	H	S	S
837	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
838	S	S	S	R	S	S	S	S	H	S	S
839	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
840	S	S	S	H	S	S	S	S	H	S	S
841	S	S	S	H	S	S	S	S	H	S	S
842	S	S	S	H	S	S	S	S	H	S	S
843	S	S	S	H	S	S	S	S	H	S	S
844	S	S	S	H	S	S	S	S	H	S	S
845	S	S	S	S	S	S	S	S	R	S	S
846	S	S	S	S	S	S	S	S	R	S	S
847	S	S	S	S	S	S	S	S	R	S	S
848	S	S	S	S	S	S	S	S	R	S	S
849	S	S	S	S	S	S	S	S	R	S	S
850	S	S	S	S	S	S	S	S	S	S	S
851	S	S	S	S	S	S	S	S	S	S	S

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw1 2	Ve2
285	S	S	S	S	S	H	S	R/H	S	H	H
286	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
287	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
288	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
289	S	S	S	S	S	S	S	S	S	S	H
290	S	S	S	S	S	S	S	S	S	S	H
291	S	S	S	S	S	S	S	S	S	S	H
292	S	S	S	S	S	S	S	S	S	S	H
293	S	S	S	S	S	S	S	S	S	S	H
294	S	S	S	S	S	S	S	S	S	S	H
295	S	S	S	S	S	S	S	S	S	S	H
296	S	S	S	H	S	S	S	S	S	S	H
297	S	S	S	H	S	S	S	S	S	S	H
298	S	S	S	H	S	S	S	S	S	S	H
299	S	S	S	H	S	S	S	S	S	S	H
300	S	S	S	H	S	S	S	S	S	S	H
301	S	S	S	H	S	S	S	S	S	S	H
302	S	S	S	H	S	S	S	S	S	S	H
303	S	S	S	H	S	S	S	S	S	S	H
304	S	S	S	H	S	S	S	S	S	S	H
305	S	S	S	H	S	S	S	S	S	S	H
306	S	S	S	S	S	S	S	S	S	S	S
307	S	S	S	S	S	S	S	S	S	S	S
308	S	S	S	S	S	S	S	S	S	S	S
309	S	S	S	S	S	S	S	S	S	S	S
310	S	S	S	S	S	S	S	S	S	S	S
311	S	S	S	S	S	S	S	R/H	S	S	S
312	S	S	S	S	S	S	S	R/H	S	S	S
313	S	S	S	S	S	S	S	R/H	S	S	S
314	S	S	S	S	S	S	S	R/H	S	S	S
315	S	S	S	S	S	S	S	R/H	S	S	S
316	S	S	S	H	S	S	S	S	S	S	H
317	S	S	S	H	S	S	S	S	S	S	H
318	S	S	S	H	S	S	S	S	S	S	H
319	S	S	S	H	S	S	S	S	S	S	H
320	S	S	S	H	S	S	S	S	S	S	H
321	S	S	S	S	S	S	H	S	S	S	S
322	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
323	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
324	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
325	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
326	S	S	S	S	S	S	H	S	S	S	H
327	S	S	S	S	S	S	H	S	S	S	H
328	S	S	S	S	S	S	H	S	S	S	H
329	S	S	S	S	S	S	H	S	S	S	H
330	S	S	S	S	S	S	H	S	S	S	H
331	S	S	S	S	S	S	R	S	S	S	H
332	S	S	S	S	S	S	R	S	S	S	H
333	S	S	S	S	S	S	R	S	S	S	H
334	S	S	S	S	S	S	R	S	S	S	H
335	S	S	S	S	S	S	R	S	S	S	H
336	S	S	S	S	S	S	R	S	S	S	H
337	S	S	S	S	S	S	R	S	S	S	H
338	S	S	S	S	S	S	R	S	S	S	H
339	S	S	S	S	S	S	R	S	S	S	H
340	S	S	S	S	S	S	R	S	S	S	H
341	S	S	S	S	S	n/a	H	S	S	S	S
342	S	S	S	S	S	S	H	S	S	S	S
343	S	S	S	S	S	S	H	S	S	S	S
344	S	S	S	S	S	S	H	S	S	S	S
345	S	S	S	S	S	S	H	S	S	S	S
346	S	S	S	S	S	S	R	S	H	H	S
347	S	S	S	S	S	S	R	S	H	H	S
348	S	S	S	S	S	S	R	S	H	H	S
349	S	S	S	S	S	S	R	S	H	H	S
350	S	S	S	S	S	S	R	S	H	H	S
351	S	S	S	H	S	S	R	S	S	S	S
352	S	S	S	H	S	S	R	S	S	S	S

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw12	Ve2
852	S	S	S	S	S	S	H	S	S	S	S
853	S	S	S	S	S	S	S	S	S	S	S
854	S	S	S	S	n/a	S	S	S	S	S	S
855	H	S	H	S	S	S	H	S	H	S	H
856	H	S	H	S	S	S	H	S	H	S	H
857	H	S	H	S	S	S	H	S	H	S	H
858	H	S	H	S	S	S	H	S	H	S	H
859	H	S	H	S	S	S	H	S	H	S	H
860	S	S	R	S	S	S	R	S	S	S	R
861	H	S	H	S	S	S	H	S	S	S	H
862	H	S	H	S	S	S	H	S	S	S	H
863	H	S	H	S	S	S	H	S	S	S	H
864	H	S	H	S	S	S	H	S	S	S	H
865	H	n/a	n/a	H	S	n/a	R	n/a	n/a	n/a	n/a
866	n/a	n/a	H	n/a	S	S	H	n/a	S	S	S
867	H	n/a	H	H	S	S	R	n/a	S	S	H
868	H	n/a	n/a	n/a	S	S	R	n/a	S	S	H
869	n/a	n/a	n/a	n/a	S	S	n/a	n/a	S	S	n/a
870	n/a	S	n/a	H	S	S	n/a	n/a	n/a	S	n/a
871	n/a	S	n/a	R	n/a	n/a	n/a	n/a	S	S	n/a
872	S	S	S	H	S	S	S	S	S	S	R
873	n/a	n/a	n/a	n/a	n/a	n/a	S	n/a	n/a	S	n/a
874	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	S	n/a	n/a
875	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
876	S	S	n/a	n/a	S	n/a	S	S	S	S	S
877	S	S	S	S	S	S	S	n/a	S	S	S
878	n/a	n/a	n/a	n/a	n/a	n/a	S	n/a	n/a	n/a	n/a
879	S	S	S	S	S	S	S	S	S	S	S
880	S	n/a	n/a	n/a	S	S	R	n/a	n/a	S	S
881	S	n/a	S	n/a	S	n/a	R	n/a	S	n/a	S
882	S	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
883	S	n/a	n/a	n/a	S	n/a	R	n/a	n/a	n/a	n/a
884	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
885	n/a	n/a	n/a	n/a	S	n/a	n/a	n/a	n/a	n/a	n/a
886	n/a	n/a	n/a	n/a	n/a	n/a	R	n/a	n/a	n/a	n/a
887	S	S	n/a	n/a	S	S	R	n/a	S	S	S
888	S	S	S	S	S	S	R	S	S	S	S
889	S	S	n/a	S	S	S	R	S	S	S	S
890	S	n/a	n/a	n/a	S	S	n/a	n/a	S	S	S
891	S	n/a	n/a	n/a	S	S	n/a	n/a	S	S	n/a
892	S	S	S	n/a	S	S	n/a	n/a	S	S	n/a
893	S	S	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
894	S	S	S	S	S	S	S	S	S	S	S
895	S	S	S	S	S	S	S	R/H	H	S	R
896	S	S	S	n/a	S	S	S	R/H	n/a	S	R
897	n/a	n/a	S	n/a	S	S	S	R/H	H	S	R
898	S	n/a	n/a	S	S	S	S	n/a	H	n/a	R
899	S	S	n/a	S	S	S	S	R/H	H	S	R
900	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
901	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	S	n/a	H
902	H	S	S	S	S	S	S	R/H	S	S	H
903	H	S	n/a	S	S	S	S	R/H	S	S	H
904	H	S	n/a	S	S	S	S	R/H	S	S	H
905	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	R
906	H	n/a	n/a	n/a	S	n/a	n/a	n/a	S	n/a	R
907	n/a	n/a	n/a	n/a	S	n/a	n/a	n/a	n/a	n/a	n/a
908	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
909	H	S	n/a	S	S	S	S	S	S	S	R
910	H	S	n/a	S	S	S	S	R/H	S	S	H
911	H	S	S	S	S	S	S	R/H	S	S	H
912	H	S	n/a	n/a	S	S	S	n/a	S	S	H
913	H	n/a	S	S	S	S	S	n/a	S	S	H
914	n/a	n/a	S	S	S	S	S	n/a	S	S	H
915	S	n/a	n/a	n/a	S	n/a	n/a	n/a	R	n/a	n/a
916	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
917	n/a	n/a	n/a	n/a	S	n/a	n/a	n/a	n/a	n/a	n/a
918	S	S	S	S	S	S	S	S	R	R	R
919	S	S	S	S	S	S	S	S	R	R	R

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw1 2	Ve2
353	S	S	S	H	S	S	R	S	S	S	S
354	S	S	S	H	S	S	R	S	S	S	S
355	S	S	S	H	S	n/a	R	S	S	S	S
356	S	S	S	S	S	H	S	S	S	S	H
357	S	S	S	S	S	H	S	S	S	S	H
358	S	S	S	S	S	H	S	S	S	S	H
359	S	S	S	S	S	H	S	S	S	S	H
360	S	S	S	S	S	H	S	S	S	S	H
361	S	H	S	S	S	S	H	S	H	R	S
362	S	H	S	S	S	S	H	S	H	R	S
363	S	H	S	S	S	S	H	S	H	R	S
364	S	H	S	S	S	S	H	S	H	R	S
365	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
366	H	S	S	S	S	S	R	R/H	H	S	S
367	H	S	S	S	S	S	R	S	H	S	S
368	H	S	S	S	S	S	R	S	H	S	S
369	H	S	S	S	S	S	R	S	H	S	S
370	H	S	S	S	S	S	R	S	H	S	S
371	S	S	S	S	S	S	R	S	S	S	S
372	S	S	S	S	S	S	R	S	H	S	S
373	S	S	S	S	S	S	R	S	H	S	S
374	S	S	S	S	S	S	R	S	H	S	S
375	S	S	S	S	S	S	R	S	H	S	S
376	S	S	S	S	S	S	R	S	S	S	S
377	S	S	S	S	S	S	R	S	S	S	S
378	S	S	S	S	S	S	R	S	H	S	S
379	S	S	S	S	S	S	R	S	S	S	S
380	S	S	S	S	S	S	R	S	S	S	S
381	S	S	S	S	S	H	S	S	S	S	H
382	S	S	S	S	S	H	S	S	S	S	H
383	S	S	S	S	S	H	S	S	S	S	H
384	S	S	S	S	S	H	S	S	S	S	H
385	S	S	S	S	S	H	S	S	S	S	H
386	H	S	S	S	S	S	R	S	H	S	S
387	H	S	S	S	S	S	R	R/H	H	S	S
388	H	S	S	S	S	S	R	S	H	S	S
389	H	S	S	S	S	S	R	S	H	S	S
390	H	S	S	H	S	S	R	S	S	H	S
391	H	S	S	H	S	S	R	S	S	H	S
392	H	S	S	H	S	S	R	S	S	H	S
393	H	S	S	H	S	S	R	S	S	H	S
394	H	S	S	H	S	S	R	S	S	H	S
395	H	S	S	H	S	S	R	S	S	H	S
396	S	n/a	S	S	S	S	R	S	S	S	S
397	S	S	S	S	S	S	R	S	S	S	S
398	S	S	S	S	S	S	R	R/H	S	S	S
399	S	S	S	S	S	S	R	S	S	S	S
400	S	S	S	S	S	S	R	R/H	S	S	S
401	S	S	S	S	S	S	H	S	S	S	S
402	S	S	S	S	S	S	H	S	S	S	S
403	S	S	S	S	S	S	H	S	S	S	S
404	S	S	S	S	S	S	H	S	S	S	S
405	S	S	S	S	S	S	H	S	S	S	S
406	H	S	S	H	S	S	R	S	S	H	S
407	H	S	S	H	S	S	R	S	S	H	S
408	H	S	S	H	S	S	R	S	S	H	S
409	H	S	S	H	S	S	R	S	S	H	S
410	H	S	S	H	S	S	R	S	S	H	S
411	S	S	S	S	S	S	R	S	H	H	S
412	S	S	S	S	S	S	R	S	H	H	S
413	S	S	S	S	S	S	R	S	H	H	S
414	H	S	S	H	S	S	R	S	S	H	S
415	S	S	S	S	S	S	R	S	H	H	S
416	S	S	S	S	S	S	H	S	H	R	S
417	S	S	S	S	S	S	H	S	H	R	S
418	S	S	S	S	S	S	H	S	H	R	S
419	S	S	S	S	S	S	H	S	H	R	S
420	S	S	S	S	S	S	H	S	H	R	S

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw12	Ve2
920	S	S	S	S	S	S	S	S	S	S	S
921	S	S	S	S	S	S	S	S	S	S	H
922	n/a	n/a	n/a	n/a	S	S	S	n/a	S	S	S
923	S	n/a	n/a	S	S	S	S	n/a	S	S	S
924	S	S	n/a	S	S	S	S	n/a	S	S	S
925	S	n/a	n/a	H	S	S	H	n/a	H	S	H
926	S	S	H	n/a	S	S	H	n/a	H	S	H
927	S	S	H	H	S	S	H	S	H	S	H
928	S	n/a	n/a	n/a	S	S	H	n/a	H	n/a	H
929	n/a	n/a	n/a	n/a	S	n/a	H	n/a	n/a	n/a	H
930	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
931	S	n/a	n/a	n/a	n/a	S	S	n/a	H	S	H
932	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
933	n/a	n/a	n/a	n/a	n/a	n/a	S	n/a	n/a	n/a	n/a
934	S	n/a	S	S	S	S	S	S	H	S	H
935	S	S	H	H	S	S	H	S	H	S	R
936	S	S	H	H	S	S	H	S	H	S	R
937	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
938	S	S	H	H	S	S	H	S	H	S	R
939	n/a	n/a	H	n/a	S	S	H	n/a	H	S	R
940	n/a	S	n/a	n/a	n/a	n/a	S	n/a	H	S	R
941	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
942	S	n/a	n/a	n/a	S	n/a	S	n/a	n/a	n/a	n/a
943	S	n/a	n/a	n/a	S	n/a	n/a	n/a	n/a	n/a	n/a
944	S	n/a	n/a	S	S	S	S	n/a	n/a	n/a	n/a
945	S	n/a	n/a	n/a	S	n/a	S	n/a	n/a	S	H
946	S	n/a	n/a	S	S	S	S	n/a	H	n/a	R
947	n/a	n/a	n/a	n/a	n/a	S	H	n/a	S	n/a	R
948	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
949	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
950	S	n/a	S	S	S	S	S	S	H	S	H
951	S	S	S	S	S	S	S	S	H	S	H
952	n/a	S	S	S	S	S	n/a	n/a	H	S	n/a
953	S	n/a	S	S	S	S	S	S	H	S	H
954	S	S	n/a	n/a	S	S	S	n/a	n/a	S	H
955	n/a	n/a	n/a	n/a	S	n/a	n/a	n/a	n/a	n/a	n/a
956	S	n/a	n/a	n/a	S	n/a	H	n/a	S	n/a	n/a
957	n/a	n/a	n/a	n/a	S	n/a	n/a	n/a	n/a	S	H
958	n/a	n/a	n/a	n/a	S	n/a	n/a	n/a	n/a	n/a	n/a
959	S	n/a	n/a	n/a	S	n/a	H	n/a	n/a	n/a	H
960	n/a	S	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
961	H	S	S	S	S	S	S	R/H	H	H	H
962	H	S	S	S	S	S	S	R/H	H	H	H
963	H	S	S	S	S	S	S	R/H	H	H	H
964	H	S	S	S	S	S	S	R/H	H	H	H
965	S	S	S	S	S	S	S	R/H	H	S	R
966	S	S	S	S	S	S	S	S	S	S	R
967	S	S	S	S	S	S	S	R/H	H	S	R
968	S	S	S	S	S	S	S	R/H	H	S	R
969	S	S	S	S	S	S	S	S	S	S	R
970	S	S	S	H	S	S	S	R/H	S	S	H
971	S	S	S	H	S	S	S	R/H	S	S	H
972	S	S	S	H	S	S	S	R/H	S	S	H
973	S	S	S	H	S	S	S	R/H	S	S	H
974	S	S	S	H	S	S	S	R/H	S	S	H
975	H	S	S	S	S	S	S	S	S	S	R
976	H	S	S	S	S	S	S	S	S	S	R
977	H	S	S	S	S	S	S	S	S	S	R
978	H	S	S	S	S	S	S	S	S	S	R
979	H	S	S	S	S	S	S	S	S	S	R
980	H	S	S	H	S	S	S	R/H	S	S	R
981	H	S	S	H	S	S	S	R/H	S	S	R
982	H	S	S	H	S	S	S	R/H	S	S	R
983	H	S	S	S	S	S	S	R/H	S	S	R
984	H	S	S	H	S	S	S	R/H	S	S	R
985	S	S	S	S	S	S	S	S	S	S	R
986	S	S	S	S	S	S	S	S	S	S	R
987	S	S	S	S	S	S	S	S	S	S	R

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw1 2	Ve2
421	S	S	S	S	S	S	H	S	S	S	H
422	S	S	S	S	S	S	H	S	S	S	H
423	S	S	S	S	S	S	H	S	S	S	H
424	S	S	S	S	S	S	H	S	S	S	H
425	S	S	S	S	S	S	H	S	S	S	H
426	S	S	S	S	S	S	R	R/H	S	S	S
427	S	S	S	S	S	S	R	R/H	S	S	S
428	S	S	S	S	S	S	R	R/H	S	S	S
429	S	S	S	S	S	n/a	R	R/H	S	S	S
430	S	S	S	S	S	S	R	R/H	S	S	S
431	S	S	S	S	S	S	R	R/H	H	S	S
432	S	S	S	S	S	S	R	R/H	H	S	S
433	S	S	S	S	S	S	R	R/H	H	S	S
434	S	S	S	S	S	S	R	S	H	S	S
435	S	S	S	S	S	S	R	R/H	H	S	S
436	S	S	S	H	S	S	S	S	H	H	H
437	S	S	S	H	S	n/a	S	S	H	H	H
438	S	S	S	H	S	S	S	S	H	H	H
439	S	S	S	H	S	S	S	S	H	H	H
440	S	S	S	H	S	S	S	S	H	H	H
441	S	S	S	H	S	S	H	S	H	S	H
442	S	S	S	H	S	S	H	S	H	S	H
443	S	S	S	H	S	S	H	S	H	S	H
444	S	S	S	H	S	S	H	S	H	S	H
445	S	S	S	H	S	S	H	S	H	S	H
446	S	S	S	H	S	S	H	S	H	S	H
447	S	S	S	H	S	S	H	S	H	S	H
448	S	S	S	H	S	S	H	S	H	S	H
449	S	S	S	H	S	S	H	S	H	S	H
450	S	S	S	H	S	S	H	S	H	S	H
451	S	S	S	R	S	S	H	S	H	S	H
452	S	S	S	R	S	S	H	S	H	S	H
453	S	S	S	R	S	n/a	H	S	H	S	H
454	S	S	S	R	S	S	H	S	H	S	H
455	S	S	S	R	S	S	H	S	H	S	H
456	S	S	S	H	S	S	S	S	H	H	H
457	S	S	S	H	S	S	S	S	H	H	H
458	S	S	S	H	S	S	S	S	H	H	H
459	S	S	S	H	S	S	S	H	H	H	H
460	S	S	S	H	S	n/a	S	S	H	H	H
461	S	S	S	H	S	S	S	S	H	H	H
462	S	S	S	H	S	S	S	S	H	H	H
463	S	S	S	H	S	S	S	S	H	H	H
464	S	S	S	H	S	S	S	S	H	H	H
465	S	S	S	R	S	S	S	S	R	S	R
466	S	S	S	R	S	S	S	S	R	S	R
467	S	S	S	R	S	S	S	S	R	S	R
468	S	S	S	R	S	S	S	S	R	S	R
469	S	S	S	R	S	S	S	S	R	S	R
470	S	S	S	H	S	S	R	S	S	S	S
471	S	S	S	H	S	S	R	S	S	S	S
472	S	S	S	H	S	S	R	S	S	S	S
473	S	S	S	H	S	S	R	S	S	S	S
474	S	S	S	H	S	S	R	S	S	S	S
475	S	S	S	H	S	S	H	S	H	S	H
476	S	S	S	H	S	S	H	S	H	S	H
477	S	S	S	H	S	S	H	S	H	S	H
478	S	S	S	H	S	S	H	S	H	S	H
479	S	S	S	H	S	n/a	H	S	H	S	H
480	S	S	S	S	S	S	H	S	S	H	S
481	S	S	S	S	S	S	H	S	S	H	S
482	S	S	S	S	S	S	H	S	S	S	S
483	S	S	S	S	S	S	H	S	S	S	S
484	S	S	S	S	S	S	H	S	S	S	S
485	S	S	S	S	S	S	R	S	S	S	S
486	S	S	S	S	S	S	R	S	S	S	S
487	S	S	S	S	S	S	R	S	S	S	S
488	S	S	S	S	S	S	R	S	S	S	S

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw12	Ve2
988	S	S	S	S	S	S	S	S	S	S	R
989	S	S	S	S	S	S	S	S	S	S	R
990	H	S	S	H	S	S	S	S	S	S	R
991	H	S	S	H	S	S	H	S	S	S	R
992	H	S	S	H	S	S	S	S	S	S	R
993	H	S	S	H	S	S	S	S	S	S	R
994	S	S	S	H	S	S	H	S	S	S	H
995	S	S	S	S	S	S	S	S	R	S	R
996	S	S	S	S	S	S	S	S	R	S	R
997	S	S	S	S	S	S	S	S	R	S	R
998	S	S	S	S	S	S	S	S	R	S	R
999	S	S	S	S	S	S	H	S	R	S	R
1000	S	S	S	S	S	S	S	S	S	S	S
1001	S	S	S	S	S	S	S	S	S	S	S
1002	S	S	S	S	S	S	S	S	S	S	S
1003	S	S	S	S	S	S	S	S	S	S	S
1004	S	S	S	S	S	S	S	S	S	S	S
1005	S	S	S	S	S	S	S	S	S	S	S
1006	S	S	S	S	S	S	S	S	S	S	S
1007	S	S	S	S	S	S	S	S	S	S	S
1008	S	S	S	S	S	S	S	S	S	S	S
1009	S	S	S	S	S	S	S	S	S	S	S
1010	S	S	S	S	S	S	S	S	S	S	S
1011	S	S	S	S	S	S	S	S	S	S	S
1012	S	S	S	S	S	S	S	S	S	S	S
1013	S	S	S	S	S	S	S	S	S	S	S
1014	S	S	S	S	S	S	S	S	S	S	S
1015	S	S	S	S	S	S	S	S	S	S	S
1016	S	S	n/a	n/a	n/a	n/a	S	S	S	n/a	S
1017	S	S	S	S	S	S	S	S	S	S	S
1018	S	S	S	S	S	S	S	S	S	S	S
1019	S	S	S	S	S	S	S	S	S	S	S
1020	S	S	S	S	S	S	S	S	R	R	R
1021	S	S	S	S	S	S	S	S	R	R	R
1022	S	S	S	S	S	S	S	S	R	R	R
1023	S	S	S	S	S	S	S	S	R	R	R
1024	S	S	S	S	S	S	S	S	R	R	R
1025	S	S	S	S	S	S	S	S	R	R	R
1026	S	S	S	S	S	S	S	S	R	S	R
1027	S	S	S	S	S	S	S	S	R	S	R
1028	S	S	S	S	S	S	S	S	R	S	R
1029	S	S	S	S	S	S	S	S	R	S	R
1030	S	S	S	S	S	S	S	S	R	S	R
1031	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1032	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1033	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1034	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1035	S	S	S	S	S	S	S	S	R	S	S
1036	S	S	S	S	S	S	S	S	R	S	S
1037	S	S	S	S	S	S	S	S	R	S	S
1038	S	S	S	S	S	n/a	S	S	R	S	S
1039	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1040	S	S	S	S	S	n/a	S	S	R	S	R
1041	S	S	S	S	S	S	S	S	n/a	S	R
1042	S	S	S	S	S	S	S	S	R	S	R
1043	S	S	S	S	S	S	S	S	R	S	R
1044	S	S	S	S	S	S	S	S	R	S	R
1045	S	S	S	S	S	S	R	S	S	S	S
1046	S	S	S	S	S	S	R	S	S	S	S
1047	S	S	n/a	S	S	n/a	R	n/a	n/a	S	S
1048	S	S	S	S	S	S	R	S	S	S	S
1049	S	S	S	S	S	S	R	S	S	S	S
1050	S	S	S	H	S	S	S	S	R	H	H
1051	S	S	S	H	S	S	S	S	R	H	H
1052	S	S	S	H	S	S	S	S	R	H	H
1053	S	S	S	H	S	S	S	S	R	H	H
1054	S	S	S	H	S	S	S	S	R	H	H
1055	S	S	H	S	S	S	H	S	H	S	H

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw1 2	Ve2
489	S	S	S	S	S	S	R	S	S	H	S
490	S	S	S	S	S	S	R	S	S	S	S
491	S	S	S	S	S	S	R	S	S	S	S
492	S	S	S	S	S	S	R	S	S	S	S
493	S	S	S	S	S	S	R	S	S	H	S
494	S	S	S	S	S	S	R	S	S	S	S
495	S	S	S	S	S	S	R	S	S	S	S
496	S	S	S	S	S	S	R	S	S	S	S
497	S	S	S	S	S	S	R	S	S	S	S
498	S	S	S	S	S	S	R	S	S	S	S
499	S	S	S	S	S	S	R	S	S	S	S
500	S	S	S	S	S	S	H	S	S	S	S
501	S	S	S	S	S	S	H	S	S	H	S
502	S	S	S	S	S	S	H	S	S	S	S
503	S	S	S	S	S	S	H	S	S	S	S
504	S	S	S	S	S	S	H	S	S	S	S
505	S	S	S	S	S	S	H	S	H	H	S
506	S	S	S	S	S	S	H	S	H	S	S
507	S	S	S	S	S	S	H	S	H	S	S
508	S	S	S	S	S	S	H	S	H	S	S
509	S	S	S	S	S	S	H	S	H	S	S
510	S	S	S	H	S	S	H	S	S	n/a	H
511	S	S	S	H	S	S	H	S	S	S	H
512	S	S	S	H	S	S	H	S	S	S	H
513	S	S	S	H	S	S	H	S	S	H	H
514	S	S	S	H	S	S	H	S	S	R	H
515	S	S	S	H	S	S	R	S	S	S	H
516	S	S	S	H	S	S	R	S	S	S	H
517	S	S	S	H	S	S	R	S	S	H	H
518	S	S	S	H	S	S	R	S	S	S	H
519	S	S	S	H	S	S	R	S	S	S	H
520	S	S	S	S	S	S	R	S	H	S	R
521	S	S	S	S	S	S	R	S	H	S	R
522	n/a	S	S	S	S	n/a	n/a	S	S	n/a	n/a
523	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	S	n/a
524	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	S	n/a
525	S	S	S	H	S	S	R	S	H	H	H
526	S	S	S	H	S	S	R	S	H	R	H
527	S	S	S	H	S	S	R	S	H	S	H
528	S	S	S	H	S	S	R	S	H	S	H
529	S	S	S	H	S	S	R	S	H	S	H
530	S	S	S	S	S	S	H	S	S	S	S
531	S	S	S	S	S	S	H	S	S	S	S
532	S	S	S	S	S	S	H	S	S	S	S
533	S	S	S	S	S	S	H	S	S	S	S
534	S	H	S	S	S	S	H	S	S	S	S
535	S	S	S	H	S	S	H	S	S	S	S
536	S	S	S	H	S	S	H	S	S	S	S
537	S	S	S	H	S	S	H	S	S	H	S
538	S	S	S	H	S	S	H	S	S	R	S
539	S	S	S	H	S	S	H	S	S	S	S
540	R	S	S	S	S	S	S	S	R	n/a	S
541	H	S	S	S	S	S	S	S	H	S	H
542	R	S	S	S	S	S	S	S	R	S	S
543	H	S	S	S	S	S	S	S	H	S	H
544	H	S	n/a	n/a	n/a	n/a	S	S	H	S	H
545	H	S	S	H	S	S	H	R/H	S	S	R
546	H	S	S	H	S	S	H	R/H	S	S	R
547	H	S	S	H	S	S	H	R/H	S	S	R
548	H	S	S	H	S	S	H	R/H	S	S	R
549	H	S	S	H	S	S	H	R/H	S	S	R
550	H	S	S	S	S	S	S	S	H	R	H
551	H	S	S	S	S	S	S	S	H	S	H
552	H	S	S	S	S	S	S	S	H	S	H
553	H	S	S	S	S	S	S	S	H	S	H
554	H	S	S	S	S	S	S	S	H	S	H
555	S	S	S	S	S	S	H	S	S	S	H
556	S	S	S	S	S	S	H	S	S	S	H

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw12	Ve2
1056	S	S	S	S	S	S	S	S	R	S	S
1057	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1058	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1059	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1060	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1061	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1062	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1063	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1064	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1065	S	S	S	H	S	S	S	S	R	H	H
1066	S	S	S	H	S	S	S	S	R	H	H
1067	S	S	S	H	S	S	S	S	R	H	H
1068	S	S	S	H	S	S	S	S	R	H	H
1069	S	S	S	H	S	S	S	n/a	R	H	H
1070	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1071	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1072	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1073	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1074	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1075	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1076	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1077	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1078	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1079	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1080	S	S	S	R	S	S	R	S	R	S	S
1081	S	S	S	R	S	S	R	n/a	R	S	S
1082	S	S	S	R	S	S	R	S	R	S	S
1083	S	S	S	R	S	S	R	S	R	S	S
1084	S	S	S	H	S	S	R	n/a	H	S	S
1085	S	S	S	S	S	S	R	n/a	S	S	S
1086	S	S	S	S	S	S	R	S	S	S	S
1087	S	S	S	S	S	S	R	S	S	S	S
1088	S	S	S	S	S	S	R	S	S	S	S
1089	S	S	S	S	S	S	R	S	S	S	S
1090	S	S	S	S	S	S	S	S	S	S	S
1091	S	S	S	S	S	S	S	n/a	S	S	S
1092	S	S	S	S	S	S	S	n/a	S	S	S
1093	S	S	S	S	S	S	S	S	S	S	S
1094	S	S	S	S	S	S	S	S	S	S	S
1095	R	S	S	S	S	S	R	S	S	S	S
1096	R	S	S	S	S	S	R	S	S	S	S
1097	R	S	S	S	S	S	R	S	S	S	S
1098	R	S	S	S	S	S	R	S	S	S	S
1099	R	S	S	S	S	S	R	S	S	S	S
1100	H	S	R	H	S	S	R	n/a	R	S	R
1101	H	S	R	H	S	S	R	n/a	R	S	R
1102	H	S	R	H	S	S	R	S	R	S	R
1103	R	S	R	S	S	S	R	S	R	S	R
1104	S	S	R	R	S	S	R	S	R	S	R
1105	S	S	R	R	S	S	R	S	R	S	R
1106	H	S	R	H	S	S	R	S	R	S	R
1107	R	S	R	S	S	S	R	S	R	S	R
1108	S	n/a	R	R	S	S	R	n/a	n/a	S	R
1109	H	S	R	H	S	S	R	n/a	R	S	R
1110	R	S	R	S	S	S	R	S	R	S	R
1111	H	S	R	H	S	S	R	S	R	S	R
1112	R	S	R	S	S	S	R	S	R	S	R
1113	R	S	R	S	S	S	R	S	R	S	R
1114	n/a	n/a	R	S	S	S	R	S	R	S	R
1115	S	S	S	S	S	R	S	S	S	S	S
1116	S	S	S	S	S	R	S	n/a	S	S	S
1117	S	S	S	S	S	R	S	n/a	S	S	S
1118	S	S	S	S	S	R	S	n/a	S	S	S
1119	S	S	S	S	S	R	S	S	S	S	S
1120	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1121	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1122	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1123	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw1 2	Ve2
557	S	S	S	S	S	S	H	S	S	S	H
558	S	S	S	S	S	S	H	S	S	S	H
559	S	S	S	S	S	S	H	S	H	S	H
560	S	S	S	S	S	S	S	R/H	S	S	H
561	S	S	S	S	S	S	S	R/H	S	S	H
562	S	H	S	S	S	S	S	R/H	S	R	H
563	S	S	S	S	S	S	S	R/H	S	S	H
564	S	S	S	S	S	S	S	R/H	S	S	H
565	S	S	S	S	S	S	S	R/H	S	n/a	H
566	S	S	S	S	S	S	S	R/H	S	S	H
567	S	S	S	S	S	S	S	R/H	S	S	H

No.	Ty1	Ty2	Sw5	Mi-R ex	Rx3	Rx4	PH3	Cf9	J3	Bw12	Ve2
1124	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1125	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1126	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1127	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1128	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1129	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1130	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1131	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1132	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1133	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1134	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

③ 토마토생명과학연구소

토마토생명과학연구소로부터 총 430점의 시료를 받아 5번의 서비스를 진행하였다. 처음 98점의 시료에 대하여, 병 관련 23종의 마커로 서비스를 진행하였다(표 11). 두 번째로는 154점의 시료에 대하여, 병 관련 23종의 마커로 서비스를 진행하였다(표 12). 세 번째로는 66점의 시료에 대하여, 병 관련 23종의 마커로 서비스를 진행하였다(표 13). 네 번째로는 52점의 시료에 대하여, 병 관련 24종의 마커로 서비스를 진행하였다(표 14). 다섯 번째로는 60점의 시료에 대하여, 병 관련 13종의 마커 및 형질 관련 1종의 마커로 서비스를 진행하였다(표 15). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 11, 12, 13, 14, 15).

표 11. 토마토생명과학연구소 98점의 시료에 대하여, 병 관련 23종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	Ty4	ty5	J3	Mi-R Rex	Sw5	I	I2	I3	Ve2	Tm2 a	Ph3	Cf9	Bw6	Bw1 2	Py1- 2	Py1- 4	Pto	Sm1	Sm2	ol2	Lv
1	H	S	S	S	S	S	S	R	S	S	S	R	R	S	H	S	H	S	S	S	S	S	S
2	H	S	S	S	S	S	S	R	S	S	S	R	R	S	H	S	H	S	S	S	S	S	S
3	R	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S
4	S	S	S	S	S	S	S	R	R/H	S	R	R	S	S	S	S	S	S	S	R	R	R	S
5	S	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	R	R	R	S
6	H	S	S	S	H	H	S	R	R/H	S	S	H	S	S	H	S	S	S	S	H	R	R	S
7	H	S	S	S	H	H	S	R	R/H	S	S	H	S	S	H	S	S	S	S	H	R	R	S
8	H	S	S	S	S	H	S	R	R/H	S	S	R	S	S	H	S	S	S	S	R	R	R	S
9	H	S	S	S	S	H	S	R	R/H	S	S	R	S	S	H	S	S	S	S	R	R	R	S
10	S	S	S	S	H	R	S	R	S	S	R	H	S	S	S	S	S	S	S	R	R	R	S
11	S	S	S	S	S	S	S	R	R/H	S	S	R	S	S	S	S	S	S	S	R	R	R	S
12	R	S	S	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S	S	R	R	S	S
13	H	S	S	S	R	S	S	R	S	S	R	R	S	S	S	S	S	S	S	R	R	S	S
14	S	S	S	S	S	S	S	R	R/H	S	S	S	S	S	S	S	S	S	S	R	R	R	S
15	H	S	S	S	S	S	S	R	R/H	S	R	S	S	S	S	S	S	S	S	R	R	R	S
16	H	S	S	S	S	S	S	R	R/H	S	R	R	S	S	S	S	S	S	S	R	R	R	S
17	R	S	S	S	S	S	S	R	S	S	R	S	R	R/H	S	S	S	S	S	S	R	R	S
18	R	S	S	S	S	S	S	R	S	S	R	S	R	R/H	S	S	S	S	S	S	R	R	S
19	H	S	S	S	S	S	S	R	S	S	R	S	R	R/H	S	S	S	S	S	S	R	R	S
20	H	S	S	S	S	S	S	R	S	S	R	S	R	R/H	S	S	S	S	S	R	R	R	S
21	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	H	R	R	S
22	H	S	S	S	S	S	S	R	S	S	R	H	S	S	S	S	S	S	S	R	R	R	S
23	H	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	S	R	R	S
24	R	S	S	S	S	S	S	R	S	S	R	H	S	S	S	S	S	S	S	S	R	R	S
25	R	S	S	S	S	S	S	R	R/H	S	R	R	S	S	S	S	S	S	S	S	R	R	S
26	S	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	R	R	R	S
27	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	H	R	R	S
28	R	S	S	S	S	S	R	R	R/H	S	R	S	R	R/H	S	S	S	S	S	R	H	R	S
29	R	S	S	S	S	S	R	R	R/H	S	R	S	R	R/H	S	S	S	S	S	R	H	R	S
30	R	S	S	S	S	S	R	R	R/H	S	R	S	R	R/H	S	S	S	S	S	R	R	R	S
31	R	S	S	S	S	S	R	R	R/H	S	R	R	S	S	S	S	S	S	S	R	R	R	S
32	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	R	S

No.	Ty1	Ty2	Ty4	ty5	J3	Mi-Rex	Sw5	I	I2	I3	Ve2	Tm2a	Ph3	Cf9	Bw6	Bw12	Py1-2	Py1-4	Pto	Sm1	Sm2	ol2	Lv	
33	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	R	R	S
34	H	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	S	R	R	R	S
35	R	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	H	R	R	S	
36	R	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	H	R	R	S	
37	H	S	S	S	S	H	R	R	R/H	S	R	S	R	R/H	S	S	S	S	S	S	R	R	R	S
38	H	S	S	S	S	S	R	R	R/H	S	R	S	R	R/H	S	S	S	S	S	S	R	R	R	S
39	H	S	S	S	S	H	R	R	R/H	S	R	S	R	R/H	S	S	S	S	S	S	R	R	R	S
40	H	S	S	S	S	H	R	R	R/H	S	R	S	R	R/H	S	S	S	S	S	S	R	R	R	S
41	H	S	S	S	S	H	S	R	R/H	S	R	S	S	R/H	S	S	S	S	S	R	H	R	S	
42	H	S	S	S	S	H	S	R	R/H	S	R	S	S	R/H	S	S	S	S	S	R	R	R	S	
43	R	S	S	S	S	H	R	R	R/H	S	R	R	R	R/H	S	S	S	S	S	S	R	R	R	S
44	R	S	S	S	S	R	R	R	R/H	S	R	R	R	R/H	S	S	S	S	S	S	R	R	R	S
45	R	S	S	S	S	S	R	R	R/H	S	R	R	R	R/H	S	S	S	S	S	S	R	R	R	S
46	R	S	S	S	S	H	R	R	R/H	S	R	R	R	R/H	S	S	S	S	S	S	R	R	R	S
47	R	S	S	S	S	S	S	R	R/H	S	R	S	R	R/H	S	S	S	S	S	R	R	R	S	
48	H	S	S	S	S	H	S	R	R/H	S	R	S	R	R/H	S	S	S	S	S	R	H	R	S	
49	R	S	S	S	S	S	S	R	R/H	S	R	S	R	R/H	S	S	S	S	S	R	H	R	S	
50	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	H	S	
51	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	H	S	
52	R	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	H	S	
53	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	H	S	
54	R	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	R	S	
55	R	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	R	S	
56	R	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	R	S	
57	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	R	S	
58	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	R	S	
59	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	R	S	
60	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	S	S	
61	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	H	S	
62	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	H	S	
63	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	S	S	
64	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	R	S	S	
65	H	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	R	R	R	S	
66	R	S	S	S	S	S	S	R	R/H	S	R	H	S	S	S	S	S	S	S	S	R	R	S	
67	H	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	R	R	R	S	
68	H	S	S	S	S	S	S	R	S	S	R	H	S	S	S	S	S	S	S	R	R	R	S	
69	H	S	S	S	S	H	R	R	R/H	S	R	S	R	R/H	S	S	S	S	S	S	R	R	S	
70	H	S	S	S	S	H	R	R	R/H	S	R	H	R	S	S	S	S	S	S	H	R	R	S	
71	H	S	S	S	S	H	R	R	R/H	S	R	S	R	S	S	S	S	S	S	R	R	R	S	
72	H	S	S	S	S	H	R	R	R/H	S	R	S	R	S	S	S	S	S	S	H	R	R	S	
73	H	S	S	S	S	H	R	R	R/H	S	R	R	R	S	S	S	S	S	S	H	R	R	S	
74	H	S	S	S	H	S	S	R	R/H	S	R	R	S	R/H	S	S	S	S	S	R	R	R	S	
75	S	S	S	S	S	S	H	R	R/H	S	R	H	H	S	S	S	S	S	S	H	R	R	S	
76	S	S	S	S	H	H	H	R	R/H	S	H	R	H	S	S	S	S	S	S	R	R	R	S	
77	S	S	S	S	H	S	S	R	R/H	H	H	H	S	R/H	S	S	S	S	S	R	R	R	S	
78	H	S	S	S	R	S	H	R	R/H	H	R	R	R	S	S	S	S	S	S	H	R	R	S	
79	H	S	S	S	H	H	S	R	R/H	S	R	H	S	S	S	S	S	S	S	H	R	H	S	
80	S	S	S	S	S	H	S	R	S	S	R	S	S	S	S	S	S	S	S	R	H	R	S	
81	S	S	S	S	S	H	H	R	R/H	S	R	H	S	S	S	S	S	S	S	H	R	R	S	
82	S	S	S	S	S	H	S	R	R/H	S	H	H	S	S	S	S	S	S	S	H	R	R	S	
83	H	S	S	S	S	S	H	R	R/H	H	R	H	H	S	S	S	S	S	S	S	R	H	S	
84	H	S	S	S	R	H	S	R	R/H	S	R	S	S	S	S	S	S	S	S	H	R	R	S	
85	S	S	S	S	H	H	H	R	R/H	S	H	H	H	S	S	S	S	S	S	H	R	R	S	
86	S	S	S	S	S	S	H	R	R/H	S	R	H	H	S	S	S	S	S	S	H	R	R	S	
87	S	S	S	S	H	H	H	R	R/H	S	H	S	H	S	S	S	S	S	S	R	R	R	S	
88	H	S	S	S	S	H	S	R	R/H	S	R	H	H	S	S	S	S	S	S	R	R	R	S	
89	H	S	S	S	S	S	S	R	R/H	S	R	H	H	S	S	S	S	S	S	H	R	R	S	
90	H	S	S	S	S	H	H	R	R/H	R	R	H	S	S	S	S	S	S	S	H	R	R	H	
91	H	S	S	S	H	H	H	R	R/H	S	H	H	S	S	S	S	S	S	S	H	R	R	S	
92	H	S	S	S	S	S	H	R	R/H	H	R	H	H	S	S	S	S	S	S	S	R	H	S	
93	S	S	S	S	S	H	S	R	R/H	S	H	H	S	S	S	S	S	S	S	H	R	R	S	
94	R	S	S	S	S	S	S	R	R/H	S	R	S	S	S	S	S	S	S	S	R	S	R	S	

No.	Ty1	Ty2	Ty4	ty5	J3	Mi-Rex	Sw5	I	I2	I3	Ve2	Tm2 _a	Ph3	Cf9	Bw6	Bw1 ₂	Py1- ₂	Py1- ₄	Pto	Sm1	Sm2	ol2	Lv	
95	S	S	S	S	S	R	S	R	R/H	S	R	R	R	S	S	S	S	S	S	S	S	R	R	S
96	R	S	S	S	S	S	S	R	R/H	S	R	R	R	S	S	S	S	S	S	S	S	R	R	S
97	R	S	S	S	S	S	S	R	S	S	R	R	S	R/H	S	S	S	S	S	S	S	R	R	S
98	R	S	S	S	S	S	R	R	S	S	R	R	R	R/H	S	S	S	S	S	S	R	S	R	S

표 12. 토마토생명과학연구소 154점의 시료에 대하여, 병 관련 23종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	Ty4	ty5	J3	Mi-Rex	Sw5	I	I2	I3	Ve2	Tm2 _a	Ph3	Cf9	Bw6	Bw1 ₂	Py1- ₂	Py1- ₄	Pto	Sm1	Sm2	ol2	Lv		
1	H	S	S	S	S	S	S	R	S	S	S	R	R	S	H	S	H	S	S	S	R	S	S	S	
2	R	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	S	S	R	S	S	S
3	R	S	S	S	S	S	R	R	S	S	R	S	R	S	S	S	S	S	S	S	S	R	S	S	S
4	R	S	S	S	S	S	R	R	S	S	R	S	R	S	S	S	S	S	S	S	S	R	S	S	S
5	R	S	S	S	S	S	R	R	S	S	R	S	R	S	S	S	S	S	S	S	S	R	S	S	S
6	R	S	S	S	S	S	R	R	S	S	R	S	R	S	S	S	S	S	S	S	S	R	S	S	S
7	S	S	S	S	S	R	H	R	S	S	S	R	S	R/H	S	S	H	S	S	H	S	S	S	S	S
8	S	S	S	S	S	R	H	R	S	S	S	R	S	R/H	S	S	H	S	S	H	S	S	S	S	S
9	S	S	S	S	S	R	S	R	S	S	S	R	S	R/H	S	S	H	S	S	H	S	S	S	S	S
10	S	S	S	S	S	R	H	R	S	S	S	R	S	R/H	S	S	H	S	S	R	S	S	S	S	S
11	S	S	S	S	S	S	H	R	S	S	S	H	S	S	S	S	H	S	S	H	S	S	S	S	S
12	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S	S	H	S	S	H	S	S	S	S	S
13	S	S	S	S	S	S	R	R	S	S	S	S	H	S	S	S	H	S	S	H	S	S	S	S	S
14	S	S	S	S	S	H	H	R	S	S	S	S	S	R/H	S	S	H	S	S	S	S	S	S	S	S
15	S	S	S	S	S	H	H	R	S	S	S	S	S	R/H	S	S	H	S	S	S	S	S	S	S	S
16	S	S	S	S	S	R	H	R	S	S	S	S	S	R/H	S	S	H	S	S	S	S	S	S	S	S
17	S	S	S	S	S	R	R	R	R	S	H	R	S	S	S	S	S	S	S	R	S	S	S	S	S
18	S	S	S	S	S	R	R	R	R	S	R	R	S	S	S	S	S	S	S	R	S	S	S	S	S
19	S	S	S	S	S	R	S	R	R	S	S	R	R	S	S	S	H	S	S	R	S	S	S	S	S
20	S	S	S	S	S	R	S	R	R	S	S	R	R	S	S	S	H	S	S	R	S	S	S	S	S
21	S	S	S	S	S	S	S	R	S	S	S	R	R	S	S	S	H	S	S	S	R	S	S	S	S
22	S	S	S	S	S	S	S	R	S	S	S	R	R	R/H	S	S	H	S	S	S	R	S	S	S	S
23	H	S	S	S	H	H	S	R	R	S	S	H	S	S	H	S	S	S	S	H	S	S	S	S	S
24	H	S	S	S	H	H	S	R	R	S	S	H	S	S	H	S	S	S	S	H	S	S	S	S	S
25	H	S	S	S	R	H	S	R	R	S	S	S	S	S	H	S	S	S	S	H	S	S	S	S	S
26	H	S	S	S	S	H	S	R	R	S	S	R	S	S	H	S	S	S	S	R	S	S	S	S	S
27	H	S	S	S	S	H	S	R	R	S	S	R	S	S	H	S	S	S	S	R	S	S	S	S	S
28	S	S	S	S	H	R	S	R	S	S	R	H	S	S	S	S	S	S	S	R	S	S	S	S	S
29	R	S	S	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S	S	R	S	S	S	S	S
30	R	S	S	S	R	S	S	R	S	S	R	R	S	S	S	S	S	S	S	R	S	S	S	S	S
31	R	S	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
32	R	S	S	S	S	S	S	R	R	S	R	R	S	R/H	S	S	S	S	S	S	S	S	S	S	S
33	R	S	S	S	S	S	S	R	R	S	R	R	S	R/H	S	S	S	S	S	S	S	S	S	S	S
34	R	S	S	S	R	S	S	R	R	S	R	R	S	S	S	S	S	S	S	R	S	S	S	S	S
35	R	S	S	S	R	S	S	R	R	S	R	R	S	S	S	S	S	S	S	R	S	S	S	S	S
36	R	S	S	S	R	S	S	R	R	S	R	R	S	S	S	S	S	S	S	R	S	S	S	S	S
37	R	S	S	S	R	S	S	R	R	S	R	R	S	S	S	S	S	S	S	R	S	S	S	S	S
38	R	S	S	S	S	S	S	R	R	S	R	R	R	S	S	S	S	S	S	S	S	S	S	S	S
39	R	S	S	S	S	S	S	R	R	S	R	R	R	S	S	S	S	S	S	S	S	S	S	S	S
40	R	S	S	S	S	S	S	R	R	S	R	R	R	S	S	S	S	S	S	S	S	S	S	S	S
41	S	S	S	S	S	R	S	R	R	S	R	S	S	S	S	S	S	S	S	R	R	S	S	S	S
42	S	S	S	S	S	R	S	R	R	S	R	S	S	S	S	S	S	S	S	R	R	S	S	S	S
43	R	S	S	S	S	S	S	R	R	S	R	R	S	R/H	S	S	S	S	S	S	S	S	S	S	S
44	R	S	S	S	S	S	S	R	R	S	R	R	S	R/H	S	S	S	S	S	S	S	S	S	S	S
45	R	S	S	S	S	S	S	R	R	S	R	R	S	R/H	S	S	S	S	S	S	S	S	S	S	S
46	R	S	S	S	S	S	S	R	R	S	R	R	S	R/H	S	S	S	S	S	S	S	S	S	S	S
47	R	S	S	S	S	S	S	R	R	S	R	R	S	R/H	S	S	S	S	S	S	S	S	S	S	S
48	R	S	S	S	S	S	S	R	R	S	R	R	S	R/H	S	S	S	S	S	S	S	S	S	S	S
49	R	S	S	S	S	S	S	R	R	S	R	R	S	R/H	S	S	S	S	S	S	S	S	S	S	S
50	R	S	S	S	S	S	R	R	R	S	R	R	R	R/H	S	S	S	S	S	R	R	S	S	S	S
51	R	S	S	S	S	S	S	R	R	S	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S
52	R	S	S	S	S	S	S	R	R	S	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S
53	H	S	S	S	H	S	S	R	R	S	R	H	S	R/H	S	H	S	S	S	H	S	S	S	S	S

No.	Ty1	Ty2	Ty4	ty5	J3	Mi-Rex	Sw5	I	I2	I3	Ve2	Tm2a	Ph3	Cf9	Bw6	Bw12	Py1-2	Py1-4	Pto	Sm1	Sm2	ol2	Lv
54	H	S	S	S	H	S	S	R	H	S	R	H	S	S	S	H	S	S	S	R	S	S	S
55	H	S	S	S	R	S	S	R	H	S	H	H	H	R/H	S	S	S	S	S	R	S	S	S
56	H	S	S	S	S	H	S	R	H	S	R	S	S	S	H	S	S	S	S	H	S	S	S
57	H	S	S	S	S	H	H	R	R	S	R	H	H	R/H	S	S	S	S	S	H	H	S	S
58	H	S	S	S	S	H	H	R	R	S	R	H	H	R/H	S	S	S	S	S	H	H	S	S
59	H	S	S	S	S	R	H	R	R	H	R	H	H	R/H	S	S	S	S	S	H	S	S	H
60	H	S	S	S	S	H	H	R	R	H	R	H	H	S	S	S	S	S	S	H	S	S	H
61	H	S	S	S	S	H	S	R	R	S	R	H	H	S	S	S	S	S	S	H	H	S	S
62	R	S	S	S	S	H	R	R	R	S	R	R	R	R/H	S	S	S	S	S	S	S	S	S
63	R	S	S	S	S	H	R	R	R	S	R	R	R	R/H	S	S	S	S	S	S	S	S	S
64	R	S	S	S	S	S	R	R	R	S	R	R	R	R/H	S	S	S	S	S	S	S	S	S
65	R	S	S	S	S	H	R	R	R	S	R	R	R	R/H	S	S	S	S	S	S	S	S	S
66	R	S	S	S	S	H	R	R	R	S	R	R	R	R/H	S	S	S	S	S	S	S	S	S
67	R	S	S	S	S	S	R	R	R	S	R	R	R	R/H	S	S	S	S	S	S	S	S	S
68	R	S	S	S	S	H	R	R	R	S	R	R	R	R/H	S	S	S	S	S	S	S	S	S
69	R	S	S	S	S	R	R	R	R	S	R	R	R	R/H	S	S	S	S	S	S	S	S	S
70	S	S	S	S	H	S	H	R	H	S	H	R	S	S	S	S	S	S	S	R	S	S	R
71	S	S	S	S	S	S	H	R	H	S	R	R	S	S	S	S	S	S	S	R	S	S	R
72	R	S	S	S	S	S	S	R	H	S	R	R	S	R/H	S	S	S	S	S	S	S	S	S
73	S	S	S	S	H	R	S	R	H	S	R	R	S	R/H	S	S	S	S	S	S	S	S	S
74	S	S	S	S	H	R	S	R	S	S	R	R	S	R/H	S	S	S	S	S	S	S	S	S
75	H	S	S	S	R	H	S	R	S	S	R	R	S	R/H	S	S	S	S	S	S	S	S	S
76	H	S	S	S	S	H	H	R	R	S	R	S	H	R/H	S	S	S	S	S	H	H	S	S
77	H	S	S	S	S	H	S	R	R	S	R	H	S	R/H	S	S	S	S	S	R	R	S	S
78	R	S	S	S	S	S	H	R	R	S	R	S	S	R/H	S	S	S	S	S	S	S	S	S
79	R	S	S	S	S	S	S	R	R	S	R	S	S	R/H	S	S	S	S	S	H	S	S	S
80	H	S	S	S	S	S	S	R	H	S	R	R	S	S	S	S	S	S	S	H	S	S	S
81	S	S	S	S	S	S	S	R	H	S	R	H	S	S	S	S	S	S	S	S	S	S	S
82	S	S	S	S	S	R	S	R	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S
83	S	S	S	S	S	R	S	R	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S
84	S	S	S	S	H	R	S	R	S	S	S	R	S	S	H	R	S	S	S	R	S	S	S
85	R	S	S	S	S	S	R	R	S	S	R	S	R	S	S	S	S	S	S	S	R	S	S
86	S	S	S	S	H	H	S	R	R	H	R	R	S	S	S	R	S	S	S	S	R	S	S
87	S	S	S	S	H	H	S	R	R	H	R	R	S	S	S	R	S	S	S	S	R	S	S
88	S	S	S	S	H	R	S	R	S	S	S	R	S	S	H	R	S	S	S	R	S	S	S
89	H	S	S	S	R	H	S	R	R	S	H	R	S	S	H	R	S	S	S	H	S	S	S
90	H	S	S	S	R	H	S	R	R	S	H	R	S	S	H	R	S	S	S	H	S	S	S
91	H	S	S	S	S	R	S	R	S	S	R	H	S	S	S	S	S	S	S	R	S	S	S
92	H	S	S	S	S	R	S	R	S	S	R	H	S	S	S	S	S	S	S	R	S	S	S
93	H	S	S	S	S	R	S	R	S	S	R	R	S	S	S	S	S	S	S	R	S	S	S
94	H	S	S	S	R	H	S	R	R	S	R	R	S	S	S	S	S	S	S	S	S	S	S
95	H	S	S	S	S	H	H	R	R	S	R	R	H	S	S	S	S	S	S	S	S	S	S
96	H	S	S	S	S	S	S	R	R	S	R	R	S	S	S	S	S	S	S	S	S	S	S
97	S	S	S	S	S	R	R	R	R	S	R	S	R	R/H	S	S	S	S	S	S	S	S	S
98	S	S	S	S	S	R	R	R	R	S	R	S	R	S	S	S	S	S	S	S	S	S	S
99	S	S	S	S	S	R	R	R	R	S	R	S	R	S	S	S	S	S	S	S	S	S	S
100	S	S	S	S	S	R	R	R	R	S	R	S	R	R/H	S	S	S	S	S	S	S	S	S
101	S	S	S	S	S	R	R	R	R	S	R	S	R	R/H	S	S	S	S	S	S	S	S	S
102	S	S	S	S	S	R	R	R	R	S	R	S	R	R/H	S	S	S	S	S	S	S	S	S
103	S	S	S	S	S	R	R	R	R	S	R	S	R	R/H	S	S	S	S	S	S	S	S	S
104	S	S	S	S	S	R	R	R	R	S	R	S	R	R/H	S	S	S	S	S	S	S	S	S
105	S	S	S	S	S	R	R	R	R	S	R	S	R	R/H	S	S	S	S	S	S	S	S	S
106	S	S	S	S	S	R	R	R	R	S	R	S	R	R/H	S	S	S	S	S	S	S	S	S
107	S	S	S	S	S	R	S	R	R	S	R	S	S	R/H	S	S	S	S	S	R	R	S	S
108	S	S	S	S	S	R	S	R	R	S	R	S	S	R/H	S	S	S	S	S	R	H	S	S
109	S	S	S	S	S	R	S	R	R	S	R	S	S	R/H	S	S	S	S	S	R	H	S	S
110	S	S	S	S	S	R	S	R	R	S	R	S	S	R/H	S	S	S	S	S	R	R	S	S
111	S	S	S	S	S	R	S	R	R	S	R	S	S	R/H	S	S	S	S	S	S	S	S	S
112	S	S	S	S	S	R	S	R	R	S	R	S	S	R/H	S	S	S	S	S	H	H	S	S
113	S	S	S	S	S	R	S	R	R	S	R	S	S	R/H	S	S	S	S	S	S	S	S	S
114	S	S	S	S	S	R	S	R	R	S	R	S	S	R/H	S	S	S	S	S	S	S	S	S
115	S	S	S	S	S	R	S	R	R	S	R	S	S	R/H	S	S	S	S	S	H	H	S	S

No.	Ty1	Ty2	Ty4	ty5	J3	Mi-Rex	Sw5	I	I2	I3	Ve2	Tm2 _a	Ph3	Cf9	Bw6	Bw1 ₂	Py1- ₂	Py1- ₄	Pto	Sm1	Sm2	ol2	Lv	
116	S	S	S	S	S	R	S	R	R	S	R	S	S	R/H	S	S	S	S	S	S	S	S	S	S
117	S	S	S	S	S	R	S	R	R	S	R	S	S	R/H	S	S	S	S	S	S	H	H	S	S
118	S	S	S	S	S	R	S	R	R	S	R	S	S	R/H	S	S	S	S	S	H	H	S	S	
119	S	S	S	S	S	R	S	R	R	S	R	S	S	R/H	S	S	S	S	S	R	R	S	S	
120	H	S	S	S	S	H	S	R	R	S	R	S	S	R/H	S	S	S	S	S	R	S	S	S	
121	H	S	S	S	S	H	S	R	R	S	R	S	S	S	S	S	S	S	S	R	S	S	S	
122	H	S	S	S	S	H	S	R	R	S	R	S	S	S	S	S	S	S	S	R	R	S	S	
123	R	S	S	S	S	S	S	R	R	S	R	S	S	R/H	S	S	S	S	S	R	S	S	S	
124	H	S	S	S	S	H	S	R	R	S	R	S	S	R/H	S	S	S	S	S	R	H	S	S	
125	R	S	S	S	S	H	R	R	R	S	R	R	R	R/H	S	S	S	S	S	S	S	S	S	
126	R	S	S	S	S	R	R	R	R	S	R	R	R	R/H	S	S	S	S	S	S	S	S	S	
127	R	S	S	S	S	H	R	R	R	S	R	R	R	R/H	S	S	S	S	S	S	S	S	S	
128	H	S	S	S	S	H	H	R	R	S	R	S	S	S	S	S	S	S	S	R	R	S	S	
129	H	S	S	S	S	H	H	R	R	S	R	S	H	S	S	S	S	S	S	R	R	S	S	
130	S	S	S	S	S	R	H	R	R	S	R	S	R	R/H	S	S	S	S	S	R	H	S	S	
131	S	S	S	S	S	R	S	R	R	S	R	S	S	R/H	S	S	S	S	S	H	H	S	S	
132	R	S	S	S	S	S	R	R	R	S	R	S	R	S	S	S	S	S	S	H	H	S	S	
133	R	S	S	S	S	S	R	R	R	S	R	S	R	S	S	S	S	S	S	S	S	S	S	
134	S	S	S	S	S	R	R	R	R	S	R	S	R	S	S	S	S	S	S	S	S	S	S	
135	S	S	S	S	S	R	R	R	R	S	R	S	R	R/H	S	S	S	S	S	S	S	S	S	
136	H	S	S	S	S	H	R	R	R	S	R	S	R	R/H	S	S	S	S	S	S	S	S	S	
137	H	S	S	S	S	H	R	R	R	S	R	S	R	R/H	S	S	S	S	S	S	S	S	S	
138	S	S	S	S	S	R	R	R	R	S	R	S	R	S	S	S	S	S	S	H	H	S	S	
139	H	S	S	S	S	H	H	R	R	S	R	S	H	R/H	S	S	S	S	S	H	S	S	S	
140	S	S	S	S	S	R	H	R	R	S	R	S	H	R/H	S	S	S	S	S	R	R	S	S	
141	R	S	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S	S	S	S	S	S	S	
142	H	S	S	S	R	H	S	R	H	S	R	S	S	R/H	S	S	S	S	S	R	R	S	S	
143	R	S	S	S	R	S	S	R	H	S	R	S	S	R/H	S	S	S	S	S	R	R	S	S	
144	S	S	S	S	S	R	R	R	S	S	R	R	S	R/H	S	S	S	S	S	R	R	S	S	
145	S	S	S	S	S	R	R	R	S	S	R	R	S	R/H	S	S	S	S	S	R	R	S	S	
146	S	S	S	S	S	R	R	R	S	S	R	R	S	R/H	S	S	S	S	S	R	R	S	S	
147	S	S	S	S	S	R	R	R	S	S	R	R	S	R/H	S	S	S	S	S	R	R	S	S	
148	S	S	S	S	S	R	R	R	S	S	R	R	S	R/H	S	S	S	S	S	R	R	S	S	
149	R	S	S	S	S	S	R	R	H	S	R	R	S	R/H	S	S	S	S	S	R	R	S	S	
150	R	S	S	S	R	S	R	R	H	S	R	S	S	R/H	S	S	S	S	S	R	R	S	S	
151	R	S	S	S	R	S	R	R	H	S	R	S	S	R/H	S	S	S	S	S	R	R	S	S	
152	R	S	S	S	R	S	R	R	R	S	R	S	S	R/H	S	S	S	S	S	R	R	S	S	
153	R	S	S	S	R	S	R	R	R	S	R	S	S	R/H	S	S	S	S	S	R	R	S	S	
154	R	S	S	S	R	S	H	R	S	S	R	S	S	R/H	S	S	S	S	S	R	R	S	S	

표 13. 토마토생명과학연구소 66점의 시료에 대하여, 병 관련 23종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	Ty4	ty5	J3	Mi-Rex	Sw5	I	I2	I3	Ve2	Tm2 _a	Ph3	Cf9	Bw6	Bw1 ₂	Py1- ₂	Py1- ₄	Pto	Sm1	Sm2	ol2	Lv
1	S	S	S	S	H	R	S	S	S	S	R	H	S	S	S	S	S	S	S	R	S	S	S
2	S	S	S	S	S	S	S	R	S	S	S	R	R	S	S	S	R	S	S	S	R	S	S
3	S	S	S	S	S	S	S	R	S	S	S	R	R	S	S	S	R	S	S	R	S	S	S
4	S	S	S	S	S	R	S	R	S	S	S	R	R	S	S	S	S	S	S	R	S	S	S
5	H	S	S	S	S	H	S	R	H	S	H	H	S	R/H	S	S	S	S	S	R	S	S	S
6	H	S	S	S	S	H	S	R	H	S	S	R	S	R/H	S	S	S	S	S	R	S	S	S
7	H	S	S	S	S	H	S	R	H	S	S	R	S	R/H	S	S	S	S	S	R	S	S	S
8	S	S	S	S	S	S	S	R	S	S	S	H	H	S	R	S	H	S	S	H	S	S	S
9	S	S	S	S	S	S	S	R	S	S	S	H	H	S	R	S	H	S	S	H	S	S	S
10	S	S	S	S	S	S	S	R	S	S	S	H	H	S	R	S	H	S	S	H	S	S	S
11	S	S	S	S	H	H	S	R	S	S	S	R	R	S	R	S	R	S	S	H	H	S	S
12	S	S	S	S	H	H	S	R	S	S	S	R	R	S	R	S	R	S	S	H	H	S	S
13	S	S	S	S	H	H	S	R	S	S	S	R	R	S	R	S	R	S	S	H	H	S	S
14	S	S	S	S	S	H	S	R	S	S	S	S	H	S	R	S	H	S	S	S	S	S	S
15	S	S	S	S	S	H	S	R	S	S	S	S	H	S	R	S	H	S	S	S	S	S	S
16	S	S	S	S	S	S	S	R	S	S	S	R	R	S	S	S	S	S	S	S	R	S	S
17	S	S	S	S	S	S	S	R	S	S	S	R	R	S	S	S	R	S	S	S	R	S	S
18	S	S	S	S	R	S	S	R	R	S	R	R	S	S	S	S	S	S	S	R	S	S	S

No.	Ty1	Ty2	Ty4	ty5	J3	Mi-Rex	Sw5	I	I2	I3	Ve2	Tm2 _a	Ph3	Cf9	Bw6	Bw1 ₂	Py1- ₂	Py1- ₄	Pto	Sm1	Sm2	ol2	Lv	
19	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S	R	R	S	S
20	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	R	R	S	S
21	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	R	R	S
22	S	S	S	S	R	R	S	R	S	S	S	R	S	S	S	S	S	S	S	S	R	S	R	S
23	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	R	R	S
24	S	S	S	S	R	R	S	R	S	S	S	R	S	S	S	S	S	S	S	S	R	S	R	S
25	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	R	R	S
26	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	R	R	S
27	S	S	S	S	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S	S	R	S	S
28	S	S	S	S	R	R	S	R	S	S	H	R	S	S	S	S	S	S	S	S	R	S	R	S
29	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	R	R	S
30	H	S	S	S	S	H	S	R	R	S	S	R	S	S	H	S	S	S	S	S	R	S	S	S
31	H	S	S	S	S	H	S	R	R	S	S	R	S	S	H	S	S	S	S	S	R	S	S	S
32	H	S	S	S	S	H	S	R	R	S	S	R	S	S	H	S	S	S	S	S	R	S	S	S
33	H	S	S	S	S	H	S	R	R	S	S	R	S	S	H	S	S	S	S	S	R	S	S	S
34	H	S	S	S	S	H	S	R	R	S	S	R	S	S	H	S	S	S	S	S	R	S	S	S
35	S	S	S	S	H	R	H	R	R	S	S	R	S	S	S	S	S	S	S	S	R	H	S	H
36	S	S	S	S	S	S	H	R	H	S	R	R	S	S	S	S	S	S	S	S	R	S	S	R
37	S	S	S	S	H	H	R	R	R	S	H	R	S	S	S	S	S	S	S	S	R	S	S	H
38	S	S	S	S	S	S	H	R	S	S	S	H	S	S	S	S	R	S	S	S	H	S	S	S
39	S	S	S	S	S	S	H	R	S	S	S	S	S	S	S	S	R	S	S	S	H	S	S	S
40	S	S	S	S	S	S	S	R	S	S	S	R	S	S	S	S	S	S	S	S	R	S	S	S
41	S	S	S	S	S	S	H	R	S	S	S	H	S	S	S	S	R	S	S	S	H	S	S	S
42	S	S	S	S	S	S	S	R	S	S	S	H	S	S	S	S	R	S	S	S	H	S	S	S
43	S	S	S	S	S	S	H	R	S	S	S	R	S	S	S	S	R	S	S	S	H	S	S	S
44	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S	S	R	S	S	S	R	S	S	S
45	S	S	S	S	S	H	H	R	S	S	S	S	S	R/H	S	S	R	S	S	S	S	S	S	S
46	S	S	S	S	S	H	H	R	S	S	S	S	S	R/H	S	S	R	S	S	S	S	S	S	S
47	S	S	S	S	S	R	H	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S
48	S	S	S	S	S	H	S	R	S	S	S	S	S	R/H	S	S	R	S	S	S	S	S	S	S
49	R	S	S	S	S	S	S	R	H	S	R	R	S	R/H	S	S	S	S	S	S	S	S	S	S
50	S	S	S	S	H	R	S	R	H	S	R	R	S	R/H	S	S	S	S	S	S	S	S	S	S
51	H	S	S	S	H	H	S	R	S	S	R	R	S	S	S	S	S	S	S	S	S	S	S	S
52	H	S	S	S	R	H	S	R	S	S	R	R	S	R/H	S	S	S	S	S	S	S	S	S	S
53	H	S	S	S	R	H	S	R	S	S	R	R	S	S	S	S	S	S	S	S	S	S	S	S
54	H	S	S	S	S	H	H	R	R	S	R	S	H	R/H	S	S	S	S	S	S	H	H	S	S
55	S	S	S	S	S	S	R	R	R	S	R	H	S	R/H	S	H	S	S	S	S	H	S	S	S
56	R	S	S	S	S	S	H	R	R	S	R	S	S	R/H	S	S	S	S	S	S	S	S	S	S
57	H	S	S	S	S	S	S	R	H	S	R	R	S	S	S	S	S	S	S	S	H	S	S	S
58	H	S	S	S	S	S	S	R	H	S	R	H	S	S	S	S	S	S	S	S	R	S	S	S
59	S	S	S	S	S	R	S	R	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S
60	S	S	S	S	S	R	S	R	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S
61	S	S	S	S	H	H	S	R	R	H	R	R	S	S	S	R	S	S	S	S	S	R	S	S
62	S	S	S	S	H	R	S	R	S	S	S	R	S	S	H	R	S	S	S	S	R	S	S	S
63	H	S	S	S	S	H	S	R	S	S	S	S	S	S	H	S	R	S	S	S	H	H	S	S
64	H	S	S	S	S	H	S	R	S	S	S	H	H	R/H	H	S	H	S	S	S	H	H	S	S
65	H	S	S	S	S	H	S	R	S	S	S	H	H	R/H	H	S	R	S	S	S	H	H	S	S
66	S	S	S	S	S	R	S	R	S	S	S	R	R	S	S	S	H	S	S	S	R	S	S	S

표 14. 토마토생명과학연구소 52점의 시료에 대하여, 병 관련 24종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	Ty4	ty5	J3	Mi-Rex	Mi2 ₃	Sw5	I2	I3	Ve2	Tm2 _a	Ph3	Cf9	Bw6	Bw1 ₂	py1 ₋₂	py1 ₋₄	Pto	Sm1	Sm2	Sm-CT55	ol2	Lv	
1	S	S	S	S	S	S	S	S	H	S	R	S	S	S	S	S	S	S	S	S	H	S	H	S	S
2	H	S	S	S	S	H	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S	R	S	S
3	R	S	S	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S	S	R	S	S	S	S
4	S	S	S	S	S	R	R	S	R	S	S	R	S	S	S	S	S	S	S	S	R	S	S	S	S
5	H	S	S	S	S	H	H	S	R	S	S	R	S	S	H	S	S	S	S	S	R	S	S	S	S
6	R	S	S	S	H	S	S	S	R	S	S	H	S	S	R	S	S	S	S	S	H	S	H	S	S
7	H	S	S	S	S	H	H	S	R	S	S	S	S	S	H	S	S	S	S	S	R	S	S	S	S
8	R	S	S	S	S	S	S	S	R	S	R	R	S	S	S	S	S	S	S	S	S	S	S	S	S
9	H	S	S	S	S	H	H	S	R	S	R	R	S	S	S	S	S	S	S	S	S	S	S	S	S

No.	Ty1	Ty2	Ty4	ty5	J3	Mi-Rex	Mi23	Sw5	I2	I3	Ve2	Tm2a	Ph3	Cf9	Bw6	Bw12	py1-2	py1-4	Pto	Sm1	Sm2	Sm-CT55	ol2	Lv
10	S	S	S	S	S	S	S	S	S	S	R	R	S	S	S	S	S	S	S	R	S	S	S	S
11	S	S	S	S	S	S	S	S	R	S	R	R	S	S	S	S	S	S	S	R	S	S	S	S
12	S	S	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	S	R	S	S
13	S	S	S	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	R	S	S
14	R	S	S	S	S	S	S	S	S	S	R	S	R	R	S	S	S	S	S	S	S	R	S	S
15	R	S	S	S	S	S	S	S	S	S	R	S	R	R	S	S	S	S	S	S	S	R	S	S
16	R	S	S	S	S	S	S	S	S	S	R	S	R	R	S	S	S	S	S	S	S	R	S	S
17	S	S	S	S	S	S	S	S	S	S	R	S	R	R	S	S	S	S	S	S	S	R	S	S
18	R	S	S	S	S	S	S	S	S	S	R	S	R	R	S	S	S	S	S	S	S	R	S	S
19	R	S	S	S	S	S	S	S	R	S	S	S	S	R	S	S	S	S	S	R	S	S	S	S
20	R	S	S	S	S	S	S	S	R	S	S	S	S	R	S	S	S	S	S	R	S	S	S	S
21	R	S	S	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S	R	S	S	S	S
22	R	S	S	S	R	S	S	S	R	S	R	R	S	S	S	S	S	S	S	S	S	R	S	S
23	R	S	S	S	S	S	S	S	R	S	R	S	S	R	S	S	S	S	S	S	S	R	S	S
24	H	S	S	S	S	H	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	R	S	S
25	S	S	S	S	S	S	S	S	R	S	R	R	S	S	S	S	S	S	S	H	S	S	S	S
26	R	S	S	S	S	R	R	S	H	S	R	H	S	S	S	S	S	S	S	R	S	S	S	S
27	H	S	S	S	S	R	R	S	S	S	R	R	S	S	S	S	S	S	S	R	S	S	S	S
28	R	S	S	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S	R	S	S	S	S
29	S	S	S	S	R	R	R	H	R	S	R	S	S	R	S	S	S	S	S	R	H	S	S	S
30	S	S	S	S	S	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S	S	S	S	S
31	S	S	S	S	S	S	S	S	S	S	R	R	S	S	S	S	S	S	S	R	S	S	S	S
32	R	S	S	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S
33	H	S	S	S	S	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S	S	S	S	S
34	H	S	S	S	S	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S	S	S	S	S
35	H	S	S	S	S	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S	S	S	S	S
36	S	S	S	S	R	R	R	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
37	R	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
38	R	S	S	S	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	R	S	S	S
39	R	S	S	S	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	R	S	S	S	S
40	R	S	S	S	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	R	S	S	S	S
41	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
42	S	S	S	S	S	R	R	R	R	S	R	S	R	R	S	S	S	S	S	S	S	S	S	S
43	S	S	S	S	S	R	R	R	R	S	R	S	R	R	S	S	S	S	S	S	S	S	S	S
44	R	S	S	S	S	S	S	R	R	S	R	R	R	R	S	S	S	S	S	S	S	S	S	S
45	H	S	S	S	R	H	H	S	R	S	R	S	S	R	S	S	S	S	S	R	R	S	S	S
46	H	S	S	S	R	H	H	S	H	S	R	S	S	R	S	S	S	S	S	R	R	S	S	S
47	H	S	S	S	S	H	H	R	R	S	R	R	S	R	S	S	S	S	S	R	R	S	S	S
48	S	S	S	S	S	R	R	R	S	S	R	R	S	R	S	S	S	S	S	R	R	S	S	S
49	R	S	S	S	R	S	S	S	S	S	R	S	S	R	S	S	S	S	S	R	R	S	S	S
50	H	S	S	S	S	H	S	S	R	S	R	R	S	S	S	S	S	S	S	R	S	S	S	S
51	S	S	S	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S	R	S	S	S	S
52	S	S	S	S	S	S	S	S	R	S	R	H	S	S	S	S	S	S	S	R	S	S	S	S

표 15. 토마토생명과학연구소 60점의 시료에 대하여, 병 관련 13종의 마커 및 형질 관련 1종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	Sw5	J3	Mi23	I3	Ph3	Cf9	Bw6	Bw12	Pto	Sm-CT55	ol2	ms
1	S	S	S	S	S	S	R	R	S	S	S	S	S	Ms
2	S	S	S	S	S	S	R	R	S	S	S	S	S	H
3	S	S	S	S	S	S	R	H	S	S	S	S	S	H
4	S	S	S	S	S	S	R	H	S	S	S	S	S	Ms
5	S	S	S	S	S	S	R	H	S	S	S	S	S	H
6	S	S	S	S	S	S	R	H	S	S	S	S	S	ms
7	H	S	H	S	S	S	H	H	S	S	S	S	S	H
8	S	S	H	S	H	S	H	R	S	S	S	S	S	H
9	S	S	H	S	R	S	H	R	S	S	S	S	S	H
10	S	S	S	S	R	S	H	S	S	S	S	S	S	ms
11	H	S	H	S	H	S	S	R	S	S	S	S	S	Ms
12	S	S	R	S	R	S	S	R	S	S	S	S	S	H

No.	Ty1	Ty2	Sw5	J3	Mi23	I3	Ph3	Cf9	Bw6	Bw12	Pto	Sm-CT55	ol2	ms
13	H	S	H	S	H	S	S	H	S	S	S	S	S	H
14	R	S	R	S	S	S	S	S	S	S	S	S	S	Ms
15	H	S	H	S	H	S	S	S	S	S	S	S	S	H
16	S	S	R	S	R	S	S	H	S	S	S	S	S	ms
17	R	S	S	S	S	S	H	S	S	S	S	S	S	H
18	R	S	S	S	S	S	R	S	S	S	S	S	S	H
19	R	S	S	S	S	S	H	S	S	S	S	S	S	Ms
20	R	S	S	S	S	S	H	S	S	S	S	S	S	Ms
21	R	S	S	S	S	S	R	S	S	S	S	S	S	H
22	R	S	S	S	S	S	H	S	S	S	S	S	S	ms
23	H	S	S	S	H	S	R	H	S	S	S	S	S	Ms
24	S	S	S	S	R	S	H	H	S	S	S	S	S	Ms
25	H	S	S	S	S	S	S	H	S	S	S	S	S	Ms
26	R	S	S	S	S	S	S	S	S	S	S	S	S	H
27	H	S	S	S	H	S	S	R	S	S	S	S	S	ms
28	S	S	R	S	S	S	S	H	S	S	S	S	S	H
29	S	S	R	S	H	S	S	R	S	S	S	S	S	Ms
30	S	S	R	S	R	S	S	R	S	S	S	S	S	Ms
31	S	S	H	S	S	S	H	S	S	S	S	S	S	H
32	S	S	S	S	S	S	R	H	S	S	S	S	S	H
33	S	S	S	S	S	S	R	S	S	S	S	S	S	Ms
34	S	S	R	S	S	S	S	H	S	S	S	S	S	H
35	S	S	R	S	S	S	H	R	S	S	S	S	S	H
36	S	S	H	S	S	S	H	H	S	S	S	S	S	H
37	S	S	H	S	S	S	H	S	S	S	S	S	S	H
38	S	S	H	S	S	S	S	R	S	S	S	S	S	ms
39	S	S	H	S	S	S	H	H	S	S	S	S	S	Ms
40	S	S	H	S	S	S	H	H	S	S	S	S	S	H
41	S	S	H	S	S	S	H	S	S	S	S	S	S	H
42	S	S	H	S	S	S	H	H	S	S	S	S	S	ms
43	S	S	S	S	S	S	R	S	S	S	S	S	S	H
44	S	S	H	S	S	S	H	S	S	S	S	S	S	H
45	S	S	S	S	S	S	R	S	S	S	S	S	S	H
46	S	S	R	S	S	S	S	H	S	S	S	S	S	H
47	S	S	S	S	S	S	R	S	S	S	S	S	S	H
48	S	S	R	S	S	S	S	S	S	S	S	S	S	ms
49	S	S	R	S	S	S	S	S	S	S	S	S	S	H
50	S	S	S	S	S	S	R	S	S	S	S	S	S	Ms
51	S	S	S	S	S	S	R	S	H	S	S	S	S	Ms
52	S	S	H	S	S	S	H	S	S	S	S	S	S	ms
53	S	S	H	S	S	S	H	S	S	S	S	S	S	H
54	S	S	H	S	S	S	H	S	S	S	S	S	S	H
55	H	S	R	S	S	S	S	S	R	S	S	S	S	H
56	H	S	R	S	S	S	S	S	H	S	S	S	S	Ms
57	H	S	H	S	S	S	H	S	R	S	S	S	S	Ms
58	H	S	S	S	S	S	R	S	H	S	S	S	S	Ms
59	H	S	H	S	S	S	H	S	H	S	S	S	S	Ms
60	H	S	H	S	S	S	H	S	S	S	S	S	S	Ms

④ 가나종묘

가나종묘로부터 총 233점의 시료를 받아 2번의 서비스를 진행하였다. 처음 42점의 시료에 대하여, 병 관련 12종의 마커로 서비스를 진행하였다(표 16). 두 번째로는 191점의 시료에 대하여, 고정도 검사를 위해 24종의 마커로 서비스를 진행하였다(표 17). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 16, 17).

표 16. 가나종묘 42점의 시료에 대하여, 병 관련 12종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi-rex	Tm2a	Sw5	Cf9
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No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi-rex	Tm2a	Sw5	Cf9
1	S	S	R	R	R	S	S	S	S	R	S	S
2	S	S	S	R	R	S	S	S	S	S	S	S
3	S	S	H	R	R	S	S	S	S	H	S	S
4	S	H	S	R	R	S	S	S	S	S	S	S
5	S	S	S	S	R	S	H	S	S	S	S	R/H
6	S	S	S	R	S	S	R	S	S	R	S	S
7	S	S	S	R	R	S	R	S	S	S	S	S
8	S	S	S	S	R	S	R	S	S	S	S	S
9	S	S	S	R	R	S	S	S	S	S	S	S
10	S	S	S	S	S	S	R	S	S	S	S	S
11	S	S	S	S	R	S	R	S	S	S	S	S
12	S	S	S	R	R	S	S	S	S	S	S	S
13	S	S	S	R	S	S	R	S	S	S	S	S
14	S	R	S	R	R	S	R	S	S	S	S	R/H
15	S	R	S	R	R	S	R	S	S	S	S	R/H
16	S	S	R	R	S	S	R	S	S	R	S	S
17	S	S	R	R	R	S	R	S	S	R	S	S
18	S	S	S	R	R	S	S	S	S	S	S	S
19	S	S	S	R	R	S	S	S	S	S	S	S
20	S	S	S	R	S	S	R	R/H	S	R	S	R/H
21	S	S	R	R	S	S	H	S	S	R	S	S
22	S	S	R	R	S	S	H	S	S	R	S	S
23	S	S	H	S	S	S	H	R/H	S	R	S	S
24	S	S	H	R	S	S	H	S	S	R	S	S
25	S	S	R	S	S	S	H	S	S	R	S	S
26	R	S	S	S	S	S	R	R/H	S	R	S	S
27	R	S	S	S	S	S	R	R/H	S	R	S	S
28	R	S	S	S	S	S	R	R/H	S	S	S	S
29	R	S	S	S	S	S	R	R/H	S	S	S	S
30	R	S	S	S	S	S	R	R/H	S	R	S	S
31	S	S	R	S	S	S	S	R/H	S	R	S	R/H
32	S	S	R	S	S	S	R	R/H	S	R	S	S
33	R	S	R	S	S	H	R	R/H	R	R	S	R/H
34	H	S	H	H	S	H	R	R/H	R	H	S	R/H
35	H	S	H	S	S	S	R	R/H	R	H	S	S
36	S	R	S	H	R	S	S	S	S	H	S	S
37	S	S	S	S	H	S	S	S	S	S	S	S
38	S	S	H	H	H	S	S	R/H	S	R	S	S
39	S	S	S	R	R	S	H	S	H	S	S	S
40	S	S	H	H	S	S	H	R/H	S	R	S	S
41	S	S	H	S	S	S	S	R/H	S	H	S	S
42	S	S	S	S	H	S	H	S	S	H	S	R/H

표 17. 가나종묘 191점의 시료에 대하여, 고정도 검사를 위해 24종의 마커를 이용한 서비스 결과

순번	유효 SNP수	고정된 SNP수	고정율 (%)	순번	유효 SNP수	고정된 SNP수	고정율 (%)	순번	유효 SNP수	고정된 SNP수	고정율 (%)
1	24	22	91.7	65	24	23	95.8	129	24	24	100
2	24	23	95.8	66	24	24	100	130	24	23	95.8
3	24	23	95.8	67	24	23	95.8	131	24	24	100
4	24	23	95.8	68	24	23	95.8	132	24	23	95.8
5	24	22	91.7	69	24	24	100	133	24	23	95.8
6	24	23	95.8	70	24	22	91.7	134	24	24	100
7	24	23	95.8	71	24	23	95.8	135	24	24	100
8	24	24	100	72	24	24	100	136	24	24	100
9	24	22	91.7	73	24	24	100	137	24	24	100
10	24	23	95.8	74	24	23	95.8	138	24	24	100
11	24	23	95.8	75	24	23	95.8	139	24	24	100
12	24	24	100	76	24	23	95.8	140	24	24	100
13	24	24	100	77	24	21	87.5	141	24	24	100
14	24	22	91.7	78	24	22	91.7	142	24	24	100
15	24	24	100	79	24	22	91.7	143	24	24	100
16	24	21	87.5	80	24	24	100	144	24	24	100

순번	유효 SNP수	고정된 SNP수	고정율 (%)
17	24	20	83.3
18	24	22	91.7
19	24	18	75
20	24	19	79.2
21	24	22	91.7
22	24	20	83.3
23	24	21	87.5
24	24	19	79.2
25	24	21	87.5
26	24	24	100
27	24	24	100
28	24	24	100
29	24	24	100
30	24	24	100
31	24	24	100
32	24	24	100
33	24	24	100
34	24	24	100
35	24	24	100
36	24	24	100
37	24	24	100
38	24	24	100
39	24	24	100
40	24	24	100
41	24	24	100
42	24	24	100
43	24	23	95.8
44	24	23	95.8
45	24	23	95.8
46	24	24	100
47	24	23	95.8
48	24	23	95.8
49	24	23	95.8
50	24	24	100
51	24	23	95.8
52	24	23	95.8
53	24	22	91.7
54	24	23	95.8
55	24	23	95.8
56	24	22	91.7
57	24	24	100
58	24	23	95.8
59	24	23	95.8
60	24	24	100
61	24	24	100
62	24	23	95.8
63	24	23	95.8
64	24	23	95.8

순번	유효 SNP수	고정된 SNP수	고정율 (%)
81	24	22	91.7
82	24	23	95.8
83	24	21	87.5
84	24	22	91.7
85	24	23	95.8
86	24	24	100
87	24	24	100
88	24	23	95.8
89	24	23	95.8
90	24	22	91.7
91	24	23	95.8
92	24	24	100
93	24	23	95.8
94	24	21	87.5
95	24	21	87.5
96	24	24	100
97	24	23	95.8
98	24	23	95.8
99	24	23	95.8
100	24	24	100
101	24	23	95.8
102	24	24	100
103	24	24	100
104	24	23	95.8
105	24	23	95.8
106	24	24	100
107	24	23	95.8
108	24	24	100
109	24	24	100
110	24	23	95.8
111	24	23	95.8
112	24	24	100
113	24	23	95.8
114	24	24	100
115	24	24	100
116	24	23	95.8
117	24	23	95.8
118	24	24	100
119	24	23	95.8
120	24	24	100
121	24	24	100
122	24	23	95.8
123	24	23	95.8
124	24	24	100
125	24	23	95.8
126	24	23	95.8
127	24	24	100
128	24	24	100

순번	유효 SNP수	고정된 SNP수	고정율 (%)
145	24	24	100
146	24	24	100
147	24	24	100
148	24	24	100
149	24	24	100
150	24	24	100
151	24	24	100
152	24	24	100
153	24	24	100
154	24	24	100
155	24	24	100
156	24	24	100
157	24	24	100
158	24	24	100
159	24	24	100
160	24	24	100
161	24	24	100
162	24	24	100
163	24	24	100
164	24	24	100
165	24	24	100
166	24	24	100
167	24	24	100
168	24	24	100
169	24	24	100
170	24	24	100
171	24	24	100
172	24	24	100
173	24	24	100
174	24	24	100
175	24	24	100
176	24	23	95.8
177	24	23	95.8
178	24	24	100
179	24	24	100
180	24	24	100
181	24	24	100
182	24	24	100
183	24	24	100
184	24	23	95.8
185	24	24	100
186	24	24	100
187	24	23	95.8
188	24	24	100
189	24	23	95.8
190	24	24	100
191	24	23	95.8

⑤ 한경대학교

한경대학교로부터 총 48점의 시료를 받아 1번의 서비스를 진행하였다. 48점의 시료에 대하여, MABC를 위해 48개의 마커로 서비스를 진행하였으며(표 18) 또한, 병 관련 13종의 마커 및 형질관련 1종의 마커로 서비스를 진행하였다(표 19). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 18, 19).

표 18. 한경대학교 48점의 시료에 대하여, MABC를 위해 48개의 마커를 이용한 서비스 결과

순번	샘플명	유효 SNP수	P2 allele로 완전히 고정된 SNP수	분리된 SNP수	분리된 SNP score (P2 allele: 1, heterozygous: 0.5, P1 allele: 0)		Score	치환율 (%)
					TBC-013	TBC-045		
1	BC2F3-004	39	37	2	0	0	37	94.9
2	BC2F3-005	39	37	2	0.5	0.5	38	97.4
3	BC2F3-006	39	37	2	0.5	0.5	38	97.4
4	BC2F3-007	39	37	2	0.5	0.5	38	97.4
5	BC2F3-011	39	37	2	0	0.5	37.5	96.2
6	BC2F3-013	39	37	2	0.5	1	38.5	98.7
7	BC2F3-015	39	37	2	0.5	0.5	38	97.4
8	BC2F3-016	39	37	2	0	0.5	37.5	96.2
9	BC2F3-018	39	37	2	0.5	0	37.5	96.2
10	BC2F3-021	39	37	2	0.5	0.5	38	97.4
11	BC2F3-022	39	37	2	0.5	0.5	38	97.4
12	BC2F3-023	39	37	2	1	1	39	100
13	BC2F3-032	39	37	2	0.5	1	38.5	98.7
14	BC2F3-035	39	37	2	0.5	0.5	38	97.4
15	BC2F3-043	39	37	2	0	1	38	97.4
16	BC2F3-045	39	37	2	1	0.5	38.5	98.7
17	BC2F3-047	39	37	2	0	1	38	97.4
18	BC2F3-049	39	37	2	0.5	1	38.5	98.7
19	BC2F3-053	39	37	2	1	1	39	100
20	BC2F3-054	39	37	2	0.5	0	37.5	96.2
21	BC2F3-055	39	37	2	0	0.5	37.5	96.2
22	BC2F3-057	39	37	2	1	1	39	100
23	BC2F3-058	39	37	2	0	0	37	94.9
24	BC2F3-059	39	37	2	0.5	0.5	38	97.4
25	BC2F3-061	39	37	2	0	0.5	37.5	96.2
26	BC2F3-062	39	37	2	0.5	1	38.5	98.7
27	BC2F3-066	39	37	2	0	0.5	37.5	96.2
28	BC2F3-071	39	37	2	0.5	0.5	38	97.4
29	BC2F3-073	39	37	2	0.5	0	37.5	96.2
30	BC2F3-076	39	37	2	0.5	1	38.5	98.7
31	BC2F3-079	39	37	2	1	0	38	97.4
32	BC2F3-080	39	37	2	0	0	37	94.9
33	BC2F3-082	39	37	2	0.5	1	38.5	98.7
34	BC2F3-084	39	37	2	0.5	0	37.5	96.2
35	BC2F3-085	39	37	2	0.5	1	38.5	98.7
36	BC2F3-089	39	37	2	0.5	0.5	38	97.4
37	BC2F3-090	39	37	2	0.5	1	38.5	98.7
38	BC2F3-093	39	37	2	1	0.5	38.5	98.7
39	BC2F3-094	39	37	2	0.5	0.5	38	97.4
40	BC2F3-095	39	37	2	1	0	38	97.4
41	BC2F3-097	39	37	2	0.5	1	38.5	98.7
42	BC2F3-098	39	37	2	0.5	1	38.5	98.7
43	BC2F3-106	39	37	2	0.5	0.5	38	97.4
44	BC2F3-108	39	37	2	1	1	39	100
45	BC2F3-111	39	37	2	0.5	0.5	38	97.4
46	BC2F3-118	39	37	2	0.5	0	37.5	96.2
47	BC2F3-119	39	37	2	0.5	0.5	38	97.4
48	P2	39	-	-	-	-	-	-

표 19. 한경대학교 48점의 시료에 대하여, 병 관련 13종의 마커 및 형질관련 1종의 마커를 이용한 서비스 결과

No.	Sample name	Ty1	Mi23	I2	Cf9	Ve2	J3	Ty2	I3	Ph3	Bw12	Sw5	Sm	Tm2a	Ms
1	BC2F3-004	R	S	H	R	R	R	S	S	S	S	S	S	S	H
2	BC2F3-005	R	S	H	R	R	R	S	S	S	S	S	S	S	H
3	BC2F3-006	S	R	H	R	R	R	S	S	S	S	S	S	S	H
4	BC2F3-007	S	R	S	R	R	R	S	S	S	S	S	S	S	H
5	BC2F3-011	R	S	H	R	R	R	S	S	S	S	S	S	S	H

No.	Sample name	Ty1	Mi23	I2	Cf9	Ve2	J3	Ty2	I3	Ph3	Bw12	Sw5	Sm	Tm2a	Ms
6	BC2F3-013	S	R	H	R	R	R	S	S	S	S	S	S	S	H
7	BC2F3-015	S	R	H	R	R	R	S	S	S	S	S	S	S	H
8	BC2F3-016	R	S	H	R	R	R	S	S	S	S	S	S	S	H
9	BC2F3-018	R	S	H	R	R	R	S	S	S	S	S	S	S	H
10	BC2F3-021	S	R	H	R	R	R	S	S	S	S	S	S	S	H
11	BC2F3-022	S	R	H	R	R	R	S	S	S	S	S	S	S	H
12	BC2F3-023	S	R	R	R	R	R	S	S	S	S	S	S	S	H
13	BC2F3-032	R	S	H	R	R	R	S	S	S	S	S	S	S	H
14	BC2F3-035	H	H	H	R	R	R	S	S	S	S	S	S	S	H
15	BC2F3-043	S	R	H	R	R	R	S	S	S	S	S	S	S	H
16	BC2F3-045	S	R	R	R	R	R	S	S	S	S	S	S	S	H
17	BC2F3-047	H	H	H	R	R	R	S	S	S	S	S	S	S	ms
18	BC2F3-049	R	S	H	R	R	R	S	S	S	S	S	S	S	H
19	BC2F3-053	R	S	H	R	R	R	S	S	S	S	S	S	S	H
20	BC2F3-054	S	R	R	R	R	R	S	S	S	S	S	S	S	H
21	BC2F3-055	H	H	S	R	R	R	S	S	S	S	S	S	S	Ms
22	BC2F3-057	H	H	R	R	R	R	S	S	S	S	S	S	S	H
23	BC2F3-058	R	S	S	R	R	R	S	S	S	S	S	S	S	H
24	BC2F3-059	H	H	R	R	R	R	S	S	S	S	S	S	S	H
25	BC2F3-061	R	S	H	R	R	R	S	S	S	S	S	S	S	H
26	BC2F3-062	S	R	H	R	R	R	S	S	S	S	S	S	S	H
27	BC2F3-066	R	S	H	R	R	R	S	S	S	S	S	S	S	H
28	BC2F3-071	R	S	R	R	R	R	S	S	S	S	S	S	S	H
29	BC2F3-073	S	R	R	R	R	R	S	S	S	S	S	S	S	H
30	BC2F3-076	H	H	R	R	R	R	S	S	S	S	S	S	S	ms
31	BC2F3-079	H	H	H	R	R	R	S	S	S	S	S	S	S	H
32	BC2F3-080	H	H	H	R	R	R	S	S	S	S	S	S	S	H
33	BC2F3-082	S	R	H	R	R	R	S	S	S	S	S	S	S	H
34	BC2F3-084	H	H	H	R	R	R	S	S	S	S	S	S	S	H
35	BC2F3-085	S	R	S	R	R	R	S	S	S	S	S	S	S	H
36	BC2F3-089	S	R	R	R	R	R	S	S	S	S	S	S	S	H
37	BC2F3-090	S	R	R	R	R	R	S	S	S	S	S	S	S	H
38	BC2F3-093	S	R	H	R	R	R	S	S	S	S	S	S	S	H
39	BC2F3-094	H	H	R	R	R	R	S	S	S	S	S	S	S	H
40	BC2F3-095	H	H	R	R	R	R	S	S	S	S	S	S	S	H
41	BC2F3-097	H	H	H	R	R	R	S	S	S	S	S	S	S	H
42	BC2F3-098	S	R	H	R	R	R	S	S	S	S	S	S	S	ms
43	BC2F3-106	R	S	H	R	R	R	S	S	S	S	S	S	S	H
44	BC2F3-108	H	H	H	R	R	R	S	S	S	S	S	S	S	H
45	BC2F3-111	S	R	H	R	R	R	S	S	S	S	S	S	S	H
46	BC2F3-118	R	S	S	R	R	R	S	S	S	S	S	S	S	H
47	BC2F3-119	H	H	R	R	R	R	S	S	S	S	S	S	S	Ms
48	P2	H	H	H	R	R	R	S	S	S	S	S	S	S	H

⑥ 부농종묘

부농종묘로부터 총 96점의 시료를 받아 1번의 서비스를 진행하였다. 96점의 시료에 대하여, 병 관려 2종의 마커로 서비스를 진행하였다(표 20). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 20).

표 20. 부농종묘 96점의 시료에 대하여, 병 관려 2종의 마커를 이용한 서비스 결과

No.	Bw6	Bw12	No.	Bw6	Bw12	No.	Bw6	Bw12	No.	Bw6	Bw12	No.	Bw6	Bw12	No.	Bw6	Bw12
1	H	R	17	S	R	33	H	R	49	R	R	65	R	R	81	S	H
2	R	R	18	S	R	34	S	R	50	R	R	66	R	R	82	S	S
3	H	R	19	S	R	35	R	R	51	R	R	67	R	R	83	S	R
4	R	R	20	S	R	36	S	R	52	R	R	68	R	R	84	S	H
5	H	R	21	S	R	37	H	R	53	R	R	69	R	R	85	S	H
6	S	R	22	S	R	38	H	R	54	R	R	70	R	R	86	S	H

No.	Bw6	Bw12	No.	Bw6	Bw12	No.	Bw6	Bw12	No.	Bw6	Bw12	No.	Bw6	Bw12	No.	Bw6	Bw12
7	S	R	23	S	R	39	S	R	55	R	R	71	R	R	87	S	H
8	H	R	24	S	R	40	S	R	56	S	S	72	R	R	88	S	H
9	H	R	25	S	R	41	H	R	57	S	R	73	S	R	89	S	H
10	S	R	26	S	R	42	H	R	58	S	R	74	S	R	90	S	H
11	S	R	27	S	R	43	H	R	59	S	R	75	S	R	91	S	R
12	H	R	28	S	R	44	S	R	60	S	R	76	S	H	92	S	H
13	H	R	29	S	R	45	R	R	61	S	R	77	S	H	93	S	H
14	R	R	30	S	S	46	R	R	62	S	R	78	S	S	94	S	S
15	H	R	31	S	S	47	R	R	63	S	R	79	S	S	95	S	S
16	S	R	32	S	S	48	R	R	64	S	S	80	S	H	96	S	S

⑦ 바이오통

바이오통로부터 총 6점의 시료를 받아 1번의 서비스를 진행하였다. 처음 6점의 시료에 대하여, 병 관련 12종의 마커로 서비스를 진행하였다(표 21). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 21).

표 21. 바이오통 6점의 시료에 대하여, 병 관련 12종의 마커를 이용한 서비스 결과

No.	Cf9	I2	Ty1	Ty2	Ve2	Ph3	Sw5	Tm2a	Mi- <i>rex</i>	Bw6	Bw12	J3
1	R/H	R/H	H	S	R	S	S	R	S	S	S	S
2	R/H	R/H	S	S	R	S	S	R	S	S	S	S
3	S	R/H	R	S	R	S	S	S	S	S	S	S
4	S	R/H	R	S	R	S	S	S	S	S	S	S
5	R/H	R/H	R	S	R	S	S	R	S	S	S	S
6	R/H	R/H	R	S	R	S	S	R	S	S	S	S

1-3) 3차년도 토마토 분자마커 서비스 결과

3차년도에 토마토 분자마커 서비스는 순천대학교, 토마토연구소, 대연육종연구소, 가나종묘, 제농, 아시아종묘, 더기반으로 총 7곳에서 의뢰를 받아 실시하였다.

① 순천대학교

순천대학교로부터 총 13,805점의 시료를 받아 18번의 서비스를 진행하였다. 처음 47점의 시료에 대하여, 병 관련 10종의 마커로 서비스를 진행하였다(표 1). 2번째로는 277점의 시료에 대하여, 병 관련 14종의 마커로 서비스를 진행하였다(표 2). 3번째로는 519점의 시료에 대하여, 병 관련 3종의 마커로 서비스를 진행하였다(표 3). 4번째로는 96점의 시료에 대하여, 병 관련 6종의 마커로 서비스를 진행하였다(표 4). 5번째로는 43품종에 대하여 병 마커를 이용하여 순도검정을 진행하였다(표 5). 6번째로는 96점의 시료에 대하여, *S. habrochaites* 특이적 96마커를 이용하여 서비스를 진행하였다(표 6). 7번째로는 561점의 시료에 대하여, 병 관련 마커를 이용하여 서비스를 진행하였다(표 7). 8번째로는 3,043점의 시료에 대하여, 병 관련 마커를 이용하여 서비스를 진행하였다(표 8). 9번째로는 594점의 시료에 대하여, 병 관련 마커를 이용하여 서비스를 진행하였다(표 9). 10번째로는 4점의 시료에 대하여, 병 관련 17종 마커를 이용하여 서비스를 진행하였다(표 10). 11번째로는 24점의 시료에 대하여, 병 관련 5종의 마커를 이용하여 서비스를 진행하였다(표 11). 12번째로는 48점의 시료에 대하여, 맛 관련 48종의 마커를 이용하여 서비스를 진행하였다(표 12). 13번째로는 6점의 시료에 대하여, 병 관련 13종의 마커를 이용하여 서비스를 진행하였다(표 13). 14번째로는 48점의 시료에 대하여, 맛 관련 48종의 마커를 이용하여 서비스를 진행하였다(표 14). 15번째로는 86점의 시료에 대하여, 병 관련 15종의 마커를 이용하여 서비스를 진행하였다(표 15). 16번째로는 20점의 시료에 대하여, 병 관련 4종의 마커를 이용하여 서비스를 진행하였다(표 16). 17번째로는 343점의 시료에 대하여, MS 마커를 이용하여 서비스를 진행하였다(표 17). 18번째로는

1,208점의 시료에 대하여, 병 관련 마커를 이용하여 서비스를 진행하였다(표 18). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 1~18).

표 1. 순천대학교 47점의 시료에 대하여, 병 관련 10종의 마커를 이용한 서비스 결과

No.	J3	Sm-CT55	Ve2	Bw12	Sw5	Tm2a	Ty1	Mi23	I2	Cf9
1	H	S	R	S	H	H	H	H	H	R
2	S	S	R	S	S	R	S	R	R	R
3	S	H	R	S	S	R	S	R	H	R
4	H	S	R	S	H	H	H	H	R	R
5	H	H	R	S	S	H	H	H	R	R
6	H	S	R	S	S	H	H	H	R	R
7	H	S	R	S	S	H	S	R	R	R
8	S	S	R	S	S	R	H	H	H	R
9	S	H	R	S	H	R	S	R	H	R
10	H	S	R	S	H	H	S	R	R	R
11	S	S	R	S	S	R	H	H	R	R
12	S	H	R	S	H	R	H	H	H	R
13	S	S	S	S	S	R	S	S	S	S
14	H	S	H	S	S	H	S	S	H	S
15	S	S	S	S	S	R	S	H	H	S
16	H	S	S	S	S	S	S	H	S	S
17	S	S	H	S	S	H	S	H	S	S
18	H	S	S	S	S	S	S	S	H	S
19	H	S	H	S	S	S	S	H	H	S
20	S	S	H	S	S	H	S	H	R	S
21	H	S	S	S	S	H	S	S	S	S
22	H	S	H	S	S	H	S	H	S	S
23	H	S	R	S	H	H	H	H	H	S
24	H	H	R	S	S	R	H	H	H	S
25	S	H	R	S	S	H	S	H	R	R
26	S	H	R	S	S	H	S	S	R	R
27	H	S	R	S	S	H	S	S	R	R
28	S	H	R	S	H	R	H	S	H	R
29	H	H	R	S	S	R	H	S	H	R
30	S	S	R	S	H	R	H	H	R	R
31	S	H	R	S	S	H	H	H	H	S
32	H	H	R	S	H	H	S	S	H	S
33	H	S	R	S	H	R	S	S	R	R
34	H	H	R	S	S	H	S	H	H	R
35	S	S	R	S	S	R	H	S	R	S
36	S	H	R	S	S	H	H	H	H	S
37	H	H	R	S	S	H	H	H	R	S
38	H	H	R	S	H	R	S	S	R	S
39	H	H	R	S	H	R	H	S	R	H
40	S	S	H	S	S	R	H	S	H	H
41	S	S	H	S	S	R	H	S	H	R
42	S	S	H	S	S	H	H	S	H	S
43	S	S	H	S	S	H	S	S	S	S
44	S	S	H	S	S	H	S	S	S	S
45	S	S	H	S	S	H	S	S	S	S
46	H	S	H	S	S	H	S	S	H	S
47	H	S	H	S	S	H	S	S	H	S

표 2. 순천대학교 277점의 시료에 대하여, 병 관련 14종의 마커를 이용한 서비스 결과

순번	J3	Sm-CT55	Ve2	Bw6	Bw12	Sw5	Tm2a	Ty1	Ty2	Ty4	ty5	Mi23	I2	Cf9
1	R	S	R	S	S	S	R	R	S	S	S	S	S	S
2	R	S	R	S	S	S	R	R	S	S	S	S	S	S
3	S	S	R	S	S	S	S	S	S	S	S	S	R	S
4	S	S	R	S	S	S	S	S	S	S	S	S	R	S
5	R	S	S	S	R	S	R	R	R	S	S	S	S	S

순번	J3	Sm-CT55	Ve2	Bw6	Bw12	Sw5	Tm2a	Ty1	Ty2	Ty4	ty5	Mi23	I2	Cf9
6	R	S	S	S	R	S	R	R	R	S	S	S	S	S
7	S	S	R	S	S	S	S	S	S	S	R	S	S	S
8	S	S	R	S	S	S	S	S	S	S	R	S	S	S
9	H	S	S	S	R	S	H	S	R	S	S	R	S	S
10	S	S	S	S	S	S	S	S	S	S	S	S	R	S
11	H	S	S	S	H	S	H	S	H	S	S	H	S	S
12	S	S	R	S	S	S	S	S	S	S	S	S	S	S
13	S	S	R	S	S	S	S	S	S	S	S	S	S	S
14	R	S	R	S	R	S	R	R	R	S	S	R	S	S
15	R	S	R	S	R	S	R	R	R	S	S	R	S	S
16	S	S	R	S	S	S	S	R	S	S	S	S	S	S
17	S	S	R	S	S	S	S	R	S	S	S	S	S	S
18	R	R	R	S	R	S	R	R	R	S	S	S	R	S
19	R	R	R	S	R	S	R	R	R	S	S	S	R	S
20	S	S	R	S	S	S	S	R	S	S	S	R	R	S
21	S	S	R	S	S	S	S	R	S	S	S	R	R	S
22	S	S	R	S	S	S	S	R	S	S	S	S	S	S
23	S	S	R	S	S	S	S	R	S	S	S	S	S	S
24	R	S	S	S	R	S	R	R	S	S	S	S	R	S
25	R	S	S	S	R	S	R	R	S	S	S	S	R	S
26	S	R	S	S	R	S	S	S	S	S	S	S	S	S
27	S	R	S	S	R	S	S	S	S	S	S	S	S	S
28	S	S	R	S	S	S	S	S	S	S	S	S	S	S
29	S	S	R	S	S	S	S	S	S	S	S	S	S	S
30	S	S	S	S	S	S	S	S	S	S	R	S	S	S
31	S	S	S	S	S	S	S	S	S	S	R	S	S	S
32	S	S	S	S	R	S	S	R	S	S	S	S	S	S
33	S	S	S	S	R	S	S	R	S	S	S	S	S	S
34	S	S	R	S	S	S	S	S	S	S	S	S	S	S
35	S	S	R	S	S	S	S	S	S	S	S	S	S	S
36	R	S	S	S	S	S	R	S	S	S	S	S	S	S
37	R	S	S	S	S	S	R	S	S	S	S	S	S	S
38	S	S	S	S	R	S	S	S	S	S	S	S	S	S
39	S	S	S	S	R	S	S	S	S	S	S	S	S	S
40	R	S	S	S	R	S	R	R	R	S	S	S	R	S
41	R	S	S	S	R	S	R	R	R	S	S	S	R	S
42	S	S	R	S	R	S	S	S	S	S	S	S	R	S
43	S	S	R	S	R	S	S	S	S	S	S	S	R	S
44	R	S	S	S	S	S	R	S	S	S	S	R	S	S
45	R	S	S	S	S	S	R	S	S	S	S	R	S	S
46	R	S	S	S	S	S	R	R	R	S	S	S	R	S
47	R	S	S	S	S	S	R	R	R	S	S	S	R	S
48	R	S	S	S	S	S	R	S	S	S	S	S	S	S
49	R	S	S	S	S	S	R	S	S	S	S	S	S	S
50	S	S	R	S	S	S	S	R	S	S	S	S	H	S
51	S	S	R	S	S	S	S	R	S	S	S	S	S	S
52	S	S	R	S	S	S	S	S	S	S	S	S	S	S
53	S	S	R	S	S	S	S	S	S	S	S	S	S	S
54	S	S	R	S	R	S	S	S	S	S	S	S	R	S
55	S	S	R	S	R	S	S	S	S	S	S	S	R	S
56	S	S	R	S	R	S	S	S	S	S	S	S	H	S
57	S	S	R	S	R	S	S	S	S	S	S	S	H	S
58	S	S	S	S	S	S	S	S	S	S	R	S	S	S
59	S	S	S	S	S	S	S	S	S	S	R	S	S	S
60	S	R	S	R	R	R	S	S	S	S	S	S	N/A	S
61	S	R	S	R	R	R	S	S	S	R	S	S	N/A	S
62	S	S	R	S	S	S	S	S	S	S	S	S	S	S
63	S	S	R	S	S	S	S	S	S	S	S	S	S	S
64	S	S	S	S	S	S	R	S	S	S	R	S	S	S
65	S	S	S	S	S	S	R	S	S	S	R	S	S	S
66	S	R	S	S	R	S	S	S	R	S	S	S	S	S
67	S	R	S	S	R	S	S	S	R	S	S	S	S	S
68	S	S	R	S	S	S	S	S	S	S	S	S	S	S

순번	J3	Sm-CT55	Ve2	Bw6	Bw12	Sw5	Tm2a	Ty1	Ty2	Ty4	ty5	Mi23	I2	Cf9
69	S	S	R	S	S	S	S	S	S	S	S	S	S	S
70	S	S	R	S	S	S	S	R	S	S	S	S	R	S
71	S	S	R	S	S	S	S	R	S	S	S	S	R	S
72	S	S	R	S	S	S	S	S	S	S	S	S	S	S
73	S	S	R	S	S	S	S	S	S	S	S	S	S	S
74	S	R	R	S	S	R	S	S	S	S	S	S	R	S
75	S	S	R	S	S	S	S	S	S	S	S	S	R	S
76	R	S	R	S	R	S	R	R	R	S	S	S	S	S
77	R	S	R	S	R	S	R	R	R	S	S	S	S	S
78	R	S	S	S	R	S	R	R	R	S	S	S	S	S
79	R	S	S	S	S	S	R	R	R	S	S	S	S	S
80	R	S	S	S	S	S	R	R	R	S	S	S	S	S
81	R	S	S	S	R	S	R	R	R	S	S	S	S	S
82	R	S	S	S	R	S	R	R	R	S	S	S	S	S
83	R	S	S	S	R	S	R	R	R	S	S	S	R	S
84	R	S	S	S	R	S	R	R	R	S	S	S	R	S
85	R	S	S	S	R	S	R	R	R	S	S	S	S	S
86	R	S	S	S	R	S	R	R	R	S	S	S	S	S
87	R	S	S	S	S	S	R	R	R	S	S	S	R	S
88	R	S	S	S	S	S	R	R	R	S	S	S	R	S
89	R	S	S	S	S	S	R	R	R	S	S	S	S	S
90	R	S	S	S	S	S	R	R	R	S	S	S	S	S
91	R	S	S	S	S	S	R	R	R	S	S	S	R	S
92	R	S	S	S	S	S	R	R	R	S	S	S	R	S
93	R	S	S	S	R	S	R	R	R	S	S	S	R	S
94	R	S	S	S	S	S	R	R	R	S	S	S	R	S
95	R	S	S	S	S	S	R	R	R	S	S	S	R	S
96	R	S	S	S	S	S	R	R	R	S	S	S	R	S
97	R	S	S	S	S	S	R	R	R	S	S	S	R	S
98	R	S	S	S	R	S	R	S	R	S	S	S	S	S
99	R	S	S	S	R	S	R	S	R	S	S	S	S	S
100	S	S	R	S	R	S	S	S	S	S	S	S	R	S
101	S	S	R	S	R	S	S	S	S	S	S	S	R	S
102	S	S	R	S	S	S	S	S	S	S	S	S	R	S
103	S	S	R	S	S	S	S	S	S	S	S	S	R	S
104	R	S	R	R	S	S	S	S	S	S	S	S	R	S
105	R	S	R	R	S	S	S	S	S	S	S	S	R	S
106	S	S	S	S	S	S	S	S	S	S	S	S	S	S
107	S	S	S	S	S	S	S	S	S	S	S	S	S	S
108	S	S	S	S	S	S	S	S	S	S	S	S	S	S
109	S	S	S	S	S	S	S	S	S	S	S	S	S	S
110	S	S	R	S	S	S	S	S	S	S	S	S	R	S
111	S	S	R	S	S	S	S	S	S	S	S	S	R	S
112	S	S	R	R	S	S	S	S	S	S	S	S	S	S
113	S	S	R	R	S	S	S	S	S	S	S	S	S	S
114	S	S	R	S	S	S	S	S	S	S	S	S	S	S
115	S	S	R	S	S	S	S	S	S	S	S	S	S	S
116	S	S	S	S	R	S	S	S	R	S	S	S	S	S
117	S	S	S	S	R	S	S	S	R	S	S	S	S	S
118	S	S	R	S	S	S	S	S	S	S	R	S	S	S
119	S	S	R	S	S	S	S	S	S	S	R	S	S	S
120	S	S	S	S	R	S	S	S	S	S	S	S	S	S
121	S	S	S	S	R	S	S	S	S	S	S	S	S	S
122	S	S	R	S	S	S	S	S	S	S	S	S	S	S
123	S	S	R	S	S	S	S	S	S	S	S	S	S	S
124	S	R	R	S	S	S	S	S	S	S	S	S	S	S
125	S	R	R	S	S	S	S	S	S	S	S	S	S	S
126	S	S	R	S	S	S	S	S	S	S	S	S	S	S
127	S	S	R	S	S	S	S	S	S	S	S	S	S	S
128	S	S	R	S	S	S	S	S	S	S	S	R	R	S
129	S	S	R	S	S	S	S	S	S	S	S	S	S	S
130	S	S	R	S	S	S	S	S	S	S	S	S	S	S
131	S	S	R	S	S	S	S	S	S	S	S	S	S	S

순번	J3	Sm-CT55	Ve2	Bw6	Bw12	Sw5	Tm2a	Ty1	Ty2	Ty4	ty5	Mi23	I2	Cf9
132	S	S	S	S	R	S	S	S	S	S	S	S	S	S
133	S	S	S	S	R	S	S	S	S	S	S	S	S	S
134	R	S	S	S	R	S	R	R	S	S	S	S	R	S
135	R	S	S	S	R	S	R	R	S	S	S	S	R	S
136	S	S	R	R	S	S	S	S	S	S	S	S	R	S
137	S	S	R	R	S	S	S	S	S	S	S	S	R	S
138	R	S	R	R	S	S	R	S	S	S	S	S	R	S
139	R	S	R	R	S	S	R	S	S	S	S	S	R	S
140	R	S	S	S	R	S	R	S	S	S	S	S	R	S
141	S	R	R	S	S	R	S	S	S	S	S	R	R	S
142	S	S	R	S	R	S	S	S	S	S	S	S	R	S
143	S	S	R	S	R	S	S	S	S	S	S	S	R	S
144	R	R	R	S	R	S	R	R	R	S	S	S	R	S
145	R	R	R	S	R	S	R	R	R	S	S	S	R	S
146	S	R	S	S	R	S	S	S	R	S	S	S	S	S
147	S	R	S	S	R	S	S	S	R	S	S	S	S	S
148	R	S	S	S	R	S	R	R	R	S	S	S	R	S
149	R	S	S	S	R	S	R	R	R	S	S	S	R	S
150	R	S	S	S	R	S	R	S	S	S	R	S	R	S
151	R	S	S	S	R	S	R	S	S	S	R	S	R	S
152	S	R	S	S	S	S	S	S	S	S	S	S	S	S
153	S	R	S	S	S	S	S	S	S	S	S	S	S	S
154	R	S	R	S	R	S	R	R	S	S	S	S	R	S
155	R	S	R	S	R	S	R	R	S	S	S	S	R	S
156	R	S	S	S	R	S	R	R	S	S	S	S	R	S
157	R	S	S	S	R	S	R	R	S	S	S	S	R	S
158	R	S	R	S	S	S	R	R	S	S	S	S	R	S
159	R	S	R	S	S	S	R	R	S	S	S	S	R	S
160	H	S	H	S	S	S	H	H	S	S	S	S	H	S
161	H	S	H	S	S	S	H	R	S	S	S	S	H	S
162	R	S	S	S	R	S	R	S	R	S	S	S	S	S
163	S	R	R	S	S	S	S	S	S	S	S	S	R	S
164	S	S	R	S	R	S	S	S	R	S	S	S	S	S
165	S	S	R	S	R	S	S	S	R	S	S	S	S	S
166	S	S	S	S	S	S	S	S	S	S	R	S	R	S
167	S	S	S	S	S	S	S	S	S	S	R	S	R	S
168	H	R	S	S	R	S	H	H	R	S	S	S	S	S
169	R	R	R	S	R	S	R	R	R	S	S	S	R	S
170	R	S	S	S	R	S	R	S	S	S	R	S	S	S
171	R	S	S	S	R	S	R	S	S	S	R	S	S	S
172	R	R	S	S	R	S	R	S	R	S	R	S	S	S
173	R	R	S	S	R	S	R	S	R	S	R	S	S	S
174	R	S	S	S	S	S	R	R	R	S	S	S	S	S
175	R	S	S	S	S	S	R	R	R	S	S	S	S	S
176	R	S	R	S	R	S	R	R	R	S	S	S	S	S
177	R	S	R	S	R	S	R	R	R	S	S	S	S	S
178	R	S	R	S	R	S	R	R	R	S	S	S	S	S
179	R	R	R	S	R	S	R	R	R	S	S	S	R	S
180	R	S	S	S	R	S	R	R	R	S	S	S	R	S
181	R	S	S	S	R	S	R	R	R	S	S	S	R	S
182	S	S	S	S	S	S	S	S	S	S	R	S	S	S
183	S	S	S	S	S	S	S	S	S	S	R	S	S	S
184	R	S	S	S	R	S	R	R	S	S	S	S	S	S
185	R	S	S	S	R	S	R	R	S	S	S	S	S	S
186	R	S	R	S	S	S	R	R	S	S	S	S	R	S
187	R	S	R	S	S	S	R	R	S	S	S	S	R	S
188	R	S	R	S	R	S	R	R	R	S	S	S	R	S
189	R	S	R	S	R	S	R	R	R	S	S	R	S	S
190	R	S	R	S	R	S	R	R	R	S	S	R	S	S
191	R	S	R	S	R	S	R	R	R	S	S	R	S	S
192	R	S	R	S	S	S	R	R	S	S	S	S	S	S
193	R	S	R	S	S	S	R	R	S	S	S	S	S	S
194	R	S	S	S	R	S	R	R	R	S	S	R	S	S

순번	J3	Sm-CT55	Ve2	Bw6	Bw12	Sw5	Tm2a	Ty1	Ty2	Ty4	ty5	Mi23	I2	Cf9
195	R	S	S	S	R	S	R	R	R	S	S	R	S	S
196	S	S	R	S	S	S	S	R	S	S	S	S	S	S
197	S	S	R	S	S	S	S	R	S	S	S	S	S	S
198	S	S	R	S	S	S	S	R	S	S	S	S	S	S
199	S	S	R	S	S	S	S	R	S	S	S	S	S	S
200	S	S	S	S	S	S	S	S	S	S	S	S	R	S
201	S	S	S	S	S	S	S	S	S	S	S	S	R	S
202	S	S	R	S	S	S	S	S	S	S	S	S	S	S
203	S	S	R	S	S	S	S	S	S	S	S	S	S	S
204	S	S	R	S	S	S	S	S	S	S	S	S	S	S
205	S	S	R	S	S	S	S	S	S	S	S	S	S	S
206	S	S	R	S	S	S	S	S	S	S	S	S	S	S
207	S	S	R	S	S	S	S	S	S	S	S	S	S	S
208	S	S	R	S	S	S	S	S	S	S	S	S	R	S
209	S	S	R	S	S	S	S	S	S	S	S	S	R	S
210	S	S	S	S	S	S	S	S	S	S	S	S	S	S
211	S	S	S	S	S	S	S	S	S	S	S	S	S	S
212	R	S	S	S	S	S	R	S	S	S	S	S	S	S
213	R	S	S	S	S	S	R	S	S	S	S	S	S	S
214	R	S	S	S	S	S	R	S	S	S	S	S	S	S
215	R	S	S	S	S	S	R	S	S	S	S	S	S	S
216	S	S	R	S	S	S	S	R	R	S	S	R	S	S
217	S	S	R	S	S	S	S	R	R	S	S	R	S	S
218	S	S	S	S	R	S	S	R	S	S	S	S	S	S
219	S	S	S	S	R	S	S	R	S	S	S	S	S	S
220	S	S	S	S	S	S	S	R	S	S	S	S	S	S
221	S	S	S	S	S	S	S	R	S	S	S	S	S	S
222	R	S	S	S	R	S	R	S	R	S	S	R	S	S
223	R	S	S	S	R	S	R	S	R	S	S	R	S	S
224	S	S	S	S	S	S	R	S	S	S	R	S	S	S
225	S	S	S	S	S	S	R	S	S	S	R	S	S	S
226	R	S	R	R	S	S	R	S	S	S	S	S	R	S
227	S	R	R	S	S	S	R	S	S	S	S	S	S	S
228	S	S	R	S	S	S	S	S	S	S	S	S	R	S
229	S	S	R	S	S	S	S	S	S	S	S	S	R	S
230	S	S	R	S	R	S	S	R	S	S	S	S	R	S
231	S	S	R	S	R	S	S	R	S	S	S	S	R	S
232	S	S	R	S	R	S	S	R	S	S	S	S	R	S
233	S	S	R	S	R	S	S	R	S	S	S	S	R	S
234	S	S	R	S	R	S	S	R	S	S	S	S	R	S
235	S	S	R	S	R	S	S	R	S	S	S	S	R	S
236	S	S	R	S	R	S	S	R	S	S	S	S	R	S
237	S	S	R	S	R	S	S	R	S	S	S	S	R	S
238	S	S	R	S	R	S	S	R	S	S	S	S	R	S
239	S	S	R	S	R	S	S	R	S	S	S	S	R	S
240	S	S	R	S	R	S	S	R	S	S	S	S	R	S
241	S	S	R	S	S	S	S	R	S	S	S	S	R	S
242	S	S	R	S	R	S	S	S	S	S	S	S	S	S
243	S	S	R	S	S	S	S	S	S	S	S	S	H	S
244	R	S	S	S	S	S	R	R	R	S	S	S	S	S
245	R	S	S	S	S	S	R	R	R	S	S	S	S	S
246	S	S	S	S	S	S	R	R	S	S	S	S	S	R
247	S	S	S	S	S	S	R	R	S	S	S	S	S	R
248	S	S	S	S	S	S	R	R	S	S	R	S	S	R
249	S	S	S	S	S	S	R	R	S	S	S	S	S	R
250	S	S	S	S	S	S	R	R	S	S	S	S	S	R
251	S	S	S	S	S	S	R	R	S	S	S	S	S	R
252	S	S	S	S	H	S	S	S	S	S	S	S	S	S
253	S	S	H	S	H	S	S	S	S	S	S	S	S	S
254	S	S	R	S	H	S	H	S	S	S	S	S	S	S
255	S	S	R	S	R	S	H	S	S	S	S	S	S	S
256	S	S	S	S	S	S	S	S	S	S	S	S	S	S
257	S	S	S	S	S	S	S	S	S	S	S	S	S	S

순번	J3	Sm-CT55	Ve2	Bw6	Bw12	Sw5	Tm2a	Ty1	Ty2	Ty4	ty5	Mi23	I2	Cf9
258	S	R	S	S	R	S	S	S	R	S	S	S	S	S
259	S	R	S	S	R	S	S	S	R	S	S	S	S	S
260	S	R	S	S	S	R	S	S	S	S	S	S	R	S
261	S	R	S	S	S	R	S	S	S	S	S	S	R	S
262	S	S	R	S	S	S	S	R	S	S	S	S	R	S
263	S	S	R	S	S	S	S	R	S	S	S	S	R	S
264	S	S	R	S	S	S	S	S	S	S	S	S	S	S
265	S	S	R	S	S	S	S	S	S	S	S	S	S	S
266	R	S	R	S	R	S	R	R	R	S	S	S	S	S
267	R	S	R	S	R	S	R	R	R	S	S	S	S	S
268	S	S	R	S	R	S	S	S	S	S	S	S	R	S
269	S	S	R	S	R	S	S	S	S	S	S	S	R	S
270	S	S	R	S	S	S	S	S	S	S	S	S	R	S
271	S	S	R	S	S	S	S	S	S	S	S	S	R	S
272	S	S	R	R	S	S	S	S	S	S	S	S	S	S
273	S	S	R	R	S	S	S	S	S	S	S	S	S	S
274	S	S	R	S	S	S	S	R	S	S	S	S	R	S
275	S	S	R	S	S	S	S	R	S	S	S	S	R	S
276	R	R	R	S	R	S	R	R	R	S	S	S	R	S
277	R	R	R	S	R	S	R	R	R	S	S	S	R	S

표 3. 순천대학교 519점의 시료에 대하여, 병 관련 3종의 마커를 이용한 서비스 결과

순번	Ty1	Bw12	Cf9	순번	Ty1	Bw12	Cf9	순번	Ty1	Bw12	Cf9	순번	Ty1	Bw12	Cf9	순번	Ty1	Bw12	Cf9
1	S	R	S	105	S	R	S	209	S	R	S	313	S	R	R	417	S	R	S
2	S	R	S	106	S	R	S	210	S	R	S	314	S	R	R	418	S	R	S
3	S	R	S	107	S	R	S	211	S	R	S	315	S	R	R	419	S	R	S
4	S	R	H	108	S	R	S	212	S	R	S	316	S	R	R	420	S	R	S
5	S	R	H	109	S	R	S	213	S	R	S	317	S	R	n/a	421	S	R	S
6	S	R	H	110	S	R	S	214	S	n/a	S	318	S	R	n/a	422	S	R	S
7	S	R	S	111	S	R	S	215	S	R	S	319	S	R	R	423	S	R	S
8	S	R	H	112	S	R	S	216	S	R	S	320	S	R	R	424	S	R	S
9	S	R	H	113	S	R	S	217	S	R	S	321	S	R	R	425	S	R	S
10	S	R	H	114	S	R	S	218	S	R	S	322	S	R	R	426	S	R	S
11	S	R	H	115	S	R	S	219	S	R	S	323	S	R	n/a	427	S	R	S
12	S	R	H	116	S	R	S	220	S	R	S	324	S	R	n/a	428	S	R	S
13	S	R	S	117	S	R	S	221	S	R	S	325	S	R	n/a	429	S	R	S
14	S	R	H	118	S	R	S	222	S	R	S	326	S	R	R	430	S	R	S
15	S	R	H	119	S	R	n/a	223	S	R	S	327	S	R	R	431	S	R	n/a
16	S	R	H	120	S	R	S	224	S	R	S	328	S	R	n/a	432	S	R	S
17	S	R	S	121	S	R	n/a	225	S	R	S	329	S	R	n/a	433	S	R	S
18	S	R	H	122	S	R	S	226	S	R	S	330	S	R	n/a	434	S	R	S
19	S	R	S	123	S	R	S	227	S	R	S	331	S	R	n/a	435	S	R	S
20	S	R	H	124	S	R	S	228	S	R	S	332	S	R	n/a	436	S	R	S
21	S	R	H	125	S	R	S	229	S	R	S	333	S	R	n/a	437	S	R	S
22	S	R	H	126	S	R	n/a	230	S	R	S	334	S	R	R	438	S	R	S
23	S	R	H	127	S	R	S	231	S	R	S	335	S	R	H	439	S	R	S
24	S	R	S	128	S	R	S	232	S	R	S	336	S	R	S	440	S	R	S
25	S	R	S	129	H	R	S	233	H	R	H	337	S	R	H	441	S	R	S
26	S	R	S	130	R	R	S	234	S	R	R	338	S	R	S	442	S	R	S
27	S	R	H	131	S	R	S	235	H	R	R	339	S	R	n/a	443	S	R	S
28	S	R	S	132	S	R	n/a	236	S	R	R	340	S	R	n/a	444	S	R	S
29	S	R	S	133	H	R	n/a	237	R	R	H	341	S	R	n/a	445	S	R	S
30	S	R	S	134	S	R	n/a	238	S	R	S	342	S	R	S	446	S	R	S
31	S	R	S	135	S	R	n/a	239	R	R	R	343	S	R	H	447	S	R	S
32	S	R	H	136	S	R	n/a	240	H	R	R	344	S	R	H	448	S	R	S
33	S	R	H	137	R	R	n/a	241	H	R	H	345	S	R	R	449	S	R	S
34	S	R	S	138	R	R	n/a	242	S	R	R	346	S	R	n/a	450	S	R	S

순번	Ty1	Bw12	Cf9	순번	Ty1	Bw12	Cf9	순번	Ty1	Bw12	Cf9	순번	Ty1	Bw12	Cf9	순번	Ty1	Bw12	Cf9
35	S	R	S	139	H	R	n/a	243	H	R	H	347	S	R	n/a	451	S	R	S
36	S	R	H	140	H	R	H	244	H	R	H	348	S	R	R	452	S	R	S
37	S	R	H	141	R	R	H	245	R	R	H	349	S	R	R	453	S	R	S
38	S	R	S	142	R	R	H	246	S	R	S	350	S	R	R	454	S	R	S
39	S	R	S	143	H	R	S	247	S	R	S	351	S	R	R	455	S	R	S
40	S	R	S	144	H	R	R	248	S	R	S	352	S	R	R	456	S	R	S
41	S	R	S	145	H	R	S	249	S	R	S	353	S	R	n/a	457	R	R	S
42	S	R	n/a	146	H	R	R	250	S	R	S	354	S	R	n/a	458	R	R	S
43	S	R	S	147	R	R	S	251	S	R	S	355	S	R	n/a	459	R	R	S
44	S	R	S	148	S	R	R	252	S	R	S	356	S	R	R	460	R	R	S
45	S	R	S	149	R	R	S	253	S	R	S	357	S	R	R	461	R	R	S
46	S	R	S	150	R	R	S	254	S	R	S	358	S	R	R	462	R	R	S
47	S	R	S	151	S	R	S	255	S	R	S	359	S	R	R	463	H	R	R
48	S	R	S	152	H	R	H	256	S	R	S	360	S	R	R	464	R	R	S
49	S	R	S	153	H	R	S	257	S	R	S	361	S	R	R	465	R	R	S
50	S	R	S	154	H	R	S	258	S	R	S	362	S	R	R	466	R	R	S
51	S	R	S	155	H	R	n/a	259	S	R	S	363	S	R	R	467	R	R	S
52	S	R	S	156	R	R	R	260	S	R	S	364	R	R	H	468	R	R	S
53	S	R	S	157	H	R	S	261	S	R	R	365	H	R	H	469	H	R	H
54	S	R	S	158	H	R	S	262	S	R	R	366	H	R	H	470	R	R	S
55	S	R	S	159	R	R	S	263	S	R	R	367	H	R	H	471	R	R	S
56	S	R	S	160	H	R	S	264	S	R	R	368	H	R	H	472	R	R	S
57	S	R	S	161	R	R	n/a	265	S	R	R	369	S	R	H	473	R	R	S
58	S	R	S	162	H	R	S	266	S	R	R	370	S	R	R	474	H	R	S
59	S	R	S	163	R	R	S	267	S	R	R	371	R	R	R	475	R	R	S
60	S	R	S	164	H	R	H	268	S	R	R	372	R	R	H	476	R	R	S
61	S	R	S	165	H	R	H	269	S	R	R	373	H	R	H	477	R	R	S
62	S	R	S	166	S	R	S	270	S	R	R	374	H	R	R	478	R	R	S
63	S	R	S	167	S	R	n/a	271	S	R	R	375	H	R	S	479	S	R	R
64	S	R	S	168	H	R	H	272	S	R	n/a	376	H	R	H	480	R	R	S
65	S	R	S	169	H	n/a	S	273	S	R	n/a	377	H	R	S	481	R	R	S
66	S	R	S	170	R	R	R	274	S	R	R	378	H	R	S	482	R	R	S
67	S	R	S	171	R	R	S	275	S	R	R	379	R	R	H	483	R	R	R
68	S	R	S	172	S	R	H	276	S	R	R	380	H	R	S	484	R	R	S
69	S	R	S	173	R	R	H	277	S	R	R	381	S	R	H	485	R	R	S
70	S	R	S	174	R	R	S	278	S	R	R	382	H	R	S	486	R	R	S
71	S	R	S	175	n/a	n/a	n/a	279	S	R	n/a	383	S	R	R	487	R	R	S
72	S	R	H	176	S	R	R	280	S	R	R	384	S	R	H	488	R	R	S
73	S	R	H	177	R	R	S	281	S	R	R	385	S	R	H	489	R	R	S
74	S	R	H	178	H	R	S	282	S	R	R	386	S	R	H	490	R	R	S
75	S	R	S	179	S	R	n/a	283	S	R	R	387	H	R	H	491	R	R	S
76	S	R	H	180	H	R	R	284	S	R	R	388	R	R	S	492	R	R	S
77	S	R	S	181	H	R	H	285	S	R	R	389	S	R	R	493	R	R	S
78	S	R	S	182	S	R	S	286	S	R	R	390	S	R	S	494	R	R	S
79	S	R	S	183	S	R	S	287	S	R	R	391	R	R	S	495	R	R	S
80	S	R	S	184	S	R	S	288	S	R	S	392	H	R	H	496	R	R	S
81	S	R	S	185	S	R	S	289	S	R	S	393	R	R	S	497	R	R	S
82	S	R	H	186	S	R	S	290	S	R	S	394	H	R	H	498	R	R	S
83	S	R	H	187	S	R	S	291	S	R	R	395	H	R	S	499	R	R	S
84	S	R	S	188	S	R	S	292	S	R	n/a	396	S	R	S	500	R	R	S
85	S	R	H	189	S	R	S	293	S	R	S	397	S	R	S	501	R	R	S
86	S	R	S	190	S	R	S	294	S	R	S	398	S	R	S	502	R	R	S
87	S	R	H	191	S	R	S	295	S	R	S	399	S	R	S	503	R	R	S
88	S	R	H	192	S	R	S	296	S	R	S	400	S	R	S	504	R	R	S
89	S	R	H	193	S	R	S	297	S	R	n/a	401	S	R	S	505	R	R	S
90	S	R	S	194	S	R	S	298	S	R	S	402	S	R	S	506	R	R	S
91	S	R	S	195	S	R	S	299	S	R	S	403	S	R	S	507	R	R	S

순번	Ty1	Bw12	Cf9	순번	Ty1	Bw12	Cf9	순번	Ty1	Bw12	Cf9	순번	Ty1	Bw12	Cf9	순번	Ty1	Bw12	Cf9
92	S	R	S	196	S	R	S	300	S	R	S	404	S	R	S	508	R	R	S
93	S	R	S	197	S	R	S	301	S	R	S	405	S	R	S	509	R	R	S
94	S	R	S	198	S	R	S	302	S	R	n/a	406	S	R	S	510	R	R	S
95	S	R	S	199	S	R	S	303	S	R	S	407	S	R	S	511	R	R	S
96	S	R	H	200	S	R	S	304	S	R	S	408	S	R	n/a	512	R	R	S
97	S	R	S	201	S	R	S	305	S	R	S	409	S	R	S	513	R	R	S
98	S	R	S	202	S	R	S	306	S	R	S	410	S	R	S	514	R	R	S
99	S	R	S	203	S	R	S	307	S	R	S	411	S	R	S	515	R	R	S
100	S	R	S	204	S	R	S	308	S	R	n/a	412	S	R	S	516	R	R	S
101	S	R	n/a	205	S	R	S	309	S	R	R	413	S	R	S	517	R	R	S
102	S	R	H	206	S	R	S	310	S	R	R	414	S	R	S	518	R	R	S
103	S	R	n/a	207	S	R	S	311	S	R	R	415	S	R	S	519	R	R	S
104	S	R	n/a	208	S	R	S	312	S	R	R	416	S	R	S				

표 4. 순천대학교 96점의 시료에 대하여, 병 관련 6종의 마커를 이용한 서비스 결과

순번	Ph3	J3	Ve2	I2	I3	Sm	순번	Ph3	J3	Ve2	I2	I3	Sm
1	S	S	R	R	S	S	49	R	S	R	H	S	S
2	S	H	R	R	S	S	50	R	R	R	H	S	S
3	S	S	R	R	S	S	51	R	H	H	R	S	S
4	S	H	R	R	S	S	52	R	R	R	R	S	S
5	S	H	R	R	S	S	53	R	R	R	R	S	S
6	S	R	R	R	S	S	54	R	H	H	R	S	S
7	S	S	R	R	S	S	55	R	H	H	R	S	S
8	S	R	R	R	S	S	56	R	H	H	R	S	S
9	S	H	R	R	S	S	57	R	H	S	R	S	S
10	S	H	R	R	S	S	58	R	H	H	R	S	S
11	R	S	R	R	S	S	59	R	H	H	R	S	S
12	H	S	R	R	S	S	60	R	R	S	R	S	S
13	S	H	R	R	S	S	61	H	R	R	R	S	S
14	H	H	R	R	S	S	62	H	R	H	R	S	S
15	H	S	R	R	S	S	63	R	R	H	R	S	S
16	S	H	R	R	S	S	64	H	R	S	R	S	S
17	S	H	R	R	S	S	65	R	R	S	R	S	S
18	H	S	R	R	S	S	66	S	R	S	R	S	S
19	R	H	R	R	S	S	67	S	R	H	R	S	S
20	H	S	R	R	S	S	68	H	R	R	R	S	S
21	R	S	R	H	S	S	69	H	R	R	R	S	S
22	R	H	R	H	S	S	70	R	R	R	R	S	S
23	R	R	R	H	S	S	71	S	R	S	R	S	H
24	R	S	R	H	S	S	72	S	R	S	R	S	R
25	R	S	R	H	S	S	73	S	R	H	R	S	H
26	R	H	R	H	S	S	74	S	R	H	R	S	H
27	R	H	R	R	S	S	75	S	R	H	R	S	R
28	R	H	R	S	S	S	76	S	R	H	R	S	H
29	R	H	R	S	S	S	77	S	R	R	R	S	H
30	R	H	R	R	S	S	78	S	R	H	R	S	H
31	S	R	R	R	S	S	79	S	R	H	R	S	H
32	S	R	R	R	S	S	80	S	R	S	R	S	H
33	S	R	R	R	S	S	81	S	R	R	R	S	H
34	S	R	R	R	S	S	82	S	S	R	R	S	R
35	S	R	R	R	S	S	83	S	H	R	R	S	R
36	S	R	R	R	S	S	84	S	R	R	R	S	H
37	S	R	R	R	S	S	85	S	H	R	R	S	H
38	S	R	R	R	S	S	86	S	R	R	R	S	H
39	S	R	R	R	S	S	87	S	H	R	R	S	S
40	S	R	R	R	S	S	88	S	H	R	R	S	H
41	R	S	R	H	S	S	89	S	H	R	R	S	H
42	R	S	R	H	S	S	90	S	H	R	R	S	H
43	R	S	R	R	S	S	91	S	S	S	S	S	H

순번	Ph3	J3	Ve2	I2	I3	Sm
44	S	R	R	R	S	S
45	R	R	R	R	S	S
46	R	H	R	H	S	S
47	S	R	R	R	S	S
48	R	H	R	H	S	S

순번	Ph3	J3	Ve2	I2	I3	Sm
92	S	S	S	S	S	R
93	S	S	S	S	S	R
94	S	S	S	S	S	R
95	S	S	S	S	S	S
96	S	S	S	S	S	H

표 5. 순천대학교 43품종에 대한, 병 마커 이용 순도검정 서비스 결과

샘플명	판별마커	샘플수	혼입샘플수	순도
JTS01	Ve2	167	1	99.4
JTS02	Ve2	160	0	100
JTS03	Ve2	191	0	100
JTS04	Ve2	160	0	100
JTS05	J3	157	1	99.4
JTS06	Bw6	150	0	100
JTS07	Bw6	182	1	99.5
JTS08	Bw6	191	0	100
JTS09	Bw6	148	1	99.3
JTS10	Bw6	184	0	100
JTS11	Ve2	192	1	99.5
JTS12	Ve2	192	0	100
JTS13	Ve2	185	1	99.5
JTS14	Ve2	191	0	100
JTS15	Ve2	192	0	100
JTS16	Sw5	133	0	100
JTS17	Bw6	82	1	98.8
JTS18	Bw6	95	0	100
JTS19	Bw6	64	0	100
JTS20	Bw6	81	0	100
JTS21	Sm	29	0	100
JTS22	Bw6	91	0	100

샘플명	판별마커	샘플수	혼입샘플수	순도
JTS23	Bw12	192	0	100
JTS24	Bw6	82	0	100
JTS25	Bw12	186	0	100
JTS26	Sm	191	0	100
JTS28	Bw12	158	0	100
JTS29	Ve2	181	0	100
JTS30	Tm2a	192	1	99.5
JTS31	Ve2	190	0	100
JTS32	J3	191	0	100
JTS33	Bw12	177	0	100
JTS34	Bw12	192	0	100
JTS35	Bw12	191	0	100
JTS36	Ve2	192	5	97.4
JTS37	Tm2a	166	0	100
JTS38	Tm2a	167	1	99.4
JTS39	Ve2	188	0	100
JTS40	Bw12	60	0	100
JTS41	Tm2a	96	0	100
JTS42	Sm	192	0	100
JTS43	J3	192	2	99
JTS44	Sm	192	0	100

표 6. 순천대학교 96점의 시료에 대하여, *S. habrochaites* 특이적 96마커를 이용한 서비스 결과

순번	TR01	TR02	TR03	TR04	TR05	TR06	TR07	TR08	TR09	TR10	TR11	TR12	TR13	TR14	TR15	TR16	TR17	TR18	TR19	TR20	TR21	TR22	TR23	TR24
1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	NC	XX	XX	XX	XX	XX	XX	XX	XX
2	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	NC	XX	XX	XX	XX	XX	XX	XX	XX
3	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	NC	XX	XX	XX	XX	XX	XX	XX	XX
4	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	NC	XX	XX	XX	XX	XX	XX	XX	XX
5	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
6	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	NC	XX	XX	XX	XX	XX	XX	XX	XX
7	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	NC	XX	XX	XX	XX	XX	XX	XX	XX
8	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	NC	XX	XX	XX	XX	XX	XX	XX	XX
9	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	NC	XX	XX	XX	XX	XX	XX	XX	XX
10	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX	XX	NC	XX	XX	XX	XX	XX	XX	XX	XX
11	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	NC	XX	XX	XX	XX	XX	XX	XX	XX
12	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX	XX	NC	XX	XX	XX	XX	XX	XX	XX	XX
13	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	NC	XX	XX	XX	XX	XX	XX	XX	XX
14	XX	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	XY	XY	XY	XY	XY	XY	XY	XY
15	XX	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	XY	XY	XY	XX	XY	XY	XY	XY
16	XX	XY	XY	XX	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	XX	XY	XX	XX	XY	XY	XY	XY
17	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	XX	XY	XX	XX	XY	XY	XY	XY
18	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
19	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
20	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	XX	XY	XY	XX	XY	XY	XY	XY
21	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	XX	XY	XY	XX	XY	XY	XY	XY
22	XX	XX	XX	XX	XX	XY	XY	XY	XY	XY	XY	XY	XY	YY	YY	NC	YY	YY	XY	XX	XY	XY	XY	XY
23	XX	XY	YY	XY	YY	YY	YY	YY	YY	YY	YY	XY	XY	YY	YY	NC	YY	YY	XX	XX	XX	XX	XX	XX
24	XX	XX	XX	XY	YY	XY	XY	XY	XY	XY	YY	YY	YY	YY	YY	NC	XX	XY	YY	XX	YY	YY	YY	YY
25	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XX	XX	XX	XX	XX	NC	XX	XX	XX	XX	XY	XY	XY	XX
26	XX	XY	XY	XY	YY	YY	YY	YY	YY	YY	XY	XY	XY	YY	YY	NC	YY	YY	YY	XX	XY	XY	XY	XY
27	XX	XX	XX	XX	XY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	XX	XY	XY	XX	XY	XY	XY	XY
28	XX	YY	YY	YY	YY	XY	XY	XY	XX	XX	YY	YY	YY	YY	YY	NC	YY	YY	XY	XX	XY	XY	XY	XY
29	XX	XX	XY	XY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	XX	XX	YY	XX	YY	YY	YY	YY
30	XX	XY	XY	XY	XY	YY	YY	YY	YY	YY	XY	XY	XY	XY	XY	NC	XX	XY	YY	XX	XX	XX	XX	XX
31	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY	YY	YY	YY	YY	NC	YY	XY	YY	XX	XY	XY	XY	YY
32	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	XX	XY	XY	XX	YY	YY	YY	YY
33	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY	YY	YY	YY	YY	NC	YY	XY	XY	XX	XY	XY	XY	YY
34	XX	XY	YY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	XX	XX	XY	XX	YY	YY	YY	YY

35	XX	XY	XY	XX	YY	YY	YY	YY	YY	YY	XY	XY	XY	XY	YY	NC	YY	XY	XX	XX	XY	XY	XY	XY
36	XX	XY	XY	XY	XY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	XX	XX	XX	XX	XX	XY	XY	XY
37	XX	XX	XX	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	XX	XY	XY	XX	XY	XY	XY	YY
38	XX	XY	XY	XX	XY	YY	YY	YY	YY	YY	XX	XX	XX	XY	XY	NC	XX	XY	XY	XX	XY	XY	XY	XX
39	XX	XY	XY	XY	XX	XX	XX	XX	XX	XX	XY	XY	XY	XY	XY	NC	XX	XY	XY	XX	XY	XY	YY	
40	XX	YY	YY	YY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	YY	YY	YY	XX	YY	YY	YY	YY
41	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	XY	XY	YY	YY	NC	YY	XY	YY	XX	YY	YY	YY	XY
42	XX	XX	XX	XX	YY	YY	YY	YY	XY	XY	YY	YY	YY	XY	XX	NC	XX	XX	XX	XX	XX	XX	XX	XX
43	XX	YY	YY	XY	XY	XX	XX	XX	XX	XX	YY	YY	YY	YY	YY	NC	YY	XY	XX	XX	XY	XY	XY	XY
44	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	XX	YY	XY	XX	XX	XX	XX	XX
45	XX	XY	XY	XY	YY	XY	XY	XX	XX	XX	XY	XY	XY	XX	XX	NC	XX	YY	XY	XX	YY	YY	YY	YY
46	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	XY	XY	XY	XY	XY	NC	XX	XY	YY	XX	YY	YY	YY	YY
47	XX	YY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XX	XX	NC	XX	YY	XY	XX	XY	XY	XY	YY
48	XX	YY	YY	YY	YY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	XX	XY	YY	XX	XY	XX	XX	XX
49	XX	XY	YY	XY	YY	YY	YY	YY	YY	YY	XY	XY	XY	XY	XY	NC	XX	XY	XY	XX	XY	XY	XY	XX
50	XX	YY	YY	YY	YY	XY	XY	XY	XY	XY	YY	YY	YY	XY	XY	NC	XX	XY	XY	XX	XY	XY	XY	XY
51	XX	YY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	XX	XY	XY	XX	XY	XY	XY	XY
52	XX	YY	YY	XY	XY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	XX	XY	XY	XX	XY	XX	XX	XX
53	XX	XY	XY	XX	XX	XX	XY	YY	YY	YY	XY	XY	XY	XY	XY	NC	YY	YY	XX	XX	XX	XX	XX	XY
54	XX	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	XX	XY	XX	XX	XX	XX	XX	XY
55	XX	XY	XY	XX	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	XX	XY	YY	XX	YY	YY	YY	XY
56	XX	XY	XY	XY	XX	XY	XY	XY	XX	XX	YY	YY	YY	YY	YY	NC	XX	XY	XY	XX	XY	XY	XY	XY
57	XX	XY	XY	XY	YY	YY	XY	XY	XY	XY	XY	XY	XY	YY	YY	NC	XX	XX	XY	XX	XY	XY	XY	XX
58	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	XY	NC	XX	XX	XX	XX	XX	YY	YY	YY
59	XX	YY	YY	YY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	XX	XX	XX	XX	XY	XY	XY	XY
60	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	NC	XX	XY	XY	XX	XX	XX	XX	XX
61	XX	YY	YY	YY	XY	XX	XX	XX	XX	XX	XY	XY	XY	XY	XX	NC	XX	XY	XX	XX	XY	XY	XY	YY
62	XX	XX	XY	XY	XY	XY	XY	XY	XY	XY	XX	XX	XX	XY	XY	NC	XX	XY	XY	XX	XY	XY	XY	YY
63	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
64	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
65	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
66	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
67	XY	YY	YY	XY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
68	XX	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
69	XX	XX	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
70	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
71	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
72	XX	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
73	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
74	XX	XY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XY	YY	YY	YY	YY
75	XX	XY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
76	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
77	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
78	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
79	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XY	YY	YY	YY	YY
80	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
81	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
82	XX	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
83	XX	YY	YY	IV	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	XX	NC	YY	YY	YY	XX	YY	YY	YY	YY
84	XX	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	XX	NC	YY	YY	YY	XX	YY	YY	YY	YY
85	YY	XY	XY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	XY	XX	YY	YY	YY	YY
86	YY	YY	YY	IV	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	XX	XX	YY	YY	YY	YY
87	XX	XX	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
88	XX	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XY	YY	YY	YY	YY
89	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
90	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
91	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
92	XX	YY	YY	IV	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
93	YY	YY	YY	IV	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
94	XY	YY	YY	IV	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	XX	XX	YY	YY	YY	YY
95	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	XX	YY	YY	YY	YY
96	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
순번	TR25	TR26	TR27	TR28	TR29	TR30	TR31	TR32	TR33	TR34	TR35	TR36	TR37	TR38	TR39	TR40	TR41	TR42	TR43	TR44	TR45	TR46	TR47	TR48
1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	XX	XX	XX	XX	XX	XX
2	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	XX	XX	XX	XX	XX	XX
3	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	XX	XX	XX	XX	XX	XX
4	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	XX	XX	XX	XX	XX	XX
5	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	XX	XX	XX	XX	XX	XX
6	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	XX	XX	XX	XX	XX	XX
7	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	XX	XX	XX	XX	XX	XX
8	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	XX	XX	XX	XX	XX	XX
9	XX	XX	XX	XX	XX	XX	XX	IV	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	XX	XX	XX	XX	XX	XX
10	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	XX	XX	XX	XX	XX	XX
11	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	XX	XX	XX	XX	XX	XX
12	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	XX	XX	XX	XX	XX	XX
13	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	XX	XX	XX	XX	XX	XX
14	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY	XY	XY	XY	XY	XY	XY	XY	XY
15	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY	XY	XY	XY	XY	XY	XY	XY	XY
16	XX	XY	XY	XY	XY	XY	XX	XY	XY	XY	XY	YY	XY	XY	XY	XX	XY	XX	XY	XY	XY	XY	XY</	

17	XX	XY	XY	XY	XY	XY	XY	XX	XY	XY	XY	YY	XY	XY	XY	XX	XY	XX	XX	XX	XX	XX	XX	XY
18	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	YY	YY
19	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	YY	YY
20	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY	XY	XX	XX	XY	XY	XY	XY	XY
21	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY	XY	XX	XX	XY	XY	XY	XY	XY
22	XX	XY	XY	XY	XY	XY	XY	YY	YY	YY	YY	XY	XY	XY	XY	YY	XY	XX	XX	XY	XY	XY	XY	XY
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24	XX	YY	XX	XX	XX	XX	XY	XY	XY	XX	XX	XX	XX	XX	YY	YY	XX	XX	XY	XY	XY	XY	XY	XY
25	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY	YY	YY	XX	YY	YY	XY	XY	XY	XY
26	XX	YY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY	YY	XX	XX	XX	XX	XY	XY	IV	YY
27	XX	XY	YY	YY	YY	YY	XX	XX	XY	XY	XY	XY	XY	XY	YY	YY	YY	XX	YY	YY	YY	IV	YY	
28	XX	XY	XY	XY	XY	XX	XX	XY	YY	XY	XY	XY	XY	YY	YY	YY	XY	XX	XX	XY	XY	XY	XY	XY
29	XX	YY	XY	XY	XY	XY	XY	XY	XY	XX	XX	XX	XX	XX	YY	XY	XX	XX	XY	XY	XY	XY	XY	XY
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31	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY	XY	XX	NC	YY	YY	YY	YY	YY	YY
32	XX	YY	YY	YY	YY	YY	YY	XY	YY	YY	YY	YY	YY	XY	XY	YY	XX	XX	XY	XY	XY	XY	XY	XY
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37	XX	XY	XY	XY	XY	XY	XY	XY	XY	YY	YY	YY	YY	YY	YY	YY	YY	NC	XY	XY	XY	XY	XY	XY
38	XX	XX	XY	XY	XY	XY	XY	YY	YY	XX	XX	XX	XY	YY	YY	XY	YY	NC	YY	YY	YY	IV	XY	XY
39	XX	YY	XY	XY	XY	XY	YY	YY	YY	YY	XY	XY	XY	XY	YY	XY	XX	XX	XY	XY	XY	YY	YY	YY
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41	XX	XX	XY	XY	XY	XY	XY	XY	XY	YY	YY	YY	YY	YY	YY	XX	XX	XX	XY	XY	YY	IV	YY	YY
42	XX	XY	XY	XY	XY	XX	XX	XX	XY	XY	XY	XY	XY	XX	XX	YY	XY	XX	XX	XY	XY	XY	YY	YY
43	XX	XX	YY	YY	YY	YY	XX	YY	YY	XY	XY	XY	XY	YY	XY	YY	XX	XX	XY	XY	XY	XY	XY	XY
44	XX	XX	YY	YY	YY	YY	XY	XX	XY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	YY	YY	YY
45	XX	XY	YY	YY	YY	YY	YY	YY	XX	XY	XY	XY	XY	XX	XY	YY	XX	XX	XY	XY	XY	XY	XY	XY
46	XX	YY	YY	YY	YY	YY	XY	YY	XY	XX	XX	XX	XX	XX	YY	XY	XX	XX	XY	XY	XY	XY	XY	XY
47	XX	YY	YY	YY	YY	YY	XY	XX	XY	XY	XY	XY	XY	XX	YY	YY	YY	NC	YY	YY	YY	YY	XY	XY
48	XX	XY	XY	XY	XY	XY	XY	XX	XY	XY	XY	XY	XY	XY	XY	XY	YY	NC	YY	YY	YY	YY	YY	YY
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53	XX	YY	YY	YY	YY	YY	XY	XY	XY	XY	XY	XY	XY	YY	YY	YY	XY	YY	XX	XY	XY	YY	IV	YY
54	XX	XY	XY	XY	XY	XY	XY	XX	XX	XX	XY	XY	XY	XY	YY	XY	XX	XX	XX	XX	XX	XY	XY	XY
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61	XX	YY	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	IV	YY	YY
62	XX	YY	XX	XX	XX	XX	XY	XY	YY	YY	YY	YY	YY	YY	YY	XY	XX	XX	XY	XY	XY	IV	YY	YY
63	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
64	XX	YY	YY	YY	YY	YY	NC	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	IV	YY	YY
65	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	YY	YY	YY
66	XX	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	YY	XX	IV	YY
67	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	XX	IV	YY
68	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	XY	NC	YY	YY	YY	YY	XX	YY	YY	YY
69	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	XY	NC	YY	YY	YY	YY	XX	XX	YY	YY
70	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
71	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY
72	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	XY	NC	YY	YY	YY	YY	XX	XX	YY	YY
73	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
74	XY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	XY	YY	YY
75	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
76	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	XX	YY	YY
77	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY
78	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	YY	IV	YY
79	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	XY	IV	YY
80	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY
81	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY
82	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	YY	XX	IV	YY
83	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	XX	IV	YY	YY
84	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	YY	XX	YY	YY	YY
85	XX	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	YY	XX	XY	YY	YY
86	XX	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	NC	YY	YY	YY	XX	YY	YY	YY
87	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	XY	NC	YY	YY	YY	YY	XX	XX	YY	YY
88	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	XY	IV	YY	YY
89	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
90	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
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92	XX	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	XY	NC	YY	YY	YY	YY	XX	IV	YY	YY
93	XX	XY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	YY	XX	IV	YY	YY
94	XX	NC	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	XX	IV	YY
95	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	YY	IV	YY	YY

60	XX	XY	XY	XY	XY	XY	XX	XY	XY	XX	XX	XY	XY	XY	XY	XY	XY	XY	YY	YY	YY	YY	XY
61	XY	XY	XY	XY	XY	XY	XX	XY	XY	XX	XX	XX	XX	XX	XX	XX	XY	XY	YY	YY	YY	YY	XX
62	YY	XY	XY	XY	XY	XY	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY
63	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
64	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
65	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
66	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY
67	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY
68	YY	YY	YY	YY	YY	YY	XX	YY	XX	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY
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72	YY	YY	YY	YY	YY	YY	XX	XX	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY
73	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
74	YY	YY	YY	YY	YY	YY	XX	YY	XY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
75	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
76	YY	YY	YY	YY	XX	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
77	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
78	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
79	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
80	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
81	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
82	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY
83	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
84	YY	YY	YY	YY	YY	YY	XX	XX	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY
85	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY
86	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY
87	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY
88	YY	YY	YY	YY	XX	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
89	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
90	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
91	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	XY	YY	YY	YY	YY	YY	YY	YY	YY
92	YY	YY	XX	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	XY	YY	YY	YY	YY	YY	YY	YY	YY
93	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY
94	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY
95	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
96	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

표 7. 순천대학교 561점의 시료에 대하여, 병 관련 마커를 이용한 서비스 결과

순번	Ph3	순번	I2	순번	I3	순번	I3	순번	Ve2	순번	py1-4	순번	Bw6	순번	Mi23
1	S	1	R	12	H	84	H	65	n/a	6	R	57	H	7	S
2	S	2	H	13	H	85	S	66	R	7	H	58	R	8	H
3	H	3	R	14	H	86	S	67	R	8	H	59	H	9	H
4	H	4	R	15	S	87	S	68	S	9	S	60	H	10	H
5	R	5	n/a	16	H	88	H	69	S	10	S	61	H	11	R
6	H	6	S	17	S	89	H	70	H	11	S	62	R	12	H
7	R	7	H	18	H	90	H	71	R	12	R	63	H	13	R
8	S	8	R	19	H	순번 Ve2		72	S	13	S	64	H	14	H
9	H	9	H	20	R	1	S	73	H	14	H	65	R	15	R
10	H	10	S	21	R	2	H	74	H	15	S	66	R	16	R
순번 Sm-565		11	H	22	S	3	H	75	H	16	H	67	R	17	S
1	R	12	R	23	H	4	H	76	R	17	H	68	S	18	R
2	R	13	H	24	S	5	H	77	R	18	S	69	R	19	R
3	R	14	R	25	R	6	R	78	S	19	S	70	R	20	H
4	S	15	H	26	S	7	S	79	S	20	S	순번 Bw12		21	H
5	H	16	S	27	R	8	S	80	R	순번 Bw6		1	H	22	R
6	H	17	H	28	S	9	R	81	H	1	n/a	2	S	23	H
7	H	18	H	29	S	10	S	82	H	2	S	3	H	24	S
8	S	19	H	30	R	11	R	83	H	3	H	4	H	25	S
9	H	20	n/a	31	H	12	R	84	H	4	H	5	H	26	S
10	R	21	H	32	R	13	H	85	H	5	R	6	H	27	H
11	R	22	H	33	H	14	H	86	R	6	R	7	S	28	R
12	S	23	H	34	R	15	H	87	H	7	S	8	S	29	H
13	H	24	H	35	H	16	H	88	H	8	H	9	R	30	S
14	S	25	S	36	S	17	H	89	H	9	H	10	S	31	R
15	H	26	R	37	H	18	S	90	H	10	H	11	S	32	H
16	H	27	R	38	S	19	H	91	H	11	H	12	S	33	H
17	H	28	R	39	S	20	H	92	H	12	H	13	S	34	H
18	H	29	H	40	R	21	H	93	H	13	H	14	H	35	R
19	H	30	H	41	H	22	R	94	S	14	H	15	H	36	H

20	R	31	H	42	H	23	S	95	H	15	H	16	S	37	H
21	S	32	R	43	S	24	S	96	H	16	H	17	H	38	H
22	H	33	H	44	R	25	S	97	R	17	H	18	H	39	H
23	H	34	H	45	R	26	S	98	H	18	R	19	H	40	S
24	S	35	H	46	H	27	S	99	H	19	R	20	R	41	S
25	S	36	S	47	H	28	S	순번 J3		20	H	21	S	42	S
26	R	37	H	48	H	29	S	1	H	21	H	22	R	43	H
27	H	38	H	49	H	30	H	2	H	22	H	23	R	44	H
28	S	39	S	50	S	31	S	3	S	23	H	24	R	45	H
29	R	40	H	51	n/a	32	H	4	H	24	S	25	H	46	H
30	R	41	R	52	S	33	S	5	H	25	S	26	S	47	R
31	H	42	H	53	H	34	S	6	H	26	H	27	H	48	R
32	S	43	S	54	H	35	H	7	H	27	H	28	S	49	R
33	S	44	H	55	S	36	H	8	H	28	R	29	H	50	H
34	H	45	H	56	H	37	H	9	H	29	H	30	H	51	H
35	H	46	H	57	H	38	H	10	S	30	H	31	R	52	R
36	S	47	S	58	R	39	S	11	H	31	H	32	H	53	R
37	S	48	R	59	H	40	S	12	H	32	H	33	H	54	H
38	H	49	R	60	H	41	S	13	H	33	H	34	S	55	R
39	S	50	R	61	H	42	R	14	H	34	H	35	R	56	H
40	S	51	R	62	R	43	R	15	H	35	H	36	H	57	H
41	H	52	H	63	H	44	R	16	H	36	H	37	S	58	S
42	S	53	R	64	S	45	H	17	H	37	R	38	n/a	59	H
43	H	54	H	65	S	46	R	18	H	38	H	39	S	60	H
44	H	55	H	66	H	47	S	19	H	39	S	40	H	61	H
45	H	56	S	67	H	48	H	20	S	40	S	41	H	순번 Cf9	
46	R	57	S	68	H	49	R	21	S	41	H	42	S	1	R
47	S	58	R	69	H	50	S	22	H	42	H	43	S	2	R
48	S	59	R	70	H	51	H	23	S	43	R	44	H	3	S
49	H	60	S	71	S	52	S	24	S	44	R	45	H	4	S
50	n/a	순번 I3		72	S	53	H	25	H	45	R	46	H	5	S
51	R	1	S	73	H	54	H	26	S	46	S	47	H	6	R
52	H	2	H	74	H	55	H	27	H	47	H	48	H	7	H
53	H	3	S	75	R	56	H	28	H	48	S	49	R	8	n/a
54	H	4	S	76	H	57	S	29	H	49	S	50	H	9	n/a
55	R	5	H	77	H	58	H	30	H	50	R	순번 Mi23		10	R
56	S	6	S	78	H	59	H	순번 py1-4		51	H	1	R		
57	H	7	S	79	H	60	n/a	1	H	52	H	2	H		
58	S	8	R	80	R	61	n/a	2	H	53	H	3	H		
59	S	9	R	81	R	62	n/a	3	H	54	S	4	H		
60	R	10	S	82	R	63	n/a	4	S	55	H	5	H		
61	H	11	H	83	R	64	n/a	5	H	56	R	6	R		

표 8. 순천대학교 3,043점의 시료에 대하여, 병 관련 마커를 이용한 서비스 결과

순번 Sw5		순번 I2		순번 J3		순번 Mi23		순번 Ty1		순번 Ph3		순번 Ve2		순번 Bw6	
1	H	167	H	241	S	284	R	291	S	139	S	266	R	23	H
2	R	168	H	242	S	285	H	292	R	140	H	267	H	24	S
3	R	169	R	243	S	286	H	293	S	141	S	268	S	25	S
4	H	170	H	244	R	287	H	294	H	142	R	269	R	26	H
5	R	171	R	245	H	288	H	295	R	143	S	270	R	27	S
6	S	172	H	246	R	289	S	296	H	144	H	271	S	28	H
7	H	173	S	247	R	290	S	297	H	145	H	272	R	29	H
8	H	174	R	248	H	291	R	298	H	146	H	273	S	30	R
9	R	175	S	249	R	292	R	299	H	147	H	274	H	31	H
10	H	176	H	250	S	293	S	300	H	148	R	275	S	32	S
11	S	177	S	251	S	294	R	301	H	149	S	276	R	33	H
12	H	178	S	252	S	295	H	302	R	150	H	277	H	34	R
13	H	179	R	253	S	296	S	303	H	151	H	278	H	35	R
14	H	180	H	254	S	297	S	304	H	152	S	279	H	36	R
15	R	181	H	255	S	298	H	305	H	153	S	280	S	37	H
16	H	182	H	256	S	299	R	306	S	154	H	281	S	38	S
17	R	183	S	257	S	300	H	307	H	155	H	282	H	39	S
18	R	184	S	258	S	301	H	308	H	156	S	283	H	40	H

19	H	185	S	259	S	302	R	309	S	157	H	284	H	41	H
20	H	186	S	260	S	303	R	310	H	158	R	285	S	42	H
21	S	187	S	261	S	304	H	311	H	159	H	286	H	43	S
22	S	188	S	262	S	305	H	312	S	160	H	287	S	44	H
23	H	189	S	263	S	306	H	313	H	161	H	288	H	45	R
24	H	190	S	264	S	307	H	314	S	162	H	289	H	46	R
25	H	191	S	265	S	308	H	315	H	163	H	290	H	47	H
26	H	192	S	266	S	309	R	316	R	164	H	291	S	48	S
27	H	193	S	267	S	310	S	317	H	165	S	292	R	49	H
28	S	194	S	268	S	311	H	318	R	166	R	293	H	50	R
29	H	195	S	269	S	312	H	319	H	167	H	294	R	51	H
30	H	196	S	270	S	313	H	320	H	168	S	295	S	52	H
31	S	197	S	271	S	314	S	321	R	169	S	296	H	53	H
32	H	198	S	272	S	315	H	322	H	170	S	297	H	54	H
33	H	199	S	273	S	순번 Tm2a		323	H	171	S	298	H	55	S
34	H	200	S	274	S	1	R	324	H	172	S	299	H	56	H
35	S	201	S	275	S	2	H	325	S	173	H	300	R	57	H
36	R	202	S	276	S	3	H	326	H	174	S	301	S	58	H
37	R	203	S	277	S	4	R	327	R	175	R	302	H	59	S
38	R	204	S	278	S	5	H	328	R	176	S	303	H	60	S
39	R	205	H	279	H	6	H	329	R	177	H	304	H	61	R
40	S	206	S	280	H	7	H	330	H	178	H	305	R	62	H
41	H	207	R	281	R	8	S	331	S	179	H	306	S	63	S
42	H	208	H	282	S	9	H	332	S	180	S	307	H	64	R
43	H	209	H	283	H	10	H	333	H	181	H	308	H	65	S
44	H	210	S	284	H	11	H	334	S	182	H	309	R	66	H
45	R	211	S	285	H	12	S	335	R	183	S	310	S	67	H
46	S	212	S	286	H	13	H	336	R	184	S	311	R	68	S
47	H	213	S	287	R	14	R	337	H	185	S	312	H	69	H
48	H	214	S	288	S	15	S	338	S	186	R	313	H	70	R
49	S	215	S	289	S	16	H	339	H	187	S	314	S	71	H
50	H	216	S	290	S	17	R	340	S	188	R	315	S	72	H
51	H	217	S	291	S	18	H	341	R	189	R	316	H	73	R
52	H	218	S	292	S	19	H	342	H	190	S	317	R	74	R
53	H	219	S	293	S	20	S	343	R	191	R	318	H	75	H
54	H	220	S	294	S	21	R	344	H	192	S	319	R	76	H
55	H	221	S	295	S	22	H	345	H	193	S	320	H	77	R
56	R	222	S	296	S	23	H	346	H	194	S	321	H	78	H
57	R	223	S	297	S	24	R	347	H	195	S	순번 Sm-565		79	H
58	S	224	S	298	S	25	S	348	S	196	S	1	n/a	80	R
59	H	225	S	299	S	26	S	349	H	197	H	2	R	81	R
60	H	226	S	300	S	27	H	350	H	198	H	3	H	82	H
61	S	227	S	301	S	28	S	351	H	199	H	4	H	83	H
62	H	228	S	302	S	29	S	352	S	200	H	5	R	84	S
63	R	229	H	303	S	30	S	353	S	201	S	6	H	85	R
64	R	230	H	304	S	31	S	354	R	202	H	7	H	86	H
65	S	231	R	305	S	32	S	355	H	203	H	8	H	87	H
66	H	232	H	306	S	33	R	356	H	204	H	9	H	88	S
67	R	233	R	307	S	34	H	357	S	205	H	10	H	89	H
68	H	234	S	308	S	35	S	358	S	206	R	11	R	90	R
69	H	235	R	309	S	36	R	359	n/a	207	S	12	S	91	H
70	S	236	S	310	S	37	H	360	n/a	208	R	13	S	92	H
71	R	237	S	311	S	38	R	361	S	209	H	14	H	93	H
72	R	238	R	312	S	39	R	362	H	210	S	15	R	94	S
73	H	239	R	313	S	40	H	363	R	211	S	16	S	95	H
74	H	240	R	314	S	41	H	364	H	212	R	17	H	96	H
75	H	241	R	315	S	42	H	365	H	213	S	18	H	97	H
76	H	242	R	316	S	43	S	366	R	214	H	19	H	98	H
77	S	243	R	317	S	44	H	367	R	215	H	20	H	99	R
78	H	244	R	318	S	45	H	368	H	216	R	21	H	100	H
79	H	245	R	319	S	46	S	369	H	217	R	22	H	101	H
80	S	246	R	320	S	47	S	370	R	218	H	23	H	102	H
81	H	247	R	321	S	48	S	371	H	219	R	24	R	103	H
82	H	248	R	322	S	49	R	372	R	220	R	25	R	104	R

83	R	249	R	323	S	50	R	373	S	221	R	26	S	105	H
84	S	250	R	324	S	51	R	374	H	222	H	27	H	106	R
85	H	251	H	325	S	52	R	375	H	223	R	28	H	107	H
86	S	252	R	326	S	53	R	376	H	224	R	29	R	108	R
87	H	253	R	327	S	54	S	377	H	225	R	30	H	109	n/a
88	H	254	R	328	H	55	R	378	H	226	R	31	S	110	H
89	R	255	R	329	S	56	R	379	R	227	R	32	H	111	H
90	R	256	H	330	S	57	R	380	H	228	S	33	S	112	S
91	H	257	R	331	R	58	R	381	H	229	R	34	H	113	H
92	H	258	H	332	S	순번 Ty1		382	R	230	R	35	H	114	S
93	R	259	H	333	S	1	R	383	R	231	R	36	H	115	S
94	S	260	S	334	S	2	H	384	H	232	R	37	S	116	H
95	H	261	R	335	S	3	H	385	H	233	R	38	H	117	H
96	H	262	S	336	S	4	R	386	S	234	R	39	R	118	H
97	R	263	S	337	S	5	S	387	R	235	S	40	R	119	H
98	H	264	H	338	S	6	H	388	H	236	R	41	R	120	H
99	H	265	H	순번 Mi23		7	H	389	H	237	H	42	R	121	R
100	R	266	H	1	S	8	S	390	H	238	H	43	S	122	R
101	R	267	H	2	H	9	H	391	H	239	H	44	R	123	R
102	H	268	R	3	H	10	R	392	H	240	H	45	R	124	H
103	S	269	H	4	S	11	R	393	H	241	H	46	R	125	S
104	H	270	R	5	R	12	S	394	R	242	H	47	R	126	H
105	H	271	R	6	H	13	H	395	R	243	H	48	H	127	H
106	S	272	R	7	H	14	H	396	R	244	R	49	R	128	S
107	R	273	R	8	R	15	H	397	H	245	H	50	n/a	129	H
108	R	274	R	9	S	16	S	398	H	246	H	51	H	130	S
109	H	275	R	10	S	17	S	399	H	247	S	52	H	131	H
110	R	276	R	11	S	18	S	400	R	248	S	53	S	132	R
111	S	277	n/a	12	R	19	H	401	S	249	R	54	H	133	H
112	H	278	R	13	H	20	S	402	H	250	R	55	H	134	R
113	R	279	R	14	S	21	H	403	R	251	S	56	H	135	H
114	R	순번 I3		15	S	22	H	404	S	252	H	57	R	136	H
115	S	1	H	16	S	23	R	405	H	253	H	58	R	137	S
116	R	2	H	17	S	24	H	406	S	254	S	59	H	138	H
117	S	3	H	18	S	25	H	407	H	순번 Ve2		60	H	139	R
118	S	4	R	19	H	26	R	408	H	1	R	61	R	140	S
119	H	5	H	20	S	27	R	409	H	2	H	62	R	141	R
120	R	6	R	21	H	28	H	410	H	3	S	63	H	142	H
121	S	7	H	22	H	29	H	411	S	4	S	64	R	143	R
122	H	8	S	23	S	30	R	412	H	5	S	65	H	144	R
123	H	9	H	24	S	31	H	413	H	6	H	66	H	145	R
124	H	10	R	25	S	32	R	414	R	7	R	67	S	146	S
125	H	11	R	26	S	33	H	415	H	8	R	68	H	147	H
126	R	12	H	27	H	34	S	416	S	9	R	69	R	148	H
127	H	13	H	28	R	35	H	417	H	10	S	70	H	149	H
128	H	14	R	29	H	36	R	418	R	11	S	71	R	150	H
129	H	15	H	30	S	37	H	419	R	12	H	72	H	151	R
130	H	16	H	31	H	38	H	420	S	13	H	73	H	152	H
131	H	17	S	32	R	39	H	421	S	14	H	74	R	153	R
132	H	18	n/a	33	H	40	R	422	R	15	H	75	H	154	H
133	H	19	R	34	H	41	H	423	S	16	R	76	H	155	R
134	S	20	R	35	H	42	S	424	S	17	H	77	H	156	H
135	S	21	R	36	H	43	H	425	H	18	H	78	R	157	R
136	R	22	S	37	S	44	H	426	R	19	S	79	R	158	H
137	H	23	H	38	H	45	H	427	R	20	H	80	H	159	S
138	S	24	S	39	S	46	H	428	R	21	H	81	R	160	S
139	R	25	R	40	H	47	R	429	H	22	H	82	R	161	H
140	S	26	H	41	S	48	H	430	H	23	H	83	S	162	H
141	H	27	S	42	R	49	R	431	S	24	S	84	S	163	S
142	H	순번 J3		43	S	50	H	432	H	25	R	85	S	164	R
143	H	1	H	44	R	51	R	433	S	26	H	86	H	165	H
144	S	2	H	45	S	52	S	434	S	27	H	87	S	166	H
145	S	3	H	46	S	53	R	435	S	28	S	88	H	167	S
146	H	4	R	47	H	54	S	436	H	29	H	89	R	168	H

147	H	5	S	48	H	55	R	437	R	30	H	90	R	169	S
148	H	6	R	49	S	56	R	438	H	31	R	91	H	170	H
149	H	7	H	50	H	57	H	439	S	32	H	92	R	171	H
150	R	8	H	51	H	58	H	440	H	33	H	93	H	172	R
151	S	9	S	52	R	59	R	441	S	34	S	94	S	173	R
152	H	10	S	53	R	60	H	442	S	35	H	95	H	174	R
153	R	11	H	54	S	61	H	443	S	36	R	96	H	순번	Cf9
154	H	12	H	55	H	62	S	444	S	37	H	97	R	1	R/H
155	H	13	H	56	H	63	S	445	S	38	S	98	R	2	R/H
156	S	14	S	57	S	64	R	446	H	39	R	99	H	3	R/H
157	H	15	H	58	S	65	H	447	S	40	R	100	R	4	n/a
158	S	16	S	59	S	66	H	448	H	41	H	101	R	5	n/a
159	H	17	R	60	S	67	R	449	R	42	R	102	H	6	n/a
160	R	18	H	61	H	68	R	450	R	43	H	103	H	7	n/a
161	H	19	R	62	R	69	H	451	H	44	H	104	R	8	R/H
162	S	20	H	63	R	70	H	452	H	45	H	105	H	9	R/H
163	S	21	H	64	S	71	H	453	S	46	H	106	H	10	R/H
164	H	22	H	65	H	72	H	454	H	47	R	107	S	11	n/a
165	S	23	R	66	R	73	R	455	H	48	S	108	S	12	R/H
166	H	24	S	67	H	74	H	456	H	49	R	109	R	13	n/a
167	R	25	R	68	R	75	H	457	H	50	H	110	R	14	R/H
168	H	26	S	69	H	76	H	458	S	51	H	111	S	15	R/H
169	R	27	H	70	H	77	H	459	S	52	H	112	H	16	R/H
170	S	28	S	71	H	78	H	460	R	53	H	113	H	17	R/H
171	H	29	S	72	H	79	H	461	H	54	H	114	H	18	n/a
172	H	30	S	73	S	80	S	462	H	55	S	115	S	19	n/a
173	H	31	S	74	H	81	H	463	H	56	H	116	S	20	R/H
174	S	32	S	75	H	82	R	464	R	57	R	117	R	21	R/H
175	R	33	S	76	S	83	R	465	H	58	S	118	R	22	R/H
176	H	34	S	77	S	84	H	순번	Ty2	59	H	119	H	23	R/H
177	S	35	S	78	H	85	R	1	H	60	H	120	R	24	n/a
178	H	36	S	79	S	86	R	2	S	61	S	121	R	25	R/H
179	R	37	S	80	S	87	S	3	S	62	S	122	H	26	R/H
180	H	38	S	81	H	88	H	4	S	63	R	123	R	27	R/H
181	n/a	39	S	82	H	89	H	5	H	64	H	124	H	28	n/a
182	H	40	S	83	S	90	H	6	n/a	65	H	125	H	29	n/a
183	R	41	S	84	H	91	H	7	H	66	S	126	R	30	R/H
184	R	42	S	85	H	92	S	8	H	67	H	127	H	31	n/a
185	S	43	S	86	H	93	R	9	H	68	H	128	S	32	R/H
186	R	44	S	87	H	94	S	10	H	69	H	129	S	33	R/H
187	H	45	S	88	H	95	R	11	H	70	H	130	H	34	R/H
188	S	46	S	89	H	96	H	12	R	71	H	131	H	35	R/H
189	H	47	S	90	R	97	H	13	H	72	H	132	H	36	R/H
190	H	48	S	91	H	98	S	14	H	73	S	133	S	37	n/a
191	H	49	S	92	S	99	S	15	H	74	H	134	S	38	R/H
192	H	50	S	93	H	100	R	16	H	75	R	135	H	39	R/H
193	S	51	S	94	H	101	H	17	R	76	H	136	H	40	R/H
194	H	52	S	95	H	102	S	18	H	77	R	137	H	41	R/H
195	S	53	S	96	H	103	H	19	H	78	S	138	R	42	R/H
196	R	54	S	97	S	104	S	20	H	79	H	139	S	43	R/H
197	R	55	S	98	R	105	H	21	H	80	S	140	H	44	n/a
198	S	56	S	99	H	106	H	22	H	81	H	141	H	45	R/H
199	H	57	S	100	H	107	H	23	S	82	S	142	R	46	R/H
200	R	58	S	101	H	108	H	24	H	83	S	143	R	47	R/H
201	H	59	S	102	H	109	R	25	H	84	S	144	H	48	R/H
202	H	60	S	103	S	110	H	26	H	85	S	145	R	49	R/H
203	H	61	S	104	H	111	H	27	H	86	H	146	S	50	R/H
204	H	62	S	105	H	112	R	28	H	87	H	147	S	51	n/a
205	H	63	S	106	S	113	R	29	H	88	R	148	R	52	R/H
206	H	64	S	107	H	114	H	30	H	89	H	149	R	53	R/H
207	H	65	S	108	S	115	R	31	H	90	H	150	R	54	R/H
208	R	66	S	109	H	116	R	32	R	91	R	151	H	55	R/H
209	H	67	n/a	110	R	117	H	33	S	92	R	152	H	56	n/a
210	H	68	H	111	H	118	H	34	H	93	R	153	H	57	R/H

211	R	69	H	112	R	119	S	35	H	94	R	154	H	58	n/a
212	H	70	R	113	S	120	S	36	H	95	R	155	S	59	n/a
213	H	71	R	114	R	121	H	37	H	96	H	156	S	60	R/H
214	S	72	H	115	H	122	H	38	R	97	S	157	H	61	R/H
215	H	73	R	116	H	123	S	39	H	98	R	158	H	62	R/H
순번	I2	74	R	117	H	124	S	40	R	99	R	159	R	63	R/H
1	R	75	H	118	H	125	S	41	S	100	H	160	H	64	n/a
2	R	76	S	119	H	126	H	42	R	101	R	161	H	65	R/H
3	R	77	S	120	H	127	H	43	R	102	R	162	R	66	R/H
4	R	78	S	121	R	128	H	44	H	103	S	163	S	67	R/H
5	R	79	S	122	H	129	H	45	S	104	R	164	S	68	R/H
6	R	80	S	123	R	130	H	46	H	105	H	165	R	69	R/H
7	R	81	S	124	S	131	H	47	H	106	H	166	R	70	R/H
8	R	82	S	125	R	132	H	48	S	107	R	167	H	71	R/H
9	H	83	S	126	R	133	R	49	H	108	H	168	R	72	R/H
10	H	84	R	127	H	134	R	50	H	109	H	169	R	73	R/H
11	S	85	S	128	H	135	H	51	H	110	R	170	S	74	R/H
12	S	86	R	129	H	136	S	52	H	111	R	171	S	75	R/H
13	R	87	S	130	H	137	H	53	H	112	R	172	S	76	n/a
14	R	88	S	131	H	138	H	54	H	113	S	173	S	77	R/H
15	R	89	H	132	S	139	R	55	H	114	H	174	S	78	R/H
16	R	90	H	133	R	140	H	56	S	115	H	175	S	79	R/H
17	R	91	S	134	H	141	H	57	H	116	H	176	S	80	R/H
18	R	92	H	135	H	142	H	58	H	117	H	177	S	81	n/a
19	R	93	R	136	S	143	H	59	S	118	S	178	S	82	R/H
20	R	94	H	137	S	144	H	60	S	119	S	179	S	83	R/H
21	R	95	S	138	S	145	H	61	H	120	R	180	S	84	R/H
22	R	96	H	139	R	146	S	62	H	121	S	181	S	85	n/a
23	R	97	H	140	H	147	H	63	R	122	H	182	S	86	n/a
24	R	98	H	141	R	148	R	64	H	123	R	183	S	87	R/H
25	R	99	S	142	H	149	H	65	H	124	H	184	H	88	R/H
26	R	100	H	143	S	150	H	66	R	125	H	185	H	89	R/H
27	R	101	H	144	R	151	H	67	R	126	R	186	S	90	R/H
28	R	102	H	145	n/a	152	H	순번	Ph3	127	H	187	H	91	R/H
29	R	103	H	146	R	153	R	1	R	128	R	188	R	92	n/a
30	R	104	H	147	H	154	S	2	H	129	H	189	S	93	n/a
31	R	105	H	148	H	155	H	3	S	130	H	190	H	94	n/a
32	R	106	H	149	R	156	H	4	S	131	S	191	S	95	R/H
33	R	107	H	150	S	157	H	5	S	132	S	192	H	96	n/a
34	R	108	S	151	H	158	H	6	H	133	R	193	H	97	n/a
35	R	109	S	152	H	159	R	7	H	134	H	194	R	98	R/H
36	R	110	S	153	H	160	H	8	H	135	H	195	H	99	R/H
37	R	111	S	154	H	161	H	9	H	136	R	196	H	100	n/a
38	R	112	S	155	H	162	R	10	R	137	R	197	n/a	101	n/a
39	R	113	S	156	H	163	H	11	H	138	R	198	H	102	R/H
40	R	114	S	157	R	164	R	12	R	139	H	199	S	103	n/a
41	R	115	S	158	H	165	H	13	S	140	H	200	R	104	n/a
42	R	116	S	159	H	166	R	14	S	141	H	201	H	105	R/H
43	R	117	S	160	S	167	S	15	H	142	R	202	H	106	R/H
44	R	118	R	161	H	168	S	16	H	143	H	203	H	107	n/a
45	R	119	R	162	R	169	R	17	R	144	S	204	R	108	n/a
46	R	120	R	163	H	170	H	18	H	145	H	205	S	109	R/H
47	R	121	R	164	S	171	S	19	H	146	H	206	S	110	R/H
48	R	122	R	165	S	172	H	20	H	147	H	207	S	111	R/H
49	R	123	n/a	166	H	173	S	21	R	148	H	208	H	112	n/a
50	R	124	S	167	H	174	H	22	S	149	R	209	H	113	R/H
51	R	125	S	168	H	175	H	23	S	150	R	210	H	114	R/H
52	R	126	S	169	H	176	S	24	H	151	n/a	211	H	115	n/a
53	R	127	S	170	S	177	S	25	H	152	S	212	R	116	R/H
54	R	128	S	171	H	178	S	26	H	153	H	213	R	117	n/a
55	R	129	S	172	R	179	R	27	R	154	R	214	H	118	R/H
56	R	130	S	173	H	180	S	28	S	155	S	215	H	119	n/a
57	R	131	S	174	H	181	H	29	H	156	R	216	R	120	R/H
58	R	132	S	175	H	182	H	30	H	157	R	217	S	121	R/H

59	R	133	S	176	H	183	R	31	H	158	S	218	n/a	122	n/a
60	R	134	H	177	R	184	R	32	H	159	S	219	H	123	R/H
61	R	135	H	178	H	185	H	33	R	160	H	220	n/a	124	R/H
62	R	136	S	179	R	186	H	34	S	161	R	221	n/a	125	R/H
63	R	137	H	180	R	187	S	35	H	162	R	222	n/a	126	R/H
64	R	138	S	181	H	188	S	36	H	163	R	223	H	127	R/H
65	R	139	S	182	R	189	H	37	S	164	R	224	S	128	R/H
66	R	140	R	183	H	190	R	38	H	165	R	225	S	129	R/H
67	R	141	R	184	H	191	S	39	H	166	R	226	S	130	n/a
68	R	142	H	185	S	192	S	40	H	167	S	227	S	131	R/H
69	R	143	S	186	H	193	H	41	S	168	H	228	H	132	n/a
70	R	144	S	187	R	194	H	42	R	169	S	229	S	133	n/a
71	R	145	S	188	H	195	H	43	R	170	R	230	R	134	R/H
72	R	146	S	189	S	196	H	44	S	171	H	231	S	135	R/H
73	R	147	S	190	S	197	H	45	R	172	H	232	R	136	R/H
74	R	148	S	191	S	198	R	46	S	173	R	233	H	137	n/a
75	R	149	S	192	H	199	S	47	R	174	S	순번	Bw12	138	R/H
76	R	150	S	193	R	200	H	48	H	175	R	1	H	139	n/a
77	R	151	S	194	R	201	H	49	S	176	n/a	2	H	140	R/H
78	R	152	S	195	H	202	H	50	H	177	H	3	H	141	n/a
79	R	153	S	196	S	203	S	51	R	178	H	4	H	142	n/a
80	R	154	S	197	H	204	S	52	R	179	H	5	H	143	R/H
81	R	155	S	198	H	205	H	53	S	180	H	6	H	144	R/H
82	R	156	S	199	H	206	H	54	H	181	H	7	H	145	R/H
83	R	157	S	200	H	207	H	55	R	182	H	8	S	146	R/H
84	R	158	S	201	R	208	R	56	H	183	H	9	S	147	R/H
85	R	159	S	202	H	209	S	57	S	184	H	10	S	148	n/a
86	R	160	S	203	H	210	R	58	S	185	S	11	R	149	R/H
87	R	161	S	204	R	211	H	59	R	186	H	12	H	150	n/a
88	R	162	S	205	H	212	R	60	R	187	R	13	R	151	R/H
89	R	163	S	206	S	213	H	61	H	188	H	14	H	152	n/a
90	R	164	S	207	H	214	R	62	H	189	H	15	S	153	R/H
91	R	165	S	208	H	215	R	63	H	190	S	16	H	154	n/a
92	R	166	S	209	S	216	R	64	H	191	H	17	R	155	R/H
93	R	167	S	210	S	217	H	65	S	192	R	18	R	156	R/H
94	R	168	S	211	H	218	R	66	H	193	R	19	H	157	R/H
95	R	169	S	212	H	219	H	67	H	194	R	20	H	158	R/H
96	R	170	S	213	S	220	R	68	S	195	H	21	R	159	n/a
97	R	171	S	214	H	221	H	69	H	196	S	22	R	160	R/H
98	H	172	S	215	H	222	S	70	H	197	H	23	R	161	R/H
99	H	173	S	216	S	223	S	71	R	198	H	24	R	162	n/a
100	H	174	S	217	S	224	S	72	S	199	H	25	R	163	n/a
101	H	175	S	218	H	225	R	73	H	200	S	26	R	164	n/a
102	S	176	S	219	H	226	H	74	S	201	S	27	R	165	n/a
103	n/a	177	S	220	R	227	H	75	H	202	H	28	H	166	R/H
104	S	178	S	221	S	228	H	76	H	203	S	29	H	167	R/H
105	S	179	S	222	H	229	H	77	H	204	H	30	S	168	n/a
106	S	180	S	223	H	230	R	78	R	205	S	31	R	169	R/H
107	S	181	S	224	H	231	R	79	R	206	H	32	H	170	n/a
108	S	182	S	225	H	232	S	80	H	207	H	33	H	171	R/H
109	S	183	S	226	S	233	R	81	S	208	H	34	H	172	R/H
110	S	184	S	227	S	234	H	82	H	209	H	35	H	173	n/a
111	S	185	S	228	H	235	H	83	H	210	H	36	H	174	n/a
112	S	186	S	229	H	236	S	84	S	211	R	37	S	175	n/a
113	H	187	S	230	H	237	S	85	R	212	S	38	S	176	n/a
114	R	188	S	231	S	238	H	86	R	213	H	39	H	177	n/a
115	R	189	S	232	H	239	S	87	H	214	H	40	R	178	R/H
116	R	190	S	233	H	240	H	88	R	215	H	41	S	179	n/a
117	R	191	S	234	S	241	H	89	S	216	H	42	R	180	n/a
118	R	192	S	235	R	242	R	90	H	217	H	43	H	181	n/a
119	R	193	S	236	H	243	H	91	H	218	S	44	S	182	n/a
120	R	194	S	237	S	244	S	92	H	219	S	45	S	183	n/a
121	R	195	S	238	R	245	R	93	S	220	H	46	R	184	n/a
122	R	196	S	239	H	246	H	94	S	221	H	47	H	185	n/a

123	R	197	S	240	R	247	H	95	S	222	S	48	H	186	n/a
124	H	198	S	241	H	248	R	96	S	223	R	49	S	187	R/H
125	H	199	S	242	H	249	H	97	S	224	S	50	S	188	R/H
126	R	200	S	243	H	250	R	98	H	225	R	51	S	189	R/H
127	H	201	H	244	H	251	R	99	S	226	H	52	H	190	n/a
128	H	202	H	245	R	252	H	100	S	227	R	53	H	191	n/a
129	R	203	H	246	H	253	R	101	S	228	H	54	H	192	n/a
130	R	204	H	247	H	254	R	102	S	229	H	55	S	193	n/a
131	S	205	H	248	S	255	S	103	H	230	R	56	R	194	n/a
132	S	206	S	249	H	256	S	104	S	231	H	57	S	195	n/a
133	R	207	S	250	H	257	R	105	H	232	H	58	R	196	n/a
134	R	208	S	251	R	258	H	106	H	233	H	59	H	197	R/H
135	R	209	S	252	H	259	S	107	R	234	R	60	H	198	n/a
136	S	210	S	253	S	260	R	108	S	235	H	61	H	199	R/H
137	H	211	S	254	H	261	R	109	S	236	H	62	R	200	n/a
138	H	212	S	255	S	262	S	110	S	237	R	63	H	201	R/H
139	S	213	S	256	H	263	S	111	R	238	S	64	R	202	R/H
140	H	214	S	257	R	264	S	112	H	239	H	65	H	203	n/a
141	R	215	S	258	R	265	H	113	H	240	H	66	S	204	R/H
142	S	216	S	259	R	266	H	114	R	241	R	67	S	205	R/H
143	R	217	S	260	H	267	S	115	S	242	H	68	S	206	R/H
144	H	218	R	261	S	268	R	116	H	243	R	순번	Bw6	207	n/a
145	S	219	R	262	H	269	H	117	R	244	R	1	H	208	R/H
146	S	220	S	263	H	270	H	118	H	245	R	2	R	209	R/H
147	R	221	S	264	H	271	H	119	S	246	H	3	H	210	R/H
148	S	222	R	265	R	272	H	120	H	247	H	4	H	211	R/H
149	R	223	S	266	R	273	H	121	R	248	H	5	S	212	n/a
150	H	224	H	267	R	274	H	122	R	249	R	6	S	213	R/H
151	S	225	H	268	R	275	R	123	S	250	R	7	S	214	R/H
152	H	226	H	269	R	276	H	124	H	251	H	8	S	215	R/H
153	H	227	H	270	H	277	H	125	S	252	R	9	S	216	R/H
154	H	228	S	271	R	278	H	126	H	253	H	10	S	217	R/H
155	S	229	H	272	H	279	H	127	H	254	S	11	H	218	R/H
156	H	230	S	273	H	280	H	128	H	255	H	12	H	219	R/H
157	H	231	H	274	H	281	R	129	H	256	H	13	H	220	n/a
158	R	232	H	275	H	282	H	130	H	257	H	14	H	221	n/a
159	R	233	R	276	S	283	H	131	H	258	R	15	H	222	n/a
160	n/a	234	S	277	R	284	H	132	H	259	R	16	S	223	n/a
161	R	235	S	278	H	285	H	133	S	260	R	17	H	224	n/a
162	H	236	S	279	H	286	H	134	S	261	R	18	H	225	R/H
163	H	237	S	280	S	287	H	135	H	262	S	19	H	226	n/a
164	R	238	S	281	H	288	S	136	H	263	H	20	H	227	n/a
165	R	239	S	282	H	289	H	137	H	264	H	21	H	228	n/a
166	R	240	S	283	S	290	S	138	S	265	R	22	S	229	n/a

표 9. 순천대학교 594점의 시료에 대하여, 병 관련 마커를 이용한 서비스 결과

순번	Sw5	순번	Tm2a	순번	Ty1	순번	Ph3	순번	I2	순번	Ve2	순번	J3	순번	Mi23
1	R	31	S	12	H	18	R	12	R	8	R	36	H	5	R
2	S	32	H	13	H	19	H	13	R	9	R	37	H	6	H
3	R	33	R	14	H	20	R	14	H	10	R	38	H	7	S
4	H	34	S	15	S	21	S	15	H	11	H	39	H	8	H
5	H	35	H	16	H	22	H	16	H	12	S	40	H	9	H
6	H	36	S	17	H	23	R	17	H	13	R	41	H	10	H
7	S	37	n/a	18	H	24	H	18	R	14	S	42	S	11	S
8	H	38	H	19	H	25	H	19	R	15	R	43	H	12	S
9	H	39	H	20	H	26	R	20	H	16	S	44	H	13	S
10	R	40	S	21	H	27	n/a	21	H	17	S	45	S	14	S
11	H	41	S	22	n/a	28	H	22	S	18	S	46	H	15	S
12	S	42	S	23	R	29	S	23	S	19	S	47	H	16	n/a
13	R	43	S	24	H	30	H	24	H	20	S	48	H	17	S
14	H	44	S	25	H	31	H	25	S	21	H	49	R	18	S
15	R	45	R	26	R	32	R	26	S	22	H	50	H	19	S
16	n/a	46	S	27	S	33	H	27	H	23	S	51	H	20	S

17	S	47	H	28	H	34	S	28	H	24	H	52	S	21	H
18	R	48	H	29	H	35	H	29	R	25	S	53	H	22	S
19	H	49	R	30	S	36	S	30	H	26	S	54	R	23	H
20	R	50	H	31	R	37	S	31	R	27	S	55	S	24	H
21	S	51	S	32	H	38	H	32	R	28	H	56	H	25	H
22	H	52	S	33	H	39	H	33	H	29	R	57	H	26	H
23	R	53	S	34	H	40	R	34	S	30	H	순번 Bw6		27	n/a
24	H	54	H	35	R	41	S	35	S	31	R	1	H	28	S
25	H	55	H	36	H	42	H	36	R	32	R	2	H	29	S
26	R	56	S	37	R	43	H	37	R	33	H	3	H	30	H
27	n/a	57	S	38	H	44	H	38	S	34	R	4	H	31	H
28	H	58	H	39	R	45	H	39	R	35	H	5	H	32	H
29	S	59	H	40	H	46	S	40	H	36	S	6	H	33	H
30	H	60	R	41	H	47	H	41	H	37	S	7	n/a	34	H
31	S	61	H	42	H	48	R	42	H	38	S	8	S	35	H
32	R	62	H	43	H	49	R	43	H	39	H	9	H	36	H
33	H	63	R	44	H	50	R	44	H	40	H	10	H	37	R
34	S	64	H	45	H	51	R	45	R	41	H	11	S	38	R
35	H	65	R	46	R	52	H	46	R	42	H	12	R	39	H
36	S	66	R	47	H	53	S	47	H	43	R	13	H	40	R
37	S	67	R	48	H	54	H	48	H	44	R	14	H	41	S
38	H	68	R	49	H	55	R	49	H	45	S	15	R	42	H
39	H	69	R	50	H	순번 Sm-565		50	H	46	S	16	S	43	S
40	R	70	S	51	H	1	S	51	R	47	H	17	H	44	H
41	S	71	R	52	H	2	H	52	S	순번 J3		18	H	45	S
42	H	72	R	53	H	3	H	53	R	1	H	19	H	46	H
43	H	73	R	54	H	4	R	54	R	2	H	20	S	47	S
44	H	74	R	55	H	5	R	55	R	3	H	21	S	48	H
45	H	75	R	56	H	6	H	56	S	4	S	22	H	49	H
순번 Tm2a		76	R	57	S	7	S	57	S	5	R	23	H	50	H
1	n/a	77	R	58	H	8	H	58	S	6	H	24	H	순번 Cf9	
2	H	78	S	59	R	9	R	순번 I3		7	S	25	H	1	H
3	H	79	S	60	H	10	H	1	n/a	8	H	26	H	2	S
4	S	80	H	61	R	11	H	2	S	9	R	27	H	3	R
5	R	81	H	62	R	12	S	3	H	10	H	28	H	4	H
6	H	82	H	63	H	13	S	4	H	11	H	29	S	5	H
7	S	83	H	64	H	14	R	5	R	12	H	30	H	6	H
8	H	84	H	65	S	15	S	6	H	13	R	31	S	7	n/a
9	R	85	R	66	S	16	S	7	R	14	H	32	R	8	R
10	H	86	R	67	R	17	H	8	H	15	R	33	R	9	R
11	H	87	R	68	H	18	R	9	S	16	n/a	34	H	10	H
12	H	88	H	69	R	19	H	10	R	17	H	35	H	11	H
13	R	89	S	순번 Ph3		20	R	11	S	18	n/a	36	H	12	R
14	H	90	S	1	n/a	21	H	12	S	19	S	37	H	13	S
15	R	91	R	2	S	22	R	13	S	20	R	순번 Bw12		14	H
16	n/a	92	S	3	R	23	S	14	S	21	H	1	H	15	R
17	H	93	H	4	H	24	S	15	S	22	R	2	S	16	H
18	S	94	H	5	H	25	S	16	n/a	23	S	3	R	17	S
19	S	순번 Ty1		6	H	순번 I2		17	S	24	H	4	H	18	H
20	R	1	H	7	S	1	S	18	S	25	S	5	H	19	R
21	H	2	R	8	H	2	H	19	S	26	S	6	R	20	R
22	R	3	H	9	S	3	R	20	S	27	n/a	7	n/a	21	R
23	S	4	H	10	R	4	S	순번 Ve2		28	H	8	H	22	H
24	H	5	H	11	H	5	R	1	H	29	R	9	H	23	R
25	S	6	H	12	S	6	S	2	H	30	H	10	H	24	R
26	S	7	n/a	13	R	7	n/a	3	R	31	R	순번 Mi23		25	R
27	n/a	8	R	14	H	8	H	4	S	32	H	1	R	26	n/a
28	H	9	R	15	H	9	H	5	H	33	S	2	H	27	R
29	R	10	n/a	16	n/a	10	S	6	H	34	H	3	H		
30	H	11	H	17	S	11	H	7	n/a	35	R	4	H		

표 10. 순천대학교 4점의 시료에 대하여, 병 관련 17종의 마커를 이용한 서비스 결과

순번	Sw5	Tm2a	Ty1	Ty2	Ty4	ty5	Ph3	Sm-565	I2	I3	Ve2	J3	py1	Bw6	Bw12	Mi23	Cf9
----	-----	------	-----	-----	-----	-----	-----	--------	----	----	-----	----	-----	-----	------	------	-----

1	S	R	S	H	S	S	H	H	S	S	S	H	S	H	S	S	S
2	S	R	S	H	S	S	H	H	S	S	S	H	S	H	S	S	S
3	S	R	S	H	S	S	H	H	S	S	S	H	S	H	S	S	S
4	S	R	S	S	S	S	S	R	S	S	S	S	S	R	S	S	S

표 11. 순천대학교 24점의 시료에 대하여, 병 관련 5종의 마커를 이용한 서비스 결과

순번	Ty2	Ph3	Sm-565	J3	Bw6	순번	Ty2	Ph3	Sm-565	J3	Bw6	순번	Ty2	Ph3	Sm-565	J3	Bw6
1	S	S	R	S	R	9	R	R	R	H	R	17	R	R	S	R	S
2	S	S	H	H	H	10	S	R	H	H	H	18	H	H	R	R	H
3	S	R	R	S	H	11	H	H	H	H	R	19	R	R	S	R	R
4	S	R	R	S	H	12	R	H	S	R	H	20	S	S	H	R	S
5	H	R	S	H	R	13	R	H	H	R	H	21	H	S	H	R	H
6	R	S	H	S	H	14	S	H	H	R	H	22	S	H	H	R	H
7	S	R	H	S	H	15	H	S	S	R	H	23	H	S	H	R	R
8	H	H	S	H	H	16	R	H	S	R	H	24	S	H	R	R	R

표 12. 순천대학교 48점의 시료에 대하여, 맛 관련 48종의 마커를 이용한 서비스 결과

순번	FL01	FL02	FL03	FL04	FL05	FL06	FL07	FL08	FL09	FL10	FL11	FL12	FL13	FL14	FL15	FL16	FL17	FL18	FL19	FL20	FL21	FL22	FL23	FL24
1	XX	XX	XX	YY	XX	XX	XX	XX	XX	YY	XX	IV	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	XX
2	XX	XX	XX	YY	XX	XX	XX	XX	XX	XX	XX	IV	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	XX
3	XX	XX	XX	YY	XX	XX	XX	XX	XX	XY	XX	IV	XX	YY	XX	XX	XY	XX	YY	XX	XX	XX	YY	XX
4	YY	XX	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX	XX	XX	XX	YY	XX	XX	XX	YY	XX
5	XX	XX	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX	XX	YY	XX	XX	XX	XX	XX	YY	XX
6	XY	XX	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX	XX	XY	XX	XX	XX	XX	XX	YY	XX
7	YY	XX	XX	YY	XX	XX	XX	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
8	YY	XX	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX	XX	XX	XX	YY	XX	XX	XX	YY	XX
9	YY	XX	XX	XY	XX	XX	XY	XX	XX	XY	XX	XX	XX	YY	XX	XX	XX	XX	XY	XX	XX	XX	YY	XX
10	YY	XX	YY	YY	YY	XX	XY	YY	YY	XX	XX	XX	XX	YY	XX	XX	XX	YY	YY	XX	XX	YY	XX	YY
11	YY	XX	XX	XX	YY	XX	XX	YY	YY	XX	XX	XX	XX	YY	XX	XX	YY	YY	YY	XX	XX	XX	XX	YY
12	YY	XX	XY	XY	YY	XX	XX	YY	YY	XX	XX	XX	XX	YY	XX	XX	YY	YY	YY	XX	XX	XY	XX	YY
13	YY	XX	YY	YY	YY	XX	XX	YY	YY	XX	XX	XX	XX	YY	XX	XX	YY	YY	YY	XX	XX	YY	XX	YY
14	YY	XX	XX	XX	YY	XX	XX	YY	YY	XX	YY	XX	XX	YY	XX	XX	YY	YY	YY	XX	XX	XX	XX	YY
15	YY	XX	XY	XY	YY	XX	XX	YY	YY	XX	XY	XX	XX	YY	XX	XX	YY	YY	YY	XX	XX	XY	XX	YY
16	YY	XX	YY	YY	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	XX	YY	YY	XX	XX	YY	XX	YY
17	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	YY	YY	XX	XX	XX	YY	YY
18	YY	XX	XY	YY	XY	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	XY	YY	YY	XX	XX	XY	XY	YY
19	YY	XX	YY	YY	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	XX	YY	YY	XX	XX	YY	YY	YY
20	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	YY	YY	XX	XX	XX	YY	YY
21	YY	XX	XY	XY	XX	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	XY	YY	YY	XX	XX	XY	YY	YY
22	YY	XX	YY	YY	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	XX	YY	YY	XX	XX	YY	XX	YY
23	YY	XX	XX	YY	XX	XX	XX	XX	XX	XX	YY	XX	XX	YY	XX	XX	YY	YY	YY	XX	XX	XX	YY	YY
24	YY	XX	XY	YY	XY	XX	XX	XY	XX	XX	YY	XX	XX	YY	XX	XX	XY	YY	YY	XX	XX	XY	XY	YY
25	YY	XX	YY	YY	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	XX	XY	YY	YY	XX	XX	YY	YY
26	YY	XX	XX	YY	XX	XX	XX	XX	XX	XX	YY	XX	XX	YY	XX	XX	YY	YY	YY	XX	XX	XX	YY	YY
27	YY	XX	XY	YY	XY	XX	XX	XY	XX	XX	YY	XX	XX	YY	XX	XX	XY	YY	YY	XX	XX	XY	XY	YY
28	YY	XX	YY	YY	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	XX	YY	YY	XX	XX	YY	XX	YY
29	YY	XX	XX	YY	XX	XX	XX	XX	XX	XX	YY	XX	XX	YY	XX	XX	YY	YY	YY	XX	XX	XX	YY	YY
30	YY	XX	XY	YY	XY	XX	XX	XY	XX	XX	YY	XX	XX	YY	XX	XX	XY	YY	YY	XX	XX	XY	XY	YY
31	YY	XX	YY	YY	YY	XX	XX	YY	YY	XX	YY	XX	XX	YY	XX	XX	YY	YY	YY	XX	XX	YY	XX	XX
32	YY	XX	YY	YY	XX	XX	XX	XX	XX	XX	YY	XX	XX	YY	XX	XX	YY	YY	YY	XX	XX	XX	YY	YY
33	YY	XX	YY	YY	XY	XX	XX	XY	XY	XX	YY	XX	XX	YY	XX	XX	YY	YY	YY	XX	XX	XY	XY	XY
34	XX	XX	XX	YY	XX	XX	XX	YY	XX	XX	YY	YY	XX	YY	XX	XX	XX	YY	XX	XX	XX	XX	YY	YY
35	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	YY	YY	XX	YY	XX	XX	YY	YY	XX	XX	XX	XX	YY	YY
36	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
37	YY	XX	YY	YY	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	XX	YY	YY	XX	XX	YY	XX	YY
38	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	YY	XX	XX	XY	XX	XX	YY	YY	YY	XX	XX	XX	YY	YY
39	YY	XX	XY	YY	XY	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	XY	YY	YY	XX	XX	XY	XY	YY
40	YY	XX	YY	YY	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	YY	YY	XX	XX	YY	XX	YY
41	YY	XX	XX	YY	YY	XX	XX	YY	YY	XX	XX	YY	XX	YY	XX	XX	XX	YY	YY	XX	XX	YY	XX	XX
42	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	XX	YY	YY	XX	XX	XX	YY	YY
43	YY	XX	YY	YY	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	YY	XX	XX
44	XX	XX	YY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	XX	YY	XX
45	XY	XX	YY	YY	YY	XX	XX	XX	XX	XY	XX	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	XY	XY	XX
46	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	YY	YY	XX	XX	XX	YY	YY
47	YY	XX	YY	YY	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	XY	YY	YY	XX	XX	YY	YY	YY
48	YY	XX	XY	YY	XY	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	XY	YY	YY	XX	XX	XY	YY	YY
순번	FL25	FL26	FL27	FL28	FL29	FL30	FL31	FL32	FL33	FL34	FL35	FL36	FL37	FL38	FL39	FL40	FL41	FL42	FL43	FL44	FL45	FL46	FL47	FL48
1	XX	XX	YY	XX	XX	XX	XX	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX	XX	XX	XX	XX
2	XX	XX	YY	XX	XX	XX	XX	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	YY	YY	YY	XX	XX
3	XX	XX	YY	XX	XX	XX	XX	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XY	XY	XY	XX	XX

4	XX	YY	YY	XX	XX	XX	XX	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX	YY	XX	XX	XX
5	XX	XX	YY	XX	XX	XX	XX	XX	YY	XX	YY	XX	XX	YY	YY	XX	XX	XX	YY	XX	YY	XX	XX
6	XX	XY	YY	XX	XX	XX	XX	XX	YY	XX	XY	XX	XX	YY	XY	XX	XX	XX	YY	XX	YY	XX	XX
7	XX	XX	YY	XX	XX	XX	XX	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
8	XX	XX	YY	XX	XX	XX	XX	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	YY	YY	XX	XX
9	XX	XX	YY	XX	XX	XX	XX	XX	YY	XX	XX	XX	XX	YY	XY	XX	XX	XX	YY	XX	XX	XY	XX
10	XX	XX	XX	XX	XX	XX	YY	YY	YY	XX	XX	XX	XX	YY	YY	XX	XX	XX	XX	XX	XX	YY	XX
11	XX	XX	XX	XX	YY	XX	YY	XX	YY	XX	XX	YY	YY	YY	YY	XX	XX	XX	YY	XX	XX	YY	XX
12	XX	XX	XX	XX	XY	XX	YY	XY	YY	XX	XX	XY	XY	YY	YY	XX	XX	XX	XY	XX	XX	YY	XX
13	XX	XX	XX	XX	XX	XX	YY	YY	YY	XX	XX	XX	XX	YY	YY	XX	XX	XX	YY	XX	XX	YY	XX
14	XX	XX	XX	XX	YY	XX	YY	XX	YY	XX	XX	XX	XX	YY	YY	XX	XX	XX	YY	XX	XX	YY	XX
15	XX	XX	XX	XX	XY	XX	YY	XY	YY	XX	XX	XX	XX	YY	YY	XX	XX	XX	YY	XX	XX	YY	XX
16	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX
17	YY	XX	YY	XX	XX	XX	XX	XX	YY	YY	XX	XX	XX	YY	YY	XX	XX	XX	XX	YY	XX	XX	XX
18	XY	XX	XY	XX	XX	XX	XX	XX	YY	XY	XX	XY	XY	YY	YY	XX	XX	XX	XX	XY	XX	XX	XX
19	XX	XX	YY	XX	XX	XX	XX	XX	YY	XX	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX
20	YY	XX	YY	XX	XX	XX	XX	XX	YY	XX	XX	XX	XX	YY	YY	XX	XX	XX	XX	YY	XX	XX	XX
21	XY	XX	YY	XX	XX	XX	XX	XX	YY	YY	XX	XX	XY	YY	YY	XX	XX	XX	XX	XY	XX	XX	XX
22	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX
23	YY	XX	YY	XX	XX	XX	XX	XX	YY	YY	XX	XX	XX	YY	YY	XX	XX	XX	XX	YY	XX	XX	XX
24	XY	XX	XY	XX	XX	XX	XX	XX	YY	XY	XX	XY	XY	YY	YY	XX	XX	XX	XX	XY	XX	XX	XX
25	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX
26	YY	XX	YY	XX	XX	XX	XX	XX	YY	YY	XX	XX	XX	YY	YY	XX	XX	XX	XX	YY	XX	XX	XX
27	XY	XX	XY	XX	XX	XX	XX	XX	YY	XY	XX	XY	XY	YY	YY	XX	XX	XX	XX	XY	XX	XX	XX
28	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX
29	YY	XX	YY	XX	XX	XX	XX	XX	YY	YY	XX	XX	XX	YY	YY	XX	XX	XX	XX	YY	XX	XX	XX
30	XY	XX	XY	XX	XX	XX	XX	XX	YY	XY	XX	XY	XY	YY	YY	XX	XX	XX	XX	XY	XX	XX	XX
31	YY	XX	XX	XX	YY	XX	YY	XX	YY	XX	XX	YY	YY	YY	YY	XX	XX	XX	XX	YY	XX	YY	XX
32	XY	XX	YY	XX	YY	XX	XX	XX	YY	XX	XX	XY	XY	YY	YY	XX	XX	XX	XX	YY	XX	XX	XX
33	XY	XX	XY	XX	YY	XX	XY	XX	YY	XX	XX	YY	YY	YY	YY	XX	XX	XX	XY	YY	XX	XY	XX
34	YY	XX	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	XX	YY	YY	XX	XX	XX	XX	YY	XX	XX	XX
35	XX	XX	YY	XX	XX	XX	XX	XX	YY	XX	XX	XX	XX	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX
36	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
37	XX	XX	XX	XX	YY	XX	YY	XX	YY	XX	XX	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
38	YY	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	YY	XX	XX
39	XY	XX	XY	XX	XY	XX	YY	XX	YY	XY	XX	XY	XY	XX	XX	XX	XX	XX	XY	XY	XX	XX	XX
40	XX	YY	XX	XX	YY	XX	YY	XX	YY	XX	XX	YY	YY	YY	YY	XX	XX	XX	XX	YY	XX	YY	XX
41	XX	XX	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	XX	YY	YY	XX	XX	XX	YY	XX	XX	YY	XX
42	YY	XX	YY	XX	XX	XX	XX	XX	YY	XY	XX	XY	XX	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX
43	XX	XX	XX	XX	YY	XX	YY	YY	YY	XX	XX	YY	YY	YY	YY	XX	XX	XX	XX	YY	XX	YY	XX
44	XX	XX	XX	XX	XX	XX	YY	XX	YY	XX	XX	XX	XX	YY	YY	XX	XX	XX	YY	XX	YY	YY	XX
45	XX	XX	XX	XX	XY	XX	YY	XY	YY	XX	XY	XY	XY	YY	YY	XX	XX	XX	YY	XX	XY	YY	XX
46	YY	XX	YY	XX	XX	XX	XX	XX	YY	YY	XX	XX	XX	YY	YY	XX	XX	XX	XX	YY	XX	XX	XX
47	XX	XX	YY	XX	XX	XX	XX	XX	YY	XX	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX
48	XY	XX	YY	XX	XX	XX	XX	XX	YY	XY	XX	XY	XY	YY	YY	XX	XX	XX	XX	XY	XX	XX	XX

표 13. 순천대학교 6점의 시료에 대하여, 병 관련 13종의 마커를 이용한 서비스 결과

순번	Ty1	Ty2	Sw5	Tm2a	Mi23	J3	I2	Ve2	Ph3	Sm-565	Bw6	Bw12	Cf9
1	S	S	S	R	R	S	R	S	S	R	S	S	S
2	S	S	S	R	R	S	S	R	S	S	S	S	R
3	R	S	S	R	S	S	R	S	S	R	S	S	S
4	S	S	S	R	R	S	R	S	S	R	S	S	R
5	S	S	S	R	R	S	S	S	R	R	S	S	S
6	R	S	S	S	R	S	S	R	S	R	S	S	S

표 14. 순천대학교 48점의 시료에 대하여, 맛 관련 48종의 마커를 이용한 서비스 결과

순번	FL49	FL50	FL51	FL52	FL53	FL54	FL55	FL56	FL57	FL58	FL59	FL60	FL61	FL62	FL63	FL64	FL65	FL66	FL67	FL68	FL69	FL70	FL71	FL72
1	XX	XX	XX	XX	XX	YY	YY	XX	YY	XX	YY	YY	XX	XY	XX	XX	XX	XX	YY	XX	XX	XY	XX	XX
2	XX	XX	XX	XX	XY	YY	XX	XX	YY	XX	YY	XX	XX	XY	XX	XX	XX	XX	YY	XY	XY	YY	YY	XX
3	XX	XX	XX	XX	XX	YY	YY	XX	YY	XY	YY	YY	XX	XY	XX	XX	XX	XX	YY	XX	XX	XY	XX	XX
4	YY	XX	XX	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	XY	XX	XX	XX	XX	YY	YY	XY	XY	YY	XX
5	XX	XX	XX	XX	YY	YY	XX	YY	XX	YY	XX	XX	XY	XY	XX	XX	XX	XX	YY	XY	XX	XY	XX	XX
6	YY	XX	XX	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	XY	XX	XX	XX	XX	YY	YY	XX	XY	YY	XX
7	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	XY	YY	XX	XX	XX	YY	YY	YY	XY	XX	XX
8	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY	XX	XX	XY	YY	XX	XX	XX	YY	XY	XX	XY	XY	XX
9	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	XY	YY	XX	XX	XX	YY	XY	YY	XY	XX	XX
10	XX	XX	XX	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	XY	XX	XX	XX	XX	YY	YY	YY	XY	YY	XX
11	XX	XX	XX	XX	XY	YY	XY	XX	YY	XX	YY	XX	XX	XY	XX	XX	XX	XX	YY	YY	NC	XY	YY	XX
12	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	XY	XX	XX	XX	XX	YY	XX	YY	XY	XY	XY
13	YY	XX	XX	XX	XX	YY	XX	XX	YY	XX	YY	XY	XX	XY	XX	XX	XX	XX	YY	XY	XY	XY	YY	XX
14	YY	XX	XX	XX	XX	YY	XX	XX	YY	XY	YY	XX	XX	XY	XX	XX	XX	XX	YY	XY	XY	XY	YY	XX
15	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	XY	YY	XX	XX	XX	YY	YY	XY	XY	YY	XX
16	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	XY	XX	XX	XX	XX	XX	XY	XX	XY	XX	XX

17	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	XY	YY	XX	XX	YY	YY	XX	XY	YY	XX	
18	XX	XX	XX	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	XY	XX	XX	XX	YY	YY	XY	XY	YY	XX	
19	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	XY	YY	XX	XX	YY	YY	XY	XY	YY	XX	
20	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY	YY	XX	XY	YY	XX	XX	YY	XX	YY	XY	YY	XX	
21	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	XY	XX	XX	XX	XX	XY	XX	XY	YY	XX	
22	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	XY	YY	XX	XX	XX	YY	YY	XX	XY	XX	
23	YY	XX	XY	YY	XX	XX	YY	YY	XX	XX	YY	YY	XX	XY	YY	XX	XX	YY	YY	XX	XX	XY	XX	
24	YY	XX	XX	XX	XX	XX	XX	YY	XX	XX	YY	YY	XX	XY	YY	XX	XX	XX	XX	YY	XY	YY	YY	
25	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY	YY	XX	XY	XX	XX	XX	XX	YY	XX	XX	XY	XX	
26	XX	XX	YY	XX	YY	YY	YY	XX	YY	XX	YY	YY	XX	XY	XX	XX	XX	XX	YY	YY	XX	XY	XX	
27	YY	XX	XX	XX	XX	YY	XX	XX	YY	XX	YY	YY	XX	XY	XX	XX	XX	XX	YY	YY	XY	XY	YY	
28	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	XX	XX	XX	XY	XX	XX	XX	XX	YY	YY	YY	XY	XX	
29	XX	XX	XX	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	XY	YY	XX	XX	XX	YY	YY	XY	XY	XX	
30	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY	YY	XX	XY	XX	XX	XX	XX	YY	XY	XX	XY	XX	
31	YY	XX	XX	YY	XX	XX	XX	XX	YY	XX	YY	XX	YY	XY	XX	XX	XX	YY	YY	XX	XX	XY	XX	
32	YY	XX	YY	XX	XX	XX	XX	YY	XX	XX	YY	YY	XX	XY	XX	XX	XX	XX	YY	XX	YY	XY	XX	
33	YY	XX	YY	YY	XX	XX	XX	XX	YY	XX	YY	XX	YY	XY	XX	XX	XX	YY	YY	XX	XX	XY	XX	
34	YY	XX	YY	XX	XX	XX	XX	XX	YY	XX	XX	YY	XX	XY	XX	XX	XX	YY	YY	XX	XY	YY	XX	
35	YY	XX	YY	YY	XX	XX	XX	YY	YY	XX	XX	YY	XX	XY	XX	XX	XX	XX	YY	XX	XX	XY	YY	
36	YY	XX	YY	YY	XX	XX	XX	YY	YY	XX	XX	YY	XX	XY	YY	XX	XX	XX	XX	XX	XX	XY	YY	
37	YY	XX	YY	YY	XX	XX	XX	YY	YY	XX	XX	YY	XX	XY	XX	XX	XX	YY	YY	XX	XX	XY	YY	
38	YY	XX	YY	YY	XX	XX	XX	YY	YY	XX	XX	YY	XX	XY	YY	XX	XX	YY	XX	YY	XX	XY	YY	
39	YY	XX	YY	YY	XX	XX	XX	YY	YY	XX	XX	YY	XX	XY	YY	XX	XX	YY	XX	YY	XY	XY	YY	
40	YY	XX	YY	YY	XX	XX	XX	YY	YY	XX	XX	YY	XX	XY	YY	XX	XX	YY	XX	YY	XY	XY	YY	
41	YY	XX	YY	XX	XX	XX	XX	YY	YY	XX	YY	XX	YY	XY	XX	XX	XX	YY	YY	XX	YY	XY	YY	
42	YY	XX	YY	XX	XX	XX	XX	YY	YY	XX	XX	YY	XX	XY	YY	XX	XX	XX	YY	NC	XY	YY	XX	
43	YY	XX	YY	YY	XX	XX	XX	YY	YY	XX	XX	YY	XX	XY	YY	XX	XX	XX	XX	XX	XY	XX	YY	
44	YY	XX	YY	YY	XX	XX	XX	YY	YY	XX	XX	YY	XX	XY	XX	XX	XX	XX	YY	YY	XY	XY	XX	
45	YY	XX	YY	YY	XX	XX	XX	YY	YY	XX	XX	YY	XX	XY	YY	XX	XX	XX	XX	YY	XX	XY	XX	
46	XX	XX	YY	YY	XX	XX	XX	YY	XX	XX	YY	XX	YY	XY	YY	XX	XX	YY	YY	XX	XX	XY	XX	
47	YY	XX	XX	XX	XX	XX	XX	YY	XX	YY	XX	YY	XX	XY	XX	XX	XX	XX	YY	XX	XX	XY	XX	
48	YY	XX	YY	YY	XX	XX	XX	YY	YY	XX	YY	XX	YY	XY	YY	XX	XX	XX	YY	XX	XX	XY	XX	
순번	FL73	FL74	FL75	FL76	FL77	FL78	FL79	FL80	FL81	FL82	FL83	FL84	FL85	FL86	FL87	FL88	FL89	FL90	FL91	FL92	FL93	FL94	FL95	FL96
1	XY	XX	YY	YY	YY	YY	XX	XY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
2	YY	XX	YY	YY	YY	YY	XX	XY	YY	YY	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	YY
3	XY	XX	YY	YY	YY	YY	XX	XY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
4	YY	XX	XX	YY	YY	YY	XX	XY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
5	XY	XX	YY	XX	YY	YY	XX	XY	YY	YY	XX	XX	XX	XX	XX	YY	XX	XX	XX	XX	XX	XX	YY	XX
6	YY	XX	XX	YY	YY	YY	XX	XY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
7	YY	XX	YY	YY	YY	YY	XX	XY	XY	XY	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
8	NC	XX	YY	XX	YY	YY	XX	XY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
9	YY	XX	YY	YY	YY	YY	XX	XY	XY	XY	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
10	YY	XX	YY	YY	YY	YY	XX	XY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
11	YY	XX	YY	XX	YY	YY	XX	XY	XY	XY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
12	YY	XX	YY	YY	XX	YY	XX	XY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
13	YY	XX	YY	XX	YY	YY	XX	XY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	YY	XX
14	YY	XX	XX	YY	YY	YY	XX	XY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
15	XX	XX	YY	YY	YY	YY	XX	XY	YY	YY	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	YY
16	XY	XX	YY	YY	YY	YY	XX	XY	XX	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	XX	XX	XX	YY	XX
17	XX	XX	YY	YY	YY	YY	XX	XY	YY	YY	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	YY
18	YY	XX	YY	YY	YY	YY	XX	XY	XY	XY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
19	XX	XX	YY	YY	YY	YY	XX	XY	YY	YY	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	YY
20	YY	XX	XX	YY	YY	YY	XX	XY	YY	YY	XX	XX	XX	XX	XX	YY	XX	XX	XX	XX	XX	XX	YY	XX
21	XY	XX	YY	XY	YY	YY	XX	XY	YY	YY	XX	YY	XX	XX	XX	YY	XX	XX	XX	XX	XX	XX	YY	XX
22	YY	XX	YY	YY	YY	YY	XX	XY	YY	YY	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
23	XY	XX	YY	YY	YY	YY	XX	XY	YY	YY	XX	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	YY	YY	XX
24	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	YY	XX
25	XY	XX	YY	YY	YY	YY	XX	XY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
26	XY	XX	YY	YY	YY	YY	XX	XY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
27	XX	XX	YY	XX	YY	YY	XX	XY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
28	YY	XX	XX	YY	YY	YY	XX	XY	XX	XX	XX	XX	XX	XX	XX	YY	XX	XX	YY	YY	XX	XX	YY	XX
29	XX	XX	YY	YY	YY	YY	XX	XY	YY	YY	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
30	XY	XX	YY	XX	YY	YY	XX	XY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
31	XY	XX	YY	XX	YY	YY	XX	XY	YY	YY	XX	YY	YY	XX	XX	YY	XX	XX	YY	XX	XX	XX	YY	XX
32	YY	XX	YY	XX	YY	YY	XX	XY	YY	YY	XX	XX	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX
33	XY	XX	YY	XX	YY	YY	XX	XY	YY	YY	XX	YY	YY	XX	XX	YY	YY	XX	XX	YY	XX	YY	YY	XX
34	XX	XX	YY	XX	YY	YY	XX	XY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX
35	XY	XX	XX	YY	YY	YY	XX	XY	YY	YY	XX	YY	YY	XX	XX	YY	XX	XX	YY	YY	XX	XX	XX	XX
36	XY	XX	XX	XX	YY	YY	XX	XY	YY	YY	XX	YY	YY	XX	XX	YY	XX	XX	YY	YY	XX	XX	XX	XX
37	XY	XX	XX	YY	YY	YY	XX	XY	YY	YY	XX	YY	YY	XX	XX	YY	XX	XX	YY	YY	XX	XX	XX	XX
38	XY	XX	XX	XX	YY	YY	XX	XY	YY	YY	XX	XX	XX	XX	XX	YY	XX	XX	YY	YY	XX	XX	XX	XX
39	XX	XX	XX	XX	YY	YY	XX	XY	YY	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	YY	XX	XX	XX	XX
40	XX	XX	XX	XX	YY	YY	XX	XY	YY	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	YY	XX	XX	XX	XX
41	YY	XX	YY	XX	YY	YY	XX	XY	YY	YY	XX	YY	YY	XX	XX	YY	XX	XX	YY	YY	XX	XX	YY	XX
42	XX	XX	YY	XX	YY	YY	XX	XY	YY	YY	XX	YY	YY	XX	XX	YY	XX	XX	YY	YY	XX	XX	YY	XX
43	XY	XX	XX	YY	YY	YY	XX	XY	YY	YY	YY	YY	YY	XY	XX	YY	XX	XX	XX	XX	XX	YY	XX	XX
44	XX	XX	XX	YY	YY	YY	XX	XY	YY	YY	XX	YY	YY	XX	XX	YY	XX	XX	YY	YY	XX	XX	XX	XX
45	XY	XX	YY	XX	YY	YY	XX	XY	YY	YY	XX	YY	YY	XX	XX	XX	XX	XX	YY	YY	XX	XX	XX	XX

46	XY	XX	XX	XX	YY	YY	XX	YY	YY	YY	XX	YY	YY	XX	XX	XX	XX	XX	YY	YY	XX	XX	XX	XX
47	XY	XX	YY	XX	YY	YY	YY	YY	YY	YY	XX	XX	XX	XX	YY	YY	XX	YY	YY	XX	YY	YY	XX	XX
48	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	XX	XX	XX	XX	YY	YY	XX	XX	YY	YY	XX	XX	YY	XX

표 15. 순천대학교 86점의 시료에 대하여, 병 관련 15종의 마커를 이용한 서비스 결과

순번	Ty1	Ty2	Sw5	Tm2a	Ph3	Sm565	I2	I3	Ve2	J3	py1	Bw6	Bw12	Mi23	Cf9
1	S	H	S	S	H	H	S	S	S	S	S	S	H	S	S
2	S	S	S	H	S	S	H	S	H	H	S	S	H	S	S
3	S	H	S	H	S	S	S	S	H	H	S	S	H	S	S
4	H	H	S	H	S	H	S	S	H	H	S	S	H	S	S
5	S	S	H	S	H	H	H	S	H	H	S	S	S	S	S
6	H	S	S	H	S	H	H	S	R	H	S	H	S	S	S
7	S	S	S	H	S	H	H	S	H	H	S	H	H	S	S
8	R	H	S	R	S	H	R	S	S	R	S	S	H	S	S
9	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
10	H	H	S	H	S	S	S	S	R	H	S	S	H	H	S
11	S	S	S	R	S	S	S	S	S	R	S	S	R	S	n/a
12	S	H	S	H	S	H	S	S	H	H	S	S	H	H	S
13	S	H	S	H	S	S	S	S	S	H	S	S	H	S	S
14	S	H	S	S	S	R	S	S	H	S	S	S	H	S	S
15	S	S	S	S	S	S	S	S	H	S	S	S	S	H	S
16	H	R	S	H	S	H	S	S	H	H	S	S	R	S	S
17	H	H	H	H	H	H	H	S	R	H	S	S	H	S	S
18	R	H	S	R	H	H	S	S	S	R	S	S	R	S	S
19	H	S	H	S	H	R	H	S	R	S	S	S	H	S	S
20	S	H	S	H	S	H	H	S	H	S	S	S	H	S	S
21	H	S	S	H	S	H	R	S	R	H	S	S	H	S	S
22	S	H	S	H	S	H	H	S	H	S	S	S	H	S	S
23	S	S	S	S	S	H	H	S	R	S	S	S	S	H	S
24	S	S	S	H	S	H	S	S	R	S	S	H	S	S	S
25	S	S	S	H	H	S	S	S	S	H	S	S	H	S	S
26	S	S	S	S	S	H	S	S	R	S	S	S	S	H	S
27	S	S	H	S	H	S	R	S	S	S	S	H	H	S	S
28	R	H	S	R	S	H	R	S	H	R	S	S	R	S	S
29	H	S	S	H	S	R	H	S	H	H	S	S	R	S	S
30	H	H	S	H	S	R	S	S	S	H	S	S	R	H	S
31	H	S	S	S	S	S	H	S	H	S	S	S	H	S	S
32	H	S	S	R	S	R	H	S	H	R	S	S	H	S	S
33	H	S	S	H	S	H	H	S	R	H	S	S	S	S	S
34	H	S	S	R	S	S	H	S	H	H	S	S	S	S	S
35	H	S	S	H	S	H	H	S	R	H	S	S	S	S	S
36	R	H	S	R	S	R	H	S	H	R	S	S	R	H	S
37	R	H	S	R	S	R	H	S	S	R	S	S	R	H	S
38	H	H	S	H	S	S	H	S	H	H	S	S	S	S	S
39	S	S	H	H	S	R	H	S	H	H	S	S	S	H	S
40	S	H	S	R	S	R	S	S	S	R	S	S	H	H	n/a
41	S	S	S	H	S	H	H	S	S	H	S	S	S	S	n/a
42	R	H	S	H	S	R	H	S	H	H	S	S	H	H	S
43	R	H	S	H	S	H	H	S	H	H	S	S	R	H	S
44	R	H	S	H	S	H	H	S	H	H	S	S	R	H	S
45	H	S	S	H	H	H	H	S	R	H	S	H	S	S	S
46	H	S	S	S	S	H	S	S	S	S	S	S	S	H	S
47	S	H	S	H	S	H	S	S	S	H	S	S	H	S	S
48	S	H	S	S	H	H	S	S	S	S	S	S	H	S	S
49	S	S	S	H	S	S	H	S	H	H	S	S	H	S	S
50	S	S	S	H	S	S	S	S	H	S	S	S	H	n/a	S
51	H	H	S	H	S	H	S	S	S	H	S	S	H	H	S
52	S	H	S	H	S	S	S	S	H	H	S	S	H	S	S
53	S	H	S	H	S	H	S	S	S	H	S	S	H	S	S
54	S	S	S	S	S	H	S	S	R	S	S	S	S	H	S
55	S	S	S	H	S	H	H	S	H	H	S	S	H	S	S
56	S	S	S	H	S	S	S	S	H	S	S	S	H	S	S
57	S	H	S	S	H	H	S	S	H	S	S	S	H	S	S
58	H	H	H	H	H	H	R	S	H	R	S	S	S	R	R

59	S	H	H	H	R	S	H	S	S	R	S	S	S	n/a	R
60	S	H	H	H	R	S	R	S	H	R	n/a	S	S	R	R
61	S	H	H	R	R	S	R	S	R	R	S	S	S	n/a	R
62	S	S	S	R	R	S	R	S	R	R	S	S	S	n/a	R
63	S	S	H	H	R	S	R	S	H	R	n/a	S	S	R	R
64	S	H	S	H	R	S	R	S	H	R	S	S	S	R	n/a
65	S	H	H	R	R	S	R	S	H	R	S	S	n/a	R	R
66	S	R	S	H	R	S	n/a	S	H	R	n/a	S	n/a	n/a	n/a
67	S	H	H	H	R	S	R	S	S	R	S	S	S	R	R
68	S	S	R	H	R	S	R	S	R	R	n/a	S	n/a	R	n/a
69	S	H	H	H	R	S	S	S	R	R	n/a	S	S	R	R
70	S	S	H	H	R	S	R	S	H	R	S	S	S	R	R
71	S	H	H	S	R	S	R	S	H	R	S	S	S	R	R
72	S	H	H	R	R	S	R	S	H	R	S	S	n/a	R	R
73	S	H	R	H	R	S	R	S	H	R	S	S	n/a	R	R
74	S	S	H	H	R	S	R	S	H	R	S	S	S	n/a	R
75	S	S	H	H	R	S	R	S	H	R	S	S	S	R	R
76	S	S	R	H	R	S	R	S	S	R	n/a	S	S	R	R
77	S	S	H	R	R	S	R	S	R	R	S	S	S	R	n/a
78	S	S	R	H	R	S	R	S	H	R	S	S	S	R	R
79	S	H	S	H	R	S	S	S	H	R	n/a	S	S	R	R
80	S	R	R	S	R	S	n/a	S	H	R	S	S	S	R	R
81	S	R	R	S	R	S	n/a	S	H	R	n/a	S	n/a	n/a	R
82	S	R	R	S	R	S	n/a	S	H	R	S	S	n/a	R	R
83	S	H	R	H	R	S	R	S	S	R	n/a	S	S	n/a	R
84	S	S	S	H	R	S	R	S	H	R	S	S	S	R	R
85	S	S	H	H	R	S	R	S	R	R	S	S	S	R	S
86	S	R	R	S	R	S	n/a	S	S	R	n/a	S	n/a	n/a	n/a

표 16. 순천대학교 20점의 시료에 대하여, 병 관련 4종의 마커를 이용한 서비스 결과

순번	Sm-565	Rx3	Rx4	Pto	순번	Sm-565	Rx3	Rx4	Pto
1	S	S	S	N/A	11	S	S	S	N/A
2	S	S	S	N/A	12	S	S	S	N/A
3	S	S	S	N/A	13	S	S	S	N/A
4	S	S	S	N/A	14	S	S	S	N/A
5	R	S	S	N/A	15	S	S	S	S
6	R	S	S	N/A	16	S	S	S	S
7	S	S	S	S	17	H	S	S	S
8	S	S	S	N/A	18	R	S	S	S
9	R	S	S	S	19	S	S	S	S
10	R	S	S	S	20	S	S	S	S

표 17. 순천대학교 343점의 시료에 대하여, MS 마커를 이용한 서비스 결과

순번	MS	순번	MS	순번	MS	순번	MS	순번	MS	순번	MS	순번	MS	순번	MS
1	ms	44	Ms	87	Ms	130	Ms	173	Ms	216	n/a	259	Ms	302	Ms
2	Ms	45	Ms	88	Ms	131	Ms	174	Ms	217	Ms	260	Ms	303	Ms
3	H	46	Ms	89	Ms	132	Ms	175	Ms	218	Ms	261	Ms	304	Ms
4	H	47	Ms	90	Ms	133	Ms	176	Ms	219	n/a	262	Ms	305	Ms
5	H	48	Ms	91	Ms	134	Ms	177	Ms	220	Ms	263	Ms	306	Ms
6	Ms	49	Ms	92	Ms	135	Ms	178	Ms	221	Ms	264	Ms	307	Ms
7	H	50	Ms	93	Ms	136	Ms	179	Ms	222	Ms	265	Ms	308	Ms
8	H	51	Ms	94	Ms	137	Ms	180	Ms	223	Ms	266	Ms	309	Ms
9	ms	52	Ms	95	Ms	138	Ms	181	Ms	224	Ms	267	Ms	310	Ms
10	Ms	53	Ms	96	Ms	139	Ms	182	Ms	225	Ms	268	Ms	311	Ms
11	Ms	54	Ms	97	Ms	140	Ms	183	Ms	226	Ms	269	Ms	312	Ms
12	Ms	55	Ms	98	Ms	141	Ms	184	Ms	227	Ms	270	Ms	313	Ms
13	Ms	56	Ms	99	n/a	142	Ms	185	Ms	228	Ms	271	Ms	314	Ms
14	Ms	57	Ms	100	Ms	143	Ms	186	H	229	Ms	272	Ms	315	Ms
15	Ms	58	Ms	101	Ms	144	Ms	187	Ms	230	Ms	273	Ms	316	Ms
16	Ms	59	Ms	102	Ms	145	Ms	188	Ms	231	Ms	274	Ms	317	Ms
17	Ms	60	Ms	103	Ms	146	Ms	189	Ms	232	Ms	275	Ms	318	Ms
18	n/a	61	Ms	104	Ms	147	Ms	190	H	233	Ms	276	Ms	319	Ms

19	Ms	62	Ms	105	Ms	148	Ms	191	Ms	234	Ms	277	Ms	320	H
20	Ms	63	Ms	106	Ms	149	Ms	192	Ms	235	Ms	278	Ms	321	H
21	Ms	64	Ms	107	Ms	150	Ms	193	Ms	236	Ms	279	Ms	322	Ms
22	Ms	65	Ms	108	Ms	151	Ms	194	H	237	Ms	280	Ms	323	Ms
23	Ms	66	Ms	109	Ms	152	Ms	195	H	238	Ms	281	Ms	324	Ms
24	Ms	67	Ms	110	Ms	153	Ms	196	Ms	239	Ms	282	Ms	325	Ms
25	Ms	68	Ms	111	Ms	154	Ms	197	Ms	240	Ms	283	Ms	326	Ms
26	Ms	69	Ms	112	n/a	155	Ms	198	H	241	Ms	284	Ms	327	Ms
27	Ms	70	Ms	113	Ms	156	Ms	199	Ms	242	Ms	285	Ms	328	H
28	Ms	71	Ms	114	Ms	157	Ms	200	Ms	243	H	286	Ms	329	H
29	Ms	72	Ms	115	Ms	158	Ms	201	H	244	Ms	287	n/a	330	Ms
30	Ms	73	Ms	116	n/a	159	Ms	202	H	245	Ms	288	Ms	331	H
31	Ms	74	Ms	117	n/a	160	Ms	203	Ms	246	Ms	289	Ms	332	Ms
32	Ms	75	Ms	118	n/a	161	Ms	204	H	247	Ms	290	Ms	333	Ms
33	Ms	76	Ms	119	Ms	162	Ms	205	n/a	248	Ms	291	Ms	334	Ms
34	Ms	77	Ms	120	Ms	163	Ms	206	Ms	249	Ms	292	Ms	335	Ms
35	Ms	78	Ms	121	Ms	164	Ms	207	Ms	250	Ms	293	Ms	336	Ms
36	Ms	79	n/a	122	Ms	165	Ms	208	Ms	251	Ms	294	Ms	337	Ms
37	Ms	80	Ms	123	Ms	166	Ms	209	Ms	252	Ms	295	Ms	338	Ms
38	Ms	81	Ms	124	Ms	167	Ms	210	Ms	253	Ms	296	n/a	339	Ms
39	Ms	82	Ms	125	Ms	168	Ms	211	Ms	254	Ms	297	Ms	340	Ms
40	Ms	83	Ms	126	Ms	169	n/a	212	Ms	255	Ms	298	Ms	341	Ms
41	Ms	84	Ms	127	Ms	170	Ms	213	Ms	256	Ms	299	Ms	342	Ms
42	Ms	85	Ms	128	Ms	171	Ms	214	n/a	257	Ms	300	Ms	343	Ms
43	Ms	86	Ms	129	Ms	172	Ms	215	Ms	258	Ms	301	Ms		

표 18. 순천대학교 1,208점의 시료에 대하여, 병 관련 마커를 이용한 서비스 결과

순번	Ph3	순번	Sm-565	순번	I3	순번	Ve2	순번	J3	순번	Bw6	순번	Bw12	순번	Mi23
1	S	143	H	112	H	143	S	41	S	15	H	42	S	27	H
2	H	144	S	113	R	144	S	42	R	16	R	43	H	28	H
3	H	145	R	114	H	145	S	43	S	17	H	44	R	29	H
4	H	146	S	115	R	146	S	44	H	18	R	45	H	30	R
5	R	147	S	116	H	147	S	45	H	19	H	46	S	31	S
6	H	148	S	117	S	148	S	46	H	20	H	47	R	32	S
7	S	149	H	118	H	149	S	47	H	21	H	48	S	33	H
8	H	150	S	119	H	150	S	48	S	22	H	49	H	34	S
9	R	151	H	120	S	151	S	49	H	23	H	50	R	35	H
순번	Sm-565	152	S	순번	Ve2	152	S	50	H	24	H	51	H	36	S
1	R	153	H	1	H	153	S	51	S	25	S	52	R	37	S
2	H	154	R	2	S	154	S	52	H	26	R	53	H	38	S
3	H	155	S	3	S	155	S	53	H	27	R	54	H	39	R
4	H	156	H	4	H	156	S	54	H	28	H	55	H	40	S
5	S	157	H	5	H	157	S	55	H	29	S	56	S	41	S
6	S	158	H	6	H	158	S	56	H	30	S	57	H	42	S
7	S	159	S	7	R	159	S	57	H	31	S	58	H	43	H
8	H	160	H	8	H	160	S	58	S	32	R	59	H	44	R
9	H	161	H	9	S	161	S	59	S	33	R	60	S	45	H
10	H	162	R	10	H	162	S	60	S	34	H	61	R	46	R
11	R	163	R	11	R	163	S	61	H	35	H	62	H	47	S
12	H	164	H	12	H	164	S	62	H	36	S	63	H	48	H
13	H	165	R	13	S	165	S	63	H	37	H	64	S	49	R
14	H	166	H	14	R	166	S	64	H	38	H	65	H	50	S
15	R	167	R	15	H	167	S	65	H	39	H	66	R	51	S
16	H	168	H	16	H	168	S	66	S	40	H	67	R	52	H
17	H	169	H	17	H	169	H	67	H	41	H	68	H	53	H
18	R	순번	I2	18	H	170	R	68	S	42	H	69	R	54	H
19	R	1	H	19	H	171	R	69	H	43	R	70	S	55	H
20	H	2	H	20	H	172	R	70	H	44	H	71	H	56	R
21	H	3	R	21	H	173	R	71	R	45	H	72	H	57	S
22	R	4	R	22	H	174	S	72	H	46	H	73	S	58	R
23	R	5	H	23	S	175	S	73	H	47	S	74	H	59	H
24	H	6	H	24	S	176	S	74	H	48	H	75	H	60	S
25	H	7	H	25	H	177	H	75	H	49	H	76	S	61	H

26	H	8	H	26	S	178	H	76	R	50	H	77	H	62	H
27	R	9	S	27	H	179	H	77	S	51	H	78	R	63	R
28	S	10	H	28	H	180	H	78	H	52	H	79	H	64	H
29	R	11	H	29	S	181	S	79	S	53	H	80	H	65	H
30	R	12	H	30	R	182	H	80	H	54	R	81	R	66	H
31	H	순번	I3	31	H	183	R	81	R	55	H	82	H	67	S
32	S	1	H	32	H	184	R	82	H	56	R	83	H	68	H
33	H	2	H	33	S	185	R	83	H	57	R	84	R	69	S
34	S	3	H	34	R	186	R	84	H	58	H	85	R	70	S
35	R	4	H	35	R	187	R	85	H	59	R	86	S	71	S
36	H	5	R	36	R	188	H	86	R	60	R	87	H	72	H
37	R	6	R	37	R	189	S	87	R	61	R	88	H	73	R
38	R	7	H	38	H	190	R	88	R	62	H	89	R	74	S
39	S	8	R	39	S	191	S	89	H	63	H	90	S	75	H
40	S	9	R	40	R	192	H	90	H	64	S	91	H	76	H
41	H	10	R	41	S	193	R	91	H	65	H	92	R	77	S
42	S	11	S	42	R	194	S	92	R	66	R	93	H	78	H
43	H	12	H	43	S	195	H	93	S	67	S	94	S	79	H
44	S	13	H	44	H	196	R	94	H	68	R	95	S	80	R
45	H	14	H	45	R	197	R	95	H	69	S	96	R	81	R
46	S	15	H	46	R	198	R	96	R	70	R	97	S	82	H
47	H	16	S	47	H	199	H	97	H	71	H	98	H	83	S
48	H	17	S	48	S	200	H	98	H	72	S	99	H	84	R
49	S	18	S	49	S	201	H	99	H	73	S	100	S	85	H
50	S	19	H	50	S	202	R	100	H	74	H	101	H	86	H
51	S	20	H	51	H	203	R	101	S	75	R	102	S	87	S
52	H	21	H	52	H	204	R	102	R	76	R	103	H	88	S
53	R	22	R	53	H	205	S	103	S	77	S	104	R	89	S
54	R	23	S	54	R	206	R	104	H	78	H	105	S	90	R
55	S	24	H	55	S	207	R	105	R	79	S	106	S	91	H
56	H	25	H	56	H	208	S	106	R	80	S	107	H	92	R
57	H	26	H	57	S	209	H	107	H	81	H	108	S	93	S
58	H	27	S	58	S	210	H	108	R	82	H	109	H	94	H
59	H	28	R	59	S	211	R	109	S	83	H	110	R	95	S
60	S	29	H	60	S	212	H	110	H	84	H	111	H	96	R
61	H	30	H	61	H	213	R	111	R	85	R	112	R	97	H
62	n/a	31	H	62	H	214	R	순번	py1-4	86	S	113	S	98	H
63	S	32	H	63	H	215	S	1	R	87	S	114	H	99	H
64	H	33	S	64	H	216	S	2	R	88	H	115	S	100	R
65	S	34	S	65	S	217	R	3	R	89	H	116	S	101	R
66	S	35	H	66	H	218	H	4	H	90	H	117	H	102	S
67	R	36	R	67	H	219	H	5	R	91	S	118	H	103	S
68	R	37	S	68	R	220	S	6	H	92	R	119	H	104	S
69	H	38	R	69	H	221	H	7	H	93	R	120	R	105	H
70	R	39	H	70	H	222	H	8	R	94	S	121	S	106	H
71	R	40	S	71	H	223	H	9	H	95	S	122	H	107	H
72	S	41	R	72	S	224	S	10	H	96	R	123	S	108	n/a
73	S	42	S	73	H	225	H	11	H	97	H	124	R	109	H
74	R	43	S	74	S	226	H	12	H	98	H	125	R	110	S
75	S	44	H	75	R	227	H	13	S	99	R	126	H	111	H
76	S	45	H	76	R	228	H	14	H	100	H	127	H	112	H
77	H	46	R	77	S	229	H	15	R	101	S	128	H	113	H
78	H	47	S	78	R	230	R	16	H	102	H	129	S	114	H
79	R	48	H	79	S	231	R	17	R	103	H	130	S	115	H
80	H	49	H	80	S	232	H	18	H	104	H	131	H	116	S
81	H	50	S	81	R	233	R	19	R	105	H	132	H	117	H
82	H	51	R	82	H	234	S	20	R	106	H	133	H	118	S
83	S	52	S	83	R	235	S	21	H	107	S	134	H	119	S
84	H	53	H	84	R	236	S	22	H	108	S	135	H	120	S
85	H	54	H	85	S	237	H	23	H	109	S	136	S	121	S
86	S	55	S	86	H	238	S	24	H	110	H	137	R	122	H
87	H	56	S	87	H	239	H	25	S	111	H	138	S	123	S
88	H	57	S	88	S	240	H	26	R	112	H	139	S	124	H
89	H	58	H	89	H	241	R	27	R	113	S	140	S	125	R

90	H	59	S	90	H	242	H	28	H	114	S	141	R	126	H
91	H	60	S	91	H	243	H	29	R	115	S	142	R	127	S
92	R	61	R	92	R	244	S	30	R	116	H	143	H	128	R
93	R	62	S	93	H	245	H	31	H	117	H	144	S	129	S
94	S	63	S	94	R	246	R	32	R	118	R	145	H	130	H
95	S	64	H	95	S	247	S	33	H	119	R	146	R	131	S
96	H	65	H	96	S	248	H	34	H	120	H	147	H	132	S
97	R	66	H	97	H	249	S	35	R	121	H	148	R	133	S
98	R	67	S	98	S	250	H	36	R	122	R	149	H	134	R
99	H	68	S	99	H	251	H	37	S	123	H	150	R	135	S
100	H	69	R	100	R	252	H	38	R	124	S	151	R	136	H
101	H	70	H	101	R	253	R	39	H	순번 Bw12		152	H	137	S
102	H	71	S	102	H	순번 J3		40	R	1	S	153	R	138	H
103	R	72	R	103	R	1	H	41	H	2	S	154	R	139	H
104	S	73	R	104	R	2	S	42	R	3	S	155	R	140	R
105	H	74	H	105	H	3	H	43	S	4	H	156	S	141	n/a
106	H	75	H	106	S	4	R	44	R	5	H	157	R	142	S
107	H	76	R	107	H	5	H	45	H	6	H	158	H	143	S
108	H	77	S	108	R	6	S	46	R	7	H	159	H	144	H
109	H	78	R	109	H	7	H	47	H	8	H	160	H	145	S
110	R	79	H	110	H	8	S	48	S	9	H	161	H	146	H
111	H	80	H	111	S	9	S	49	H	10	S	162	R	147	R
112	H	81	H	112	R	10	H	50	H	11	R	163	H	148	R
113	S	82	H	113	H	11	R	51	S	12	H	164	S	149	S
114	H	83	S	114	H	12	H	52	R	13	S	165	S	150	H
115	S	84	H	115	H	13	H	53	R	14	R	166	R	151	S
116	R	85	H	116	S	14	R	54	S	15	R	순번 Mi23		152	H
117	S	86	R	117	H	15	S	55	H	16	R	1	H	153	S
118	H	87	H	118	H	16	H	56	R	17	H	2	R	154	S
119	S	88	S	119	H	17	S	57	H	18	H	3	S	155	R
120	H	89	H	120	H	18	S	58	H	19	R	4	S	156	R
121	S	90	H	121	S	19	S	59	R	20	S	5	R	157	S
122	S	91	R	122	S	20	S	60	H	21	H	6	H	158	R
123	R	92	H	123	S	21	H	61	H	22	H	7	H	159	H
124	S	93	H	124	S	22	H	62	H	23	R	8	S	160	H
125	H	94	R	125	S	23	R	63	H	24	H	9	R	161	H
126	R	95	H	126	S	24	S	64	S	25	R	10	R	162	H
127	R	96	R	127	S	25	H	65	H	26	H	11	S	163	S
128	R	97	H	128	S	26	H	순번 Bw6		27	H	12	S	164	H
129	H	98	H	129	S	27	R	1	R	28	R	13	R	165	R
130	S	99	R	130	S	28	H	2	H	29	H	14	H	166	R
131	S	100	R	131	S	29	H	3	S	30	S	15	S	167	H
132	H	101	H	132	S	30	S	4	H	31	S	16	H	168	H
133	H	102	R	133	S	31	H	5	H	32	H	17	H	169	R
134	R	103	S	134	S	32	H	6	H	33	H	18	H	170	R
135	H	104	S	135	S	33	H	7	R	34	S	19	R	171	H
136	R	105	H	136	S	34	H	8	H	35	H	20	R	172	H
137	H	106	H	137	S	35	S	9	R	36	H	21	R	173	H
138	S	107	R	138	S	36	H	10	H	37	H	22	S	174	H
139	R	108	S	139	S	37	H	11	H	38	R	23	H	175	R
140	H	109	S	140	S	38	R	12	H	39	S	24	S	176	S
141	S	110	R	141	S	39	R	13	H	40	H	25	H	177	R
142	H	111	H	142	S	40	H	14	H	41	H	26	S	178	R
														179	H

② 토마토연구소

순천대학교로부터 총 767점의 시료를 받아 9번의 서비스를 진행하였다. 처음 37점의 시료에 대하여, 병 관련 21종의 마커로 서비스를 진행하였다(표 19). 2번째로는 37점의 시료에 대하여, 병 관련 2종의 마커로 서비스를 진행하였다(표 20). 3번째로는 95점의 시료에 대하여, 병 관련 21종의 마커를 이용하여 서비스를 진행하였다(표 21). 4번째로는 81점의 시료에 대하여, 병 관련 21종의 마커를 이용하여 서비스를 진행하였다(표 22). 5번째로는 132점의 시료에 대하여, 병 관련 21종의 마커를 이용하여 서비

스를 진행하였다(표 23). 6번째로는 33점의 시료에 대하여, MS 마커를 이용하여 서비스를 진행하였다(표 24). 7번째로는 209점의 시료에 대하여, 병 관련 17종의 마커를 이용하여 서비스를 진행하였다(표 25). 8번째로는 117점의 시료에 대하여, 병 관련 16종의 마커를 이용하여 서비스를 진행하였다(표 26). 9번째로는 26점의 시료에 대하여, 병 관련 16종의 마커를 이용하여 서비스를 진행하였다(표 27). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 19~27).

표 19. 토마토연구소 37점의 시료에 대하여, 병 관련 21종의 마커를 이용한 서비스 결과

순번	Ty1	Ty2	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Cf9	Ph3	py1-4	Sm-1	Sm-2	Sm-CT55	ol2	Lv	Bw6	Bw12	Pto	Rx4
1	S	S	S	S	S	S	R	S	R	R	S	S	R	S	S	S	S	S	S	S	S
2	S	S	S	R	R	S	R	S	R	R	S	S	S	S	S	S	S	S	S	S	S
3	S	R	S	R	S	R	S	S	S	S	R	S	R	R	S	S	S	S	R	S	S
4	S	S	S	S	S	S	H	S	S	H	R	S	H	H	S	S	R	S	R	S	S
5	S	H	S	R	S	H	S	S	S	S	H	S	S	H	R	S	S	H	S	S	S
6	R	S	S	H	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S
7	R	S	S	H	S	S	S	S	H	S	H	S	S	R	S	S	S	S	S	S	S
8	R	S	S	R	S	S	S	S	H	R	S	S	S	H	S	S	S	R	S	S	S
9	S	S	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S	R	R	S	S
10	S	S	S	S	S	R	R	S	R	S	R	S	R	R	S	S	S	S	R	S	S
11	S	S	S	R	S	R	S	S	S	S	R	S	R	R	S	S	S	S	R	S	S
12	H	S	R	S	H	S	R	S	R	R	R	S	S	S	S	S	S	S	S	S	S
13	R	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S
14	S	S	S	S	S	R	R	S	R	H	S	S	S	S	S	S	S	S	S	S	S
15	H	S	S	R	S	S	R	S	S	S	S	S	S	S	R	S	S	S	S	S	S
16	H	S	H	R	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S	S
17	R	S	S	R	S	S	R	S	R	R	S	S	S	S	H	S	S	S	S	S	S
18	R	S	S	R	S	S	R	S	R	S	S	S	R	R	S	S	S	S	S	S	S
19	R	S	H	R	S	H	R	S	R	H	H	S	S	S	S	S	S	S	S	S	S
20	S	S	S	S	R	S	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S
21	R	S	S	R	S	S	R	S	R	R	S	S	S	S	R	S	S	S	S	S	S
22	R	S	H	R	S	S	R	S	H	R	S	S	S	S	R	S	S	S	S	S	S
23	H	S	S	H	H	H	H	S	H	R	S	S	H	H	H	S	S	S	S	S	S
24	H	S	S	H	H	H	S	S	R	R	S	S	R	R	S	S	S	S	S	S	S
25	H	S	S	H	H	H	S	S	R	R	S	S	R	R	S	S	S	S	S	S	S
26	H	S	S	S	H	R	H	S	R	R	S	S	R	R	S	S	S	S	S	S	S
27	H	S	R	R	H	S	R	S	R	R	S	S	R	R	S	S	S	S	S	S	S
28	H	S	S	S	S	S	S	S	R	R	R	S	S	S	R	S	S	S	S	S	S
29	R	S	S	R	S	R	R	S	R	S	S	S	R	S	S	S	S	S	S	S	S
30	R	S	S	R	S	R	R	S	R	S	S	S	R	S	S	S	S	S	S	S	S
31	S	S	S	H	R	H	S	S	R	S	S	S	R	S	S	S	S	S	S	S	S
32	R	S	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S	S	S	S	S
33	R	S	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S	S	S	S	S
34	R	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S	S
35	S	S	S	S	S	S	R	S	R	S	S	S	S	S	R	S	S	S	S	S	S
36	R	S	S	H	S	S	R	S	R	S	S	S	R	S	S	S	S	S	S	S	S
37	R	S	R	R	S	S	R	S	R	R	R	S	S	S	S	S	S	S	S	S	S

표 20. 토마토연구소 37점의 시료에 대하여, 병 관련 2종의 마커를 이용한 서비스 결과

순번	Sm-InDel	Sm-565	순번	Sm-InDel	Sm-565	순번	Sm-InDel	Sm-565	순번	Sm-InDel	Sm-565	순번	Sm-InDel	Sm-565
1	S	S	9	R	R	17	H	H	25	H	H	33	S	S
2	S	S	10	S	S	18	S	S	26	H	H	34	S	S
3	R	R	11	S	S	19	S	S	27	S	S	35	R	R
4	H	H	12	S	S	20	S	S	28	R	R	36	R	R
5	H	H	13	S	S	21	R	R	29	S	S	37	S	S
6	S	S	14	S	S	22	R	R	30	S	S			
7	S	S	15	R	R	23	R	R	31	R	R			
8	S	S	16	R	R	24	H	H	32	R	R			

표 21. 토마토연구소 95점의 시료에 대하여, 병 관련 21종의 마커를 이용한 서비스 결과

순번	Ty1	Ty2	ty5	Sw5	Tm 2a	Mi 23	J3	I2	I3	Ve2	Cf9	Ph3	py1- 4	Sm-CT 55	Sm-5 65	ol2	Lv	Bw6	Bw 12	Pto	Rx4
1	H	S	S	S	R	H	H	R	S	H	S	S	S	S	S	S	S	S	S	S	S
2	H	S	S	S	R	S	H	R	S	R	S	S	S	S	H	S	S	S	S	S	S
3	H	S	S	S	H	S	H	R	S	H	S	S	S	S	R	S	S	S	S	S	S
4	R	S	S	S	H	S	H	R	S	R	H	S	S	R	R	S	S	S	S	S	S
5	H	S	S	S	H	H	H	R	S	R	H	S	S	H	R	S	S	S	S	S	S
6	H	S	S	S	H	S	S	R	S	H	H	S	S	S	R	S	S	S	S	S	S
7	H	S	S	S	H	H	H	H	S	S	H	S	S	S	R	S	S	S	S	S	S
8	H	S	S	S	R	S	S	H	S	R	S	S	S	S	H	S	S	S	S	S	S
9	R	S	S	S	R	S	S	H	S	R	S	S	S	S	S	S	S	S	S	S	S
10	H	S	S	S	R	S	S	R	S	R	H	S	S	S	S	S	S	S	S	S	S
11	H	S	S	S	R	S	S	R	S	H	S	S	S	H	H	S	S	S	S	S	S
12	H	S	S	H	H	H	H	R	S	R	S	H	S	S	S	S	S	S	S	S	S
13	H	S	S	H	H	H	H	R	S	H	H	H	S	H	H	S	S	S	H	S	S
14	H	S	S	S	H	S	S	H	S	R	S	S	S	S	S	S	S	S	S	S	S
15	H	S	S	S	H	H	S	R	S	R	H	S	S	S	S	S	S	S	S	S	S
16	H	S	S	S	H	H	S	R	S	R	H	S	S	S	S	S	S	S	S	S	S
17	H	S	S	S	H	S	S	R	S	R	S	S	S	H	H	S	S	S	S	S	S
18	H	S	S	S	S	S	H	H	S	S	S	S	S	H	H	S	S	S	S	S	S
19	S	S	S	S	S	S	S	S	S	R	S	H	S	H	H	S	S	S	S	S	S
20	S	S	S	S	H	R	H	R	S	S	S	S	S	S	S	S	S	S	S	S	S
21	S	S	S	S	H	R	H	R	S	S	S	S	S	S	S	S	S	S	S	S	S
22	H	S	S	S	R	S	S	S	S	S	S	H	S	S	S	S	S	H	S	S	S
23	R	S	S	H	S	S	S	S	S	H	S	R	S	S	S	S	S	H	S	S	S
24	H	S	S	S	R	S	S	S	S	S	S	H	S	S	S	S	S	H	S	S	S
25	R	S	S	H	H	S	S	S	S	H	S	R	S	S	S	S	S	H	S	S	S
26	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	H	S	S	S
27	R	S	S	S	H	S	S	S	S	S	H	H	S	S	S	S	S	H	S	S	S
28	H	S	S	S	S	S	S	S	S	H	S	S	S	S	S	S	S	H	S	S	S
29	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S
30	R	S	S	R	S	S	R	R	S	R	R	S	S	S	S	S	S	S	S	S	S
31	R	S	S	R	S	S	R	R	S	R	R	S	S	S	S	S	S	S	S	S	S
32	S	S	S	S	R	S	R	S	S	S	S	R	S	S	S	S	S	S	R	S	S
33	R	H	S	S	S	S	R	H	S	R	R	S	S	S	S	S	S	S	R	S	S
34	R	S	S	S	H	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S
35	R	S	S	S	H	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S
36	R	S	S	S	S	S	S	S	S	R	R	R	S	R	R	S	S	S	S	S	S
37	R	S	S	S	S	S	S	S	S	R	R	R	S	R	R	S	S	S	S	S	S
38	H	S	S	S	S	S	S	S	S	R	R	R	S	R	R	S	S	S	S	S	S
39	H	S	S	S	S	S	S	S	S	R	R	R	S	R	R	S	S	S	S	S	S
40	R	S	S	S	R	S	R	R	S	R	S	S	S	S	S	S	S	S	S	S	S
41	R	S	S	S	R	S	R	R	S	R	S	S	S	S	S	S	S	S	S	S	S
42	R	S	S	S	R	S	R	R	S	R	S	S	S	S	S	S	S	S	S	S	S
43	R	S	S	S	R	S	R	R	S	R	S	S	S	S	S	S	S	S	S	S	S
44	S	S	S	S	H	R	H	S	S	R	S	S	S	S	R	S	S	S	S	S	S
45	R	S	S	S	S	S	S	R	S	R	S	S	S	S	R	S	S	S	S	S	S
46	R	S	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
47	R	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
48	R	S	S	S	S	S	S	R	S	R	S	S	S	R	R	S	S	S	S	S	S
49	S	S	S	S	R	S	S	R	S	R	S	S	S	S	R	S	S	S	S	S	S
50	S	S	S	S	S	S	S	R	S	R	S	S	S	S	R	S	S	S	S	S	S
51	H	S	S	S	H	S	S	R	S	R	S	S	S	S	R	S	S	S	S	S	S
52	R	S	S	S	H	S	S	R	S	R	S	S	S	R	R	S	S	S	S	S	S
53	R	S	S	S	H	S	S	R	S	R	S	S	S	S	R	S	S	S	S	S	S
54	R	S	S	S	H	S	S	R	S	R	S	S	S	H	R	S	S	S	S	S	S
55	H	S	S	S	S	S	S	R	S	R	S	S	S	R	R	S	S	S	S	S	S
56	S	S	S	S	R	S	S	R	S	H	S	S	S	H	H	S	S	S	S	S	S
57	S	S	S	S	R	S	S	R	S	H	S	S	S	S	S	S	S	S	S	S	S
58	H	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
59	H	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S
60	H	S	S	S	R	S	S	R	S	S	S	S	S	R	R	S	S	S	S	S	S
61	H	S	S	S	S	S	R	R	S	S	S	S	S	S	R	S	S	S	S	S	S
62	H	S	S	S	S	S	R	R	S	S	S	S	S	S	R	S	S	S	S	S	S

순번	Ty1	Ty2	ty5	Sw5	Tm 2a	Mi 23	J3	I2	I3	Ve2	Cf9	Ph3	py1-4	Sm-CT55	Sm-565	ol2	Lv	Bw6	Bw 12	Pto	Rx4
63	R	S	S	S	R	S	S	R	S	S	S	S	S	S	R	S	S	S	S	S	S
64	S	S	S	S	R	S	S	R	S	S	H	S	S	S	R	S	S	S	S	S	S
65	H	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S
66	H	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S
67	S	S	S	S	R	S	S	R	S	R	S	S	S	S	R	S	S	S	S	S	S
68	H	S	S	H	S	R	R	R	S	R	R	S	S	S	R	S	S	S	S	S	S
69	R	S	S	S	R	R	S	R	S	R	R	S	S	S	R	S	S	S	S	S	S
70	H	S	S	H	R	R	S	R	S	R	R	S	S	S	R	S	S	S	S	S	S
71	H	n/a	S	S	R	S	H	H?	S	R	n/a	S	S	S	R	S	S	S	S	S	S
72	R	S	S	R	R	S	S	R	S	R	R	R	S	S	S	S	S	S	S	S	S
73	R	S	S	R	R	S	S	R	S	R	R?	R	S	S	S	S	S	S	S	S	S
74	R	S	S	R	R	S	S	R	S	R	R	R	S	S	S	S	S	S	S	S	S
75	S	S	S	S	H	S	S	R	S	R	S	S	S	H	R	S	S	S	S	S	S
76	H	S	S	R	R	S	R	R	S	R	S	R	S	S	S	S	S	S	S	S	S
77	S	S	S	S	R	S	R	R	S	R	S	R	S	S	S	S	S	S	S	S	S
78	S	S	S	H	R	R	S	R	R	R	S	S	S	S	S	S	S	S	S	S	S
79	R	S	S	H	R	S	R	S	S	R	S	S	S	R	R	S	S	S	S	S	S
80	H	S	S	S	S	H	S	S	S	H	S	S	S	S	S	S	S	H	S	S	S
81	H	S	S	S	S	H	S	S	S	H	S	S	S	S	S	S	S	H	S	S	S
82	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
83	H	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	H	S	S	S
84	H	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	H	S	S	S
85	H	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	H	S	S	S
86	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
87	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
88	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
89	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
90	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
91	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
92	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
93	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
94	H	S	S	S	H	R	S	S	S	H	S	S	S	S	S	S	S	H	S	S	S
95	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S	S

표 22. 토마토연구소 81점의 시료에 대하여, 병 관련 21종의 마커를 이용한 서비스 결과

순번	Ty1	Ty2	Ty5	Sw5	Tm 2a	Mi 23	J3	I2	I3	V2	Cf9	Ph3	Py 1-4	Sm-CT55	Sm-565	Ol2	Lv	Bw6	Bw 12	Pto	Rx4
1	H	S	S	S	H	H	S	R	S	R	H	S	S	S	S	S	S	S	S	S	S
2	H	S	S	S	H	S	S	R	S	R	S	S	S	H	H	S	S	S	S	S	S
3	H	S	S	S	S	S	S	S	S	H	S	S	S	S	S	S	S	H	S	S	S
4	H	S	S	S	S	S	S	S	S	H	S	H	S	S	S	S	S	H	S	S	S
5	S	S	S	S	S	S	S	S	S	R	S	R	S	S	S	S	S	R	S	S	S
6	S	S	S	S	S	S	S	S	S	H	S	S	S	S	R	S	S	S	S	S	S
7	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
8	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S
9	H	S	S	S	H	S	S	S	S	H	S	R	S	S	S	S	S	S	S	S	S
10	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
11	H	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	H	S	S	S
12	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
13	H	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	H	S	S	S
14	H	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	H	S	S	S
15	R	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S
16	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
17	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
18	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
19	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
20	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
21	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
22	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
23	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
24	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

순번	Ty1	Ty2	Ty5	Sw5	Tm 2a	Mi 23	J3	I2	I3	V2	Cf9	Ph3	Py 1-4	Sm-CT55	Sm-565	OI2	Lv	Bw6	Bw 12	Pto	Rx4
25	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
26	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
27	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
28	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
29	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
30	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
31	H	S	S	S	H	S	S	S	S	S	S	R	S	S	S	S	S	H	S	S	S
32	R	S	S	S	H	S	S	S	S	S	S	R	S	S	S	S	S	R	S	S	S
33	H	S	S	S	H	S	S	S	S	S	S	R	S	S	S	S	S	H	S	S	S
34	H	S	S	S	S	H	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
35	R	S	S	S	H	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
36	S	S	S	S	H	R	S	S	S	H	S	S	S	S	S	S	S	R	S	S	S
37	H	S	S	S	R	H	S	S	S	H	S	R	S	S	S	S	S	H	S	S	S
38	R	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S	S	S
39	H	S	S	S	R	H	S	S	S	R	S	R	S	S	S	S	S	H	S	S	S
40	R	S	S	S	H	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S	S
41	H	S	S	S	R	H	S	S	S	R	S	H	S	S	S	S	S	H	S	S	S
42	H	S	S	S	S	H	S	S	S	R	S	S	S	S	S	S	S	H	S	S	S
43	H	S	S	S	S	H	S	S	S	R	S	S	S	S	S	S	S	H	S	S	S
44	R	S	S	S	H	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S
45	R	S	S	S	R	S	S	S	S	R	R	R	S	S	S	S	S	S	S	S	S
46	R	S	S	S	R	S	S	S	S	R	R	R	S	S	S	S	S	S	S	S	S
47	R	S	S	S	R	S	S	S	S	R	R	R	S	S	S	S	S	S	S	S	S
48	R	S	S	S	R	S	S	S	S	R	R	R	S	S	S	S	S	S	S	S	S
49	R	S	S	S	R	S	S	S	S	R	R	R	S	S	S	S	S	S	S	S	S
50	R	S	S	S	R	S	S	S	S	R	H	R	S	S	S	S	S	S	S	S	S
51	R	S	S	S	R	S	S	S	S	R	H	R	S	S	S	S	S	S	S	S	S
52	R	S	S	S	R	S	S	S	S	R	H	R	S	S	S	S	S	S	S	S	S
53	R	S	S	S	R	S	S	S	S	S	S	R	S	S	S	S	S	S	S	S	S
54	R	S	S	S	R	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S	S
55	R	S	S	S	R	S	S	S	S	H	H	R	S	S	S	S	S	S	S	S	S
56	S	R	S	S	R	S	H	S	S	S	S	H	S	R	S	S	S	S	S	S	S
57	S	R	S	S	R	S	R	S	S	S	S	H	S	R	S	S	S	H	S	S	S
58	S	H	S	S	R	S	H	S	S	S	S	H	S	R	S	S	S	S	S	S	S
59	S	S	S	S	R	S	S	S	S	S	S	S	S	R	R	S	S	H	S	S	S
60	S	S	S	S	R	S	R	S	S	S	S	R	S	R	H	S	S	H	S	S	S
61	S	S	S	S	R	S	H	S	S	S	S	H	S	R	H	S	S	R	S	S	S
62	S	S	S	S	R	S	H	S	S	S	S	H	S	R	H	S	S	H	S	S	S
63	S	H	S	S	R	S	H	S	S	S	S	H	S	R	H	S	S	R	S	S	S
64	S	H	S	S	R	S	H	S	S	S	S	H	S	R	H	S	S	R	S	S	S
65	S	H	S	S	R	S	S	S	S	S	S	H	S	R	H	S	S	S	S	S	S
66	H	S	S	S	R	S	S	H	S	S	S	R	S	H	H	S	S	R	S	S	S
67	H	S	S	S	S	S	S	R	S	S	S	R	S	S	H	S	S	S	S	S	S
68	H	S	S	S	H	S	S	S	S	S	S	R	S	R	R	S	S	S	S	S	S
69	R	S	S	S	H	S	S	R	S	S	S	R	S	S	S	S	S	S	S	S	S
70	H	S	S	S	S	S	S	H	S	S	S	R	S	S	S	S	S	H	S	S	S
71	H	S	S	S	S	S	S	H	S	S	S	R	S	R	R	S	S	H	S	S	S
72	H	S	S	S	H	S	S	H	S	S	S	R	S	S	S	S	S	R	S	S	S
73	S	S	S	S	H	S	S	H	S	S	S	R	S	S	S	S	S	R	S	S	S
74	H	S	S	S	H	S	S	R	S	S	S	R	S	H	H	S	S	R	S	S	S
75	S	S	S	S	R	S	S	R	S	R	S	S	S	S	R	S	S	S	S	S	S
76	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S
77	S	S	S	S	R	S	S	R	S	H	S	S	S	S	S	S	S	S	S	S	S
78	S	S	S	R	H	S	S	R	S	R	S	R	S	S	R	S	H	S	S	S	S
79	S	S	S	S	S	S	S	H	S	S	S	H	S	S	S	S	S	S	S	S	S
80	S	S	S	S	S	S	S	S	S	R	S	R	S	S	R	S	S	S	S	S	S
81	H	S	S	H	R	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S

표 23. 토마토연구소 132점의 시료에 대하여, 병 관련 21종의 마커를 이용한 서비스 결과

순번	Ty1	Ty2	Ty5	Sw5	Tm 2a	Mi 23	J3	I2	I3	V2	Cf9	Ph3	Py 1-4	Sm-CT55	Sm-565	OI2	Lv	Bw6	Bw 12	Pto	Rx4
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순번	Ty1	Ty2	Ty5	Sw5	Tm 2a	Mi 23	J3	I2	I3	V2	Cf9	Ph3	Py 1-4	Sm- CT55	Sm- 565	OI2	Lv	Bw6	Bw 12	Pto	Rx4
1	H	S	S	S	H	S	S	R	S	H	H	S	S	S	R	S	S	S	S	S	S
2	H	S	S	S	H	H	H	H	S	S	H	S	S	S	R	S	S	S	S	S	S
3	H	S	S	S	R	S	S	H	S	R	S	S	S	S	H	S	S	S	S	S	S
4	R	S	S	S	R	S	S	H	S	R	S	S	S	S	S	S	S	S	S	S	S
5	H	S	S	S	H	S	H	R	S	R	S	S	S	S	S	S	S	S	S	S	S
6	H	S	S	S	R	S	S	R	S	H	S	S	S	H	H	S	S	S	S	S	S
7	H	S	S	H	H	H	H	R	S	R	H	H	S	S	S	S	S	S	S	S	S
8	H	S	S	H	H	H	S	R	S	H	H	H	S	H	H	S	S	S	H	S	S
9	H	S	S	S	R	S	S	S	S	S	S	H	S	S	S	S	S	H	S	S	S
10	R	S	S	H	S	S	S	S	S	H	S	R	S	S	S	S	S	H	S	S	S
11	R	S	S	S	H	S	S	S	S	S	H	H	S	S	S	S	S	H	S	S	S
12	H	S	S	S	H	S	S	H	S	R	S	S	S	S	S	S	S	S	S	S	S
13	H	S	S	S	H	H	S	R	S	R	H	S	S	S	S	S	S	S	S	S	S
14	S	S	S	H	H	R	H	S	S	R	R	S	S	S	H	S	S	S	S	S	S
15	S	S	S	H	H	R	H	S	S	R	H	S	S	S	R	S	S	S	S	S	S
16	H	S	S	H	H	S	S	S	S	H	S	R	S	S	S	S	S	S	S	S	S
17	S	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
18	H	S	S	S	H	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
19	H	S	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
20	S	S	S	R	R	R	S	S	S	R	R	S	S	S	R	S	S	S	S	S	S
21	S	S	S	R	R	R	S	S	S	R	R	S	S	H	R	S	S	S	S	S	S
22	S	S	S	R	R	R	S	S	S	R	R	S	S	R	R	S	S	S	S	S	S
23	S	S	S	R	R	R	S	S	S	R	R	S	S	R	R	S	S	S	S	S	S
24	S	S	S	R	R	R	S	S	S	R	R	S	S	S	R	S	S	S	S	S	S
25	S	S	S	R	R	R	S	S	S	R	R	S	S	H	R	S	S	S	S	S	S
26	S	S	S	R	R	R	S	S	S	R	R	S	S	H	R	S	S	S	S	S	S
27	S	S	S	R	R	R	S	S	S	R	R	S	S	H	R	S	S	S	S	S	S
28	S	S	S	R	R	R	S	S	S	R	R	S	S	R	R	S	S	S	S	S	S
29	S	S	S	R	R	R	S	S	S	R	R	S	S	H	R	S	S	S	S	S	S
30	S	S	S	R	R	R	S	S	S	R	R	S	S	R	R	S	S	S	S	S	S
31	H	S	S	R	R	H	S	S	S	R	R	S	S	R	R	S	S	S	S	S	S
32	S	S	S	R	R	R	S	S	S	R	R	S	S	R	R	S	S	S	S	S	S
33	R	S	S	R	R	S	S	S	S	R	R	S	S	R	R	S	S	S	S	S	S
34	R	S	S	R	R	S	S	S	S	R	R	S	S	R	R	S	S	S	S	S	S
35	R	S	S	R	R	S	S	S	S	R	R	S	S	R	R	S	S	S	S	S	S
36	R	S	S	S	R	S	S	R	S	R	R	S	S	R	R	S	S	S	S	S	S
37	R	S	S	S	R	S	S	R	S	R	R	S	S	R	R	S	S	S	S	S	S
38	R	S	S	S	R	S	S	R	S	H	R	S	S	S	R	S	S	S	S	S	S
39	R	S	S	S	R	S	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S
40	R	S	S	H	R	S	S	R	S	H	R	S	S	R	R	S	S	S	S	S	S
41	R	S	S	S	R	S	S	R	S	S	R	S	S	R	R	S	S	S	S	S	S
42	R	S	S	S	R	S	S	R	S	S	R	S	S	R	R	S	S	S	S	S	S
43	R	S	S	H	R	S	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S
44	R	S	S	S	R	S	S	R	S	S	R	S	S	R	R	S	S	S	S	S	S
45	S	S	S	S	H	R	H	S	S	H	R	S	S	R	R	S	S	S	S	S	S
46	H	S	S	S	S	H	R	R	S	S	R	S	S	R	R	S	S	S	S	S	S
47	H	S	S	S	S	H	R	R	S	H	R	S	S	R	R	S	S	S	S	S	S
48	S	S	S	S	S	R	R	R	S	S	R	S	S	R	R	S	S	S	S	S	S
49	R	S	S	S	S	S	S	R	S	R	S	S	S	S	R	S	S	S	S	S	S
50	R	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
51	R	S	S	S	R	S	S	R	S	H	S	S	S	H	H	S	S	S	S	S	S
52	S	S	S	S	R	S	S	R	S	H	S	S	S	R	R	S	S	S	S	S	S
53	H	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S
54	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S
55	R	S	S	S	S	S	S	R	S	R	S	S	S	S	R	S	S	S	S	S	S
56	H	S	S	S	S	S	S	R	S	R	S	S	S	R	R	S	S	S	S	S	S
57	S	S	S	S	R	S	S	R	S	R	S	S	S	S	R	S	S	S	S	S	S
58	R	S	S	S	H	S	S	R	S	R	S	S	S	H	R	S	S	S	S	S	S
59	S	S	S	S	S	S	S	R	S	R	S	S	S	H	R	S	S	S	S	S	S
60	S	S	S	S	S	S	S	R	S	R	S	S	S	H	R	S	S	S	S	S	S
61	R	S	S	S	S	S	S	R	S	R	S	S	S	R	R	S	S	S	S	S	S
62	S	S	S	S	R	S	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S

순번	Ty1	Ty2	Ty5	Sw5	Tm 2a	Mi 23	J3	I2	I3	V2	Cf9	Ph3	Py 1-4	Sm- CT55	Sm- 565	OI2	Lv	Bw6	Bw 12	Pto	Rx4
63	S	S	S	S	R	S	S	R	S	R	H	S	S	S	R	S	S	S	S	S	S
64	S	S	S	S	S	S	R	R	S	S	S	S	S	S	R	S	S	S	S	S	S
65	S	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
66	R	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
67	H	S	S	R	R	S	S	R	S	R	R	S	S	S	R	S	S	S	R	S	S
68	R	S	S	R	R	S	S	R	S	R	R	S	S	S	R	S	S	S	R	S	S
69	H	S	S	H	R	S	S	R	S	R	S	S	S	S	R	S	S	S	S	S	S
70	R	S	S	H	S	S	S	R	S	R	R	S	S	S	R	S	S	S	R	S	S
71	R	S	S	R	S	S	S	R	S	R	R	S	S	S	R	S	S	S	R	S	S
72	R	S	S	H	H	S	S	R	S	R	R	S	S	S	R	S	S	S	R	S	S
73	R	S	S	R	R	S	S	R	S	R	R	S	S	S	R	S	S	S	R	S	S
74	R	S	S	S	S	S	S	R	S	R	R	S	S	S	R	S	S	S	S	S	S
75	S	S	S	S	R	R	S	S	R	S	S	S	S	R	R	S	S	S	S	S	S
76	R	S	S	S	R	S	S	R	S	R	R	S	S	R	R	S	S	S	S	S	S
77	S	S	S	S	R	S	S	R	S	H	S	S	S	S	S	S	S	S	S	S	S
78	S	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
79	H	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
80	H	S	S	S	R	H	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S
81	R	S	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
82	S	S	S	R	S	R	S	R	S	R	H	R	S	S	S	S	S	S	S	S	S
83	R	S	S	S	S	S	S	R	S	R	S	R	S	S	S	S	S	S	S	S	S
84	R	S	S	R	R	S	S	R	S	R	R	R	S	S	S	S	S	S	S	S	S
85	H	S	S	S	S	S	S	H	S	R	S	S	S	S	S	S	S	S	S	S	S
86	H	S	S	S	H	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
87	H	S	S	S	H	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
88	R	S	S	S	R	S	S	H	S	R	S	S	S	S	S	S	S	S	S	S	S
89	S	S	S	S	R	S	S	H	S	R	S	S	S	S	S	S	S	S	S	S	S
90	H	S	S	S	S	S	S	H	S	R	S	S	S	S	S	S	S	S	S	S	S
91	R	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
92	R	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
93	S	S	S	S	S	S	R	S	S	S	R	S	S	S	S	S	S	S	S	S	S
94	H	S	S	S	S	H	S	R	S	R	S	S	S	S	R	S	S	S	S	S	S
95	R	S	S	S	H	S	S	R	S	R	S	H	R	S	S	S	S	S	S	S	S
96	R	S	S	R	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S	S
97	S	S	S	H	R	S	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S
98	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S
99	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S
100	H	S	S	S	H	S	S	S	S	H	S	H	S	S	S	S	S	S	S	S	S
101	S	H	S	S	R	S	H	S	S	S	S	H	S	R	H	S	S	S	S	S	S
102	S	R	S	S	R	S	R	S	S	S	S	H	S	R	S	S	S	H	S	S	S
103	S	S	S	S	R	S	R	S	S	S	S	H	S	R	H	S	S	R	S	S	S
104	R	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S
105	H	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	H	S	S	S
106	R	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S
107	H	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	H	S	S	S
108	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
109	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
110	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
111	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
112	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
113	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
114	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
115	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
116	R	S	S	S	H	S	S	S	S	S	S	R	S	S	S	S	S	R	S	S	S
117	H	S	S	S	H	S	S	S	S	S	S	R	S	S	S	S	S	H	S	S	S
118	H	S	S	S	R	S	S	S	S	S	S	R	S	S	S	S	S	H	S	S	S
119	R	S	S	S	R	S	S	S	S	R	H	S	S	S	S	S	S	S	S	S	S
120	S	S	S	S	H	R	S	S	S	H	S	S	S	S	S	S	S	R	S	S	S
121	R	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S	S	S
122	H	S	S	S	R	H	S	S	S	R	S	H	S	S	S	S	S	H	S	S	S
123	R	S	S	S	H	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S
124	R	S	S	S	R	S	S	S	S	R	H	R	S	S	S	S	S	S	S	S	S

순번	Ty1	Ty2	Ty5	Sw5	Tm 2a	Mi 23	J3	I2	I3	V2	Cf9	Ph3	Py 1-4	Sm-CT55	Sm-565	Ol2	Lv	Bw6	Bw 12	Pto	Rx4	
125	R	S	S	S	R	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S
126	R	S	S	S	R	S	S	S	S	H	R	R	S	S	S	S	S	S	S	S	S	S
127	H	S	S	S	H	S	S	H	S	S	R	S	S	S	S	S	S	R	S	S	S	S
128	R	S	S	S	H	S	S	S	S	H	S	R	S	S	S	S	S	S	S	S	S	S
129	S	S	S	R	R	R	S	S	S	R	R	S	S	S	R	S	S	S	S	S	S	S
130	S	S	S	R	R	R	S	S	S	R	R	S	S	H	R	S	S	S	S	S	S	S
131	S	S	S	R	R	R	S	S	S	R	R	S	S	R	R	S	S	S	S	S	S	S
132	R	S	S	S	R	S	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S	S

표 24. 토마토연구소 33점의 시료에 대하여, MS 마커를 이용한 서비스 결과

순번	ms마커	순번	ms마커	순번	ms마커	순번	ms마커	순번	ms마커	순번	ms마커	순번	ms마커
1	H	6	H	11	Ms	16	Ms	21	Ms	26	Ms	31	ms
2	H	7	Ms	12	Ms	17	Ms	22	H	27	H	32	H
3	Ms	8	H	13	Ms	18	Ms	23	Ms	28	H	33	H
4	H	9	H	14	H	19	H	24	Ms	29	H		
5	Ms	10	H	15	H	20	H	25	H	30	ms		

표 25. 토마토연구소 209점의 시료에 대하여, 병 관련 17종의 마커를 이용한 서비스 결과

순번	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	V2	Cf9	Ph3	Sm-565	ol2	Bw6	Bw12	Pto
1	H	S	S	S	H	H	S	S	S	R	S	S	H	S	S	S	S
2	R	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S
3	S	S	S	R	S	R	S	R	S	R	R	R	S	S	S	S	S
4	S	S	S	R	S	R	S	R	S	R	R	R	S	S	S	S	S
5	H	S	S	R	R	S	S	R	S	R	R	S	R	S	S	R	S
6	H	S	S	R	R	S	S	R	S	R	R	S	R	S	S	R	S
7	H	S	S	R	R	S	S	R	S	R	R	S	R	S	S	R	S
8	S	S	S	R	R	S	S	R	S	R	R	S	R	S	S	R	S
9	H	S	S	R	R	S	S	R	S	R	R	S	R	S	S	R	S
10	R	S	S	R	R	S	S	R	S	R	R	S	R	S	S	R	S
11	R	S	S	R	R	S	S	R	S	R	R	S	R	S	S	R	S
12	R	S	S	R	R	S	S	R	S	R	R	S	R	S	S	R	S
13	R	S	S	S	S	S	S	R	S	R	R	S	R	S	S	R	S
14	R	S	S	S	S	S	S	R	S	R	R	S	R	S	S	R	S
15	R	S	S	H	S	S	S	R	S	R	R	S	R	S	S	R	S
16	H	S	S	R	H	S	S	R	S	R	R	S	R	S	S	R	S
17	H	S	S	R	H	S	S	H	S	R	R	S	R	S	S	R	S
18	S	S	S	R	R	S	S	R	S	R	R	S	R	S	S	R	S
19	H	S	S	R	S	S	S	R	S	R	R	S	R	S	S	R	S
20	S	S	S	R	H	S	S	R	S	R	R	S	R	S	S	R	S
21	S	S	S	R	H	S	S	R	S	R	S	S	R	S	S	S	S
22	H	S	S	S	S	S	S	R	S	R	R	S	R	S	S	S	S
23	R	S	S	R	S	S	S	R	S	R	R	S	R	S	S	R	S
24	R	S	S	S	S	S	S	R	S	R	R	S	R	S	S	H	S
25	S	S	S	R	H	S	S	R	S	R	S	S	R	S	S	R	S
26	H	S	S	S	R	H	S	S	S	R	S	S	R	S	S	S	S
27	R	S	S	S	R	S	S	S	S	R	S	S	R	S	S	S	S
28	H	S	S	S	R	H	H	S	S	R	S	S	H	S	S	S	S
29	H	S	S	S	R	H	H	S	S	R	S	S	R	S	S	S	S
30	S	S	S	S	H	R	S	R	S	R	R	S	S	S	S	S	S
31	S	S	S	S	H	R	S	R	S	R	R	S	S	S	S	S	S
32	S	S	S	S	S	R	S	R	S	R	R	S	S	S	S	S	S
33	S	S	S	S	S	R	S	R	S	R	R	S	S	S	S	S	S
34	H	S	S	S	R	H	S	S	S	S	H	S	R	S	S	S	S
35	S	S	S	S	H	R	S	H	S	S	S	S	H	S	S	S	S
36	H	S	S	S	R	H	S	S	S	S	S	S	H	S	S	S	S
37	S	S	S	S	R	R	S	S	S	R	S	S	R	S	S	S	S
38	S	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S
39	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	S
40	S	S	S	S	R	S	S	R	S	H	S	S	S	S	S	S	S

순번	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	V2	Cf9	Ph3	Sm-565	ol2	Bw6	Bw12	Pto
41	H	S	S	S	R	S	S	R	S	H	S	S	S	S	S	S	S
42	H	S	S	S	R	S	S	R	S	H	S	S	H	S	S	S	S
43	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	S
44	R	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S
45	S	S	S	S	R	S	S	R	S	R	S	S	H	S	S	S	S
46	S	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S
47	H	S	S	S	R	S	S	R	S	R	S	S	H	S	S	S	S
48	S	S	S	S	R	S	S	H	S	H	S	S	S	S	S	S	S
49	R	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S
50	S	S	S	S	R	S	S	R	S	H	S	S	S	S	S	S	S
51	H	S	S	S	R	S	S	R	S	H	S	S	S	S	S	S	S
52	H	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S
53	H	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S
54	S	S	S	S	R	R	S	S	S	R	S	S	R	S	S	S	S
55	H	S	S	S	R	H	S	S	S	R	S	S	R	S	S	S	S
56	H	S	S	S	R	H	S	H	S	R	S	S	R	S	S	S	S
57	H	S	S	S	R	H	S	R	S	R	S	S	R	S	S	S	S
58	H	S	S	S	R	H	S	R	S	R	S	S	H	S	S	S	S
59	R	S	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S
60	H	S	S	R	H	H	S	R	S	R	R	R	S	S	S	S	S
61	H	S	S	S	S	H	S	R	S	R	S	R	S	S	S	S	S
62	R	S	S	S	S	S	S	R	S	R	S	R	S	S	S	S	S
63	R	S	S	S	S	S	S	R	S	R	S	R	S	S	S	S	S
64	R	S	S	S	S	S	S	R	S	R	S	R	S	S	S	S	S
65	H	S	S	S	S	H	S	R	S	R	R	R	S	S	S	S	S
66	S	S	S	S	S	R	S	R	S	R	R	R	S	S	S	S	S
67	S	S	S	S	S	R	S	R	S	R	R	R	S	S	S	S	S
68	H	S	S	S	S	H	S	R	S	R	R	R	S	S	S	S	S
69	S	S	S	S	S	R	S	R	S	R	R	R	S	S	S	S	S
70	H	S	S	S	S	H	S	R	S	R	R	R	S	S	S	S	S
71	H	S	S	S	S	H	S	R	S	R	R	R	S	S	S	S	S
72	R	S	S	R	R	S	S	R	S	R	R	R	S	S	S	S	S
73	H	S	S	S	S	S	S	R	S	R	S	R	R	S	S	S	S
74	H	S	S	H	S	S	S	R	H	R	S	H	R	S	S	S	S
75	R	S	S	S	H	S	S	S	R	R	S	S	R	S	S	S	S
76	H	S	S	H	R	H	R	R	S	R	S	H	S	S	S	S	S
77	H	S	S	H	R	H	S	R	S	S	H	H	S	S	S	S	S
78	H	S	S	H	R	H	H	R	S	H	S	H	S	S	S	S	S
79	S	S	S	H	H	S	H	R	S	S	S	S	S	S	S	S	S
80	R	S	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S
81	H	S	S	H	H	S	H	R	S	H	S	S	S	S	S	S	S
82	H	S	S	H	H	S	S	R	S	R	S	R	S	S	S	S	S
83	R	S	S	S	H	S	S	R	S	R	S	R	H	S	S	S	S
84	H	S	S	S	R	H	S	R	S	R	S	H	R	S	S	S	S
85	H	S	S	S	S	H	S	R	S	R	S	S	R	S	S	S	S
86	H	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S
87	H	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S
88	R	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S
89	R	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S
90	S	S	S	S	H	S	S	S	S	S	H	R	S	S	H	S	S
91	R	S	S	R	S	S	S	S	S	R	S	R	S	S	S	S	S
92	R	S	S	R	S	S	S	S	S	R	S	R	S	S	S	S	S
93	R	S	S	R	S	S	S	S	S	R	S	R	S	S	S	S	S
94	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S
95	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S
96	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S
97	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S
98	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S
99	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S
100	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S
101	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S
102	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

순번	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	V2	Cf9	Ph3	Sm-565	ol2	Bw6	Bw12	Pto
103	H	S	S	S	S	H	S	S	S	S	S	S	S	S	H	S	S
104	H	S	S	S	S	H	S	S	S	H	S	S	S	S	H	S	S
105	R	S	S	R	S	S	S	S	S	R	S	R	S	S	S	S	S
106	R	S	S	S	S	S	S	S	S	H	S	S	S	S	S	S	S
107	S	S	S	H	R	S	S	S	S	S	S	S	S	S	S	S	S
108	S	S	S	H	R	S	S	S	S	S	S	S	R	S	S	S	S
109	S	S	S	H	R	S	S	S	S	S	S	S	H	S	S	S	S
110	S	S	S	H	R	S	S	S	S	S	S	S	S	S	S	S	S
111	S	S	S	S	R	S	S	S	S	S	S	S	H	S	S	S	S
112	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
113	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
114	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
115	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
116	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
117	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
118	S	S	S	S	R	S	S	S	S	S	S	S	H	S	S	S	S
119	S	S	S	S	H	S	S	S	S	S	S	S	H	S	S	S	S
120	S	S	S	S	H	S	S	S	S	S	S	S	H	S	S	S	S
121	S	S	S	S	H	S	S	S	S	S	S	S	H	S	S	S	S
122	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
123	S	S	S	S	R	S	S	S	S	S	S	S	R	S	S	S	S
124	S	S	S	S	H	S	S	S	S	S	S	S	H	S	S	S	S
125	S	S	S	S	R	S	S	S	S	S	S	S	H	S	S	S	S
126	S	S	S	S	S	S	S	S	S	S	S	S	H	S	S	S	S
127	S	S	S	S	H	S	S	S	S	S	S	S	S	S	S	S	S
128	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
129	S	S	S	S	H	S	S	S	S	S	S	S	H	S	S	S	S
130	S	S	S	S	R	S	S	S	S	S	S	S	H	S	S	S	S
131	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
132	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
133	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
134	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
135	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
136	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
137	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
138	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
139	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
140	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
141	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
142	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
143	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
144	S	H	S	S	R	S	H	S	S	S	S	H	S	S	S	S	S
145	S	H	S	S	R	S	H	S	S	S	S	H	S	S	S	S	S
146	S	H	S	S	R	S	S	S	S	S	S	H	S	S	S	S	S
147	S	H	S	S	R	S	H	S	S	S	S	H	S	S	S	S	S
148	S	R	S	S	R	S	R	S	S	S	S	R	S	S	S	S	S
149	S	R	S	S	R	S	R	S	S	S	S	H	S	S	S	S	S
150	S	H	S	S	R	S	S	S	S	S	S	R	S	S	S	S	S
151	S	H	S	S	R	S	H	S	S	S	S	S	H	S	S	S	S
152	S	H	S	S	R	S	H	S	S	S	S	S	R	S	H	S	S
153	S	R	S	S	R	S	H	S	S	S	S	S	H	S	H	S	S
154	S	H	S	S	R	S	S	S	S	S	S	H	H	S	H	S	S
155	S	H	S	S	R	S	R	S	S	S	S	H	H	S	S	S	S
156	S	H	S	S	R	S	S	S	S	S	S	S	H	S	H	S	S
157	S	H	S	S	R	S	S	S	S	S	S	H	H	S	R	S	S
158	S	R	S	S	R	S	S	S	S	S	S	H	H	S	R	S	S
159	H	S	S	H	R	S	S	S	S	S	H	H	S	S	H	S	S
160	H	S	S	S	R	S	S	S	S	S	H	R	S	S	H	S	S
161	R	S	S	S	R	S	S	S	S	S	S	R	S	S	R	S	S
162	R	S	S	H	R	S	S	S	S	S	H	H	S	S	R	S	S
163	H	S	S	S	R	S	S	S	S	S	S	R	S	S	R	S	S
164	H	S	S	S	H	S	S	R	S	S	S	R	S	S	R	S	S

순번	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	V2	Cf9	Ph3	Sm-565	ol2	Bw6	Bw12	Pto
165	H	S	S	S	H	S	S	S	S	S	S	R	S	S	R	S	S
166	R	S	S	S	H	S	S	S	S	S	S	R	S	S	R	S	S
167	R	S	S	S	S	S	S	H	S	S	S	R	S	S	R	S	S
168	H	S	S	S	H	S	S	H	S	S	S	R	S	S	R	S	S
169	R	S	S	S	S	S	S	S	S	S	S	R	S	S	R	S	S
170	H	S	S	S	H	S	S	H	S	S	S	R	S	S	R	S	S
171	S	S	S	S	H	S	S	H	S	S	S	R	S	S	R	S	S
172	H	S	S	S	R	S	S	H	S	S	S	R	S	S	R	S	S
173	H	S	S	S	R	S	S	H	S	S	S	R	S	S	R	S	S
174	R	S	S	S	S	S	S	R	S	S	S	R	R	S	R	S	S
175	R	S	S	S	H	S	S	R	S	S	S	R	H	S	R	S	S
176	R	S	S	S	H	S	S	R	S	S	S	R	R	S	R	S	S
177	H	S	S	S	H	S	S	R	S	S	S	R	H	S	R	S	S
178	R	S	S	S	R	S	S	R	S	S	S	R	R	S	R	S	S
179	H	S	S	R	R	S	S	S	S	S	S	S	S	S	R	S	S
180	H	S	S	R	R	S	S	S	S	S	S	S	S	S	R	S	S
181	H	S	S	R	R	S	S	S	S	S	S	S	S	S	R	S	S
182	R	S	S	R	R	S	S	S	S	S	S	S	S	S	R	S	S
183	S	S	S	S	R	S	S	S	S	R	S	R	S	S	S	S	S
184	S	S	S	S	R	S	S	S	S	R	S	R	S	S	S	S	S
185	S	S	S	S	R	S	S	S	S	H	S	R	S	S	S	S	S
186	S	S	S	S	R	S	S	S	S	H	S	R	S	S	S	S	S
187	S	S	S	R	R	S	S	S	S	R	R	S	S	S	S	S	S
188	H	S	S	S	R	S	S	S	S	S	S	R	S	S	R	S	S
189	S	S	S	S	R	S	S	S	S	S	S	R	S	S	R	S	S
190	H	S	S	S	R	S	S	S	S	S	S	R	S	S	R	S	S
191	H	S	S	S	R	S	S	S	S	S	S	R	S	S	R	S	S
192	R	S	S	S	R	S	S	S	S	S	S	R	S	S	R	S	S
193	S	S	S	S	S	S	S	S	S	S	S	R	S	S	H	S	S
194	R	S	S	R	R	S	S	S	S	S	S	S	S	S	R	S	S
195	H	S	S	R	R	S	S	S	S	S	S	H	S	S	R	S	S
196	H	S	S	S	R	S	S	S	S	S	S	R	S	S	R	S	S
197	R	S	S	S	R	S	S	S	S	S	S	R	S	S	S	S	S
198	R	S	S	S	R	S	S	S	S	S	S	R	S	S	S	S	S
199	R	S	S	S	R	S	S	S	S	S	S	R	S	S	S	S	S
200	R	S	S	S	R	S	S	S	S	S	S	S	R	S	S	S	S
201	S	S	S	R	S	S	S	S	S	S	R	S	S	S	S	S	S
202	S	S	S	R	S	S	S	S	S	S	R	S	S	S	S	S	S
203	S	S	S	R	S	R	S	S	S	S	R	S	S	S	S	S	S
204	H	S	S	R	R	S	S	S	S	S	H	S	S	S	S	S	S
205	R	S	S	R	R	S	S	S	S	S	S	S	S	S	S	S	S
206	S	S	S	H	R	S	S	S	S	S	R	H	S	S	S	S	S
207	H	S	S	R	R	S	S	S	S	S	R	S	S	S	S	S	S
208	H	S	S	S	S	S	S	S	S	S	S	R	S	S	R	S	S
209	H	S	S	S	S	S	S	S	S	S	S	R	S	S	R	S	S

표 26. 토마토연구소 117점의 시료에 대하여, 병 관련 16종의 마커를 이용한 서비스 결과

순번	Ty1	Ty2	Ty5	Sw5	Tm2a	Mi23	J3	I2	I3	V2	Cf9	Ph3	Sm-565	Ol2	Bw6	Bw12
1	R	S	S	S	R	S	S	R	S	S	R	S	R	S	S	S
2	H	S	S	S	R	H	S	R	S	R	S	S	H	S	S	S
3	R	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S
4	S	S	S	S	R	S	S	R	S	H	S	S	R	S	S	S
5	S	S	S	S	R	S	S	R	S	R	S	S	R	S	S	S
6	R	S	S	S	S	S	S	R	S	R	S	S	R	S	S	S
7	R	S	S	S	S	S	S	R	S	R	S	S	R	S	S	S
8	R	S	S	S	H	S	S	R	S	R	S	S	R	S	S	S
9	R	S	S	S	S	S	S	R	S	R	S	S	R	S	S	S
10	R	S	S	S	H	S	S	R	S	R	S	S	R	S	S	S
11	S	S	S	S	S	S	S	R	S	R	S	S	R	S	S	S
12	S	S	S	S	R	S	S	R	S	R	S	S	R	S	S	S
13	S	S	S	S	R	S	S	R	S	R	S	S	R	S	S	S

순번	Ty1	Ty2	Ty5	Sw5	Tm2a	Mi23	J3	I2	I3	V2	Cf9	Ph3	Sm-565	OI2	Bw6	Bw12
14	S	S	S	S	R	S	S	R	S	R	S	S	R	S	S	S
15	R	S	S	S	H	S	S	R	S	R	S	S	R	S	S	S
16	S	S	S	S	R	S	S	R	S	R	H	S	R	S	S	S
17	S	S	S	S	S	S	R	R	S	S	S	S	R	S	S	S
18	S	S	S	S	R	R	R	S	S	S	S	S	R	S	S	S
19	R	S	S	S	H	S	H	R	S	R	R	S	R	S	S	S
20	S	S	S	S	R	S	S	R	S	S	S	S	R	S	S	S
21	S	R	S	S	S	R	S	S	S	R	S	S	S	S	S	R
22	S	H	S	S	S	R	S	H	S	R	S	S	S	S	S	R
23	H	S	S	S	S	H	S	R	S	R	S	S	S	S	S	S
24	S	S	S	S	S	R	S	R	S	R	R	S	H	S	S	S
25	H	S	S	S	S	R	S	R	S	S	S	S	R	S	S	S
26	H	S	S	S	H	R	S	H	S	H	S	S	H	S	S	S
27	R	S	S	S	R	S	S	R	S	R	S	S	R	S	S	H
28	R	S	S	S	R	S	S	R	S	H	S	S	R	S	S	S
29	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S
30	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S
31	H	S	S	H	S	S	S	R	S	R	S	S	R	S	S	S
32	S	S	S	S	S	S	S	R	S	R	S	S	R	S	S	S
33	H	S	S	H	S	S	S	R	S	R	S	S	R	S	S	S
34	R	S	S	S	S	S	S	R	S	R	H	S	R	S	S	S
35	R	S	S	R	R	S	S	R	S	R	H	S	R	S	S	S
36	H	S	S	R	S	S	S	R	S	R	S	S	R	S	S	H
37	H	S	S	R	S	S	S	R	S	R	R	S	R	S	S	H
38	H	S	S	R	S	S	S	R	S	R	H	S	R	S	S	R
39	S	S	S	R	S	S	S	R	S	R	H	S	R	S	S	H
40	H	S	S	R	R	S	S	R	S	R	R	S	R	S	S	R
41	H	S	S	R	R	S	S	R	S	R	R	S	R	S	S	R
42	R	S	S	R	R	S	S	R	S	R	R	S	R	S	S	R
43	H	S	S	R	S	S	S	R	S	R	H	S	R	S	S	S
44	H	S	S	R	S	S	S	R	S	R	H	S	R	S	S	S
45	S	S	S	R	R	S	S	R	S	R	R	S	R	S	S	R
46	R	S	S	R	R	S	S	R	S	R	R	S	R	S	S	R
47	H	S	S	S	R	H	S	S	S	R	S	S	R	S	S	S
48	R	S	S	S	R	S	S	S	S	R	S	S	R	S	S	S
49	H	S	S	S	R	H	S	S	S	R	S	S	R	S	S	S
50	R	S	S	S	R	S	S	S	S	R	S	S	R	S	S	S
51	R	S	S	S	R	S	S	R	S	R	S	S	R	S	S	S
52	R	S	S	S	R	S	S	S	S	R	S	S	R	S	S	S
53	S	S	S	S	R	R	S	H	S	R	S	S	R	S	S	S
54	S	S	S	S	R	H	S	H	S	R	S	S	R	S	S	S
55	H	S	S	S	R	H	S	H	S	R	S	S	R	S	S	S
56	H	S	S	S	R	H	S	R	S	R	S	S	R	S	S	S
57	S	S	S	S	R	R	S	R	S	R	S	S	R	S	S	S
58	H	S	S	S	R	H	S	R	S	R	S	S	R	S	S	S
59	R	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S
60	H	S	S	S	R	H	S	R	S	R	S	S	H	S	S	S
61	S	S	S	S	R	R	S	R	S	R	S	S	H	S	S	S
62	S	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S
63	R	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S
64	H	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S
65	H	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S
66	R	S	S	S	S	S	S	R	S	R	H	R	S	S	S	S
67	S	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S
68	S	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S
69	H	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S
70	S	S	S	S	H	S	H	S	S	S	S	S	S	S	S	H
71	S	S	S	S	H	S	H	S	S	S	S	S	S	S	S	R
72	R	S	S	H	S	S	S	S	S	R	S	H	S	S	S	S
73	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S
74	R	S	S	R	S	S	S	S	S	R	S	R	S	S	S	S
75	S	S	S	S	S	R	S	S	S	R	S	S	S	S	S	S

순번	Ty1	Ty2	Ty5	Sw5	Tm2a	Mi23	J3	I2	I3	V2	Cf9	Ph3	Sm-565	OI2	Bw6	Bw12
76	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S
77	H	S	S	S	S	H	S	S	S	H	S	S	S	S	H	S
78	H	S	S	S	S	H	S	S	S	R	S	S	S	S	H	S
79	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
80	H	S	S	S	S	H	S	S	S	S	S	S	S	S	H	S
81	H	S	S	S	S	H	S	S	S	H	S	S	S	S	H	S
82	H	S	S	S	S	H	S	S	S	S	S	S	S	S	H	S
83	R	S	S	R	S	S	S	S	S	R	S	R	S	S	S	S
84	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
85	H	S	S	S	S	H	S	S	S	H	S	S	S	S	H	S
86	S	S	S	S	S	R	S	S	S	H	S	S	S	S	R	S
87	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S
88	R	S	S	H	S	S	S	S	S	R	S	H	S	S	S	S
89	H	S	S	S	S	S	S	S	S	H	S	R	S	S	S	S
90	R	S	S	S	S	S	S	S	S	H	S	S	S	S	S	S
91	H	S	S	S	H	S	S	S	S	H	S	H	S	S	S	S
92	H	S	S	S	H	S	S	S	S	H	S	S	S	S	S	S
93	R	S	S	S	R	S	S	S	S	S	S	R	S	S	S	S
94	H	S	S	S	S	S	S	S	S	R	S	R	S	S	S	S
95	H	S	S	S	S	S	S	S	S	R	S	R	S	S	S	S
96	H	S	S	S	R	S	S	S	S	S	S	R	S	S	S	S
97	H	S	S	S	R	S	S	S	S	H	S	R	S	S	S	S
98	H	S	S	S	S	S	S	S	S	R	S	R	S	S	S	S
99	H	S	S	S	S	S	S	S	S	H	S	R	S	S	S	S
100	H	S	S	S	H	S	S	S	S	H	S	R	S	S	S	S
101	H	S	S	S	R	S	S	S	S	S	R	R	S	S	S	S
102	H	S	S	H	R	S	S	S	S	S	H	H	S	S	R	S
103	R	S	S	H	R	S	S	S	S	S	H	H	S	S	R	S
104	H	S	S	S	R	S	S	S	S	S	H	R	S	S	H	S
105	S	R	S	S	R	S	S	S	S	S	S	H	H	S	R	S
106	S	S	S	S	R	S	S	S	S	S	S	H	S	S	S	S
107	R	S	S	H	R	S	S	S	S	S	R	H	S	S	S	S
108	R	S	S	H	R	S	S	S	S	S	R	H	S	S	S	S
109	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S
110	H	S	S	S	R	S	S	S	S	S	S	S	S	S	H	S
111	H	S	S	S	R	S	S	S	S	S	S	H	S	S	H	S
112	S	S	S	H	R	S	S	S	S	S	R	H	S	S	S	S
113	H	S	S	S	R	S	S	S	S	S	H	H	S	S	S	S
114	H	S	S	R	R	S	S	H	S	S	S	R	S	S	H	S
115	H	S	S	S	H	S	S	S	S	S	S	S	S	S	H	S
116	S	S	S	S	R	S	S	S	S	S	H	S	S	S	R	S
117	S	S	S	S	R	S	S	S	S	S	S	H	S	S	R	S

표 27. 토마토연구소 26점의 시료에 대하여, 병 관련 16종의 마커를 이용한 서비스 결과

순번	Ty1	Ty2	Ty5	Sw5	Tm2a	Mi23	J3	I2	I3	V2	Cf9	Ph3	Sm-565	OI2	Bw6	Bw12
1	S	H	S	S	R	S	S	S	S	S	S	S	S	S	S	S
2	S	H	S	S	R	S	S	S	S	S	S	S	S	S	S	S
3	S	H	S	S	R	S	H	S	S	S	S	H	S	S	S	S
4	H	S	S	R	R	S	S	S	S	S	S	S	S	S	R	S
5	H	S	S	R	R	S	S	S	S	S	S	S	S	S	R	S
6	H	S	S	R	R	S	S	S	S	S	S	S	S	S	R	S
7	R	S	S	R	R	S	S	S	S	S	S	S	S	S	R	S
8	S	S	S	S	R	S	S	S	S	R	S	R	S	S	S	S
9	S	S	S	S	R	S	S	S	S	H	S	R	S	S	S	S
10	S	S	S	S	R	S	S	S	S	H	S	R	S	S	S	S
11	S	S	S	S	R	S	S	S	S	S	S	R	S	S	R	S
12	S	S	S	S	H	S	S	S	S	S	S	R	S	S	H	S
13	S	S	S	R	S	R	S	S	S	S	R	S	S	S	S	S
14	H	S	S	S	R	H	S	S	S	R	S	S	R	S	S	S
15	H	S	S	S	R	H	S	S	S	R	S	S	R	S	S	S
16	R	S	S	S	R	S	S	R	S	R	S	S	R	S	S	S

순번	Ty1	Ty2	Ty5	Sw5	Tm2a	Mi23	J3	I2	I3	V2	Cf9	Ph3	Sm-565	OI2	Bw6	Bw12
17	H	S	S	S	R	H	S	R	S	R	S	S	R	S	S	S
18	H	S	S	S	R	H	S	R	S	R	S	S	R	S	S	S
19	R	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S
20	S	S	S	S	R	R	S	R	S	R	S	S	H	S	S	S
21	S	S	S	S	R	S	S	R	S	R	S	S	H	S	S	S
22	H	S	S	S	R	S	S	R	S	R	S	S	H	S	S	S
23	H	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S
24	H	S	S	R	R	H	S	R	S	R	R	R	S	S	S	S
25	H	S	S	R	H	H	S	R	S	R	R	R	S	S	S	S
26	S	S	S	S	S	R	S	R	S	R	S	R	S	S	S	S

③ 대연육종연구소

대연육종연구소로부터 총 429점의 시료를 받아 2번의 서비스를 진행하였다. 처음 307점의 시료에 대하여, 병 관련 6종의 마커로 서비스를 진행하였다(표 28). 2번째로는 122점의 시료에 대하여, MS 마커를 이용하여 서비스를 진행하였다(표 29). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 28~29).

표 28. 대연육종연구소 307점의 시료에 대하여, 병 관련 6종의 마커를 이용한 서비스 결과

순번	J3	Bw6	Bw12	Mi23	I2	I3
1	H	H	H	R	S	S
2	H	R	H	R	S	S
3	H	R	H	R	S	S
4	R	H	R	H	H	S
5	R	H	R	H	H	S
6	R	H	R	H	H	S
7	H	R	H	R	H	H
8	H	R	H	R	H	H
9	H	H	H	R	H	H
10	R	S	R	R	R	H
11	R	S	R	R	R	H
12	R	H	R	R	S	S
13	R	R	R	R	R	H
14	R	R	R	R	R	H
15	R	R	R	R	R	H
16	R	R	R	H	R	H
17	R	R	R	H	H	H
18	R	R	R	H	H	H
19	R	R	R	H	H	H
20	R	R	R	H	H	H
21	R	R	R	H	H	H
22	R	R	R	R	R	H
23	R	R	R	R	R	H
24	R	R	R	R	R	H
25	H	R	R	R	S	S
26	H	R	R	R	S	S
27	H	R	R	R	S	S
28	R	S	R	R	R	R
29	R	S	R	R	R	R
30	R	S	R	R	R	R
31	R	S	R	R	R	R
32	R	S	R	R	R	R
33	R	S	R	R	R	R
34	R	S	R	R	R	R
35	R	S	R	R	R	R
36	R	S	R	R	R	R
37	R	S	R	R	R	R
38	R	S	R	R	R	R
39	R	S	R	R	R	R

순번	J3	Bw6	Bw12	Mi23	I2	I3
155	R	S	R	R	R	R
156	R	S	R	R	R	R
157	R	S	R	R	R	R
158	R	S	R	R	R	R
159	R	S	R	R	R	R
160	R	S	R	R	R	R
161	R	S	R	R	R	R
162	R	S	R	R	R	R
163	R	S	R	R	R	R
164	R	S	R	R	R	R
165	R	S	R	R	R	R
166	R	S	R	R	R	R
167	R	S	R	R	R	H
168	R	S	R	R	R	R
169	R	S	R	R	R	R
170	R	S	R	R	R	R
171	R	S	R	R	R	R
172	R	S	R	R	R	R
173	R	S	R	R	R	R
174	R	S	R	R	R	R
175	R	S	R	R	R	R
176	R	S	R	R	R	R
177	R	S	R	R	R	R
178	R	S	R	R	R	R
179	R	S	R	R	R	R
180	R	S	R	R	R	R
181	R	S	R	R	R	R
182	R	S	R	R	R	R
183	R	S	R	R	R	R
184	R	S	R	R	R	R
185	R	S	R	R	R	R
186	R	S	R	R	R	R
187	R	S	R	R	R	R
188	R	S	R	R	R	R
189	R	S	R	R	R	R
190	R	S	R	R	R	R
191	R	S	R	R	R	R
192	R	S	R	R	R	R
193	R	S	R	R	R	R

순번	J3	Bw6	Bw12	Mi23	I2	I3
40	R	S	R	R	R	R
41	R	S	R	R	R	R
42	R	S	R	R	R	R
43	R	S	R	R	R	R
44	R	S	R	R	R	R
45	R	S	R	R	R	R
46	R	S	R	R	R	R
47	R	S	R	R	R	R
48	R	S	R	R	R	R
49	R	S	R	R	R	R
50	R	S	R	R	R	R
51	R	S	R	R	R	R
52	R	S	R	R	R	R
53	R	S	R	R	R	R
54	R	S	R	R	R	R
55	R	S	R	R	R	R
56	R	S	R	R	R	R
57	R	S	R	R	R	R
58	R	S	R	R	R	R
59	R	S	R	R	R	R
60	R	S	R	R	R	R
61	R	S	R	R	R	R
62	R	S	R	R	R	R
63	R	S	R	R	R	R
64	R	S	R	R	R	R
65	R	S	R	R	R	R
66	R	S	R	R	R	R
67	R	S	R	R	R	R
68	R	S	R	R	R	R
69	R	S	R	R	R	R
70	R	S	R	R	R	R
71	R	S	R	R	R	R
72	R	S	R	R	R	R
73	R	S	R	R	R	R
74	R	S	R	R	R	R
75	R	S	R	R	R	R
76	R	S	R	R	R	R
77	R	S	R	R	R	R
78	R	S	R	R	R	R
79	R	S	R	R	R	R
80	R	S	R	R	R	R
81	R	S	R	R	R	R
82	R	S	R	R	R	R
83	R	S	R	R	R	R
84	R	S	R	R	R	R
85	R	S	R	R	R	R
86	R	S	R	R	R	R
87	R	S	R	R	R	R
88	R	S	R	R	R	R
89	R	S	R	R	R	R
90	R	S	R	R	R	R
91	R	S	R	R	R	R
92	R	S	R	R	R	R
93	R	S	R	R	R	R
94	R	S	R	R	R	R
95	R	S	R	R	R	R
96	R	S	R	R	R	R
97	R	S	R	R	R	R
98	R	S	R	R	R	R
99	R	S	R	R	R	R
100	R	S	R	R	R	R
101	R	S	R	R	R	R
102	R	S	R	R	R	R

순번	J3	Bw6	Bw12	Mi23	I2	I3
194	R	S	R	R	R	R
195	R	S	R	R	R	R
196	R	S	R	R	R	R
197	R	S	R	R	R	R
198	R	S	R	R	R	R
199	R	S	R	R	R	R
200	R	S	R	R	R	R
201	R	S	R	R	R	R
202	S	S	R	R	R	R
203	S	S	R	R	R	R
204	S	S	R	R	R	R
205	S	S	R	R	R	R
206	S	S	R	R	R	R
207	S	S	R	R	R	R
208	S	S	R	R	R	R
209	S	S	R	R	R	R
210	R	R	R	R	S	S
211	R	R	R	R	S	S
212	R	R	R	R	S	S
213	R	R	R	R	S	S
214	R	R	R	R	S	S
215	R	R	R	R	S	S
216	R	R	R	R	S	S
217	R	R	R	R	S	S
218	R	R	R	R	S	S
219	R	R	R	R	R	R
220	R	R	R	R	R	R
221	R	R	R	R	R	R
222	R	R	R	R	R	R
223	R	R	R	R	R	R
224	R	R	R	R	R	R
225	R	R	R	R	R	R
226	R	R	R	R	R	R
227	n/a	n/a	n/a	n/a	n/a	n/a
228	R	R	R	R	R	R
229	R	R	R	R	R	R
230	R	R	R	R	R	R
231	R	R	R	R	R	R
232	n/a	n/a	n/a	n/a	n/a	n/a
233	R	R	R	R	R	R
234	R	R	R	R	R	R
235	R	R	R	R	R	R
236	n/a	n/a	n/a	n/a	n/a	n/a
237	R	R	R	R	R	R
238	R	R	R	R	R	R
239	R	R	R	R	R	R
240	R	R	R	R	R	R
241	R	R	R	R	R	R
242	R	R	R	R	R	R
243	R	R	R	R	R	R
244	R	R	R	R	R	R
245	R	R	R	R	R	R
246	R	R	R	R	R	R
247	R	R	R	R	R	R
248	R	R	R	R	R	R
249	R	R	R	R	R	R
250	R	R	R	R	R	R
251	R	R	R	R	R	R
252	R	R	R	R	R	R
253	R	R	R	R	R	R
254	R	R	R	R	R	R
255	R	R	R	R	R	R
256	R	R	R	R	R	R

순번	J3	Bw6	Bw12	Mi23	I2	I3
103	R	R	R	R	R	R
104	R	R	R	R	R	R
105	R	R	R	R	R	R
106	R	R	R	R	R	R
107	R	R	R	R	R	R
108	R	R	R	R	R	R
109	R	R	R	R	R	R
110	R	R	R	R	S	S
111	R	R	R	R	S	S
112	R	R	R	R	S	S
113	R	R	R	R	S	S
114	R	R	R	R	S	S
115	R	R	R	R	S	S
116	R	R	R	R	S	R
117	R	R	R	R	S	S
118	R	R	R	R	S	S
119	R	R	R	R	S	S
120	R	R	R	R	S	S
121	R	R	R	R	S	S
122	R	R	R	R	S	S
123	R	R	R	R	S	S
124	R	R	R	R	R	H
125	R	R	R	R	R	H
126	R	R	R	R	R	H
127	R	R	R	R	R	H
128	R	R	R	R	R	R
129	H	S	R	H	R	H
130	H	S	R	H	R	H
131	H	S	R	H	R	H
132	H	S	R	H	R	H
133	H	S	R	H	R	H
134	R	H	R	R	H	H
135	R	H	R	R	H	R
136	R	H	R	R	H	R
137	R	H	R	R	H	R
138	R	H	R	R	R	R
139	R	H	R	R	R	R
140	R	H	R	R	R	R
141	R	H	R	R	R	R
142	R	H	R	R	R	R
143	R	R	R	R	H	H
144	R	R	R	R	H	H
145	R	R	R	R	H	H
146	R	R	R	R	H	H
147	R	R	R	R	H	H
148	R	S	R	R	R	R
149	R	S	R	R	R	R
150	R	S	R	R	R	R
151	R	S	R	R	R	R
152	R	S	R	R	R	R
153	n/a	n/a	n/a	n/a	n/a	n/a
154	R	S	R	R	R	R

순번	J3	Bw6	Bw12	Mi23	I2	I3
257	R	R	R	R	R	R
258	R	R	R	R	R	R
259	R	R	R	R	R	R
260	R	R	R	R	R	R
261	R	R	R	R	R	R
262	R	R	R	R	R	R
263	R	R	R	R	R	R
264	R	R	R	R	R	R
265	R	R	R	R	R	R
266	R	R	R	R	R	R
267	R	R	R	R	R	R
268	R	R	R	R	R	R
269	R	R	R	R	R	R
270	R	R	R	R	R	R
271	R	R	R	R	R	R
272	R	R	R	R	R	R
273	R	R	R	R	R	R
274	R	R	R	R	R	R
275	R	R	R	R	R	R
276	R	R	R	R	R	R
277	R	R	R	R	R	R
278	R	R	R	R	R	R
279	R	R	R	R	R	R
280	R	R	R	R	R	R
281	R	R	R	R	R	R
282	R	R	R	R	R	R
283	R	R	R	R	R	R
284	R	R	R	R	R	R
285	R	R	R	R	R	R
286	R	R	R	R	R	R
287	R	R	R	R	R	R
288	R	R	R	R	R	R
289	R	R	R	R	R	R
290	R	R	R	R	R	R
291	R	R	R	R	R	R
292	R	R	R	R	R	R
293	R	R	R	R	R	R
294	R	R	R	R	R	R
295	R	R	R	R	R	R
296	R	R	R	R	R	R
297	R	R	R	R	R	R
298	R	R	R	R	R	R
299	R	R	R	R	R	R
300	R	R	R	R	R	R
301	R	R	R	R	R	R
302	R	R	R	R	R	R
303	R	R	R	R	R	R
304	R	R	R	R	R	R
305	R	R	R	R	R	R
306	R	R	R	R	R	R
307	R	R	R	R	R	R

표 29. 대연육종연구소 122점의 시료에 대하여, MS 마커를 이용한 서비스 결과

순번	Ms	순번	Ms	순번	Ms	순번	Ms	순번	Ms	순번	Ms	순번	Ms	순번	Ms
1	Ms	15	H	29	H	43	Ms	57	H	71	H	85	H	99	H
2	H	16	H	30	Ms	44	H	58	Ms	72	H	86	H	100	H
3	H	17	H	31	H	45	Ms	59	H	73	H	87	H	101	H
4	H	18	H	32	H	46	H	60	H	74	H	88	Ms	102	Ms
5	Ms	19	Ms	33	Ms	47	Ms	61	ms	75	Ms	89	Ms	103	H
6	Ms	20	H	34	H	48	H	62	H	76	H	90	H	104	H
														113	ms
														114	ms
														115	ms
														116	ms
														117	H
														118	H

순번	Ms	순번	Ms	순번	Ms	순번	Ms	순번	Ms	순번	Ms	순번	Ms	순번	Ms	순번	Ms
7	H	21	H	35	H	49	H	63	Ms	77	H	91	H	105	H	119	ms
8	ms	22	H	36	H	50	H	64	H	78	H	92	Ms	106	H	120	ms
9	H	23	Ms	37	H	51	H	65	Ms	79	Ms	93	H	107	H	121	ms
10	Ms	24	Ms	38	H	52	Ms	66	Ms	80	H	94	H	108	ms	122	H
11	H	25	Ms	39	H	53	Ms	67	H	81	H	95	ms	109	H		
12	Ms	26	Ms	40	Ms	54	H	68	Ms	82	Ms	96	H	110	ms		
13	Ms	27	H	41	H	55	Ms	69	H	83	Ms	97	H	111	ms		
14	H	28	H	42	Ms	56	Ms	70	Ms	84	H	98	Ms	112	ms		

④ 가나종묘

가나종묘로부터 총 134점의 시료를 받아 2번의 서비스를 진행하였다. 처음 64점의 시료에 대하여, 병 관련 12종의 마커를 이용하여 서비스를 진행하였다(표 30). 2번째로는 70점의 시료에 대하여, 병 관련 12종의 마커를 이용하여 서비스 진행하였다(표 31). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 30~31).

표 30. 가나종묘 64점의 시료에 대하여, 병 관련 12종의 마커를 이용한 서비스 결과

순번	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi-23	Tm2a	Sw5	Cf9
1	S	H	S	R	R	S	H	S	S	S	S	H
2	S	H	H	R	R	S	S	S	S	H	S	S
3	S	H	S	R	R	S	S	S	S	S	S	S
4	S	H	S	R	R	S	S	S	S	S	S	S
5	H	H	H	H	H	H	H	H	H	H	S	H
6	H	H	R	H	H	H	H	H	H	R	S	H
7	H	H	H	H	H	H	H	H	H	H	S	H
8	H	H	H	H	H	H	R	H	H	H	S	R
9	H	S	H	S	S	S	R	H	S	H	H	S
10	S	H	S	R	R	S	S	S	S	S	S	S
11	S	S	S	R	R	S	S	S	S	S	S	S
12	S	S	S	S	H	S	H	S	S	H	S	H
13	S	S	H	H	S	S	H	S	S	H	S	H
14	S	S	R	S	S	S	S	R	S	R	S	S
15	S	S	H	S	S	S	S	H	S	H	S	S
16	S	H	H	H	H	S	S	S	S	R	S	S
17	S	H	S	H	R	S	H	S	S	S	S	H
18	S	H	H	R	R	S	S	S	S	H	S	S
19	S	S	S	H	R	S	H	S	S	S	S	S
20	S	H	S	R	R	S	H	H	S	S	S	S
21	S	H	S	R	H	S	R	H	S	S	S	H
22	S	H	S	R	H	S	H	H	S	S	S	S
23	R	S	R	S	S	R	R	R	R	R	S	R
24	R	S	R	S	S	S	R	S	R	R	S	S
25	H	S	H	S	S	S	H	R	S	R	S	S
26	H	S	H	S	S	S	H	R	S	R	S	S
27	R	S	R	S	S	H	R	H	R	R	S	H
28	H	S	H	S	S	H	R	R	H	H	S	H
29	R	S	H	S	S	S	R	H	H	R	S	S
30	H	S	S	S	S	S	H	R	H	R	S	H
31	S	R	S	R	R	S	R	S	S	S	S	R
32	S	R	S	R	R	S	R	S	S	S	S	R
33	S	R	S	R	R	S	R	S	S	S	S	R
34	S	S	S	H	S	S	R	R	R	S	S	R
35	S	S	S	R	R	S	S	S	S	S	S	S
36	S	S	S	R	R	S	S	S	S	H	S	S
37	S	S	S	R	R	S	S	S	S	S	S	R
38	S	S	S	R	R	S	S	S	R	S	S	R
39	S	S	S	S	R	S	S	S	S	S	S	S
40	S	S	S	S	R	S	S	S	S	S	S	S
41	S	S	H	R	S	S	R	S	S	H	S	S
42	S	S	S	S	R	S	S	S	S	R	S	S

순번	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi-23	Tm2a	Sw5	Cf9
43	S	R	S	R	R	S	S	S	S	S	S	S
44	S	R	S	R	R	S	S	S	S	S	S	S
45	S	S	S	R	H	S	H	S	S	R	S	S
46	S	S	R	S	R	R	R	S	S	R	S	R
47	H	S	R	S	H	S	H	H	H	R	S	S
48	H	S	R	S	H	H	H	H	H	R	S	S
49	S	S	S	R	R	S	S	S	S	S	S	S
50	S	S	S	R	R	S	S	S	S	S	S	S
51	S	S	S	S	R	S	R	S	S	S	S	S
52	S	S	S	R	S	S	H	S	S	S	S	S
53	S	S	S	R	S	S	S	S	S	H	S	S
54	S	S	S	R	H	S	S	S	S	S	S	S
55	R	S	S	S	S	S	R	R	S	R	S	S
56	R	S	S	S	S	S	R	R	S	R	S	S
57	S	S	S	S	R	S	S	S	S	S	S	S
58	S	S	S	S	R	S	S	S	S	S	S	S
59	S	R	S	R	R	S	S	S	S	S	S	S
60	S	R	S	S	R	S	S	S	S	R	S	S
61	S	R	S	R	R	S	S	S	S	S	S	S
62	S	R	S	R	R	S	S	S	S	S	S	S
63	S	R	R	R	R	S	S	S	S	R	S	S
64	S	S	S	R	S	S	S	S	S	S	S	S

표 31. 가나종묘 70점의 시료에 대하여, 병 관련 12종의 마커를 이용한 서비스 결과

순번	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi23	Tm2a	Sw5	Cf9
1	S	S	S	H	H	S	S	S	S	S	S	S
2	S	S	S	S	R	S	S	S	S	H	S	S
3	S	H	S	R	H	S	H	H	S	S	S	S
4	S	H	S	R	H	S	R	H	S	S	S	H
5	S	H	S	R	R	S	H	H	S	S	S	S
6	S	S	S	H	R	S	S	S	S	H	S	S
7	S	H	S	R	R	S	S	S	S	S	S	S
8	S	H	S	R	R	S	S	S	S	S	S	S
9	S	H	S	R	R	S	H	S	S	S	S	H
10	S	S	S	R	R	S	S	S	S	S	S	S
11	S	S	S	R	R	S	S	S	R	S	S	R
12	S	S	S	R	S	S	R	R	H	S	S	R
13	S	S	S	R	R	S	S	S	S	S	S	R
14	S	S	S	R	H	S	H	S	S	R	S	S
15	S	S	S	R	R	S	H	S	S	R	S	S
16	S	S	S	S	R	S	S	S	S	S	S	S
17	S	S	S	H	R	S	S	S	S	S	S	S
18	S	H	S	R	R	S	H	S	S	S	S	S
19	S	S	S	R	R	S	S	S	S	S	S	S
20	S	R	S	R	R	S	S	S	S	S	S	S
21	S	S	S	R	R	S	S	S	S	S	S	S
22	S	S	S	R	R	S	S	S	S	S	S	S
23	S	S	S	R	R	S	S	S	S	S	S	S
24	S	S	S	S	R	S	S	S	S	S	S	S
25	S	S	S	S	H	S	S	S	S	R	S	S
26	S	S	S	R	S	S	S	S	S	S	S	S
27	R	S	S	H	S	S	R	R	S	R	H	R
28	H	S	S	S	S	S	R	R	H	R	S	R
29	S	S	H	S	S	S	R	H	R	R	R	R
30	S	S	H	S	S	S	R	R	R	R	R	R
31	R	S	S	S	S	S	R	H	R	H	S	R
32	H	S	H	S	S	H	R	R	H	H	S	R
33	S	S	R	S	S	R	R	R	S	R	S	S
34	H	S	H	S	S	S	R	R	S	H	S	S
35	R	S	S	S	S	S	R	H	S	R	S	S
36	R	S	S	S	S	S	R	S	S	R	S	H

순번	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi23	Tm2a	Sw5	Cf9
37	S	S	S	R	S	S	R	S	S	S	S	S
38	R	S	S	H	R	S	S	R	S	H	H	R
39	S	S	R	R	S	S	R	R	H	R	H	S
40	H	S	S	H	S	S	R	R	H	H	S	H
41	R	S	S	R	S	S	S	S	S	R	S	S
42	H	S	S	R	H	S	S	S	S	R	S	S
43	S	S	S	R	R	S	S	S	S	H	S	S
44	S	S	S	R	R	S	S	S	H	H	S	S
45	S	S	S	R	R	S	S	S	S	S	S	S
46	S	S	S	S	S	S	S	S	S	R	S	S
47	S	S	S	S	S	S	S	S	S	R	S	S
48	H	S	S	R	S	S	R	S	H	S	S	S
49	S	S	S	R	S	S	R	S	R	H	S	S
50	H	S	S	R	S	S	S	R	S	H	H	S
51	R	S	S	R	S	S	S	R	S	R	S	S
52	S	S	S	H	S	S	S	H	R	R	S	R
53	H	S	S	H	S	S	S	H	H	H	S	R
54	H	S	S	H	S	S	S	H	R	R	S	R
55	H	S	H	H	S	S	S	S	H	R	H	R
56	S	S	R	R	H	S	H	R	H	R	S	R
57	S	S	H	R	R	S	H	S	S	H	S	H
58	S	S	S	R	R	S	S	R	S	H	S	H
59	R	S	S	R	S	S	S	R	S	H	S	H
60	H	S	S	R	H	S	S	R	S	S	S	S
61	H	S	S	R	H	S	S	R	S	S	S	R
62	S	S	S	R	R	S	S	S	H	H	S	H
63	S	S	S	R	R	S	S	S	H	S	S	R
64	S	S	S	R	S	S	R	R	R	R	S	S
65	H	S	S	H	S	S	R	R	H	R	S	S
66	H	S	H	H	S	S	S	R	S	H	S	R
67	R	S	H	H	S	S	H	R	S	H	S	R
68	R	S	S	S	S	S	R	R	S	R	R	S
69	R	S	S	H	S	S	R	R	S	H	H	S
70	H	S	S	S	S	S	R	R	S	S	H	S

⑤ 제농

제농으로부터 총 34점의 시료를 받아 1번의 서비스를 진행하였다. 34점의 시료에 대하여, 병 관련 15종의 마커를 이용하여 서비스를 진행하였으며, 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 32).

표 32. 가나종묘 64점의 시료에 대하여, 병 관련 12종의 마커를 이용한 서비스 결과

순번	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Ph3	py1-4	Sm-565	Bw12	Cf9
1	S	S	S	S	S	S	H	H	S	H	S	S	R	S	S
2	S	S	S	S	S	S	H	H	S	H	S	S	R	S	S
3	S	S	S	S	S	S	R	R	S	R	S	S	R	S	S
4	S	H	S	S	H	S	H	H	S	R	S	S	R	R	S
5	S	H	S	S	H	S	H	H	S	R	S	S	R	R	S
6	S	H	S	S	H	S	H	H	S	R	S	S	R	R	S
7	H	S	S	S	H	S	H	H	S	R	S	S	R	S	S
8	S	S	S	S	S	H	S	H	S	R	H	S	H	S	S
9	S	S	S	S	H	H	S	H	S	H	S	S	H	S	S
10	S	S	S	S	S	H	S	H	S	R	H	S	H	S	S
11	H	S	S	S	H	S	S	S	S	R	S	S	H	S	S
12	H	S	S	S	H	S	S	S	S	R	S	S	H	S	S
13	H	S	S	S	H	S	S	S	S	R	S	S	H	S	S
14	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
15	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
16	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

순번	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Ph3	py1-4	Sm-565	Bw12	Cf9
17	H	S	S	S	H	S	H	S	S	H	S	S	S	R	S
18	H	S	S	S	H	S	H	S	S	H	S	S	S	R	S
19	H	S	S	S	H	S	H	S	S	H	S	S	S	R	S
20	H	S	S	H	H	H	H	S	S	R	H	S	H	R	R/H
21	H	S	S	H	H	H	H	S	S	R	H	S	H	R	R/H
22	H	S	S	H	H	H	H	S	S	R	H	S	H	R	R/H
23	H	S	S	S	H	S	H	H	S	H	S	S	S	S	S
24	H	S	S	S	H	S	H	H	S	H	S	S	S	S	S
25	H	S	S	S	H	S	H	H	S	H	S	S	S	S	S
26	H	S	S	S	H	S	H	H	S	R	S	S	H	S	S
27	H	S	S	S	H	S	H	H	S	R	S	S	H	S	S
28	H	S	S	S	H	S	H	H	S	R	S	S	H	S	S
29	H	S	S	S	R	H	R	H	S	R	S	S	H	S	S
30	H	S	S	S	R	H	R	H	S	R	S	S	H	S	S
31	H	S	S	S	H	H	H	H	S	R	S	S	H	S	S
32	H	S	S	S	H	S	H	R	S	R	S	S	H	H	R/H
33	H	S	S	S	H	S	H	R	S	R	S	S	H	H	R/H
34	H	S	S	S	H	S	H	R	S	R	S	S	H	H	R/H

⑥ 아시아종묘

아시아종묘부터 총 23점의 시료를 받아 2번의 서비스를 진행하였다. 처음 8점의 시료에 대하여, 병 관련 12종의 마커를 이용하여 서비스를 진행하였다(표 33). 2번째로는 15점의 시료에 대하여, 병 관련 9종의 마커를 이용하여 서비스를 진행하였다(표 34). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 33~34).

표 33. 아시아종묘 8점의 시료에 대하여, 병 관련 12종의 마커를 이용한 서비스 결과

샘플	Ty1	Ty2	I2	I3	Bw6	Bw12	Ph3	J3	Cf9	Sm	Sw5	Tm2a
1	S	H	S	S	R	S	H	S	S	S	S	S
2	S	H	S	S	R	H	H	S	S	S	S	S
3	S	H	S	S	R	S	H	S	S	S	S	S
4	S	H	S	S	R	S	H	S	S	S	S	S
5	S	H	S	S	R	H	H	S	S	S	S	S
6	S	H	S	S	R	H	H	S	S	S	S	S
7	S	H	S	S	R	S	H	S	S	S	S	S
8	S	H	S	S	R	S	H	S	S	S	S	S

표 34. 아시아종묘 15점의 시료에 대하여, 병 관련 9종의 마커를 이용한 서비스 결과

순번	Ty1	Ty2	Sw5	Tm2a	Mi23	J3	I2	Ve2	Cf9
1	S	H	S	S	S	S	S	S	S
2	S	H	S	S	S	S	S	S	S
3	S	H	S	S	S	S	S	S	S
4	S	H	S	S	S	S	S	S	S
5	S	H	S	S	S	S	S	S	S
6	H	S	S	H	S	S	R	H	S
7	H	S	S	H	S	S	R	H	S
8	H	S	S	H	S	S	R	H	S
9	H	S	S	H	S	S	R	H	S
10	H	S	S	H	S	S	R	H	S
11	S	S	S	R	H	R	H	H	S
12	S	S	S	R	H	R	H	H	S
13	S	S	S	R	H	R	H	R	S
14	S	S	S	R	H	R	H	R	S
15	S	S	S	R	H	R	H	H	S

⑦ 더기반

더기반으로부터 총 35점의 시료를 받아 1번의 서비스를 진행하였다. 35점의 시료에 대하여, 병 관련 2종의 마커를 이용하여 서비스를 진행하였으며, 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 35).

표 35. 더기반 35점의 시료에 대하여, 병 관련 2종의 마커를 이용한 서비스 결과

순번	Sm-InDel	Sm-565	순번	Sm-InDel	Sm-565	순번	Sm-InDel	Sm-565	순번	Sm-InDel	Sm-565	순번	Sm-InDel	Sm-565	순번	Sm-InDel	Sm-565
1	S	S	7	R	R	13	R	R	19	R	R	25	R	R	31	R	R
2	R	R	8	R	R	14	R	R	20	R	R	26	S	S	32	R	R
3	R	R	9	R	R	15	R	R	21	S	S	27	R	R	33	H	H
4	R	R	10	R	R	16	R	R	22	S	S	28	R	R	34	S	S
5	R	R	11	R	R	17	R	R	23	R	R	29	R	R	35	S	S
6	R	R	12	R	R	18	R	R	24	R	R	30	H	H			

1-4) 4차년도 토마토 분자마커 서비스 결과

4차년도에 토마토 분자마커 서비스는 순천대학교, 가나중묘, 현대중묘, 토마토연구소, 한경대학교, 더기반으로 총 6곳에서 의뢰를 받아 실시하였다.

① 순천대학교

순천대학교로부터 총 7,608점의 시료를 받아 35번의 서비스를 진행하였다. 처음 69점의 시료에 대하여, 병 관련 6종의 마커로 서비스를 진행하였다(표 1). 2번째로는 290점의 시료에 대하여, 병 관련 15종의 마커로 서비스를 진행하였다(표 2). 3번째로는 71점의 시료에 대하여, 병 관련 5종의 마커로 서비스를 진행하였다(표 3). 4번째로는 5점의 시료에 대하여, 병 관련 8종의 마커로 서비스를 진행하였다(표 4). 5번째로는 1점의 시료에 대하여 병 관련 10종의 마커로 서비스를 진행하였다(표 5). 6번째로는 57점의 시료에 대하여, 병 관련 6종의 마커로 서비스를 진행하였다(표 6). 7번째로는 11점의 시료에 대하여, 병 관련 15종의 마커로 서비스를 진행하였다(표 7). 8번째로는 765점의 시료에 대하여, 병 관련 10종의 마커로 서비스를 진행하였다(표 8). 9번째로는 86점의 시료에 대하여, 원예 형질 관련 1종의 마커로 서비스를 진행하였다(표 9). 10번째로는 1,030점의 시료에 대하여, 병 관련 8종의 마커로 서비스를 진행하였다(표 10). 11번째로는 8점의 시료에 대하여, 병 관련 15종의 마커로 서비스를 진행하였다(표 11). 10번째로는 1,030점의 시료에 대하여, 병 관련 8종의 마커로 서비스를 진행하였다(표 10). 12번째로는 8점의 시료에 대하여, 병 관련 9종의 마커로 서비스를 진행하였다(표 12). 13번째로는 283점의 시료에 대하여, 병 관련 15종의 마커로 서비스를 진행하였다(표 13). 14번째로는 33점의 시료에 대하여, 병 관련 15종의 마커로 서비스를 진행하였다(표 14). 15번째로는 154점의 시료에 대하여, 원예 형질 관련 1종의 마커로 서비스를 진행하였다(표 15). 16번째로는 46점의 시료에 대하여, 원예 형질 관련 3종의 마커로 서비스를 진행하였다(표 16). 17번째로는 12점의 시료에 대하여, 병 관련 9종의 마커로 서비스를 진행하였다(표 17). 18번째로는 10점의 시료에 대하여, 병 관련 15종의 마커로 서비스를 진행하였다(표 18). 19번째로는 7점의 시료에 대하여, 병 관련 15종의 마커로 서비스를 진행하였다(표 19). 20번째로는 2점의 시료에 대하여, 병 관련 15종의 마커로 서비스를 진행하였다(표 20). 21번째로는 96점의 시료에 대하여, 원예 형질 관련 1종의 마커로 서비스를 진행하였다(표 21). 22번째로는 2,481점의 시료에 대하여, 병 관련 9종의 마커로 서비스를 진행하였다(표 22). 23번째로는 66점의 시료에 대하여, 병 관련 5종의 마커로 서비스를 진행하였다(표 23). 24번째로는 65점의 시료에 대하여, 병 관련 8종의 마커로 서비스를 진행하였다(표 24). 25번째로는 9점의 시료에 대하여, 병 관련 14종의 마커로 서비스를 진행하였다(표 25). 26번째로는 321점의 시료에 대하여, 병 관련 1종의 마커로 서비스를 진행하였다(표 26). 27번째로는 98점의 시료에 대하여, 병 관련 1종의 마커로 서비스를 진행하였다(표 27). 28번째로는 26점의 시료에 대하여, 병 관련 1종의 마커로 서비스를 진행하였다(표 28). 29번째로는 645점의 시료에 대하여, 병 관련 11종의

마커로 서비스를 진행하였다(표 29). 30번째로는 2점의 시료에 대하여, 원예 형질 관련 2종의 마커로 서비스를 진행하였다(표 30). 31번째로는 321점의 시료에 대하여, 병 관련 2종의 마커로 서비스를 진행하였다(표 31). 32번째로는 44점의 시료에 대하여, 병 관련 2종의 마커로 서비스를 진행하였다(표 32). 33번째로는 365점의 시료에 대하여, 병 관련 7종의 마커로 서비스를 진행하였다(표 33). 34번째로는 115점의 시료에 대하여, 원예 형질 관련 1종의 마커로 서비스를 진행하였다(표 34). 35번째로는 6점의 시료에 대하여, 병 관련 16종의 마커로 서비스를 진행하였다(표 35). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 1~35).

표 1. 순천대학교 69점의 시료에 대하여, 병 관련 6개의 마커를 이용한 서비스 결과

No.	Sw5	Tm2a	Ty1	Ty2	Ph3	Sm-565
1	H	H	H	R	H	H
2	H	H	S	R	H	H
3	R	S	S	R	R	S
4	R	H	H	R	R	S
5	H	H	H	R	H	H
6	R	S	S	R	R	H
7	R	H	H	H	H	S
8	R	S	S	H	R	H
9	H	H	H	H	H	H
10	H	H	S	R	H	H
11	H	H	S	R	H	S
12	H	H	R	H	H	R
13	H	R	H	H	H	R
14	H	S	S	S	H	H
15	S	H	R	R	S	R
16	H	S	H	H	R	H
17	S	S	S	H	S	S
18	S	S	H	R	H	S
19	S	H	S	S	S	H
20	R	R	S	H	S	H
21	H	H	R	S	H	H
22	S	R	S	H	S	S
23	H	R	S	R	H	H
24	S	H	H	H	H	S
25	R	H	S	H	H	H
26	S	S	S	H	S	H
27	S	H	S	H	H	H
28	R	H	H	H	R	R
29	H	H	H	S	H	H
30	H	H	R	S	H	R
31	H	H	R	H	R	S
32	H	H	S	R	R	S
33	R	R	S	H	R	S
34	S	R	S	H	S	H
35	H	S	H	H	H	S
36	H	R	S	H	H	H
37	H	R	H	H	H	H
38	H	H	S	H	H	H
39	S	R	H	R	S	S
40	S	R	R	H	S	R
41	R	H	S	R	R	H
42	H	H	H	H	H	R
43	R	H	S	S	R	R
44	H	H	R	S	H	R
45	H	S	R	R	H	S
46	H	S	H	H	H	R
47	R	S	S	S	R	R
48	H	S	S	S	H	H
49	H	R	S	R	H	H
50	R	H	H	H	R	S
51	H	S	R	H	H	H
52	R	H	H	H	R	R
53	R	S	H	H	R	S
54	H	R	S	H	H	H
55	H	S	S	S	H	R
56	R	H	R	H	R	H
57	R	H	H	H	R	R
58	S	H	H	S	S	S
59	R	R	H	H	H	S
60	H	R	H	H	H	R
61	R	H	H	R	R	S
62	H	S	S	H	R	S
63	H	S	H	H	H	H
64	R	H	H	H	R	R
65	S	H	H	H	S	R
66	S	H	H	H	H	H
67	H	H	H	S	H	S
68	H	H	R	S	H	H
69	S	S	S	R	S	S

표 2. 순천대학교 290점의 시료에 대하여, 병 관련 15개의 마커를 이용한 서비스 결과

No.	I2	I3	Ve2	J3	py1	Mi23	Bw6	Bw12	Cf9	Sw5	Tm2a	Ty1	Ty2	Ph3	Sm-565
1	H	S	S	S	S	H	S	R	R	S	R	S	S	S	H
2	H	S	H	H	S	H	NA	R	S	S	R	S	S	S	H
3	H	S	H	H	S	H	S	R	S	S	R	S	S	S	R
4	S	S	R	NA	S	H	H	R	S	S	R	S	S	S	S
5	S	S	H	S	S	R	H	R	S	S	R	S	S	S	R
6	H	S	H	H	S	R	S	R	S	S	R	S	S	S	H
7	S	S	H	S	S	H	R	R	S	S	R	S	S	S	H
8	S	S	H	H	S	S	R	R	S	S	R	S	S	S	H
9	H	S	S	H	S	R	H	R	S	S	R	S	S	S	R

10	H	S	R	H	S	H	R	R	S	S	R	S	S	S	R
11	H	S	R	S	S	S	R	R	S	S	S	S	S	S	R
12	H	S	H	S	S	H	H	R	S	S	S	S	S	S	R
13	H	S	H	S	S	H	H	R	S	S	S	S	S	S	R
14	H	S	R	S	S	H	H	R	S	S	S	S	S	S	R
15	H	S	H	S	S	R	S	R	S	S	S	S	S	S	R
16	S	S	R	S	S	R	S	R	S	S	S	S	S	S	R
17	H	S	R	S	S	H	R	R	S	S	S	S	S	S	R
18	H	S	S	S	S	H	H	R	S	S	S	S	S	S	R
19	H	S	H	S	S	H	S	R	S	S	S	S	S	S	R
20	H	S	S	S	S	S	H	R	S	S	S	S	S	S	R
21	H	S	R	S	S	R	H	R	S	S	R	S	S	S	R
22	S	S	R	H	S	R	H	R	S	S	R	S	S	S	S
23	H	S	S	S	S	R	H	R	S	S	R	S	S	S	H
24	H	S	S	H	S	R	H	R	S	S	R	S	S	S	H
25	H	S	S	H	S	R	S	R	S	S	R	S	S	S	S
26	H	S	R	H	S	R	R	R	S	S	R	S	S	S	H
27	S	S	R	S	S	R	R	R	S	S	R	S	S	S	S
28	H	S	S	H	S	R	H	R	S	S	R	S	S	S	R
29	S	S	S	H	S	R	R	R	S	S	R	S	S	S	H
30	H	S	S	H	S	R	H	R	S	S	R	S	S	S	R
31	S	S	S	S	S	R	S	R	S	S	R	S	S	S	S
32	S	S	S	S	S	R	H	R	S	S	R	S	S	S	S
33	S	S	S	H	S	R	S	R	S	S	R	S	S	S	S
34	S	S	S	H	S	R	R	R	S	S	R	S	S	S	S
35	S	S	S	S	S	R	H	R	S	S	R	S	S	S	S
36	S	S	S	H	S	R	S	R	S	S	R	S	S	S	S
37	S	S	S	H	S	R	S	R	S	S	R	S	S	S	S
38	S	S	S	H	S	R	H	R	S	S	R	S	S	S	S
39	S	S	S	H	S	R	S	R	S	S	R	S	S	S	S
40	S	S	S	H	S	R	R	R	S	S	R	S	S	S	S
41	H	S	R	S	S	R	R	R	R	S	NA	S	S	R	H
42	H	S	R	H	S	R	R	R	S	S	H	S	S	S	R
43	H	S	R	H	S	R	R	R	H	S	H	S	S	S	H
44	H	S	R	S	S	R	R	R	R	S	S	S	S	R	R
45	H	S	R	S	S	R	R	R	H	S	S	S	S	R	H
46	H	S	R	H	S	R	R	R	H	S	NA	S	S	H	S
47	H	S	R	H	S	R	R	R	H	S	H	S	S	R	H
48	H	S	R	H	S	R	R	R	H	S	H	S	S	S	H
49	S	S	R	S	S	R	R	R	R	S	S	S	S	R	S
50	H	S	R	S	S	R	R	R	S	S	S	S	S	H	S
51	H	H	H	S	S	R	R	R	S	S	R	S	S	S	R
52	H	R	S	R	S	H	S	R	S	S	R	S	S	S	R
53	S	H	H	R	S	R	R	R	S	S	R	S	S	S	R
54	H	H	S	R	S	H	H	R	S	S	R	S	S	S	R
55	H	R	H	R	S	R	R	R	S	S	R	S	S	S	R
56	H	S	S	R	S	H	S	R	S	S	R	S	S	S	R
57	H	S	H	R	S	H	S	R	S	S	R	S	S	S	R
58	NA	S	S	R	S	S	H	R	S	S	R	S	S	S	R
59	S	S	R	R	S	H	H	R	S	S	R	S	S	S	R
60	H	R	S	R	S	H	H	R	S	S	R	S	S	S	R
61	H	S	R	S	S	H	S	na	S	S	S	S	S	S	R
62	S	S	R	S	S	H	S	H	S	S	S	S	S	S	R
63	H	S	R	S	S	S	S	H	S	S	S	S	S	S	R
64	S	S	R	S	S	S	S	na	S	S	S	S	S	S	R
65	S	S	R	S	S	S	S	na	S	S	S	S	S	S	R
66	H	S	R	S	S	H	S	na	S	S	S	S	S	S	R
67	H	S	R	S	S	H	S	na	S	S	S	S	S	S	R
68	S	S	R	S	S	H	S	na	S	S	S	S	S	S	R
69	S	S	R	S	S	S	S	na	S	S	S	S	S	S	R
70	S	S	R	S	S	H	S	na	S	S	S	S	S	S	R
71	S	S	R	R	S	S	R	na	S	S	R	S	S	S	R
72	H	S	R	R	S	H	H	R	S	S	R	S	S	S	S
73	S	S	R	R	S	R	H	R	S	S	R	S	S	S	H

74	H	S	R	R	S	H	S	na	S	S	R	S	S	S	H
75	H	S	R	R	S	R	S	na	S	S	R	S	S	S	S
76	S	S	R	R	S	S	R	na	S	S	R	S	S	S	R
77	S	S	R	R	S	R	H	na	S	S	R	S	S	S	R
78	H	S	R	R	S	S	H	na	S	S	R	S	S	S	H
79	H	S	R	R	S	R	R	na	S	S	R	S	S	S	S
80	H	S	R	R	S	H	H	na	S	S	R	S	S	S	H
81	S	S	H	R	H	R	S	na	R	S	R	S	S	S	S
82	S	S	S	R	H	R	S	H	R	S	R	S	S	H	S
83	S	S	R	R	H	R	H	H	R	S	R	S	S	H	S
84	S	S	H	R	NA	R	H	na	R	S	R	S	S	R	S
85	S	S	S	R	S	R	R	na	R	S	R	S	S	H	S
86	S	S	R	R	H	R	S	na	R	S	R	S	S	S	S
87	S	S	H	R	H	R	S	na	R	S	R	S	S	R	S
88	S	S	S	R	R	R	R	na	R	S	R	S	S	S	S
89	S	S	R	R	H	R	H	na	R	S	R	S	S	H	S
90	S	S	R	R	S	R	H	na	R	S	R	S	S	H	S
91	R	S	H	H	H	H	S	R	S	S	R	S	S	S	H
92	R	H	S	H	S	S	S	R	S	S	R	S	S	S	S
93	R	H	H	H	H	H	S	R	S	S	R	S	S	S	S
94	R	H	S	H	R	R	S	R	S	S	R	S	S	S	R
95	R	H	R	H	S	S	S	R	S	S	R	S	S	S	S
96	R	H	H	H	S	S	S	R	S	S	R	S	S	S	H
97	R	R	H	H	S	NA	S	R	S	S	R	S	S	S	H
98	R	H	R	H	H	H	S	R	S	S	R	S	S	S	R
99	R	R	NA	H	H	R	S	R	S	S	R	S	S	S	H
100	R	H	H	S	NA	H	S	R	S	S	R	S	S	S	H
101	S	S	R	R	S	R	R	R	S	S	R	S	S	S	S
102	S	S	R	R	S	R	R	R	S	S	R	S	S	S	S
103	S	S	R	R	S	R	R	R	S	S	R	S	S	S	S
104	S	S	R	R	S	R	R	R	S	S	R	S	S	S	S
105	S	S	R	R	S	R	R	R	S	S	R	S	S	S	S
106	S	S	R	R	S	R	R	R	S	S	R	S	S	S	S
107	S	S	R	R	S	R	R	R	S	S	R	S	S	S	S
108	S	S	R	R	S	R	R	R	S	S	R	S	S	S	S
109	S	S	R	R	S	R	R	R	S	S	R	S	S	S	S
110	S	S	R	R	S	R	R	R	S	S	R	S	S	S	S
111	S	S	S	R	S	H	S	na	S	S	R	S	S	S	R
112	S	S	S	S	S	R	S	H	S	S	S	S	S	S	R
113	S	S	H	H	S	R	R	R	S	S	H	S	S	S	R
114	S	S	NA	H	S	R	R	na	S	S	H	S	S	S	R
115	S	S	NA	R	S	R	H	na	S	S	R	S	S	S	R
116	S	S	H	H	S	S	S	na	S	S	H	S	S	S	R
117	S	S	H	H	S	S	R	na	S	S	H	S	S	S	R
118	S	S	R	S	S	R	H	na	S	S	S	S	S	S	R
119	S	S	S	S	S	H	S	na	S	S	S	S	S	S	R
120	S	S	NA	R	S	R	S	na	S	S	R	S	S	S	R
121	S	S	H	H	S	S	H	R	S	S	R	S	S	S	R
122	H	S	H	H	S	H	R	R	S	S	R	S	S	S	R
123	H	S	S	S	S	S	R	R	S	S	R	S	S	S	R
124	H	S	S	H	S	H	H	R	S	S	R	S	S	S	R
125	H	S	R	H	S	H	S	R	S	S	R	S	S	S	R
126	H	S	H	H	S	R	R	R	S	S	R	S	S	S	R
127	H	S	S	NA	S	R	R	R	S	S	R	S	S	S	R
128	H	S	R	R	S	H	H	R	S	S	R	S	S	S	R
129	H	S	S	H	S	H	H	R	S	S	R	S	S	S	R
130	NA	S	NA	NA	S	NA			S	S		S	S	S	
131	H	S	NA	S	S	NA	H	R	S	S	R	S	S	S	R
132	H	S	R	S	S	H	S	R	S	S	H	S	S	S	R
133	S	S	R	S	S	H	S	R	S	S	R	S	S	S	R
134	H	S	S	S	S	NA	S	R	S	S	H	S	S	S	R
135	H	S	H	S	S	H	S	R	S	S	H	S	S	S	R
136	H	S	S	S	S	S	H	R	S	S	R	S	S	S	R
137	S	S	H	S	S	R	S	R	S	S	H	S	S	S	R

138	H	S	R	S	S	S	S	R	S	S	S	S	S	S	R
139	H	S	H	S	S	H	H	R	S	S	S	S	S	S	R
140	H	S	H	S	S	S	H	R	S	S	R	S	S	S	R
141	S	S	S	S	S	H	H	R	S	S	S	S	S	S	R
142	H	S	S	S	S	R	H	R	S	S	S	S	S	S	R
143	S	S	H	S	S	H	H	R	S	S	S	S	S	S	R
144	H	S	H	S	S	H	S	R	S	S	S	S	S	S	R
145	H	S	R	S	S	R	R	R	S	S	S	S	S	S	R
146	S	S	R	S	S	R	H	R	S	S	S	S	S	S	R
147	S	S	S	S	S	H	H	R	S	S	S	S	S	S	R
148	H	S	R	S	S	H	R	R	S	S	S	S	S	S	R
149	H	S	R	S	S	S	S	R	S	S	S	S	S	S	R
150	H	S	S	S	S	S	H	R	S	S	S	S	S	S	R
151	NA	S	NA	S	S	R	NA	S	S	S	S	S	H	H	S
152	S	S	R	H	S	R	NA	S	S	S	S	S	H	S	S
153	S	S	R	H	S	R	NA	S	S	S	S	S	S	H	S
154	H	S	R	H	S	R	NA	S	S	S	S	S	R	R	S
155	H	S	NA	H	S	R	NA	S	S	S	S	S	R	R	S
156	H	S	R	S	S	R	NA	S	S	S	S	S	H	H	S
157	H	S	R	H	S	R	NA	S	S	S	S	S	H	R	S
158	S	S	NA	H	S	R	NA	S	S	S	S	S	S	R	S
159	H	S	R	H	S	R	NA	S	S	S	S	S	S	H	S
160	H	S	R	R	S	R	NA	S	S	S	S	S	R	R	S
161	H	S	S	S	S	R	R	NA	S	S	R	S	S	S	H
162	H	S	NA	R	S	R	R	S	S	S	R	S	S	S	H
163	S	S	R	H	S	R	R	H	S	S	R	S	S	S	H
164	H	S	H	R	S	R	R	NA	S	S	R	S	S	S	H
165	H	S	H	H	S	R	R	NA	S	S	R	S	S	S	H
166	H	S	H	R	S	R	R	NA	S	S	R	S	S	S	R
167	S	S	H	R	S	R	R	NA	S	S	R	S	S	S	S
168	S	S	S	R	S	R	R	NA	S	S	R	S	S	S	S
169	H	S	H	H	S	R	R	NA	S	S	R	S	S	S	H
170	H	S	H	S	S	R	R	NA	S	S	R	S	S	S	H
171	S	S	H	R	S	R	R	NA	S	S	R	S	S	S	H
172	S	S	S	S	S	R	R	H	S	S	R	S	S	S	H
173	S	S	S	R	S	R	R	NA	S	S	R	S	S	S	S
174	S	S	R	H	S	R	R	NA	S	S	R	S	S	S	R
175	S	S	S	H	S	R	R	NA	S	S	R	S	S	S	R
176	S	S	S	R	S	R	R	NA	S	S	R	S	S	S	S
177	S	S	R	R	S	R	R	NA	S	S	R	S	S	S	S
178	S	S	NA	S	S	R	R	NA	S	S	R	S	S	S	S
179	S	S	R	H	S	R	R	NA	S	S	R	S	S	S	S
180	S	S	R	H	S	R	R	NA	S	S	R	S	S	S	S
181	S	S	S	S	S	R	H	R	S	S	S	S	S	S	S
182	S	S	S	S	S	R	S	H	R	S	S	S	S	S	H
183	S	S	S	S	S	H	H	R	R	S	S	S	S	S	H
184	S	S	S	H	S	H	H	H	R	S	H	S	S	S	H
185	S	S	S	H	S	H	H	S	R	S	H	S	S	S	NA
186	S	S	S	H	S	H	S	H	R	S	H	S	S	S	R
187	S	S	S	S	S	R	S	H	R	S	S	S	S	S	R
188	S	S	S	NA	S	S	H	H	R	S	H	S	S	S	NA
189	S	S	S	H	S	NA	H	H	R	S	H	S	S	S	H
190	S	S	S	S	S	H	H	H	R	S	NA	S	S	S	R
191	S	S	NA	S	S	NA	R	R	S	S	R	S	S	S	R
192	H	S	R	S	S	H	R	R	S	S	R	S	S	S	R
193	H	S	R	S	S	S	R	R	S	S	R	S	S	S	R
194	H	S	R	H	S	H	S	R	S	S	R	S	S	S	R
195	H	S	H	H	S	H	S	R	S	S	R	S	S	S	R
196	H	S	R	S	S	H	R	R	S	S	R	S	S	S	R
197	H	S	H	H	S	S	R	R	S	S	R	S	S	S	R
198	H	S	H	H	S	S	S	R	S	S	R	S	S	S	R
199	H	S	S	H	S	R	H	R	S	S	R	S	S	S	R
200	S	S	H	R	S	R	R	R	S	S	R	S	S	S	R
201	H	S	S	R	S	H	R	R	S	S	R	S	S	S	R

202	H	S	H	S	S	S	H	R	S	S	S	S	S	S	R
203	H	S	S	S	S	S	H	R	S	S	S	S	S	S	R
204	H	S	H	H	S	H	H	R	S	S	H	S	S	S	R
205	H	S	H	S	S	R	S	R	S	S	S	S	S	S	R
206	H	S	H	S	S	S	S	R	S	S	S	S	S	S	R
207	NA	S	NA	S	S	S	NA	R	S	S	S	S	S	S	R
208	H	S	H	S	S	H	H	R	S	S	S	S	S	S	R
209	H	S	S	H	S	H	R	R	S	S	H	S	S	S	R
210	NA	S	S	R	S	H	H	R	S	S	NA	S	S	S	R
211	R	S	R	R	R	R	R	R	S	S	NA	S	S	S	S
212	R	S	R	R	R	S	R	R	S	S	NA	S	S	S	S
213	R	S	R	R	R	S	R	R	S	S	H	S	S	S	S
214	R	S	R	R	R	H	R	R	S	S	H	S	S	S	S
215	R	S	R	R	R	H	R	R	S	S	R	S	S	S	S
216	R	S	R	R	R	H	R	R	S	S	R	S	S	S	S
217	R	S	R	R	R	R	R	R	S	S	H	S	S	S	S
218	R	S	R	R	R	H	R	R	S	S	H	S	S	S	S
219	R	S	R	R	R	R	R	R	S	S	S	S	S	S	S
220	R	S	R	R	R	R	R	R	S	S	NA	S	S	S	S
221	H	S	H	R	S	R	NA	R	S	S	R	S	S	S	S
222	H	S	H	R	S	R	S	R	S	S	R	S	S	S	S
223	H	S	R	H	S	H	H	R	S	S	R	S	S	S	S
224	H	S	R	H	S	R	NA	R	S	S	R	S	S	S	S
225	H	S	H	S	S	R	H	R	S	S	R	S	S	S	S
226	H	S	S	S	S	H	H	R	S	S	R	S	S	S	S
227	H	S	H	H	S	R	S	R	S	S	R	S	S	S	S
228	S	S	R	S	S	H	R	R	S	S	R	S	S	S	S
229	H	S	H	H	S	S	NA	R	S	S	R	S	S	S	S
230	H	S	R	S	S	H	R	R	S	S	R	S	S	S	S
231	H	S	R	S	S	S	S	R	S	S	S	S	S	S	R
232	H	S	R	S	S	S	S	H	S	S	S	S	S	S	R
233	H	S	R	S	S	S	S	R	S	S	S	S	S	S	R
234	H	S	R	S	S	H	S	R	S	S	S	S	S	S	R
235	H	S	R	S	S	S	S	R	S	S	S	S	S	S	R
236	H	S	R	S	S	NA	S	R	S	S	S	S	S	S	R
237	H	S	R	S	S	H	S	H	S	S	S	S	S	S	R
238	H	S	R	S	S	S	S	NA	S	S	S	S	S	S	R
239	H	S	R	S	S	H	S	NA	S	S	S	S	S	S	R
240	H	S	R	S	S	H	S	NA	S	S	S	S	S	S	R
241	H	S	R	S	S	R	H	R	S	S	S	S	S	S	H
242	S	S	R	S	S	R	H	R	S	S	H	S	S	S	S
243	H	S	R	H	S	R	R	R	S	S	H	S	S	S	H
244	H	S	H	H	S	R	R	R	S	S	H	S	S	S	H
245	S	S	R	S	S	R	S	R	S	S	S	S	S	S	H
246	H	S	H	H	S	R	S	R	S	S	H	S	S	S	S
247	H	S	S	S	S	R	H	R	S	S	S	S	S	S	H
248	H	S	H	H	S	R	H	R	S	S	H	S	S	S	H
249	H	S	R	H	S	R	H	R	S	S	H	S	S	S	H
250	H	S	H	H	S	R	R	R	S	S	H	S	S	S	S
251	S	S	S	S	S	R	R	R	S	S	R	S	S	S	S
252	S	S	S	R	S	R	R	R	S	S	R	S	S	S	H
253	S	S	S	S	S	R	R	R	S	S	R	S	S	S	S
254	S	S	S	S	S	R	R	R	S	S	R	S	S	S	R
255	S	S	S	R	S	R	R	R	S	S	R	S	S	S	S
256	S	S	S	S	S	R	R	R	S	S	R	S	S	S	R
257	S	S	S	H	S	R	R	R	S	S	R	S	S	S	S
258	S	S	S	H	S	R	R	R	S	S	R	S	S	S	S
259	S	S	S	H	S	R	R	R	S	S	R	S	S	S	H
260	S	S	S	H	S	R	R	R	S	S	R	S	S	S	S
261	R	H	R	S	S	H	S	R	S	S	R	S	S	S	R
262	R	S	R	H	S	H	S	R	S	S	R	S	S	S	R
263	R	S	R	S	S	H	S	R	S	S	R	S	S	S	R
264	R	H	R	NA	S	S	S	R	S	S	R	S	S	S	R
265	R	H	R	H	S	S	S	R	S	S	R	S	S	S	R

266	R	H	R	S	S	H	S	R	S	S	R	S	S	S	R
267	R	H	R	S	S	H	S	R	S	S	R	S	S	S	R
268	R	NA	R	H	S	H	S	R	S	S	R	S	S	S	R
269	R	H	R	S	S	H	S	R	S	S	R	S	S	S	R
270	R	H	R	R	S	S	S	R	S	S	R	S	S	S	R
271	S	S	S	H	S	R	R	R	S	S	R	S	S	S	S
272	S	S	S	H	S	R	R	R	S	S	R	S	S	S	NA
273	S	S	S	S	S	R	R	R	S	S	R	S	S	S	R
274	S	S	S	H	S	R	R	R	S	S	R	S	S	S	H
275	S	S	S	R	S	R	R	R	S	S	R	S	S	S	S
276	S	S	S	S	S	R	R	R	S	S	R	S	S	S	S
277	S	S	S	S	S	R	R	R	S	S	R	S	S	S	R
278	S	S	S	H	S	R	R	R	S	S	R	S	S	S	H
279	S	S	S	S	S	R	R	R	S	S	R	S	S	S	H
280	S	S	S	R	S	R	R	R	S	S	R	S	S	S	R
281	S	S	H	H	S	R	R	H	S	S	R	S	S	S	H
282	S	S	H	H	S	R	R	H	S	S	R	S	S	S	H
283	S	S	H	H	S	R	R	H	S	S	R	S	S	S	H
284	S	S	H	H	S	R	R	H	S	S	R	S	S	S	H
285	S	S	H	H	S	R	R	H	S	S	R	S	S	S	H
286	S	S	H	H	S	R	R	H	S	S	R	S	S	S	H
287	S	S	H	H	S	R	R	H	S	S	R	S	S	S	H
288	S	S	H	H	S	R	R	H	S	S	R	S	S	S	H
289	S	S	H	H	S	R	R	H	S	S	R	S	S	S	H
290	S	S	H	H	S	R	R	H	S	S	R	S	S	S	H

표 3. 순천대학교 71점의 시료에 대하여, 병 관련 5개의 마커를 이용한 서비스 결과

No.	Ty2	Ph3	Sm-565	J3	Bw6
1	S	S	H	S	H
2	S	S	H	S	R
3	S	S	R	H	R
4	S	S	R	R	H
5	S	S	H	R	H
6	S	R	H	H	R
7	S	R	H	S	H
8	S	R	H	S	H
9	S	R	H	H	H
10	S	R	H	H	R
11	H	S	S	R	R
12	H	S	H	R	R
13	H	S	S	R	R
14	H	S	H	R	H
15	H	S	R	R	S
16	R	H	H	R	R
17	H	R	R	S	R
18	H	H	H	S	R
19	R	H	R	S	R
20	H	R	H	H	R
21	S	S	R	R	S
22	S	S	H	R	S
23	S	S	S	R	S
24	S	S	H	R	S
25	S	S	H	R	S
26	S	S	R	R	R
27	S	H	R	R	R
28	S	R	R	R	R
29	S	S	R	R	R
30	S	H	R	R	R
31	R	R	R	H	R
32	S	R	H	S	H
33	S	R	H	H	H
34	S	R	S	H	R
35	S	R	R	R	S

No.	Ty2	Ph3	Sm-565	J3	Bw6
37	S	S	H	S	R
38	H	S	H	H	R
39	S	H	H	H	R
40	H	R	H	R	R
41	H	H	H	S	R
42	R	R	R	R	S
43	R	S	H	R	H
44	R	H	H	R	H
45	R	H	S	R	S
46	R	R	S	R	S
47	R	H	R	R	S
48	R	S	H	R	S
49	R	R	S	R	S
50	R	R	S	R	S
51	R	R	S	R	S
52	R	R	S	R	S
53	R	R	S	R	S
54	R	R	S	R	S
55	S	S	S	R	S
56	S	S	H	R	S
57	S	S	H	R	S
58	S	S	H	R	S
59	S	H	R	R	R
60	S	H	R	R	R
61	S	S	R	R	R
62	S	H	R	R	R
63	S	R	R	R	R
64	S	H	R	R	R
65	S	R	R	R	R
66	S	R	H	R	H
67	H	R	R	S	R
68	S	R	H	R	R
69	S	S	H	H	H
70	H	H	H	H	S
71	R	R	H	S	H

36	S	R	R	S	H
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표 4. 순천대학교 5점의 시료에 대하여, 병 관련 8개의 마커를 이용한 서비스 결과

No	I2	I3	Ve2	J3	py1	Mi23	Bw6	Bw12
1	H	S	H	R	S	H	H	H
2	H	H	H	R	R	R	R	R
3	H	S	H	H	S	H	H	R
4	S	R	R	R	R	R	R	H
5	S	S	S	H	S	R	H	R

표 5. 순천대학교 1점의 시료에 대하여, 병 관련 10개의 마커를 이용한 서비스 결과

샘플명	Ve2	J3	Mi23	Bw12	Sw5	Tm2a	Ty1	Ty5	Ph3	Sm-565
대과종 품종 (F1)	R	H	H	S	S	H	H	S	H	H

표 6. 순천대학교 57점의 시료에 대하여, 병 관련 6개의 마커를 이용한 서비스 결과

No.	Tm2a	Ty2	Ph3	Sm-565	J3	Bw6
1	R	R	R	R	R	R
2	R	R	R	R	R	R
3	R	R	R	R	R	R
4	R	R	R	R	H	R
5	R	R	R	R	H	R
6	R	R	R	R	S	R
7	R	R	R	R	S	R
8	R	R	R	R	R	R
9	R	R	R	R	H	R
10	R	R	R	R	H	R
11	R	R	R	R	H	R
12	R	R	R	R	H	R
13	R	R	R	R	H	R
14	R	R	R	R	H	R
15	R	R	R	R	H	R
16	R	S	H	H	S	R
17	R	R	H	R	H	R
18	R	S	S	H	H	R
19	R	H	H	H	H	R
20	R	R	H	R	R	R
21	R	S	R	S	R	R
22	R	S	H	S	H	R
23	R	R	S	R	H	R
24	R	H	H	H	H	R
25	R	H	H	H	R	R
26	R	n/a	S	S	H	R
27	R	H	H	S	S	R
28	R	H	H	H	H	R
29	R	S	R	S	S	R

No.	Tm2a	Ty2	Ph3	Sm-565	J3	Bw6
30	R	R	H	R	S	R
31	R	R	H	H	R	H
32	R	R	S	H	R	R
33	R	R	R	R	R	S
34	R	R	S	R	R	R
35	R	R	R	H	R	H
36	R	R	H	S	R	H
37	R	S	S	H	R	S
38	R	S	R	R	R	S
39	R	S	H	H	R	S
40	R	S	H	H	R	S
41	R	S	H	H	R	S
42	R	S	H	R	R	S
43	R	S	H	H	R	S
44	R	S	S	S	R	S
45	R	S	S	R	R	S
46	R	S	H	n/a	R	S
47	R	S	H	H	R	S
48	R	S	S	H	R	S
49	R	S	S	H	R	S
50	R	S	R	S	R	S
51	R	S	S	H	R	S
52	R	R	R	R	R	S
53	R	R	R	R	R	S
54	R	R	R	R	R	S
55	R	R	R	R	R	S
56	R	R	R	R	R	S
57	R	R	R	R	R	S

표 7. 순천대학교 11점의 시료에 대하여, 병 관련 15개의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	ty5	Tm2a	Sw5	I2	I3	Mi23	J3	Ph3	Sm-565	Bw6	Bw12	Ve2	Cf9
1	H	S	S	H	S	R	H	S	S	S	H	S	S	R	R
2	H	S	S	H	H	H	S	H	S	H	H	R	S	S	S
3	H	S	S	H	S	R	S	H	S	S	R	S	R	H	R
4	H	S	S	R	S	R	S	H	H	S	R	S	R	H	H
5	H	S	S	H	S	H	S	R	H	S	R	S	S	R	H
6	S	S	S	R	S	H	S	H	R	S	R	H	H	H	S
7	H	S	S	H	S	H	S	S	S	R	H	H	S	S	S

8	H	S	S	S	H	R	S	S	S	H	S	S	R	H	H
9	H	S	S	H	S	H	S	S	S	S	H	S	S	H	S
10	S	S	S	S	S	S	S	S	S	H	S	R	S	S	S
11	S	S	S	S	S	S	S	S	H	S	H	S	R	S	S

표 8. 순천대학교 765점의 시료에 대하여, 병 관련 10개의 마커를 이용한 서비스 결과

No.	Ty1	Tm 2a	Sw5	I3	Mi 23	J3	Ph3	Sm-565	Ve2	Cf9	No.	Ty1	Tm 2a	Sw5	I3	Mi 23	J3	Ph3	Sm-565	Ve2	Cf9
1	H	H	H	S	S	H	H	S	H	H	384	S	R	H	S	S	R	H	S	R	S
2	H	H	S	S	S	H	S	H	S	H	385	S	R	H	S	S	R	H	S	R	S
3	H	S	H	S	S	S	H	H	H	R	386	S	R	H	S	S	R	H	S	R	S
4	H	R	H	S	S	R	H	H	H	R	387	S	R	H	S	S	R	H	S	R	S
5	H	S	S	S	S	S	S	H	R	S	388	S	S	S	S	S	S	S	S	R	S
6	H	R	S	S	S	R	S	S	S	S	389	S	R	S	S	S	R	S	S	R	S
7	S	H	H	S	S	H	H	R	H	S	390	S	R	S	S	S	R	S	S	R	S
8	R	R	H	S	S	R	H	H	S	H	391	S	S	S	S	S	S	S	S	R	S
9	R	R	H	S	S	H	R	S	R	S	392	S	R	S	S	S	R	S	S	R	S
10	H	H	H	S	S	H	H	S	H	S	393	S	S	S	S	S	S	S	S	R	S
11	H	S	n/a	S	S	n/a	H	H	R	R	394	S	S	S	S	S	S	S	S	R	S
12	H	R	S	S	S	R	S	R	S	S	395	S	R	S	S	S	R	S	S	R	S
13	H	H	H	S	S	H	H	S	R	S	396	S	H	S	S	S	H	S	S	R	S
14	H	H	H	S	S	H	H	H	R	H	397	S	S	S	S	S	S	S	S	R	S
15	H	H	R	S	S	H	R	H	H	S	398	S	S	S	S	S	S	S	S	R	S
16	R	H	S	S	S	H	H	H	H	H	399	S	R	S	S	S	R	S	S	R	S
17	H	H	H	S	S	H	H	R	S	R	400	S	R	S	S	S	R	S	S	R	S
18	H	S	H	S	S	S	H	H	R	H	401	S	H	S	S	S	H	S	S	R	S
19	S	H	H	S	S	H	H	H	R	H	402	S	H	S	S	S	H	S	S	R	S
20	H	H	H	S	S	H	H	R	H	R	403	S	H	S	S	S	H	S	S	R	S
21	H	S	H	S	S	S	H	S	H	H	404	S	H	S	S	S	H	S	S	R	S
22	H	H	S	S	S	H	S	R	H	S	405	S	H	S	S	S	H	S	S	R	S
23	H	H	S	S	S	H	S	H	R	S	406	S	S	S	S	S	S	S	S	R	S
24	S	H	S	S	S	H	H	S	H	H	407	S	R	S	S	S	R	S	S	R	S
25	S	S	H	S	S	S	H	H	H	H	408	S	R	S	S	S	R	S	S	R	S
26	S	H	R	S	S	H	R	R	R	R	409	S	R	S	S	S	R	S	S	R	S
27	H	S	R	S	S	S	R	H	H	H	410	S	R	S	S	S	R	S	S	R	S
28	R	S	H	S	S	S	H	S	R	R	411	S	H	S	S	S	H	S	S	R	S
29	H	H	H	S	S	H	H	H	S	H	412	S	R	S	S	S	R	S	S	R	S
30	R	H	H	S	S	H	H	H	H	R	413	S	R	S	S	S	R	S	S	R	S
31	S	R	H	S	S	R	H	H	S	H	414	S	R	S	S	S	R	S	S	R	S
32	H	S	H	S	S	S	H	H	S	H	415	S	H	S	S	S	H	S	S	R	S
33	S	S	H	S	S	S	H	S	S	S	416	S	S	S	S	S	S	S	S	R	S
34	H	R	S	S	S	R	S	S	H	H	417	S	H	S	S	S	H	S	S	R	S
35	R	H	R	S	S	H	H	H	R	H	418	S	S	S	S	S	S	S	S	R	S
36	H	S	R	S	S	S	R	R	R	H	419	S	S	S	S	S	S	S	S	R	S
37	H	H	S	S	S	H	S	S	H	H	420	S	S	S	S	S	S	S	S	R	S
38	H	H	H	S	S	H	H	S	R	H	421	S	R	S	S	S	R	S	S	R	S
39	S	H	H	S	S	H	H	H	H	H	422	S	H	S	S	S	H	S	S	R	S
40	R	H	S	S	S	H	H	H	H	R	423	S	H	S	S	S	H	S	S	R	S
41	H	R	S	S	n/a	R	H	H	R	S	424	S	H	S	S	S	H	S	S	R	S
42	R	R	S	S	S	H	H	H	R	S	425	S	R	S	S	S	R	S	S	R	S
43	H	R	S	S	S	R	S	H	R	S	426	S	R	S	S	S	R	S	S	R	S
44	H	R	S	S	H	H	S	H	R	S	427	S	H	S	S	S	H	S	S	R	S
45	H	R	S	S	H	H	S	S	R	S	428	S	S	S	S	S	S	S	S	R	S
46	R	R	S	S	S	S	R	S	R	S	429	S	H	S	S	S	H	S	S	R	S
47	R	R	S	S	S	S	H	H	R	S	430	S	R	S	S	S	R	S	S	R	S
48	R	R	S	S	S	S	H	H	R	S	431	S	S	S	S	S	S	S	S	R	S
49	R	R	S	S	S	R	H	R	R	S	432	S	S	S	S	S	S	S	S	R	S
50	R	R	S	S	S	S	H	H	R	S	433	S	H	S	S	S	H	S	S	R	S
51	R	R	S	S	S	R	H	R	R	S	434	S	H	S	S	S	H	S	S	R	S
52	R	R	S	S	S	S	H	H	R	S	435	H	S	R	S	S	S	R	S	R	S
53	H	R	S	S	H	H	H	S	R	S	436	H	R	H	S	S	S	H	S	R	S
54	H	R	S	S	H	H	H	R	R	S	437	R	R	H	S	S	S	H	S	R	S
55	R	R	S	S	S	R	S	S	R	S	438	R	S	S	S	S	S	S	S	R	S

No.	Ty1	Tm 2a	Sw5	I3	Mi 23	J3	Ph3	Sm-565	Ve2	Cf9
56	H	R	S	S	H	R	S	S	R	S
57	H	R	S	S	H	H	H	H	R	S
58	H	R	S	S	H	H	R	S	R	S
59	H	R	S	S	H	S	S	R	R	S
60	R	R	S	S	S	H	H	H	R	S
61	H	R	S	S	H	R	R	S	R	S
62	R	R	S	S	S	R	S	S	R	S
63	R	R	S	S	S	H	R	H	R	S
64	R	R	S	S	S	R	H	H	R	S
65	R	R	S	S	S	R	S	H	R	S
66	H	R	S	S	H	H	S	R	R	S
67	H	R	S	S	H	R	H	R	R	S
68	H	R	S	S	H	H	R	H	R	S
69	R	R	S	S	S	S	H	H	R	S
70	S	R	S	S	R	S	R	H	R	S
71	H	R	S	S	H	H	H	S	R	S
72	H	R	S	S	H	S	S	H	R	S
73	H	R	S	S	H	S	H	S	R	S
74	S	R	H	S	H	R	H	H	R	S
75	S	S	H	S	H	S	H	S	R	S
76	S	S	S	S	H	S	S	S	R	S
77	S	H	S	S	H	H	S	H	R	S
78	S	S	H	S	S	S	H	S	R	S
79	S	H	S	S	H	H	S	H	R	S
80	S	R	R	S	R	R	R	H	R	S
81	S	H	H	S	S	H	H	H	R	S
82	S	H	H	S	H	H	H	H	R	S
83	S	H	R	S	H	H	R	S	R	S
84	S	H	H	S	R	H	H	H	R	S
85	S	R	S	S	S	R	S	H	R	S
86	S	H	H	S	S	H	S	R	R	S
87	S	R	H	S	R	R	H	R	R	S
88	S	R	H	S	H	R	H	S	R	S
89	S	H	S	S	S	H	S	S	R	S
90	S	H	S	S	H	H	S	S	R	S
91	S	S	R	S	H	S	R	H	R	S
92	S	R	H	S	H	R	H	S	R	S
93	S	R	S	S	H	R	S	R	R	S
94	S	H	R	S	H	H	R	H	R	S
95	S	S	H	S	H	S	H	H	R	S
96	S	H	H	S	R	H	S	S	R	S
97	S	H	H	S	H	H	S	R	R	S
98	S	S	H	S	H	S	H	S	R	S
99	S	H	H	S	H	H	H	S	R	S
100	S	H	S	S	H	H	S	R	R	S
101	S	R	R	S	H	R	H	S	R	S
102	S	H	H	S	H	H	H	H	R	S
103	S	R	R	S	H	R	R	R	R	S
104	S	H	S	S	H	H	S	H	R	S
105	S	H	R	S	H	H	H	R	R	S
106	S	R	H	S	H	R	H	R	R	S
107	S	R	H	S	R	R	H	R	R	S
108	S	H	H	S	S	H	H	H	R	S
109	S	R	H	S	S	R	S	H	R	S
110	S	H	H	S	H	H	H	S	R	S
111	S	H	H	S	H	H	H	S	R	S
112	S	S	H	S	H	S	R	H	R	S
113	S	H	S	S	H	H	S	H	R	S
114	S	H	R	S	S	H	R	H	R	S
115	S	H	S	S	H	H	S	S	R	S
116	S	H	R	S	H	H	R	H	R	S
117	S	R	H	S	R	R	H	H	R	S

No.	Ty1	Tm 2a	Sw5	I3	Mi 23	J3	Ph3	Sm-565	Ve2	Cf9
439	H	H	H	S	S	S	H	S	R	S
440	R	S	H	S	S	S	H	S	R	S
441	H	H	R	S	S	S	R	S	R	S
442	H	H	H	S	S	S	S	S	R	S
443	H	R	S	S	S	S	S	S	R	S
444	H	H	H	S	S	S	H	S	R	S
445	H	H	H	S	S	S	H	S	R	S
446	H	H	R	S	S	S	R	S	R	S
447	H	H	S	S	S	S	S	S	R	S
448	H	S	H	S	S	S	H	S	R	S
449	S	R	H	S	S	S	H	S	R	S
450	H	H	R	S	S	S	R	S	R	S
451	H	H	H	S	S	S	H	S	R	S
452	S	H	R	S	S	S	R	S	R	S
453	H	H	H	S	S	S	H	S	R	S
454	H	R	H	S	S	S	H	S	R	S
455	H	S	H	S	S	S	H	S	R	S
456	H	H	H	S	S	S	H	S	R	S
457	S	H	H	S	S	S	H	S	R	S
458	H	S	H	S	S	S	n/a	S	R	S
459	S	S	R	S	S	S	R	S	R	S
460	n/a	n/a	n/a	S	S	S	n/a	S	R	S
461	H	H	H	S	S	S	H	S	R	S
462	H	R	H	S	S	S	H	S	R	S
463	H	H	H	S	S	S	H	S	R	S
464	H	H	H	S	S	S	H	S	R	S
465	H	R	H	S	S	S	H	S	R	S
466	H	H	H	S	S	S	H	S	R	S
467	S	S	R	S	S	S	R	S	R	S
468	R	H	H	S	S	S	H	S	R	S
469	H	H	H	S	S	S	H	S	R	S
470	H	H	S	S	S	S	S	S	R	S
471	R	S	R	S	S	S	R	S	R	S
472	S	R	S	S	S	S	S	S	R	S
473	R	H	S	S	S	S	S	S	R	S
474	R	S	R	S	S	S	R	S	R	S
475	H	R	S	S	S	S	S	S	R	S
476	R	S	S	S	S	S	S	S	R	S
477	S	R	R	S	H	R	R	S	R	S
478	S	R	R	S	R	R	R	S	R	S
479	S	R	R	S	H	R	R	S	R	S
480	S	R	H	S	H	R	R	S	R	S
481	S	R	H	S	H	R	R	S	R	S
482	S	R	H	S	n/a	R	R	S	R	S
483	S	R	H	S	S	R	R	S	R	S
484	S	R	H	S	H	R	R	S	R	S
485	S	R	H	S	H	R	R	S	R	S
486	S	R	S	S	H	R	R	S	R	S
487	S	R	H	S	H	R	R	S	R	S
488	S	R	H	S	H	R	R	S	R	S
489	S	R	H	S	R	R	R	S	R	S
490	S	R	H	S	H	R	R	S	R	S
491	S	R	S	S	H	R	R	S	R	S
492	S	R	H	S	H	R	R	S	R	S
493	S	R	R	S	H	R	R	S	R	S
494	S	R	S	S	H	R	R	S	R	S
495	S	R	H	S	H	R	R	S	R	S
496	S	R	S	S	S	R	R	S	R	S
497	S	R	H	S	S	R	R	S	R	S
498	S	R	R	S	S	R	R	S	R	S
499	S	R	S	S	S	R	R	S	R	S
500	S	R	H	S	H	R	R	S	R	S

No.	Ty1	Tm 2a	Sw5	I3	Mi 23	J3	Ph3	Sm-565	Ve2	Cf9
118	S	H	H	S	H	H	H	H	R	S
119	S	R	S	S	H	R	S	S	R	S
120	S	H	S	S	H	H	S	H	R	S
121	S	H	H	S	R	H	H	R	R	S
122	S	R	S	S	S	S	H	S	S	H
123	H	H	S	S	S	S	R	S	S	H
124	R	S	S	S	S	S	H	S	S	R
125	H	R	S	S	S	S	R	S	S	H
126	H	H	S	S	S	S	H	S	S	H
127	H	H	S	S	S	S	H	S	S	R
128	H	R	S	S	S	S	R	S	S	S
129	H	H	S	S	S	S	H	S	S	S
130	R	S	S	S	S	S	H	S	S	R
131	H	R	S	S	S	S	H	S	S	S
132	R	R	S	S	S	S	H	S	S	H
133	H	S	S	S	S	S	H	S	S	R
134	S	H	S	S	S	S	H	S	S	H
135	H	S	S	S	S	S	H	S	S	R
136	R	R	S	S	S	S	H	S	S	H
137	H	R	S	S	S	S	S	S	S	R
138	R	R	S	S	S	S	R	S	S	R
139	n/a	H	S	S	S	S	H	S	S	H
140	S	R	S	S	S	S	R	S	S	R
141	H	R	S	S	S	S	H	S	S	R
142	S	S	S	S	S	S	H	S	S	H
143	S	H	S	S	S	S	S	S	S	H
144	H	S	S	S	S	S	S	S	S	H
145	R	S	S	S	S	S	H	S	S	R
146	R	S	S	S	S	S	S	S	S	S
147	R	R	S	S	S	S	H	S	S	H
148	H	S	S	S	S	S	S	S	S	S
149	R	S	S	S	S	S	R	S	S	R
150	R	H	S	S	S	S	H	S	S	R
151	R	H	S	S	S	S	R	S	S	H
152	S	R	S	S	S	S	R	S	S	S
153	R	H	S	S	S	S	S	S	S	R
154	S	H	S	S	S	S	R	S	S	R
155	R	S	S	S	S	S	H	S	S	H
156	R	S	S	S	S	S	S	S	S	R
157	R	S	S	S	S	S	S	S	S	R
158	S	H	S	S	S	S	R	S	S	R
159	S	H	S	S	S	S	R	S	S	R
160	R	H	S	S	S	S	H	S	S	H
161	S	R	S	S	S	S	R	S	S	H
162	H	H	S	S	S	S	H	S	S	R
163	S	H	S	S	S	H	S	S	R	S
164	S	H	S	S	S	H	S	S	R	S
165	S	S	S	S	S	S	S	S	R	S
166	S	H	S	S	S	H	S	S	R	S
167	S	S	S	S	S	S	S	S	R	S
168	S	R	S	S	S	R	S	S	R	S
169	S	H	S	S	S	H	S	S	R	S
170	S	S	S	S	S	S	S	S	R	S
171	S	S	S	S	S	S	S	S	R	S
172	S	H	S	S	S	H	S	S	R	S
173	S	R	S	S	S	R	S	S	R	S
174	S	S	S	S	S	S	S	S	R	S
175	S	S	S	S	S	S	S	S	R	S
176	S	S	S	S	S	S	S	S	R	S
177	S	H	S	S	S	H	S	S	R	S
178	S	S	S	S	S	S	S	S	R	S
179	S	R	S	S	S	R	S	S	R	S

No.	Ty1	Tm 2a	Sw5	I3	Mi 23	J3	Ph3	Sm-565	Ve2	Cf9
501	S	R	R	S	R	R	R	S	R	S
502	S	R	S	S	H	R	R	S	R	S
503	S	R	H	S	S	R	R	S	R	S
504	S	R	H	S	H	R	R	S	R	S
505	S	R	R	S	H	R	R	S	R	S
506	S	R	H	S	H	R	R	S	R	S
507	S	R	H	S	S	R	R	S	R	S
508	S	R	S	S	S	R	R	S	R	S
509	S	R	H	S	R	R	R	S	R	S
510	S	R	S	S	H	R	R	S	R	S
511	S	R	S	S	R	R	R	S	R	S
512	S	R	R	S	H	R	R	S	R	S
513	S	R	H	S	H	R	R	S	R	S
514	S	R	S	S	H	R	R	S	R	S
515	S	R	R	S	H	R	R	S	R	S
516	S	R	H	S	H	R	R	S	R	S
517	S	S	S	S	S	S	S	S	R	S
518	S	H	S	S	S	S	S	H	R	S
519	S	R	S	S	S	S	S	R	R	S
520	S	H	S	S	S	S	S	H	R	S
521	S	S	S	S	S	S	S	S	R	S
522	S	S	S	S	S	S	S	S	R	S
523	S	R	S	S	S	S	S	R	R	S
524	S	S	S	S	S	S	S	R	R	S
525	S	R	S	S	S	S	S	S	R	S
526	S	H	S	S	S	S	S	S	R	S
527	S	H	S	S	S	S	S	H	R	S
528	S	S	S	S	S	S	S	H	R	S
529	S	S	S	S	S	S	S	H	R	S
530	S	R	S	S	S	S	S	H	R	S
531	S	R	S	S	S	S	S	H	R	S
532	S	H	S	S	S	S	S	H	R	S
533	S	S	S	S	S	S	S	H	R	S
534	S	R	S	S	S	S	S	S	R	S
535	S	H	S	S	S	S	S	S	R	S
536	S	H	S	S	S	S	S	H	R	S
537	S	S	S	S	S	S	S	H	R	S
538	S	H	S	S	S	S	S	R	R	S
539	S	H	S	S	S	S	S	R	R	S
540	S	S	S	S	S	S	S	H	R	S
541	S	S	S	S	S	S	S	H	R	S
542	S	R	S	S	S	S	S	S	R	S
543	S	H	S	S	S	S	S	R	R	S
544	S	H	S	S	S	S	S	R	R	S
545	S	H	S	S	S	S	S	R	R	S
546	S	S	S	S	S	S	S	H	R	S
547	S	R	S	S	S	S	S	H	R	S
548	S	H	S	S	S	S	S	H	R	S
549	S	S	S	S	S	S	S	H	R	S
550	S	S	S	S	S	S	S	R	R	S
551	S	R	S	S	S	S	S	R	R	S
552	S	H	S	S	S	S	S	H	R	S
553	S	H	S	S	S	S	S	R	R	S
554	S	R	S	S	S	S	S	R	R	S
555	S	H	S	S	S	S	S	H	R	S
556	S	R	S	S	S	S	S	R	R	S
557	S	H	S	S	S	S	S	R	R	S
558	S	S	S	S	R	S	S	R	R	S
559	S	S	S	S	R	S	S	R	R	S
560	S	S	S	S	H	S	S	R	H	S
561	S	S	S	S	S	S	S	R	R	S
562	S	S	S	S	H	S	S	R	H	S

No.	Ty1	Tm 2a	Sw5	I3	Mi 23	J3	Ph3	Sm-565	Ve2	Cf9
180	S	H	S	S	S	H	S	S	R	S
181	S	S	S	S	S	S	S	S	R	S
182	S	R	S	S	S	R	S	S	R	S
183	S	H	S	S	S	H	S	S	R	S
184	S	R	S	S	S	R	S	S	R	S
185	S	H	S	S	S	H	S	S	R	S
186	S	H	S	S	S	H	S	S	R	S
187	S	R	S	S	S	R	S	S	R	S
188	S	S	S	S	S	S	S	S	R	S
189	S	H	S	S	S	H	S	S	R	S
190	S	R	S	S	S	R	S	S	R	S
191	S	S	S	S	S	S	S	S	R	S
192	S	R	S	S	S	R	S	S	R	S
193	S	H	S	S	S	H	S	S	R	S
194	S	H	S	S	S	H	S	S	R	S
195	S	R	S	S	S	R	S	S	R	S
196	S	S	S	S	S	S	S	S	R	S
197	S	H	S	S	S	H	S	S	R	S
198	S	H	S	S	S	H	S	S	R	S
199	S	R	S	S	S	R	S	S	R	S
200	S	H	S	S	S	H	S	S	R	S
201	S	S	S	S	S	S	S	S	R	S
202	S	R	S	S	S	R	S	S	R	S
203	S	S	S	S	S	S	S	S	R	S
204	S	S	S	S	S	S	S	S	R	S
205	S	S	S	S	S	S	S	S	R	S
206	S	H	S	S	S	H	S	S	R	S
207	S	H	S	S	S	H	S	S	R	S
208	S	S	S	S	S	S	S	S	R	S
209	S	H	S	S	S	H	S	S	R	S
210	S	H	S	S	S	H	S	S	R	S
211	S	H	S	S	S	H	S	S	R	S
212	S	H	S	S	S	H	S	S	R	S
213	S	H	S	S	S	H	S	S	R	S
214	S	H	S	S	S	H	S	S	R	S
215	S	S	S	S	S	S	S	S	R	S
216	S	R	S	S	S	R	S	S	R	S
217	S	S	S	S	S	S	S	S	R	S
218	S	H	S	S	S	H	S	S	R	S
219	S	R	S	S	S	R	S	S	R	S
220	S	H	S	S	S	H	S	S	R	S
221	S	H	S	S	S	H	S	S	R	S
222	S	S	S	S	S	S	S	S	R	S
223	S	R	S	S	S	R	S	S	R	S
224	S	S	S	S	S	S	S	S	R	S
225	S	S	S	S	S	S	S	S	R	S
226	S	H	S	S	S	H	S	S	R	S
227	S	H	S	S	S	H	S	S	R	S
228	S	S	S	S	S	S	S	S	R	S
229	S	R	S	S	S	R	S	S	R	S
230	S	S	S	S	S	S	S	S	R	S
231	S	H	S	S	S	H	S	S	R	S
232	S	H	S	S	S	H	S	S	R	S
233	S	H	S	S	S	H	S	S	R	S
234	S	R	S	S	S	R	S	S	R	S
235	S	S	S	S	S	S	S	S	R	S
236	S	H	S	S	S	H	S	S	R	S
237	S	H	S	S	S	H	S	S	R	S
238	S	S	S	S	S	S	S	S	R	S
239	S	H	S	S	S	H	S	S	R	S
240	S	H	S	S	S	H	S	S	R	S
241	S	S	S	S	S	S	S	S	R	S

No.	Ty1	Tm 2a	Sw5	I3	Mi 23	J3	Ph3	Sm-565	Ve2	Cf9
563	S	S	S	S	H	S	S	R	H	S
564	S	S	S	S	S	S	S	R	H	S
565	S	S	S	S	H	S	S	R	S	S
566	S	S	S	S	H	S	S	R	S	S
567	S	S	S	S	H	S	S	R	H	S
568	S	S	S	S	H	S	S	R	H	S
569	S	S	S	S	R	S	S	R	H	S
570	S	S	S	S	H	S	S	R	H	S
571	S	S	S	S	R	S	S	R	H	S
572	S	S	S	S	H	S	S	R	R	S
573	S	S	S	S	H	S	S	R	S	S
574	S	S	S	S	H	S	S	R	H	S
575	S	S	S	S	S	S	S	R	S	S
576	S	S	S	S	S	S	S	R	S	S
577	S	S	S	S	R	S	S	R	H	S
578	S	S	S	S	H	S	S	R	n/a	S
579	S	S	S	S	H	S	S	R	S	S
580	S	S	S	S	S	S	S	R	H	S
581	S	S	S	S	S	S	S	R	H	S
582	S	S	S	S	H	S	S	R	H	S
583	S	S	S	S	R	S	S	R	H	S
584	S	S	S	S	H	S	S	R	H	S
585	S	S	S	S	S	S	S	R	H	S
586	S	S	S	S	S	S	S	R	S	S
587	S	S	S	S	H	S	S	R	R	S
588	S	S	S	S	H	S	S	R	H	S
589	S	S	S	S	S	S	S	R	H	S
590	S	S	S	S	H	S	S	R	H	S
591	S	S	S	S	R	S	S	R	H	S
592	S	S	S	S	R	S	S	R	S	S
593	S	S	S	S	R	S	S	R	H	S
594	S	S	S	S	H	S	S	R	S	S
595	S	S	S	S	S	S	S	R	S	S
596	S	S	S	S	H	S	S	R	H	S
597	S	S	S	S	n/a	S	S	R	H	S
598	S	S	S	S	S	S	S	R	R	S
599	S	S	S	S	H	S	S	R	H	S
600	S	S	S	S	H	S	S	R	R	S
601	S	S	S	S	S	S	S	R	S	S
602	S	S	S	S	n/a	S	S	R	H	S
603	S	S	S	S	S	S	S	R	H	S
604	S	S	S	S	H	S	S	R	H	S
605	S	S	S	S	R	S	S	R	H	S
606	S	R	S	S	S	R	H	S	S	S
607	S	H	S	S	S	H	H	S	S	S
608	S	S	S	S	S	S	H	S	S	S
609	S	H	S	S	S	H	S	S	S	S
610	S	H	S	S	S	H	H	S	S	S
611	S	R	S	S	S	R	S	S	S	S
612	S	S	S	S	S	S	H	S	S	S
613	S	H	S	S	S	H	S	S	S	S
614	S	H	S	S	S	H	H	S	S	S
615	S	H	S	S	S	H	H	S	S	S
616	S	H	S	S	S	H	H	S	S	S
617	S	H	S	S	S	H	H	S	S	S
618	S	S	S	S	S	S	H	S	S	S
619	S	H	S	S	S	H	H	S	S	S
620	S	R	S	S	S	R	H	S	S	S
621	S	S	S	S	S	S	H	S	S	S
622	S	S	S	S	S	S	S	S	S	S
623	S	H	S	S	S	H	H	S	S	S
624	S	S	S	S	S	S	H	S	S	S

No.	Ty1	Tm 2a	Sw5	I3	Mi 23	J3	Ph3	Sm-565	Ve2	Cf9
242	S	R	S	S	S	R	S	S	R	S
243	S	H	S	S	S	H	S	S	R	S
244	S	R	S	S	S	R	S	S	R	S
245	S	S	S	S	S	S	S	S	R	S
246	S	H	S	S	S	H	S	S	R	S
247	S	R	S	S	S	R	S	S	R	S
248	S	H	S	S	S	H	S	S	R	S
249	S	H	S	S	S	H	S	S	R	S
250	S	R	S	S	S	R	S	S	R	S
251	S	H	S	S	S	H	S	S	R	S
252	S	H	S	S	S	H	S	S	R	S
253	S	H	S	S	S	H	S	S	R	S
254	S	S	S	S	S	S	S	S	R	S
255	S	H	S	S	S	H	S	S	R	S
256	S	R	S	S	S	R	S	S	R	S
257	S	R	S	S	S	R	S	S	R	S
258	S	H	S	S	S	H	S	S	R	S
259	S	H	S	S	S	H	S	S	R	S
260	S	H	S	S	S	H	S	S	R	S
261	S	H	S	S	S	H	S	S	R	S
262	S	S	S	S	S	S	S	S	R	S
263	S	R	S	S	S	R	S	S	R	S
264	S	H	S	S	S	H	S	S	R	S
265	S	S	S	S	S	S	S	S	R	S
266	S	H	S	S	S	H	S	S	R	S
267	S	H	S	S	S	H	S	S	R	S
268	S	H	S	S	S	H	S	S	R	S
269	S	H	S	S	S	H	S	S	R	S
270	S	H	S	S	S	H	S	S	R	S
271	S	R	S	S	S	R	S	S	R	S
272	S	H	S	S	S	H	S	S	R	S
273	S	H	S	S	S	H	S	S	R	S
274	S	S	S	S	S	H	S	S	R	S
275	S	R	S	S	S	R	S	S	R	S
276	S	H	S	S	S	H	S	S	R	S
277	S	H	S	S	S	H	S	S	R	S
278	S	H	S	S	S	H	S	S	R	S
279	S	R	S	S	S	R	S	S	R	S
280	S	H	S	S	S	H	S	S	R	S
281	S	H	S	S	S	H	S	S	R	S
282	S	R	S	S	S	R	S	S	R	S
283	S	H	S	S	S	H	S	S	R	S
284	S	R	S	S	S	R	S	S	R	S
285	S	S	S	S	S	S	S	S	R	S
286	S	H	S	S	S	H	S	S	R	S
287	S	R	S	S	S	R	S	S	R	S
288	S	H	S	S	S	H	S	S	R	S
289	S	R	S	S	S	R	S	S	R	S
290	S	H	S	S	S	H	S	S	R	S
291	S	S	S	S	S	S	S	S	R	S
292	S	S	S	S	S	S	S	S	R	S
293	S	R	S	S	S	R	S	S	R	S
294	S	S	S	S	S	S	S	S	R	S
295	S	H	S	S	S	H	S	S	R	S
296	S	S	S	S	S	S	S	S	R	S
297	S	S	S	S	S	S	S	S	R	S
298	S	H	S	S	S	H	S	S	R	S
299	S	S	S	S	S	S	S	S	R	S
300	S	H	S	S	S	H	S	S	R	S
301	S	S	S	S	S	S	S	S	R	S
302	S	R	S	S	S	R	S	S	R	S
303	S	H	S	S	S	H	S	S	R	S

No.	Ty1	Tm 2a	Sw5	I3	Mi 23	J3	Ph3	Sm-565	Ve2	Cf9
625	S	H	S	S	S	H	H	S	S	S
626	S	S	S	S	S	S	H	S	S	S
627	S	S	S	S	S	S	H	S	S	S
628	S	S	S	S	S	S	H	S	S	S
629	S	R	S	S	S	R	S	S	S	S
630	S	H	S	S	S	H	H	S	S	S
631	S	R	S	S	S	R	H	S	S	S
632	S	S	S	S	S	S	H	S	S	S
633	S	R	S	S	S	R	H	S	S	S
634	S	R	S	S	S	R	H	S	S	S
635	S	H	S	S	S	H	H	S	S	S
636	S	H	S	S	S	H	H	S	S	S
637	S	S	S	S	S	H	S	S	S	S
638	S	H	S	S	S	H	H	S	S	S
639	S	S	S	S	S	S	H	S	S	S
640	S	H	S	S	S	H	H	S	S	S
641	S	H	S	S	S	H	H	S	S	S
642	S	S	S	S	S	S	S	S	S	S
643	S	S	S	S	S	S	S	S	S	S
644	S	S	S	S	S	S	H	S	S	S
645	S	H	S	S	S	H	H	S	S	S
646	S	S	S	S	S	S	H	S	S	S
647	S	R	S	S	S	R	H	S	S	S
648	S	S	S	S	S	S	H	S	S	S
649	S	H	S	S	S	H	H	S	S	S
650	S	H	S	S	S	H	H	S	S	S
651	R	S	S	H	S	S	S	H	R	S
652	H	H	R	R	H	H	S	H	R	S
653	R	H	H	H	S	H	S	H	R	S
654	H	H	H	H	H	H	S	H	R	S
655	n/a	R	R	S	H	R	S	R	R	S
656	H	H	H	H	H	H	S	S	R	S
657	H	H	R	H	H	H	S	H	R	S
658	H	H	H	S	H	H	S	H	R	S
659	H	S	H	H	H	S	S	H	R	S
660	H	S	H	H	H	S	S	H	R	S
661	R	H	H	H	S	H	S	H	R	S
662	H	H	S	H	H	H	S	S	R	S
663	H	H	H	S	H	H	S	R	R	S
664	S	R	H	H	n/a	R	S	H	R	S
665	R	S	H	R	S	S	S	H	R	S
666	R	S	R	H	H	S	S	H	R	S
667	H	S	H	H	H	S	S	H	R	S
668	R	H	H	H	S	H	S	H	R	S
669	R	S	H	H	S	S	S	H	R	S
670	R	R	S	H	S	R	S	n/a	R	S
671	R	R	S	H	S	R	S	H	R	S
672	H	H	H	R	H	H	S	H	R	S
673	R	R	R	R	S	R	S	R	R	S
674	R	R	S	S	S	R	S	S	R	S
675	H	S	R	H	H	S	S	H	R	S
676	S	H	S	S	S	H	S	S	H	H
677	S	H	S	S	S	H	S	S	H	H
678	S	S	S	S	S	S	S	S	S	H
679	S	S	S	S	S	S	S	S	S	R
680	S	H	S	S	S	H	S	S	S	R
681	S	H	S	S	S	H	S	S	H	H
682	S	H	S	S	S	H	S	S	H	H
683	S	R	S	S	S	R	S	S	R	R
684	S	S	S	S	S	S	S	S	S	R
685	S	H	S	S	S	H	S	S	S	H
686	S	S	S	S	S	S	S	S	H	S

No.	Ty1	Tm 2a	Sw5	I3	Mi 23	J3	Ph3	Sm-565	Ve2	Cf9
304	S	H	S	S	S	H	S	S	R	S
305	S	S	S	S	S	S	S	S	R	S
306	S	S	S	S	S	S	S	S	R	S
307	S	R	S	S	S	R	S	S	R	S
308	S	S	S	S	S	S	S	S	R	S
309	S	H	S	S	S	H	S	S	R	S
310	S	S	S	S	S	S	S	S	R	S
311	S	S	S	S	S	S	S	S	R	S
312	S	R	S	S	S	R	S	S	R	S
313	S	H	S	S	S	H	S	S	R	S
314	S	H	S	S	S	H	S	S	R	S
315	S	R	S	S	S	R	S	S	R	S
316	S	H	S	S	S	H	S	S	R	S
317	S	R	S	S	S	R	S	S	R	S
318	S	H	S	S	S	H	S	S	R	S
319	S	S	S	S	S	S	S	S	R	S
320	S	R	S	S	S	R	S	S	R	S
321	S	H	S	S	S	H	S	S	R	S
322	S	S	S	S	S	S	S	S	R	S
323	S	S	S	S	S	S	S	S	R	S
324	S	S	S	S	S	S	S	S	R	S
325	S	H	S	S	S	H	S	S	R	S
326	S	H	S	S	S	H	S	S	R	S
327	S	S	S	S	S	S	S	S	R	S
328	S	H	S	S	S	H	S	S	R	S
329	S	S	S	S	S	S	S	S	R	S
330	S	H	S	S	S	H	S	S	R	S
331	S	H	S	S	S	H	S	S	R	S
332	S	S	S	S	S	S	S	S	R	S
333	S	H	S	S	S	H	S	S	R	S
334	S	H	S	S	S	H	S	S	R	S
335	S	R	S	S	S	R	S	S	R	S
336	S	S	S	S	S	S	S	S	R	S
337	S	R	S	S	S	R	S	S	R	S
338	S	H	S	S	S	H	S	S	R	S
339	S	R	S	S	S	R	S	S	R	S
340	S	H	S	S	S	H	S	S	R	S
341	S	H	S	S	S	H	S	S	R	S
342	S	S	S	S	S	S	S	S	R	S
343	S	H	S	S	S	H	S	S	R	S
344	S	R	H	S	S	R	H	S	R	S
345	S	R	H	S	S	R	H	S	R	S
346	S	R	S	S	S	R	S	S	R	S
347	S	R	S	S	S	R	S	S	R	S
348	S	R	H	S	S	R	H	S	R	S
349	S	R	S	S	S	R	S	S	R	S
350	S	R	S	S	S	R	S	S	R	S
351	S	R	R	S	S	R	H	S	R	S
352	S	R	H	S	S	R	H	S	R	S
353	S	R	S	S	S	R	S	S	R	S
354	S	R	S	S	S	R	S	S	R	S
355	S	R	R	S	S	R	R	S	R	S
356	S	R	R	S	S	R	R	S	R	S
357	S	R	R	S	S	R	R	S	R	S
358	S	R	H	S	S	R	H	S	R	S
359	S	R	R	S	S	R	R	S	R	S
360	S	R	H	S	S	R	H	S	R	S
361	S	R	R	S	S	R	R	S	R	S
362	S	R	H	S	S	R	H	S	R	S
363	S	R	S	S	S	R	S	S	R	S
364	S	R	R	S	S	R	R	S	R	S
365	S	R	H	S	S	R	H	S	R	S

No.	Ty1	Tm 2a	Sw5	I3	Mi 23	J3	Ph3	Sm-565	Ve2	Cf9
687	S	H	S	S	S	H	S	S	S	H
688	S	R	S	S	S	R	S	S	R	H
689	S	H	S	S	S	H	S	S	S	H
690	S	H	S	S	S	H	S	S	H	S
691	S	H	S	S	S	H	S	S	S	H
692	S	H	S	S	S	H	S	S	R	H
693	S	S	S	S	S	S	S	S	S	H
694	S	R	S	S	S	R	S	S	R	R
695	S	H	S	S	S	H	S	S	S	H
696	S	S	S	S	S	S	S	S	S	R
697	S	H	S	S	S	H	S	S	H	H
698	S	S	S	S	S	S	S	S	H	R
699	S	H	S	S	S	H	S	S	H	S
700	S	H	S	S	S	H	S	S	n/a	H
701	S	H	S	S	S	H	S	S	H	S
702	S	R	S	S	S	R	S	S	R	H
703	S	H	S	S	S	H	S	S	R	S
704	S	H	S	S	S	H	S	S	H	S
705	S	H	S	S	S	H	S	S	H	H
706	S	R	S	S	S	R	S	S	H	S
707	S	R	S	S	S	R	S	S	R	R
708	S	R	S	S	S	R	S	S	H	H
709	S	S	S	S	S	S	S	S	S	R
710	S	R	S	S	S	R	S	S	H	H
711	S	S	S	S	S	S	S	S	H	S
712	S	H	S	S	S	H	S	S	S	S
713	S	R	S	S	S	R	S	S	R	R
714	S	H	S	S	S	H	S	S	S	H
715	S	R	S	S	S	R	S	S	R	S
716	S	S	S	S	S	S	S	S	S	H
717	S	S	S	S	S	S	S	S	H	H
718	S	H	S	S	S	H	S	S	H	R
719	S	S	S	S	S	S	S	S	S	H
720	S	H	S	S	S	H	S	S	R	H
721	S	H	S	S	S	H	S	S	R	S
722	H	H	H	S	H	H	H	S	H	S
723	R	S	S	S	S	R	R	S	H	S
724	S	S	H	S	R	R	H	S	H	S
725	R	R	R	S	S	S	S	S	S	S
726	R	H	H	S	S	H	H	S	H	S
727	H	H	R	S	H	H	S	S	S	S
728	H	S	H	S	H	R	H	S	R	S
729	S	S	H	S	R	R	H	S	S	S
730	H	S	R	S	H	R	S	S	R	S
731	H	H	S	S	H	H	R	S	R	S
732	R	H	S	S	S	R	H	S	S	S
733	H	H	H	S	H	H	H	S	H	S
734	R	H	H	S	S	H	H	S	H	S
735	H	H	S	S	H	H	R	S	H	S
736	H	S	H	S	H	R	H	S	R	S
737	H	H	H	S	H	H	S	S	H	S
738	S	H	H	S	R	H	H	S	H	S
739	H	H	S	S	H	H	R	S	H	S
740	H	H	S	S	H	H	R	S	H	S
741	S	S	H	S	R	R	H	S	H	S
742	R	S	R	S	S	H	S	S	H	S
743	H	H	R	S	H	H	S	S	H	S
744	H	H	H	S	H	H	H	S	R	S
745	H	H	R	S	H	H	S	S	H	S
746	R	S	R	S	S	R	S	S	H	S
747	S	S	R	S	R	R	S	S	H	S
748	S	R	R	S	R	S	S	S	R	S

No.	Ty1	Tm 2a	Sw5	I3	Mi 23	J3	Ph3	Sm-565	Ve2	Cf9
366	S	R	H	S	S	R	H	S	R	S
367	S	R	S	S	S	R	S	S	R	S
368	S	R	R	S	S	R	R	S	R	S
369	S	R	R	S	S	R	R	S	R	S
370	S	R	S	S	S	R	S	S	R	S
371	S	R	S	S	S	R	S	S	R	S
372	S	R	H	S	S	R	H	S	R	S
373	S	R	S	S	S	R	S	S	R	S
374	S	R	H	S	S	R	H	S	R	S
375	S	R	H	S	S	R	H	S	R	S
376	S	R	R	S	S	R	R	S	R	S
377	S	R	H	S	S	R	H	S	R	S
378	S	R	H	S	S	R	H	S	R	S
379	S	R	H	S	S	R	H	S	R	S
380	S	R	H	S	S	R	H	S	R	S
381	S	R	H	S	S	R	H	S	R	S
382	S	R	H	S	S	R	H	S	R	S
383	S	R	H	S	S	R	H	S	R	S

No.	Ty1	Tm 2a	Sw5	I3	Mi 23	J3	Ph3	Sm-565	Ve2	Cf9
749	S	S	S	S	R	R	R	S	H	S
750	S	H	S	S	R	H	R	S	R	S
751	R	S	H	S	S	R	H	S	R	S
752	R	H	H	S	S	H	H	S	R	S
753	S	R	S	S	R	S	R	S	S	S
754	H	H	H	S	H	H	H	S	H	S
755	H	H	S	S	H	H	R	S	H	S
756	H	S	H	S	H	R	H	S	H	S
757	R	S	H	S	S	R	H	S	S	S
758	H	H	H	S	H	H	H	S	H	S
759	H	R	H	S	H	S	H	S	R	S
760	R	H	H	S	S	H	H	S	R	S
761	R	H	H	S	S	H	H	S	H	S
762	R	H	S	S	S	H	R	S	S	S
763	n/a	S	H	S	H	R	H	S	R	S
764	H	H	S	S	H	H	R	S	S	S
765	R	R	R	S	S	S	S	S	H	S

표 9. 순천대학교 86점의 시료에 대하여, 원에 형질 관련 1개의 마커를 이용한 서비스 결과

No.	Ms	No.	Ms	No.	Ms	No.	Ms	No.	Ms	No.	Ms	No.	Ms	No.	Ms
1	H	12	Ms	23	Ms	34	Ms	45	Ms	56	Ms	67	H	78	Ms
2	Ms	13	Ms	24	Ms	35	Ms	46	Ms	57	Ms	68	H	79	Ms
3	Ms	14	Ms	25	Ms	36	Ms	47	Ms	58	Ms	69	Ms	80	Ms
4	Ms	15	Ms	26	Ms	37	Ms	48	Ms	59	Ms	70	Ms	81	Ms
5	Ms	16	Ms	27	Ms	38	Ms	49	Ms	60	Ms	71	Ms	82	ms
6	Ms	17	Ms	28	Ms	39	Ms	50	Ms	61	Ms	72	Ms	83	H
7	H	18	Ms	29	Ms	40	Ms	51	Ms	62	Ms	73	Ms	84	H
8	H	19	Ms	30	Ms	41	Ms	52	Ms	63	Ms	74	Ms	85	ms
9	H	20	Ms	31	Ms	42	Ms	53	Ms	64	Ms	75	Ms	86	H
10	H	21	Ms	32	Ms	43	Ms	54	Ms	65	H	76	Ms		
11	Ms	22	Ms	33	Ms	44	Ms	55	Ms	66	H	77	Ms		

표 10. 순천대학교 1,030점의 시료에 대하여, 병 관련 8개의 마커를 이용한 서비스 결과

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-565	Ph3	No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-565	Ph3
1	R	S	S	S	R	S	S	H	516	S	S	H	n/a	R	H	R	S
2	H	H	S	S	R	H	S	H	517	S	H	n/a	H	R	H	R	S
3	H	H	S	S	R	H	S	H	518	S	H	H	R	R	H	R	S
4	S	S	S	S	R	S	S	H	519	S	S	H	S	R	H	R	S
5	R	R	S	S	R	R	S	H	520	S	S	H	S	R	R	R	S
6	S	S	S	S	R	S	S	H	521	S	R	H	H	R	S	R	S
7	H	H	S	S	R	H	S	R	522	S	H	R	S	R	H	R	S
8	H	H	S	S	R	H	S	H	523	S	H	R	H	R	S	R	S
9	H	H	S	S	R	H	S	S	524	S	R	n/a	H	R	S	R	S
10	S	H	S	S	R	R	S	H	525	S	n/a	H	n/a	R	S	R	S
11	R	S	S	S	R	H	S	R	526	S	S	H	R	R	R	R	S
12	H	S	S	S	R	S	S	H	527	S	S	H	H	R	R	R	S
13	H	H	S	S	R	S	S	H	528	S	S	H	R	R	R	R	S
14	S	H	S	S	R	R	S	H	529	S	H	H	H	R	H	R	S
15	S	H	S	S	R	H	S	H	530	S	R	n/a	n/a	R	H	R	S
16	H	H	S	S	R	H	S	H	531	S	R	H	S	R	H	R	S
17	H	H	S	S	R	R	S	H	532	S	S	H	S	R	R	R	S
18	H	H	S	S	R	H	S	S	533	S	R	n/a	R	R	H	R	S
19	S	S	S	S	R	H	S	R	534	S	S	R	S	R	H	R	S
20	H	R	S	S	R	H	S	S	535	S	H	H	R	R	H	R	S
21	H	R	S	S	R	R	S	H	536	S	R	H	H	R	S	R	S
22	H	R	S	S	R	R	S	H	537	S	H	n/a	H	R	S	R	S
23	H	S	S	S	R	H	S	H	538	S	S	H	R	R	H	R	S
24	H	H	S	S	R	S	S	H	539	S	S	R	H	R	R	R	S

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-5 65	Ph3
25	S	H	S	S	R	S	S	R
26	H	H	S	S	R	R	S	S
27	H	H	S	S	R	H	S	R
28	H	H	S	S	R	R	S	S
29	R	S	S	S	R	H	S	H
30	S	R	S	S	R	R	S	R
31	H	R	S	S	R	H	S	H
32	H	H	S	S	R	H	S	H
33	H	S	S	S	R	H	S	S
34	H	H	S	S	R	H	S	S
35	R	S	S	S	R	S	S	H
36	H	R	S	S	R	H	S	R
37	H	R	S	S	R	R	S	S
38	S	R	S	S	R	R	S	H
39	H	R	S	S	R	H	S	H
40	R	H	S	S	R	S	S	H
41	H	R	S	S	R	H	S	S
42	H	H	S	S	R	H	S	H
43	S	H	S	S	R	H	S	H
44	S	H	S	S	R	H	S	S
45	H	R	S	S	R	H	S	S
46	S	H	S	S	R	H	S	H
47	H	H	S	S	R	H	S	H
48	R	H	S	S	R	H	S	S
49	R	R	S	S	R	H	S	R
50	H	S	S	S	R	S	S	H
51	S	S	S	S	R	S	S	H
52	S	S	S	S	R	H	S	H
53	S	H	S	S	R	H	S	H
54	S	H	S	S	R	H	S	R
55	H	R	S	S	R	R	S	S
56	H	R	S	S	R	R	S	R
57	R	S	S	S	R	S	S	R
58	S	H	S	S	R	R	S	R
59	S	R	S	S	R	R	S	H
60	S	R	S	S	R	S	S	R
61	S	H	S	S	R	H	S	H
62	H	H	S	S	R	H	S	R
63	H	H	S	S	R	R	S	H
64	n/a	H	S	S	R	R	S	H
65	H	R	S	S	R	R	S	H
66	n/a	R	S	S	R	R	S	R
67	S	S	S	S	R	S	S	S
68	R	R	S	S	R	R	S	H
69	R	H	S	S	R	R	S	S
70	S	R	S	S	R	R	S	H
71	H	H	S	S	R	H	S	H
72	R	S	S	S	R	H	S	S
73	R	S	S	S	R	S	S	H
74	H	H	S	S	R	H	S	H
75	H	R	S	S	R	R	S	R
76	H	H	S	S	R	H	S	H
77	S	H	S	S	R	H	S	S
78	R	S	S	S	R	R	S	S
79	S	R	S	S	R	R	S	H
80	H	H	S	S	R	R	S	S
81	H	H	S	S	R	S	S	H
82	R	R	S	S	R	H	S	H
83	H	S	S	S	R	H	S	R
84	R	H	S	S	R	H	S	H
85	S	R	S	S	R	S	S	S
86	S	H	S	S	R	H	S	H

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-5 65	Ph3
540	H	R	H	S	H	H	S	S
541	S	R	R	S	H	H	H	S
542	H	R	R	S	H	H	S	S
543	R	R	R	S	R	R	S	S
544	S	R	H	S	H	H	H	S
545	H	R	H	S	S	S	H	S
546	H	R	R	S	R	R	R	S
547	H	R	S	S	H	H	R	S
548	H	R	H	S	H	H	H	S
549	H	R	H	S	H	H	H	S
550	H	R	R	S	H	H	R	S
551	H	R	S	S	S	S	H	S
552	R	R	H	S	H	H	H	S
553	R	R	S	S	H	H	S	S
554	S	R	H	S	H	H	R	S
555	H	R	H	S	S	S	R	S
556	H	R	H	S	R	R	S	S
557	R	R	H	S	S	S	R	S
558	H	R	R	S	R	R	H	S
559	S	R	R	S	S	S	R	S
560	S	R	R	S	R	R	H	S
561	S	R	H	S	H	H	S	S
562	R	R	H	S	R	R	H	S
563	H	R	H	S	S	S	S	S
564	R	R	S	S	H	H	R	S
565	S	R	S	S	H	H	H	S
566	R	R	S	S	H	H	R	S
567	H	R	S	S	S	S	R	S
568	H	R	H	S	H	H	H	S
569	S	R	S	S	H	H	H	S
570	R	R	S	S	R	R	H	S
571	H	R	S	S	R	R	H	S
572	H	R	S	S	S	S	H	S
573	S	R	H	S	H	H	S	S
574	H	R	S	S	H	H	H	S
575	S	R	S	S	R	R	R	S
576	R	R	H	S	H	H	R	S
577	R	R	S	S	H	H	R	S
578	S	R	S	S	n/a	H	S	S
579	H	R	H	S	H	H	R	S
580	R	R	R	S	H	H	S	S
581	H	R	R	S	S	S	S	S
582	H	R	H	S	R	R	n/a	S
583	H	R	R	S	n/a	S	H	S
584	H	R	H	S	S	S	H	S
585	R	R	R	S	S	S	H	S
586	R	R	H	S	R	R	H	S
587	H	R	S	S	S	S	R	S
588	S	H	S	S	S	S	R	S
589	S	S	S	S	R	S	R	S
590	S	S	S	S	R	S	R	S
591	S	H	S	S	H	S	R	S
592	S	S	S	S	R	S	R	S
593	S	H	S	S	H	S	R	S
594	S	H	S	S	H	S	R	S
595	S	H	S	S	S	S	R	S
596	S	S	S	S	R	S	R	S
597	S	S	S	S	H	S	R	S
598	S	H	S	S	S	S	R	S
599	S	H	S	S	S	S	R	S
600	S	R	S	S	H	S	R	S
601	S	H	S	S	S	S	R	S

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-5 65	Ph3
87	R	S	S	S	R	H	S	S
88	n/a	R	S	S	R	H	S	H
89	H	S	S	S	R	S	S	R
90	H	H	S	S	R	R	S	H
91	S	H	S	S	R	R	S	S
92	S	n/a	S	S	R	R	S	H
93	S	R	S	S	R	R	S	H
94	S	R	S	S	R	H	S	H
95	R	n/a	S	S	R	H	S	H
96	H	R	S	S	R	R	H	S
97	H	S	S	S	H	H	S	S
98	H	R	S	S	H	H	H	S
99	H	H	S	S	H	H	H	S
100	S	R	S	S	R	R	R	S
101	H	H	S	S	H	H	S	S
102	H	H	S	S	R	R	H	S
103	H	R	S	S	R	R	S	S
104	R	R	S	S	R	R	n/a	S
105	R	H	S	S	R	R	R	S
106	S	R	S	S	H	H	H	S
107	H	H	S	S	H	H	H	S
108	H	S	S	S	H	H	S	S
109	S	R	S	S	R	R	S	S
110	R	H	S	S	H	H	S	S
111	R	H	S	S	R	R	S	S
112	H	S	S	S	H	H	H	S
113	S	S	S	S	S	S	H	S
114	S	H	S	S	H	H	S	S
115	R	H	S	S	R	R	R	S
116	S	H	S	S	S	S	H	S
117	R	S	S	S	S	S	R	S
118	S	H	S	S	H	H	R	S
119	H	R	S	S	R	R	R	S
120	R	S	S	S	H	H	R	S
121	H	H	S	S	S	S	H	S
122	S	R	S	S	R	R	R	S
123	R	S	S	S	H	H	S	S
124	S	H	S	S	H	H	R	S
125	S	R	S	S	R	R	H	S
126	S	H	S	S	H	H	n/a	S
127	H	R	S	S	H	n/a	S	S
128	H	S	S	S	S	S	H	S
129	H	H	S	S	H	H	H	S
130	R	R	S	S	H	H	R	S
131	S	R	S	S	R	R	R	S
132	H	S	S	S	H	H	H	S
133	S	H	S	S	S	S	H	S
134	S	H	S	S	H	H	S	S
135	R	S	S	S	H	H	H	S
136	H	H	S	S	R	R	R	S
137	S	H	S	S	H	H	R	S
138	H	H	S	S	H	H	H	S
139	S	R	S	S	R	R	S	S
140	H	H	S	S	H	H	H	S
141	R	H	S	S	H	H	n/a	S
142	H	S	S	S	S	S	R	S
143	H	R	S	S	H	H	R	S
144	S	S	S	S	R	R	S	S
145	S	H	S	n/a	R	H	S	S
146	S	R	S	S	R	S	S	S
147	S	H	S	R	R	H	S	S
148	S	R	S	H	R	S	S	S

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-5 65	Ph3
602	S	R	S	S	R	S	R	S
603	S	S	S	S	S	S	R	S
604	S	H	S	S	n/a	S	R	S
605	S	S	S	S	R	S	R	S
606	S	R	S	S	n/a	S	R	S
607	S	R	S	S	S	S	R	S
608	S	H	S	S	n/a	S	R	S
609	S	H	S	S	S	S	R	S
610	S	H	S	S	n/a	S	R	S
611	S	H	S	S	R	S	R	S
612	S	H	S	S	R	S	R	S
613	S	H	S	S	R	S	R	S
614	S	S	S	S	R	S	R	S
615	S	R	S	S	S	S	R	S
616	S	R	S	S	H	S	R	S
617	S	H	S	S	H	S	R	S
618	S	H	S	S	R	S	R	S
619	S	H	S	S	R	S	R	S
620	S	S	S	S	H	S	R	S
621	S	H	S	S	H	S	R	S
622	S	S	S	S	H	S	R	S
623	S	R	S	S	R	S	R	S
624	S	H	S	S	R	S	R	S
625	S	S	S	S	H	S	R	S
626	S	R	S	S	R	S	R	S
627	S	H	S	S	H	S	R	S
628	S	R	S	S	H	S	R	S
629	S	S	S	S	H	S	R	S
630	S	H	S	S	H	S	R	S
631	S	n/a	S	S	H	S	R	S
632	S	H	S	S	H	S	R	S
633	S	R	S	S	R	S	R	S
634	S	S	S	S	H	S	R	S
635	S	H	S	S	H	S	R	S
636	R	H	S	S	H	H	R	S
637	S	H	R	R	H	H	H	S
638	H	S	S	H	R	S	H	S
639	n/a	H	H	H	H	H	S	S
640	n/a	H	H	H	R	S	H	S
641	H	R	R	H	H	H	S	S
642	R	R	S	n/a	H	H	R	S
643	H	S	H	H	S	R	S	S
644	H	S	H	H	n/a	R	S	S
645	S	H	n/a	R	H	H	H	S
646	R	H	n/a	n/a	H	n/a	H	S
647	S	S	R	R	H	H	S	S
648	S	S	H	R	S	R	S	S
649	S	S	R	R	H	H	R	S
650	R	H	S	n/a	H	H	R	S
651	R	S	H	S	H	H	H	S
652	H	R	n/a	H	H	H	H	S
653	H	R	R	H	S	R	R	S
654	H	S	S	H	S	R	H	S
655	H	H	S	H	S	R	R	S
656	R	S	R	n/a	H	H	H	S
657	H	S	R	H	H	H	S	S
658	H	R	R	H	S	R	H	S
659	H	H	H	H	S	R	S	S
660	H	R	S	H	H	H	S	S
661	H	H	S	H	H	H	H	S
662	S	R	R	R	R	S	R	S
663	R	H	n/a	S	R	S	H	S

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-5 65	Ph3
149	S	H	S	n/a	R	H	S	S
150	S	S	S	n/a	R	S	S	S
151	S	H	S	n/a	R	H	S	S
152	S	S	S	H	R	R	S	S
153	S	H	S	H	R	H	S	S
154	S	R	S	S	R	H	S	S
155	S	H	S	R	R	R	S	S
156	S	H	S	H	R	H	S	S
157	S	S	S	S	R	R	S	S
158	S	H	S	H	R	R	S	S
159	S	S	S	H	R	R	S	S
160	S	H	S	H	R	H	S	S
161	S	H	S	H	R	H	S	S
162	S	S	S	S	R	S	S	S
163	S	H	S	S	R	S	S	S
164	S	H	S	S	R	H	S	S
165	S	S	S	H	R	R	S	S
166	S	H	S	H	R	H	S	S
167	S	S	S	R	R	R	S	S
168	S	R	S	H	R	H	S	S
169	S	H	S	S	R	H	S	S
170	S	H	S	S	R	H	S	S
171	S	R	S	R	R	H	S	S
172	S	H	S	R	R	H	S	S
173	S	H	S	H	R	H	S	S
174	S	R	S	R	R	S	S	S
175	S	H	S	H	R	H	S	S
176	S	H	S	H	R	H	S	S
177	S	R	S	R	R	S	S	S
178	S	S	S	R	R	R	S	S
179	S	S	S	H	R	H	S	S
180	S	S	S	H	R	R	S	S
181	S	S	S	R	R	H	S	S
182	S	H	S	S	R	H	S	S
183	S	H	S	H	R	R	S	S
184	S	S	S	H	R	H	S	S
185	H	R	S	H	R	S	S	H
186	R	R	S	S	R	S	S	H
187	H	R	S	H	R	S	S	R
188	R	R	S	S	R	S	S	S
189	R	R	S	S	R	S	S	H
190	S	R	S	R	R	S	S	H
191	R	R	S	S	R	S	S	R
192	R	R	S	S	R	S	S	R
193	R	R	S	S	R	S	S	H
194	H	R	S	H	R	S	S	H
195	H	R	S	H	R	S	S	R
196	R	R	S	n/a	R	S	S	S
197	R	R	S	S	R	S	S	H
198	R	R	S	S	R	S	S	R
199	H	R	S	H	R	S	S	H
200	R	R	S	S	R	S	S	S
201	H	R	S	S	R	S	S	S
202	H	R	S	H	R	S	S	S
203	S	R	S	R	R	S	S	H
204	H	R	S	H	R	S	S	H
205	H	R	S	H	R	S	S	S
206	R	R	S	S	R	S	S	S
207	S	R	S	R	R	S	S	S
208	R	R	S	S	R	S	S	H
209	H	R	S	H	R	S	S	H
210	H	R	S	H	R	S	S	R

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-5 65	Ph3
664	R	H	H	S	H	H	H	S
665	R	H	S	S	R	S	R	S
666	R	H	S	S	H	H	H	S
667	R	H	H	S	H	H	H	S
668	H	R	H	H	S	R	H	S
669	R	H	R	S	S	R	S	S
670	R	H	H	S	S	R	H	S
671	R	H	H	S	H	H	S	S
672	S	H	n/a	R	H	H	R	S
673	S	S	R	R	S	R	S	S
674	H	S	H	H	S	R	H	S
675	R	S	H	S	H	H	R	S
676	H	H	n/a	H	H	H	R	S
677	H	H	S	H	H	H	R	S
678	R	H	H	n/a	n/a	H	H	S
679	H	S	R	H	H	H	R	S
680	S	H	R	R	R	S	H	S
681	S	S	H	R	H	H	S	S
682	H	S	S	H	H	H	R	S
683	H	S	H	H	H	H	H	S
684	S	H	R	S	n/a	S	R	R
685	n/a	R	H	S	S	S	H	H
686	R	H	H	S	S	S	S	H
687	S	H	R	S	H	H	R	R
688	H	S	H	S	n/a	R	H	H
689	H	R	S	S	H	H	H	S
690	H	R	H	S	H	H	H	H
691	H	H	H	S	H	H	R	H
692	H	H	H	S	S	S	H	H
693	S	H	R	S	H	H	S	R
694	S	R	H	S	S	S	S	H
695	H	H	R	S	H	H	H	R
696	S	S	H	S	H	H	R	H
697	H	S	H	S	H	H	H	H
698	n/a	S	S	S	H	H	S	H
699	H	H	R	S	H	H	H	R
700	S	H	S	S	R	R	H	S
701	R	H	R	S	R	R	S	R
702	R	H	H	S	H	H	S	H
703	H	R	H	S	S	S	H	H
704	H	R	H	S	H	H	H	H
705	H	H	H	S	H	H	H	H
706	H	H	H	S	H	H	H	H
707	R	S	H	S	R	R	H	H
708	R	S	H	S	H	H	R	H
709	S	H	H	S	H	H	H	H
710	H	R	S	S	S	S	S	S
711	S	S	H	S	R	R	H	H
712	R	H	R	S	H	H	H	H
713	S	S	H	S	R	R	H	H
714	H	H	H	S	n/a	H	H	H
715	R	H	R	S	S	S	H	R
716	S	H	H	S	H	H	R	H
717	H	R	H	S	S	S	H	H
718	S	S	S	S	H	H	R	H
719	R	S	H	S	R	R	R	H
720	R	R	S	S	H	H	R	S
721	H	H	H	S	S	S	H	H
722	H	H	H	S	H	H	H	H
723	S	R	R	S	H	H	H	R
724	S	S	H	S	R	R	H	H
725	R	R	S	S	S	S	S	S

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-5 65	Ph3
211	H	R	S	H	R	S	S	R
212	R	R	S	S	R	S	S	H
213	R	R	S	S	R	S	S	H
214	R	R	S	S	R	S	S	H
215	H	R	S	H	R	S	S	H
216	H	R	S	H	R	S	S	H
217	R	R	S	S	R	S	S	S
218	S	R	S	R	R	S	S	R
219	H	R	S	H	R	S	S	H
220	S	R	S	R	R	S	S	H
221	S	R	S	R	R	S	S	S
222	S	R	S	R	R	S	S	H
223	H	R	S	H	R	S	S	H
224	H	R	S	H	R	S	S	S
225	S	R	S	R	R	S	S	H
226	S	R	S	R	R	S	S	H
227	H	R	S	H	R	S	S	R
228	H	R	S	H	R	S	S	H
229	H	R	S	H	R	S	S	H
230	H	R	S	H	R	S	S	S
231	H	R	S	H	R	S	S	H
232	S	R	S	R	R	S	S	H
233	S	R	S	R	H	H	S	R
234	S	R	S	R	H	H	S	R
235	S	R	S	R	H	H	S	R
236	S	R	S	R	S	S	S	R
237	S	R	S	R	H	H	S	R
238	S	R	S	R	H	H	S	R
239	S	R	S	R	R	R	S	R
240	S	R	S	R	S	S	S	R
241	S	R	S	R	H	H	S	R
242	S	R	S	R	R	R	S	R
243	S	R	S	R	H	H	S	R
244	S	R	S	R	R	R	S	R
245	S	R	S	R	S	S	S	R
246	S	R	S	R	S	S	S	R
247	S	R	S	R	S	S	S	R
248	S	R	S	R	H	H	S	R
249	S	R	S	R	H	H	S	R
250	S	R	S	R	H	H	S	R
251	S	R	S	R	H	H	S	R
252	S	R	S	R	S	S	S	R
253	S	R	S	R	H	H	S	R
254	S	R	S	R	H	H	S	R
255	S	R	S	R	R	R	S	R
256	S	R	S	R	H	H	S	R
257	S	R	S	R	S	S	S	R
258	S	R	S	R	H	H	S	R
259	S	R	S	R	H	H	S	R
260	S	R	S	R	H	H	S	R
261	S	R	S	R	H	H	S	R
262	S	R	S	R	S	S	S	R
263	S	R	S	R	H	H	S	R
264	S	R	S	R	S	S	S	R
265	S	R	S	R	H	H	S	R
266	S	R	S	R	H	S	S	R
267	S	R	S	R	S	S	S	R
268	S	R	S	R	H	H	S	R
269	S	R	S	R	H	H	S	R
270	S	R	S	R	S	S	S	R
271	S	R	S	R	H	H	S	R
272	S	R	S	R	H	H	S	R

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-5 65	Ph3
726	H	H	H	S	S	S	R	H
727	S	S	H	S	H	H	S	H
728	R	S	R	S	S	S	H	R
729	R	H	H	S	S	S	H	H
730	S	S	S	R	H	H	S	S
731	H	S	S	H	S	S	H	S
732	H	S	S	H	R	R	H	S
733	H	S	S	H	S	S	S	S
734	S	S	S	R	S	S	H	S
735	H	S	S	H	H	H	H	S
736	S	S	S	R	H	H	H	S
737	H	S	S	H	H	H	S	S
738	H	S	S	H	S	S	R	S
739	S	S	S	R	S	S	R	S
740	H	S	S	H	R	R	S	S
741	S	S	S	R	H	H	H	S
742	H	S	S	R	R	R	H	S
743	S	S	S	R	S	S	S	S
744	H	S	S	H	S	S	H	S
745	n/a	S	S	S	H	H	S	S
746	H	S	S	H	n/a	S	H	S
747	S	S	S	R	H	H	H	S
748	R	S	S	S	S	S	S	S
749	H	S	S	H	H	H	R	S
750	H	S	S	H	H	H	S	S
751	H	S	S	H	H	H	S	S
752	H	S	S	H	H	H	S	S
753	H	S	S	H	H	H	H	S
754	R	S	S	S	R	R	H	S
755	H	S	S	H	S	S	H	S
756	H	S	S	H	H	H	S	S
757	H	S	S	R	H	H	H	S
758	R	S	S	n/a	H	H	S	S
759	S	S	S	R	H	H	H	S
760	S	S	S	R	H	H	H	S
761	H	S	S	H	H	H	H	S
762	H	S	S	H	H	H	R	S
763	H	S	S	H	H	H	H	S
764	H	S	S	H	S	S	S	S
765	S	S	S	R	S	S	H	S
766	H	S	S	H	R	R	H	S
767	S	S	S	R	H	H	H	S
768	H	S	S	R	S	S	H	S
769	R	S	S	S	S	S	H	S
770	R	S	S	S	H	H	H	S
771	R	S	S	S	S	S	H	S
772	R	S	S	S	H	H	H	S
773	H	S	S	H	S	S	H	S
774	R	R	S	H	R	S	S	S
775	H	R	S	H	R	S	S	R
776	H	R	S	H	R	S	S	H
777	H	R	S	H	R	S	S	H
778	H	R	S	H	R	S	S	R
779	R	R	S	S	R	S	S	R
780	H	R	S	H	R	S	S	R
781	S	R	S	n/a	R	S	S	H
782	H	R	S	H	R	S	S	n/a
783	H	R	S	H	R	S	S	S
784	H	R	S	H	R	S	S	S
785	H	R	S	H	R	S	S	S
786	H	R	S	H	R	S	S	R
787	H	R	S	H	R	S	S	H

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-5 65	Ph3
273	S	R	S	R	H	H	S	R
274	S	R	S	R	H	H	S	R
275	S	R	S	R	R	R	S	R
276	S	R	S	R	H	H	S	R
277	S	R	S	R	S	S	S	R
278	S	R	S	R	H	H	S	R
279	S	R	S	R	S	S	S	R
280	S	R	S	R	R	R	S	R
281	S	S	S	H	R	S	H	S
282	S	S	S	S	R	S	R	S
283	S	R	S	R	S	S	H	S
284	S	H	S	S	H	S	H	S
285	S	R	S	H	R	S	S	S
286	S	S	S	H	R	S	H	S
287	S	S	S	H	H	S	H	S
288	S	H	S	H	S	S	R	S
289	S	H	S	R	H	S	H	S
290	S	H	S	H	H	S	H	S
291	S	H	S	S	S	S	R	S
292	S	R	S	H	H	S	H	S
293	S	H	S	H	S	S	S	S
294	S	R	S	S	H	S	R	S
295	S	H	S	S	H	S	S	S
296	S	R	S	H	H	S	R	S
297	S	H	S	H	S	S	S	S
298	S	H	S	R	R	S	H	S
299	S	R	S	H	R	S	R	S
300	S	R	S	S	H	S	H	S
301	S	R	S	H	S	S	R	S
302	S	H	S	H	H	S	H	S
303	S	S	S	H	S	S	S	S
304	S	H	S	R	H	S	H	S
305	S	S	S	S	R	S	R	S
306	S	S	S	S	H	S	H	S
307	S	H	S	S	H	S	S	S
308	S	R	S	S	S	S	S	S
309	S	S	S	R	n/a	S	H	S
310	S	S	S	H	H	S	H	S
311	S	H	S	H	H	S	R	S
312	S	H	S	S	R	S	H	S
313	S	H	S	H	H	S	H	S
314	S	R	S	n/a	S	S	H	S
315	S	H	S	H	R	S	H	S
316	S	R	S	R	H	S	H	S
317	S	H	S	R	S	S	R	S
318	S	S	S	S	R	S	S	S
319	S	R	S	R	H	S	H	S
320	S	H	S	H	S	S	H	S
321	S	R	S	H	R	S	H	S
322	S	H	S	H	R	S	S	S
323	S	H	S	S	H	S	H	S
324	S	H	S	R	S	S	S	S
325	H	R	S	S	R	S	H	S
326	R	R	S	S	R	S	H	S
327	H	R	S	S	R	S	R	S
328	S	R	S	S	R	S	S	S
329	H	R	S	S	R	S	H	S
330	H	R	S	S	R	S	R	S
331	H	R	S	S	R	S	S	S
332	R	R	S	S	R	S	H	S
333	H	R	S	S	R	S	R	S
334	H	R	S	S	R	S	S	S

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-5 65	Ph3
788	n/a	R	S	R	R	S	S	R
789	H	R	S	H	R	S	S	S
790	H	R	S	H	R	S	S	H
791	n/a	R	S	H	R	S	S	R
792	H	R	S	H	R	S	S	H
793	H	R	S	H	R	S	S	R
794	H	R	S	H	R	S	S	R
795	H	R	S	H	R	S	S	H
796	S	R	S	H	R	S	S	H
797	H	R	S	n/a	R	S	S	H
798	H	R	S	H	R	S	S	H
799	S	R	S	R	R	S	S	R
800	H	R	S	H	R	S	S	H
801	H	R	S	H	R	S	S	H
802	H	R	S	H	R	S	S	S
803	H	R	S	n/a	R	S	S	H
804	S	R	S	R	R	S	S	S
805	R	R	S	n/a	R	S	S	S
806	S	R	S	R	R	S	S	H
807	S	R	S	R	R	S	S	H
808	H	R	S	H	R	S	S	S
809	H	R	S	H	R	S	S	R
810	H	R	S	H	R	S	S	R
811	S	R	S	R	R	S	S	S
812	H	R	S	H	R	S	S	R
813	H	R	S	R	R	S	S	S
814	R	R	S	S	R	S	S	S
815	H	R	S	H	R	S	S	H
816	H	R	S	H	R	S	S	R
817	S	R	S	R	R	S	S	H
818	H	R	S	H	R	S	S	H
819	H	R	S	H	R	S	S	H
820	S	R	S	R	R	S	S	H
821	H	R	S	n/a	R	S	S	H
822	S	S	S	H	H	S	H	R
823	S	S	S	S	H	S	S	R
824	S	H	S	H	H	S	H	R
825	S	S	S	S	H	S	H	R
826	S	S	S	R	n/a	S	S	R
827	S	S	S	S	H	S	R	R
828	S	R	S	R	H	S	H	R
829	S	H	S	H	H	S	S	R
830	S	H	S	H	H	S	S	R
831	S	H	S	S	H	S	S	R
832	S	H	S	S	S	S	H	R
833	S	S	S	R	S	S	H	R
834	S	R	S	H	S	S	R	R
835	S	H	S	H	H	S	H	R
836	S	S	S	n/a	n/a	S	H	R
837	S	R	S	R	R	S	H	R
838	S	S	S	S	S	S	R	R
839	S	H	S	H	H	S	S	R
840	S	H	S	S	H	S	H	R
841	S	H	S	H	R	S	S	R
842	S	H	S	H	H	S	H	R
843	S	H	S	H	H	S	S	R
844	S	H	S	H	S	S	H	R
845	S	H	S	H	R	S	H	R
846	S	S	S	R	S	S	S	R
847	S	R	S	H	R	S	H	R
848	S	S	S	S	S	S	S	R
849	S	S	S	S	S	S	R	R

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-5 65	Ph3
335	R	R	S	S	R	S	S	S
336	S	R	S	S	R	S	R	S
337	H	R	S	S	R	S	H	S
338	R	R	S	S	R	S	R	S
339	H	R	S	S	R	S	S	S
340	H	R	S	S	R	S	R	S
341	H	R	S	S	R	S	H	S
342	H	R	S	S	R	S	S	S
343	H	R	S	S	R	S	S	S
344	S	R	S	S	R	S	H	S
345	H	R	S	S	R	S	H	S
346	H	R	S	S	R	S	n/a	S
347	S	R	S	S	R	S	R	S
348	H	R	S	S	R	S	H	S
349	S	R	S	S	R	S	R	S
350	H	R	S	S	R	S	R	S
351	R	R	S	S	R	S	H	S
352	S	R	S	S	R	S	R	S
353	H	R	S	S	R	S	H	S
354	H	R	S	S	R	S	H	S
355	R	R	S	S	R	S	H	S
356	H	R	S	S	R	S	H	S
357	H	R	S	S	R	S	R	S
358	S	R	S	S	R	S	R	S
359	R	R	S	S	R	S	H	S
360	S	R	S	S	R	S	R	S
361	H	R	S	S	R	S	H	S
362	H	R	S	S	R	S	R	S
363	S	R	S	S	R	S	S	S
364	H	R	S	S	R	S	H	S
365	H	R	S	S	R	S	H	S
366	R	R	S	S	R	S	H	S
367	H	R	S	S	R	S	H	S
368	H	R	S	S	R	S	H	S
369	H	S	S	H	S	S	R	S
370	R	S	S	S	S	S	R	S
371	S	S	S	R	S	S	R	S
372	S	S	S	R	S	S	R	S
373	S	S	S	R	S	S	R	S
374	S	S	S	R	S	S	R	S
375	R	S	H	S	S	S	R	H
376	H	S	H	S	S	S	R	H
377	S	S	S	R	S	S	R	S
378	H	S	S	H	S	S	R	S
379	S	S	H	R	S	S	R	H
380	R	S	n/a	H	S	S	R	H
381	H	S	H	H	S	S	R	H
382	S	S	S	R	S	S	R	S
383	H	S	H	H	S	S	R	H
384	H	S	n/a	H	S	S	R	R
385	H	S	H	R	S	S	R	H
386	H	S	H	H	S	S	R	H
387	S	S	H	R	S	S	R	H
388	H	S	n/a	H	S	S	R	S
389	S	S	H	R	S	S	R	H
390	H	S	n/a	H	S	S	R	H
391	S	S	n/a	R	S	S	R	H
392	H	S	n/a	H	S	S	R	R
393	H	S	H	H	S	S	R	H
394	S	S	n/a	R	S	S	R	H
395	H	S	H	R	S	S	R	H
396	H	S	S	H	S	S	R	S

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-5 65	Ph3
850	S	H	S	S	H	S	R	R
851	S	S	S	H	H	S	R	R
852	S	R	S	S	H	S	R	R
853	S	S	S	R	H	S	S	R
854	S	H	S	H	S	S	S	R
855	S	R	S	S	H	S	S	R
856	S	S	S	R	H	S	H	R
857	S	S	S	H	H	S	H	R
858	S	S	S	R	H	S	S	R
859	S	H	S	H	H	S	S	R
860	S	H	S	R	S	S	H	R
861	S	S	S	H	S	S	S	R
862	S	H	S	H	H	S	R	R
863	S	H	S	R	S	S	H	R
864	S	H	S	R	R	S	H	R
865	S	H	S	S	R	S	H	R
866	S	H	S	R	S	S	H	R
867	S	H	S	S	H	S	R	R
868	S	S	S	n/a	S	S	R	R
869	S	H	S	R	R	S	S	R
870	S	R	S	S	R	H	S	H
871	S	R	S	S	R	H	S	S
872	S	R	S	S	R	H	S	R
873	S	R	S	S	R	R	S	H
874	S	R	S	S	R	S	S	R
875	S	R	S	S	R	S	S	R
876	S	R	S	S	R	R	S	R
877	S	R	S	S	R	S	S	H
878	S	R	S	S	R	R	S	R
879	S	R	S	S	R	H	S	H
880	S	R	S	S	R	H	S	H
881	S	R	S	S	R	R	S	H
882	S	R	S	S	R	S	S	R
883	S	R	S	S	R	H	S	S
884	S	R	S	S	R	H	S	R
885	S	R	S	S	R	S	S	H
886	S	R	S	S	R	H	S	S
887	S	R	S	S	R	S	S	H
888	S	R	S	S	R	S	S	H
889	S	R	S	S	R	H	S	H
890	S	R	S	S	R	n/a	S	H
891	S	R	S	S	R	R	S	H
892	S	R	S	S	R	H	S	H
893	S	R	S	S	R	R	S	S
894	S	R	S	S	R	S	S	R
895	S	R	S	S	R	R	S	S
896	S	R	S	S	R	S	S	H
897	S	R	S	S	R	S	S	H
898	S	R	S	S	R	H	S	S
899	S	R	S	S	R	R	S	R
900	S	R	S	S	R	H	S	R
901	S	R	S	S	R	H	S	H
902	S	R	S	S	R	H	S	H
903	S	R	S	S	R	R	S	H
904	S	R	S	S	R	R	S	R
905	S	R	S	S	R	H	S	H
906	S	R	S	S	R	H	S	H
907	S	R	S	S	R	R	S	S
908	S	R	S	S	R	H	S	H
909	S	R	S	S	R	S	S	H
910	S	R	S	S	R	R	S	H
911	S	R	S	S	R	S	S	S

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-5 65	Ph3
397	S	S	H	R	S	S	R	H
398	S	S	n/a	R	S	S	R	H
399	S	S	H	R	S	S	R	H
400	S	S	H	H	S	S	R	H
401	R	S	R	S	S	S	R	R
402	R	S	H	S	S	S	R	H
403	H	S	n/a	H	S	S	R	H
404	H	S	n/a	H	S	S	R	H
405	H	S	n/a	H	S	S	R	R
406	H	S	n/a	H	S	S	R	S
407	R	S	n/a	S	S	S	R	R
408	S	S	H	R	S	S	R	H
409	S	S	n/a	R	S	S	R	S
410	H	S	H	H	S	S	R	H
411	R	S	n/a	S	S	S	R	R
412	S	S	n/a	R	S	S	R	H
413	H	S	n/a	H	S	S	R	R
414	H	S	n/a	H	S	S	R	H
415	S	S	S	R	S	S	R	S
416	H	S	S	H	S	S	R	S
417	H	S	R	H	S	S	R	R
418	H	S	H	H	S	S	R	H
419	S	S	R	R	S	S	R	R
420	R	S	H	S	S	S	R	H
421	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
422	H	S	H	H	S	S	R	H
423	H	S	S	H	S	S	R	S
424	H	S	R	H	S	S	R	R
425	R	S	H	H	S	S	R	H
426	R	S	H	S	S	S	R	H
427	R	S	n/a	S	S	S	R	R
428	H	S	n/a	H	S	S	R	H
429	S	S	S	R	S	S	R	S
430	H	S	n/a	H	S	S	R	S
431	H	S	n/a	H	S	S	R	H
432	R	S	n/a	S	S	S	R	H
433	R	S	H	S	S	S	R	H
434	S	S	S	R	S	S	R	S
435	R	S	H	S	S	S	R	H
436	S	S	R	R	S	S	R	R
437	R	S	S	S	S	S	R	S
438	R	S	n/a	S	S	S	R	S
439	H	S	H	H	S	S	R	H
440	R	S	n/a	S	S	S	R	H
441	H	S	S	H	S	S	R	S
442	H	S	n/a	H	S	S	R	S
443	H	S	S	H	S	S	R	S
444	R	S	H	S	S	S	R	H
445	H	S	R	H	S	S	R	R
446	H	S	S	H	S	S	R	S
447	R	S	S	S	S	S	R	S
448	H	S	H	H	S	S	R	H
449	S	S	R	H	S	S	R	R
450	H	S	H	H	S	S	R	H
451	R	S	H	S	S	S	R	H
452	S	S	n/a	R	S	S	R	S
453	S	S	R	R	S	S	R	R
454	H	S	H	H	S	S	R	H
455	H	S	R	H	S	S	R	R
456	R	S	H	S	S	S	R	H
457	S	S	H	R	S	S	R	H
458	R	S	n/a	S	S	S	R	S

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-5 65	Ph3
912	S	R	S	S	R	H	S	H
913	S	R	S	S	R	H	S	R
914	S	R	S	S	R	H	S	H
915	S	R	S	S	R	S	S	S
916	S	R	S	S	R	H	S	H
917	H	R	S	S	R	S	H	S
918	S	R	S	S	H	H	S	S
919	H	R	S	S	H	H	H	S
920	R	R	S	S	H	H	R	S
921	S	R	S	S	R	H	S	R
922	H	R	S	S	n/a	H	R	S
923	H	R	S	S	H	H	H	S
924	H	R	S	S	R	S	H	S
925	H	R	S	S	H	H	n/a	S
926	S	R	S	S	S	R	H	S
927	R	R	S	S	H	H	H	S
928	H	R	S	S	R	S	H	S
929	S	R	S	S	R	S	S	S
930	H	R	S	S	S	R	S	S
931	H	R	S	S	n/a	S	R	S
932	H	R	S	S	H	H	S	S
933	n/a	R	S	S	R	S	H	S
934	H	R	S	S	S	R	H	S
935	R	R	S	S	R	S	H	S
936	S	R	S	S	H	H	H	S
937	H	R	S	S	R	S	R	S
938	S	R	S	S	R	S	S	S
939	n/a	R	S	S	H	H	H	S
940	R	R	S	S	H	H	H	S
941	H	R	S	S	R	S	H	S
942	S	R	S	S	R	S	H	S
943	S	R	S	S	R	S	H	S
944	S	R	S	S	H	H	H	S
945	S	R	S	S	H	H	H	S
946	R	R	S	S	H	H	H	S
947	H	R	S	S	H	R	R	S
948	R	R	S	S	H	H	H	S
949	H	R	S	S	H	H	H	S
950	H	R	S	S	S	R	S	S
951	H	R	S	S	H	H	S	S
952	S	R	S	S	H	H	H	S
953	H	R	S	S	H	H	H	S
954	S	R	S	S	H	H	H	S
955	S	H	S	S	R	S	R	S
956	H	H	H	S	R	H	R	S
957	H	S	S	S	R	S	H	S
958	R	S	H	S	R	H	S	S
959	S	H	H	S	R	H	H	S
960	H	H	R	S	R	S	S	S
961	S	H	H	S	R	S	R	S
962	H	H	H	S	R	H	S	S
963	R	H	H	S	R	H	H	S
964	R	H	H	S	R	S	S	S
965	H	H	R	S	R	H	H	S
966	S	H	R	S	R	R	H	S
967	H	S	S	S	R	H	H	S
968	H	R	R	S	R	H	H	S
969	H	S	R	S	R	S	H	S
970	H	R	H	S	R	H	R	S
971	S	H	H	S	R	S	S	S
972	H	R	H	S	R	H	H	S
973	H	H	H	S	R	S	S	S

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-5 65	Ph3
459	R	S	S	S	S	S	R	S
460	H	S	n/a	H	S	S	R	S
461	S	S	R	R	S	S	R	R
462	H	S	n/a	H	S	S	R	R
463	H	S	n/a	H	S	S	R	H
464	S	H	S	H	H	H	S	S
465	S	S	S	H	R	R	S	S
466	S	R	S	H	H	H	S	S
467	S	R	S	H	H	H	S	S
468	S	S	S	H	H	H	S	S
469	S	H	S	S	H	H	S	S
470	S	H	S	H	H	H	S	S
471	S	H	S	H	H	H	S	S
472	S	R	S	S	H	H	S	S
473	S	S	S	R	S	S	S	S
474	S	H	S	R	R	R	S	S
475	S	R	S	R	R	R	S	S
476	S	H	S	R	H	H	S	S
477	S	R	S	R	R	R	S	S
478	S	H	S	H	S	n/a	S	S
479	S	S	S	R	S	S	S	S
480	S	R	S	n/a	S	S	S	S
481	S	R	S	H	S	S	S	S
482	S	S	S	H	H	H	S	S
483	S	H	S	H	H	H	S	S
484	S	H	S	H	H	H	S	S
485	S	S	S	H	H	H	S	S
486	S	S	S	H	n/a	n/a	S	S
487	S	H	S	S	H	H	S	S
488	S	H	S	H	H	H	S	S
489	S	H	S	n/a	H	H	S	S
490	S	H	S	H	S	S	S	S
491	S	S	S	H	S	S	S	S
492	S	R	S	S	R	R	S	S
493	S	H	S	S	H	H	S	S
494	S	H	S	H	S	S	S	S
495	S	H	S	H	S	n/a	S	S
496	S	S	S	S	R	R	S	S
497	S	H	S	H	H	H	S	S
498	S	H	S	R	S	S	S	S
499	S	H	S	S	R	R	S	S
500	S	R	S	R	H	H	S	S
501	S	H	S	H	R	R	S	S
502	S	H	S	S	S	S	S	S
503	S	R	S	H	H	H	S	S
504	S	R	H	R	R	S	R	S
505	S	S	H	S	R	H	R	S
506	S	R	R	R	R	R	R	S
507	S	H	H	S	R	R	R	S
508	S	R	H	S	R	H	R	S
509	S	H	n/a	R	R	R	R	S
510	S	H	R	H	R	R	R	S
511	S	R	H	R	R	H	R	S
512	S	R	H	H	R	S	R	S
513	S	H	H	R	R	S	R	S
514	S	R	H	H	R	S	R	S
515	S	R	R	R	R	H	R	S

No.	Ty1	Ve2	Sw5	Mi 23	Tm 2a	J3	Sm-5 65	Ph3
974	H	H	S	S	R	H	H	S
975	S	H	H	S	R	R	R	S
976	H	H	H	S	R	S	H	S
977	S	H	H	S	R	H	R	S
978	R	H	R	S	R	S	H	S
979	H	H	S	S	R	S	S	S
980	H	H	H	S	R	S	H	S
981	H	S	H	S	R	H	R	S
982	S	H	H	S	R	H	S	S
983	S	H	S	S	R	R	H	S
984	R	H	R	S	R	R	S	S
985	S	H	n/a	H	H	S	H	R
986	S	R	H	R	S	S	H	H
987	S	H	S	H	H	S	R	S
988	S	H	n/a	n/a	H	S	H	H
989	S	R	R	S	H	S	S	R
990	S	H	S	H	R	S	R	S
991	S	H	R	R	S	S	H	R
992	S	S	S	H	R	S	S	S
993	S	S	R	H	H	S	R	R
994	S	R	S	H	H	S	H	S
995	S	H	H	R	H	S	H	H
996	S	H	R	R	R	S	H	R
997	S	H	R	H	H	S	H	R
998	S	H	H	R	R	S	H	H
999	S	R	H	H	H	S	S	H
1000	S	H	n/a	S	H	S	H	R
1001	S	R	H	n/a	H	S	H	H
1002	S	H	H	n/a	H	S	H	H
1003	S	n/a	H	n/a	n/a	S	H	S
1004	S	H	S	n/a	R	S	S	S
1005	S	n/a	H	n/a	n/a	S	R	H
1006	S	S	H	R	n/a	S	S	H
1007	S	H	H	n/a	S	S	H	H
1008	S	S	S	R	S	S	R	S
1009	S	S	H	n/a	H	S	H	H
1010	S	H	H	n/a	S	S	H	H
1011	S	H	R	R	R	S	H	R
1012	S	H	H	n/a	S	S	H	H
1013	S	R	H	H	S	S	S	H
1014	S	H	H	R	H	S	R	H
1015	S	R	H	S	R	S	R	H
1016	S	S	R	S	H	S	H	R
1017	S	H	H	R	S	S	H	H
1018	S	R	H	H	H	S	R	H
1019	S	H	S	n/a	H	S	H	S
1020	S	H	S	S	H	S	R	S
1021	S	H	R	S	H	S	H	R
1022	S	S	S	H	H	S	S	S
1023	S	R	S	S	S	S	R	S
1024	S	H	S	S	H	S	S	S
1025	S	H	S	R	H	S	S	S
1026	S	R	H	n/a	S	S	R	H
1027	S	R	H	H	R	S	H	H
1028	S	H	H	n/a	H	S	R	H
1029	S	S	R	R	H	S	R	R
1030	S	S	R	H	R	S	S	R

표 11. 순천대학교 8점의 시료에 대하여, 병 관련 15개의 마커를 이용한 서비스 결과

순번	샘플명	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Ph3	Sm-565	Bw6	Bw12	Cf9
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1	ITL33	S	S	S	S	R	S	R	R	S	R	S	S	S	S	S
2	TIL35	S	S	S	S	S	R	S	R	S	S	S	R	S	S	S
3	ITL38	S	S	S	S	R	S	S	S	S	R	S	S	S	S	S
4	ITL49	S	S	S	S	S	S	S	R	S	S	R	S	S	S	S
5	ITL51	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S
6	ITL59	S	S	S	S	S	S	S	R	S	R	S	R	R	S	S
7	ITL60	R	S	S	S	R	S	R	S	S	S	S	R	S	S	S
8	ITL77	S	S	S	S	R	S	R	S	S	S	S	S	S	R	n/a

표 12. 순천대학교 8점의 시료에 대하여, 병 관련 9개의 마커를 이용한 서비스 결과

순번	샘플명	Mi23	J3	I2	I3	Ve2	Bw6	Bw12	py1-4	Cf9
1	954-1	R	R	R	S	R	R	R	R	S
2	954-2	R	R	R	S	R	R	R	R	S
3	954-3	R	R	R	S	R	R	R	R	S
4	954-4	R	R	R	S	R	R	R	R	S
5	954-5	R	R	R	S	R	R	R	R	S
6	954-6	R	R	R	S	R	R	R	R	S
7	954-7	R	R	R	S	R	R	R	R	S
8	954-8	R	R	R	S	R	R	R	R	S

표 13. 순천대학교 283점의 시료에 대하여, 병 관련 15개의 마커를 이용한 서비스 결과

No.	Sw5	I2	I3	J3	Mi23	Tm2a	Ty1	Ty2	Ph3	Ve2	Sm-565	Bw12	Bw6	Cf9	py1
1	S	R	S	S	R	R	S	S	R	S	S	S	S	S	S
2	S	R	S	S	R	R	S	S	R	S	S	S	S	S	S
3	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S
4	S	R	S	S	R	H	S	S	R	S	S	S	S	S	S
5	S	R	S	S	R	H	S	S	R	S	S	S	S	S	S
6	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S
7	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S
8	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S
9	S	R	S	S	R	H	S	S	R	S	S	S	S	S	S
10	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S
11	S	R	S	S	R	S	S	S	S	R	S	S	S	S	S
12	S	R	S	S	R	H	S	S	S	R	S	S	S	S	S
13	S	R	S	S	R	S	S	S	S	R	S	S	S	S	S
14	S	R	S	S	R	H	S	S	S	R	S	S	S	S	S
15	S	R	S	S	R	S	S	S	S	R	S	S	S	S	S
16	S	R	S	S	R	H	S	S	S	R	S	S	S	S	S
17	S	R	S	S	R	H	S	S	S	R	S	S	S	S	S
18	S	R	S	S	R	H	S	S	S	R	S	S	S	S	S
19	S	R	S	S	R	R	S	S	S	R	S	S	S	S	S
20	S	R	S	S	R	R	S	S	S	R	S	S	S	S	S
21	S	S	S	R	S	S	H	S	S	H	H	S	S	S	S
22	S	n/a	S	R	S	H	S	S	R	R	H	S	S	S	S
23	S	H	S	R	S	H	S	S	H	S	S	S	S	S	S
24	S	S	S	R	S	R	H	S	R	R	H	S	S	S	S
25	S	S	S	R	S	S	H	S	H	R	R	S	S	S	S
26	S	H	S	R	S	H	H	S	S	R	H	S	S	S	S
27	S	H	S	R	S	H	S	S	H	H	S	S	S	S	S
28	S	R	S	R	S	R	S	S	H	S	S	S	S	S	S
29	S	H	S	R	S	H	H	S	H	R	H	S	S	S	S
30	S	R	S	S	H	R	S	S	H	H	S	S	R	S	S
31	S	R	S	S	R	R	S	S	H	R	S	S	S	H	S
32	S	R	S	S	H	R	S	S	H	R	S	S	R	H	S
33	S	R	S	S	R	R	S	S	H	H	S	S	H	R	S
34	S	R	S	S	S	R	S	S	R	H	S	S	H	R	S
35	S	R	S	S	R	R	S	S	R	H	S	S	H	S	S
36	S	R	S	S	H	R	S	S	H	R	S	S	R	H	S
37	S	R	S	S	H	R	S	S	H	R	S	S	H	H	S
38	S	S	S	S	S	R	S	S	H	H	S	S	R	R	S
39	S	R	S	S	S	R	S	S	S	H	S	S	R	R	S

No.	Sw5	I2	I3	J3	Mi23	Tm2a	Ty1	Ty2	Ph3	Ve2	Sm-565	Bw12	Bw6	Cf9	py1
40	S	R	S	S	S	R	S	S	H	S	S	S	R	R	S
41	S	R	S	S	S	R	S	S	H	H	S	S	R	R	S
42	S	R	S	S	S	R	S	S	H	R	S	S	R	R	S
43	S	H	S	S	S	R	S	S	S	H	S	S	R	R	S
44	S	H	S	S	S	R	S	S	H	R	S	S	R	R	S
45	S	S	S	S	R	R	n/a	S	S	S	S	S	S	H	S
46	S	S	S	S	R	R	n/a	S	S	S	S	S	S	S	S
47	S	S	S	S	R	R	n/a	S	S	S	S	S	S	n/a	S
48	S	S	S	S	R	R	n/a	S	S	S	S	S	S	S	S
49	S	S	S	S	R	R	n/a	S	S	S	S	S	S	R	S
50	S	S	S	S	R	R	H	S	S	S	S	S	S	R	S
51	S	S	S	S	R	R	H	S	S	S	S	S	S	H	S
52	S	S	S	S	R	R	S	S	S	S	S	S	S	H	S
53	S	S	S	S	R	R	S	S	S	S	S	S	S	H	S
54	S	R	S	S	S	R	H	S	R	H	S	S	S	S	S
55	S	R	S	S	S	R	S	S	R	H	S	S	S	S	S
56	S	S	S	S	S	R	H	S	R	S	S	S	S	S	S
57	S	R	S	S	S	R	S	S	R	H	S	S	S	S	S
58	S	R	S	S	S	R	R	S	R	R	S	S	S	S	S
59	S	S	S	S	S	R	S	S	R	H	S	S	S	S	S
60	S	S	S	S	S	R	H	S	R	H	S	S	S	S	S
61	S	H	S	S	S	R	H	S	R	R	S	S	S	S	S
62	S	S	S	S	S	R	H	S	R	R	S	S	S	S	S
63	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S
64	S	R	S	S	R	R	S	S	S	R	S	S	S	S	S
65	S	R	S	S	H	R	H	S	S	R	S	S	H	S	S
66	S	R	S	S	S	R	R	S	S	R	S	S	R	S	S
67	S	R	S	S	H	R	H	S	S	R	S	S	H	S	S
68	S	R	S	S	R	R	S	S	S	R	S	S	S	S	S
69	S	R	S	S	H	R	H	S	S	R	S	S	H	S	S
70	S	R	S	S	H	R	H	S	S	R	S	S	H	S	S
71	S	R	S	S	S	R	R	S	S	R	S	S	R	S	S
72	S	R	S	S	R	R	S	S	S	R	S	S	S	S	S
73	S	R	S	S	S	R	H	S	S	S	S	S	H	S	S
74	S	R	S	S	S	R	H	S	S	H	S	S	H	S	S
75	S	R	S	S	S	R	H	S	S	R	S	S	H	S	S
76	S	R	S	S	S	R	S	S	S	S	S	S	H	S	S
77	S	R	S	S	S	R	S	S	S	R	S	S	R	S	S
78	S	R	S	S	S	R	R	S	S	H	S	S	H	S	S
79	S	R	S	S	S	R	R	S	S	S	S	S	H	S	S
80	S	R	S	S	S	R	H	S	S	S	S	S	R	S	S
81	S	R	S	S	S	R	R	S	S	S	S	S	H	S	S
82	S	R	S	S	S	R	S	S	S	H	S	S	R	S	S
83	S	R	S	S	H	R	H	S	S	R	S	S	R	S	S
84	S	R	S	S	S	R	R	S	S	R	S	S	R	S	S
85	S	R	S	S	S	R	R	S	S	R	S	S	R	S	S
86	S	R	S	S	H	R	H	S	S	R	S	S	H	S	S
87	S	R	S	S	S	R	R	S	S	R	S	S	R	S	S
88	S	H	S	S	H	R	H	S	S	R	S	S	H	S	S
89	S	S	S	S	H	R	H	S	S	R	S	S	H	S	S
90	S	H	S	S	H	R	H	S	S	R	S	S	H	S	S
91	S	H	S	S	H	R	H	S	S	R	S	S	H	S	S
92	S	R	R	R	S	R	S	S	R	R	S	S	H	S	S
93	S	R	R	R	S	R	R	S	R	R	S	S	R	S	S
94	S	R	R	R	S	R	H	S	R	R	S	S	H	S	S
95	S	R	R	R	S	R	S	S	R	R	S	S	S	S	S
96	S	R	R	R	S	R	S	S	R	R	S	S	S	S	S
97	S	R	R	R	S	R	H	S	R	R	S	S	H	S	S
98	S	R	R	R	S	R	H	S	R	R	S	S	H	S	S
99	S	R	R	R	S	R	R	S	R	R	S	S	R	S	S
100	S	R	R	R	S	R	H	S	R	R	S	S	H	S	S
101	S	R	R	R	S	R	R	S	R	R	S	S	R	S	S

No.	Sw5	I2	I3	J3	Mi23	Tm2a	Ty1	Ty2	Ph3	Ve2	Sm-565	Bw12	Bw6	Cf9	py1
102	S	S	S	S	H	S	H	S	S	S	R	S	H	S	S
103	S	S	S	S	R	S	S	S	S	S	R	S	S	S	S
104	S	S	S	S	H	S	H	S	S	S	R	S	H	S	S
105	S	S	S	S	H	S	H	S	S	S	R	S	H	S	S
106	S	S	S	S	H	S	H	S	S	S	R	S	H	S	S
107	S	S	S	S	S	S	R	S	S	S	R	S	R	S	S
108	S	S	S	S	R	S	S	S	S	S	R	S	S	S	S
109	S	S	S	S	H	S	H	S	S	S	R	S	H	S	S
110	S	S	S	S	S	S	R	S	S	S	R	S	R	S	S
111	S	S	S	S	H	S	H	S	S	S	R	S	H	S	S
112	S	S	S	S	S	R	H	H	R	S	S	S	S	S	S
113	S	S	S	S	S	R	H	R	R	S	H	S	S	S	S
114	S	S	S	S	S	R	R	R	H	S	H	S	S	S	S
115	S	S	S	S	S	R	R	S	H	S	S	S	S	S	S
116	S	S	S	S	S	R	H	R	H	S	R	S	S	S	S
117	S	S	S	S	S	R	H	H	S	S	H	S	S	S	S
118	S	S	S	S	S	R	R	H	R	S	H	S	S	S	S
119	S	S	S	S	S	R	H	H	H	S	H	S	S	S	S
120	S	S	S	S	S	R	S	R	S	S	H	S	S	S	S
121	S	S	S	S	S	R	H	H	H	S	S	S	S	S	S
122	S	R	S	S	R	R	S	S	S	R	S	S	S	R	S
123	S	R	S	S	H	R	H	S	S	R	S	S	H	R	S
124	S	R	S	S	H	R	H	S	S	R	S	S	H	R	S
125	S	R	S	S	H	R	H	S	S	R	S	S	H	R	S
126	S	R	S	S	H	R	H	S	S	R	S	S	H	R	S
127	S	R	S	S	R	R	S	S	S	R	S	S	S	R	S
128	S	R	S	S	H	R	H	S	S	R	S	S	H	R	S
129	S	R	S	S	S	R	R	S	S	R	S	S	R	R	S
130	S	R	S	S	R	R	S	S	S	R	S	S	S	R	S
131	S	R	S	S	H	R	H	S	S	R	S	S	H	R	S
132	S	S	S	S	S	S	S	S	S	H	R	S	R	S	S
133	S	S	S	S	S	S	S	S	S	H	R	S	R	S	S
134	S	S	S	S	S	H	S	S	S	H	R	S	R	S	S
135	S	S	S	S	S	R	S	S	S	H	R	S	R	S	S
136	S	S	S	S	S	S	S	S	S	H	R	S	R	S	S
137	S	S	S	S	S	R	S	S	S	H	R	S	R	S	S
138	S	S	S	S	S	H	S	S	S	H	R	S	R	S	S
139	S	S	S	S	S	S	S	S	S	R	R	S	R	S	S
140	S	S	S	S	S	H	S	S	S	H	R	S	R	S	S
141	S	S	S	S	S	R	R	S	S	H	S	S	S	S	S
142	S	S	S	S	S	R	R	S	S	H	S	S	S	S	S
143	S	S	S	S	S	R	R	S	S	H	S	S	S	S	S
144	S	S	S	S	S	R	R	S	S	H	S	S	S	S	S
145	S	S	S	S	S	R	R	S	S	H	S	S	S	S	S
146	S	S	S	S	S	R	R	S	S	H	S	S	S	S	S
147	S	S	S	S	S	R	R	S	S	H	S	S	S	S	S
148	S	S	S	S	S	R	R	S	S	R	S	S	S	S	S
149	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S
150	S	R	S	H	S	R	H	S	H	S	S	S	R	S	S
151	S	R	S	H	S	R	S	S	H	S	S	S	S	S	S
152	S	R	S	R	S	R	R	S	H	S	S	S	R	S	S
153	S	R	S	H	S	R	H	S	S	S	S	S	S	S	S
154	S	R	S	S	S	R	H	S	S	S	S	S	H	S	S
155	S	R	S	S	S	R	H	S	H	S	S	S	H	S	S
156	S	R	S	S	S	R	R	S	H	S	S	S	R	S	S
157	S	R	S	H	S	R	R	S	R	S	S	S	R	S	S
158	S	R	S	R	S	R	H	S	H	S	S	S	H	S	S
159	S	S	S	H	S	R	R	S	S	R	S	S	R	S	S
160	S	S	S	H	S	R	R	S	S	R	S	S	R	S	S
161	S	S	S	S	S	R	R	S	S	R	S	S	R	S	S
162	S	S	S	H	S	R	R	S	S	R	S	S	R	S	S
163	S	S	S	H	S	R	R	S	S	R	S	S	R	S	S

No.	Sw5	I2	I3	J3	Mi23	Tm2a	Ty1	Ty2	Ph3	Ve2	Sm-565	Bw12	Bw6	Cf9	py1
164	S	S	S	S	S	R	R	S	S	R	S	S	R	S	S
165	S	S	S	R	S	R	R	S	S	R	S	S	R	n/a	S
166	S	S	S	H	S	R	R	S	S	R	S	S	R	S	S
167	S	S	S	S	S	R	R	S	S	R	S	S	R	S	S
168	S	S	S	S	S	R	R	S	S	R	S	S	R	S	S
169	S	R	S	S	H	R	H	S	S	H	R	S	S	S	S
170	S	R	S	S	R	R	S	S	S	R	H	S	S	S	S
171	S	R	S	S	R	R	S	S	S	H	H	S	S	S	S
172	S	R	S	S	H	R	H	S	S	H	H	S	S	S	S
173	S	R	S	S	H	R	H	S	S	R	H	S	S	S	S
174	S	R	S	S	R	R	S	S	S	H	H	S	S	S	S
175	S	R	S	S	R	R	S	S	S	S	S	S	S	S	S
176	S	R	S	S	H	R	H	S	S	H	S	S	S	S	S
177	S	R	S	S	H	R	H	S	S	S	S	S	S	S	S
178	S	R	S	S	S	R	S	S	S	S	R	S	S	S	S
179	S	R	S	R	S	R	S	H	S	S	R	S	H	S	S
180	S	R	S	R	S	R	S	H	S	S	R	S	H	S	S
181	S	R	S	R	S	R	S	S	S	S	R	S	H	S	S
182	S	R	S	R	S	R	S	S	S	S	R	S	H	S	S
183	S	R	S	R	S	R	S	S	S	S	R	S	H	S	S
184	S	R	S	R	S	R	S	H	S	S	R	S	S	S	S
185	S	R	S	R	S	R	S	H	S	S	R	S	S	S	S
186	S	R	S	R	S	R	S	H	S	S	R	S	S	S	S
187	S	R	S	R	S	R	S	S	S	S	R	S	S	S	S
188	S	R	S	S	S	S	S	S	R	S	R	H	S	S	S
189	S	R	S	S	S	S	S	S	R	S	R	R	S	S	S
190	S	R	S	S	S	S	S	H	R	S	R	H	S	S	S
191	S	R	S	S	S	S	S	S	R	S	R	H	S	S	S
192	S	R	S	S	S	S	S	H	R	S	R	R	S	S	S
193	S	R	S	S	S	S	S	H	R	S	R	H	S	S	S
194	S	R	S	S	S	S	S	S	R	S	R	S	S	S	S
195	S	R	S	S	S	S	S	S	R	S	R	H	S	S	S
196	S	R	S	S	S	S	S	R	R	S	R	S	S	S	S
197	S	R	S	S	S	R	S	S	S	S	S	R	H	S	S
198	S	R	S	S	S	H	S	S	R	S	S	S	H	S	S
199	S	R	S	S	S	S	S	S	H	S	S	S	S	S	S
200	S	S	S	S	H	H	S	S	R	S	S	S	R	S	S
201	S	S	S	S	S	H	S	S	R	S	S	S	R	S	S
202	S	S	S	S	H	R	S	S	R	S	S	S	R	S	S
203	S	S	S	S	H	S	S	S	R	S	S	S	R	S	S
204	S	S	S	S	H	S	S	S	R	S	S	S	R	S	S
205	S	S	S	S	S	R	S	S	R	S	S	S	R	S	S
206	S	S	S	S	H	H	S	S	R	S	S	S	R	S	S
207	S	S	S	S	H	R	S	S	R	S	S	S	R	S	S
208	S	S	S	S	R	R	S	S	R	S	S	S	R	S	S
209	S	S	S	S	H	H	S	S	R	S	S	S	R	S	S
210	S	S	S	S	H	H	S	S	R	S	S	R	R	S	S
211	S	S	S	S	S	R	S	S	R	S	S	R	R	S	S
212	S	S	S	S	R	S	S	S	R	S	S	H	R	S	S
213	S	S	S	S	H	S	S	S	R	S	S	S	R	S	S
214	S	S	S	S	R	H	S	S	R	S	S	S	R	S	S
215	S	S	S	S	R	S	S	S	R	S	S	S	R	S	S
216	S	S	S	S	H	H	S	S	R	S	S	S	R	S	S
217	S	S	S	S	S	H	S	S	R	S	S	S	R	S	S
218	S	S	S	S	S	S	S	S	S	H	S	S	S	R	S
219	S	S	S	S	S	S	S	S	S	H	S	S	S	R	S
220	S	S	S	S	S	S	S	S	S	H	S	S	H	R	S
221	S	S	S	S	S	S	S	S	S	H	S	S	R	R	S
222	S	S	S	S	S	S	S	S	S	H	S	S	H	R	S
223	S	R	S	S	S	H	S	S	S	R	S	S	S	S	S
224	S	R	S	S	S	S	S	S	S	R	S	S	S	R	S
225	S	R	S	S	S	H	S	S	S	R	S	S	S	S	S

No.	Sw5	I2	I3	J3	Mi23	Tm2a	Ty1	Ty2	Ph3	Ve2	Sm-565	Bw12	Bw6	Cf9	py1
226	S	R	S	S	S	H	S	S	S	R	S	S	S	R	S
227	S	R	S	S	S	R	S	S	S	R	S	S	S	H	S
228	S	R	S	S	S	R	S	S	S	R	S	S	S	R	S
229	S	R	S	S	S	S	S	S	S	R	S	S	S	R	S
230	S	R	S	R	S	H	S	S	H	S	S	S	R	S	S
231	S	R	S	R	S	R	H	S	R	S	S	S	H	S	S
232	S	R	S	R	S	S	H	S	S	S	S	S	H	S	S
233	S	R	S	R	S	H	R	S	S	S	S	S	S	S	S
234	S	R	S	R	S	R	H	S	H	S	S	S	H	S	S
235	S	R	S	R	S	S	R	S	H	S	S	S	S	S	S
236	S	R	S	R	S	H	H	S	H	S	S	S	H	S	S
237	S	R	S	R	S	H	R	S	H	S	S	S	H	S	S
238	S	R	S	R	S	S	H	S	R	S	S	S	H	S	S
239	S	R	S	R	S	S	S	S	R	S	S	S	R	S	S
240	S	R	S	S	S	H	S	S	S	R	S	S	R	S	S
241	S	R	S	S	S	S	S	S	S	R	S	S	R	S	S
242	S	R	S	S	S	H	S	S	S	R	S	S	R	S	S
243	S	R	S	S	S	S	S	S	S	H	S	S	R	S	S
244	S	R	S	S	S	H	S	S	S	H	S	S	R	S	S
245	S	R	S	S	S	S	S	S	S	H	S	S	R	S	S
246	S	R	S	S	S	H	S	S	S	R	S	S	R	S	S
247	S	R	S	S	H	H	S	S	R	S	S	S	R	S	S
248	S	R	S	S	H	R	S	S	R	S	S	S	R	S	S
249	S	R	S	S	H	S	S	S	R	S	S	S	R	S	S
250	S	R	S	S	H	H	S	S	R	S	S	S	R	S	S
251	S	R	S	S	S	S	S	S	R	S	S	S	R	S	S
252	S	R	S	S	R	H	S	S	R	S	S	S	R	S	S
253	S	R	S	S	R	H	S	S	R	S	S	S	R	S	S
254	S	R	S	S	S	S	S	S	R	S	S	S	R	S	S
255	S	R	S	S	S	S	S	H	R	S	S	S	R	S	S
256	S	R	S	S	S	S	S	R	R	S	S	S	R	S	S
257	S	R	S	S	S	S	S	R	R	S	S	S	R	S	S
258	S	R	S	S	S	S	S	H	R	S	S	S	R	S	S
259	S	R	S	S	S	S	S	H	R	S	S	S	R	S	S
260	S	R	S	S	S	S	S	S	R	S	S	S	R	S	S
261	S	R	S	S	S	S	S	H	R	S	S	S	R	S	S
262	S	R	S	S	S	S	S	H	R	S	S	S	R	S	S
263	S	R	S	S	S	S	S	H	R	S	S	S	R	S	S
264	S	S	S	S	S	S	S	H	R	S	S	S	R	S	S
265	S	S	S	H	S	H	S	S	R	S	S	S	R	S	S
266	S	S	S	R	S	R	S	H	R	S	S	S	R	S	S
267	S	S	S	H	S	H	S	S	R	S	S	S	R	S	S
268	S	S	S	R	S	R	S	R	R	S	S	S	R	S	S
269	S	S	S	H	S	H	S	S	R	S	S	S	R	S	S
270	S	S	S	R	S	R	S	H	R	S	S	S	R	S	S
271	S	S	S	H	S	H	S	H	R	S	S	S	R	S	S
272	S	S	S	H	S	H	S	H	R	S	S	S	R	S	S
273	S	S	S	S	S	S	S	S	R	S	S	S	R	S	S
274	S	S	S	S	S	S	S	S	R	S	S	S	R	S	S
275	S	S	S	S	S	S	S	S	R	S	S	S	R	S	S
276	S	S	S	H	S	H	S	S	R	S	S	S	R	S	S
277	S	S	S	H	S	H	S	S	R	S	S	S	R	S	S
278	S	S	S	S	S	S	S	S	R	S	S	S	R	S	S
279	S	S	S	H	S	H	S	S	R	S	S	S	R	S	S
280	S	S	S	S	S	S	S	S	R	S	S	S	R	S	S
281	S	S	S	S	S	S	S	S	R	S	S	S	R	S	S
282	S	S	S	S	S	S	S	S	R	S	S	S	R	S	S
283	S	S	S	S	S	S	S	S	R	S	S	S	R	S	S

표 14. 순천대학교 33점의 시료에 대하여, 병 관련 15개의 마커를 이용한 서비스 결과

순번	샘플명	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Ph3	Sm-	Bw6	Bw12	Cf9
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														565			
1	ITF100	S	H	S	S	H	S	H	S	S	S	S	R	S	R	S	
2	ITF101	S	H	H	S	S	S	S	S	S	R	H	R	S	H	S	
3	ITF102	S	S	S	S	H	S	H	R	S	H	S	R	S	S	S	
4	ITF103	S	H	S	S	H	S	S	H	S	H	S	H	S	H	S	
5	ITF104	S	S	S	S	R	S	H	H	S	H	H	S	S	S	S	
6	ITF105	S	S	S	S	H	H	H	H	S	H	H	R	S	S	S	
7	ITF106	S	S	S	S	H	S	S	S	S	H	S	S	S	H	S	
8	ITF107	H	S	S	S	H	S	H	H	S	R	S	R	S	R	S	
9	ITF108	H	H	S	S	H	S	H	S	S	H	S	H	S	R	S	
10	ITF109	H	H	S	S	H	S	H	S	S	H	S	H	S	R	S	
11	ITF110	H	S	S	S	H	S	S	H	S	R	S	H	S	S	S	
12	ITF111	S	S	S	S	H	H	S	H	S	R	H	S	S	S	S	
13	ITF112	S	S	S	S	H	S	H	H	S	H	S	H	S	H	S	
14	ITF113	H	S	S	S	H	S	S	S	S	H	H	H	S	H	S	
15	ITF114	S	S	S	S	H	S	H	R	S	R	S	H	S	H	S	
16	ITF115	S	S	S	S	S	H	S	H	S	R	S	H	S	S	S	
17	ITF116	S	H	S	S	H	S	H	H	S	S	S	R	S	H	S	
18	ITF117	H	S	S	S	H	S	H	H	S	H	S	R	H	S	S	
19	ITF118	S	S	S	S	H	S	H	H	S	H	S	S	S	H	S	
20	ITF119	H	S	S	S	R	H	H	R	S	H	S	H	S	S	S	
21	ITF120	H	S	S	S	H	S	H	S	S	R	S	H	S	H	S	
22	ITF121	S	H	H	S	S	S	S	S	S	H	H	H	S	H	S	
23	ITF122	H	S	S	S	H	S	H	S	S	R	S	H	S	H	S	
24	ITF123	S	S	S	S	H	S	S	H	S	R	S	H	S	H	S	
25	ITF124	S	H	S	S	H	S	H	S	S	S	S	H	S	H	S	
26	ITF125	S	S	S	S	S	H	S	S	S	R	S	H	S	S	S	
27	ITF126	S	S	S	S	S	S	S	H	S	H	S	H	S	H	S	
28	ITF127	S	S	S	S	S	S	S	S	S	H	S	R	S	S	S	
29	ITF128	S	S	S	S	S	H	S	S	S	R	S	R	S	S	S	
30	ITF129	S	S	S	S	S	S	S	S	S	R	R	R	S	S	S	
31	ITF130	S	S	S	S	S	H	S	H	S	R	H	R	S	S	S	
32	ITF131	H	S	S	S	H	S	H	R	S	R	S	H	S	H	S	
33	ITF132	S	H	S	S	H	S	H	S	S	S	S	S	S	R	S	

표 15. 순천대학교 154점의 시료에 대하여, 원예 형질 관련 1개의 마커를 이용한 서비스 결과

순번	샘플명	MS	순번	샘플명	MS	순번	샘플명	MS	순번	샘플명	MS
1	TMC1#01	MsMs	40	TMC2#20	H	79	TMC3#29	H	118	T4#09	MsMs
2	TMC1#02	MsMs	41	TMC2#21	H	80	TMC3#30	MsMs	119	T4#10	MsMs
3	TMC1#03	MsMs	42	TMC2#22	H	81	TMC4#01	H	120	T4#11	H
4	TMC1#04	MsMs	43	TMC2#23	H	82	TMC4#02	msms	121	T4#12	MsMs
5	TMC1#05	MsMs	44	TMC2#24	H	83	TMC4#03	H	122	T4#13	H
6	TMC1#06	MsMs	45	TMC2#25	MsMs	84	TMC4#04	MsMs	123	T4#14	H
7	TMC1#07	MsMs	46	TMC2#26	MsMs	85	TMC4#05	H	124	T4#15	H
8	TMC1#08	MsMs	47	TMC2#27	H	86	TMC4#06	MsMs	125	T4#16	MsMs
9	TMC1#09	MsMs	48	TMC2#28	H	87	TMC4#07	MsMs	126	T3#01	MsMs
10	TMC1#10	MsMs	49	TMC2#29	msms	88	TMC4#08	msms	127	T3#02	MsMs
11	TMC1#11	MsMs	50	TMC2#30	msms	89	TMC4#09	H	128	T3#03	MsMs
12	TMC1#12	MsMs	51	TMC3#01	msms	90	TMC4#10	MsMs	129	T3#04	MsMs
13	TMC1#13	MsMs	52	TMC3#02	H	91	TMC4#11	H	130	TMC7#01	MsMs
14	TMC1#14	MsMs	53	TMC3#03	H	92	TMC4#12	MsMs	131	TMC7#02	MsMs
15	TMC1#15	MsMs	54	TMC3#04	H	93	TMC4#13	H	132	TMC7#03	MsMs
16	TMC1#16	MsMs	55	TMC3#05	H	94	TMC4#14	msms	133	TMC7#04	MsMs
17	TMC1#17	MsMs	56	TMC3#06	MsMs	95	TMC4#15	MsMs	134	TMC7#05	MsMs
18	TMC1#18	MsMs	57	TMC3#07	H	96	TMC4#16	msms	135	TMC7#06	MsMs
19	TMC1#19	MsMs	58	TMC3#08	MsMs	97	TMC4#17	H	136	TMC7#07	MsMs
20	TMC1#20	MsMs	59	TMC3#09	H	98	TMC4#18	msms	137	TMC7#08	MsMs
21	TMC2#01	H	60	TMC3#10	MsMs	99	TMC4#19	H	138	TMC7#09	H
22	TMC2#02	H	61	TMC3#11	H	100	TMC4#20	H	139	TMC7#10	H
23	TMC2#03	H	62	TMC3#12	msms	101	TMC4#21	MsMs	140	TMC7#11	H
24	TMC2#04	MsMs	63	TMC3#13	H	102	TMC4#22	H	141	TMC7#12	MsMs

25	TMC2#05	H	64	TMC3#14	H	103	TMC4#23	msms	142	TMC7#13	MsMs
26	TMC2#06	H	65	TMC3#15	H	104	TMC4#24	H	143	TMC7#14	MsMs
27	TMC2#07	H	66	TMC3#16	H	105	TMC4#25	H	144	TMC7#15	MsMs
28	TMC2#08	MsMs	67	TMC3#17	H	106	TMC4#26	H	145	TMC7#16	H
29	TMC2#09	MsMs	68	TMC3#18	H	107	TMC4#27	H	146	TMC7#17	MsMs
30	TMC2#10	msms	69	TMC3#19	H	108	TMC4#28	MsMs	147	TMC7#18	H
31	TMC2#11	H	70	TMC3#20	MsMs	109	TMC4#29	H	148	T10#01	MsMs
32	TMC2#12	msms	71	TMC3#21	msms	110	T4#01	MsMs	149	T10#02	MsMs
33	TMC2#13	MsMs	72	TMC3#22	msms	111	T4#02	H	150	T10#03	MsMs
34	TMC2#14	H	73	TMC3#23	MsMs	112	T4#03	MsMs	151	T10#04	MsMs
35	TMC2#15	MsMs	74	TMC3#24	H	113	T4#04	H	152	T10#05	MsMs
36	TMC2#16	H	75	TMC3#25	msms	114	T4#05	H	153	T10#06	MsMs
37	TMC2#17	H	76	TMC3#26	msms	115	T4#06	H	154	T10#07	MsMs
38	TMC2#18	H	77	TMC3#27	H	116	T4#07	MsMs			
39	TMC2#19	msms	78	TMC3#28	H	117	T4#08	MsMs			

표 16. 순천대학교 46점의 시료에 대하여, 원예 형질 관련 3개의 마커를 이용한 서비스 결과

순번	ANT1	NOR	RIN	순번	ANT1	NOR	RIN	순번	ANT1	NOR	RIN
1	purple	normal	normal	17	purple	normal	normal	33	purple	normal	normal
2	purple	normal	normal	18	purple	normal	normal	34	purple	normal	normal
3	purple	normal	normal	19	purple	normal	normal	35	purple	normal	normal
4	H	normal	normal	20	purple	normal	normal	36	purple	normal	normal
5	purple	normal	normal	21	purple	normal	normal	37	purple	normal	normal
6	purple	normal	normal	22	purple	normal	normal	38	purple	normal	normal
7	purple	normal	normal	23	purple	normal	normal	39	H	normal	normal
8	H	normal	normal	24	purple	normal	normal	40	purple	normal	normal
9	purple	normal	normal	25	purple	normal	normal	41	purple	normal	normal
10	purple	normal	normal	26	purple	normal	normal	42	purple	normal	normal
11	purple	normal	normal	27	purple	normal	normal	43	purple	normal	normal
12	purple	normal	normal	28	purple	normal	normal	44	purple	normal	normal
13	purple	normal	normal	29	purple	normal	normal	45	purple	normal	normal
14	purple	normal	normal	30	purple	normal	normal	46	purple	normal	normal
15	purple	normal	normal	31	purple	normal	normal				
16	purple	normal	normal	32	purple	normal	normal				

표 17. 순천대학교 12점의 시료에 대하여, 병 관련 9개의 마커를 이용한 서비스 결과

순번	파종번호	Mi23	J3	I2	I3	Ve2	Bw6	Bw12	py1-4	Cf9
1	TR-0251	n/a	R	n/a	S	S	S	n/a	n/a	n/a
2	TR-0252	R	R	S	S	S	R	R	R	S
3	TR-0253	R	R	R	S	R	R	R	R	S
4	TR-0254	R	R	R	S	R	R	R	R	S
5	TR-0255	R	R	S	S	S	R	R	S	S
6	TR-0256	R	S	R	S	R	S	R	S	n/a
7	TR-0257	R	R	R	S	S	R	R	S	S
8	TR-0258	R	S	S	S	S	S	R	S	S
9	TR-0259	S	R	S	S	S	R	R	S	S
10	TR-0261	R	R	S	S	R	R	S	S	S
11	To-0271	R	S	R	S	R	S	S	S	R
12	To-0272	S	S	R	S	R	S	S	S	S

표 18. 순천대학교 10점의 시료에 대하여, 병 관련 15개의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	Ty4	ty5	Sw5	Mi23	J3	I2	I3	Ve2	Ph3	Sm-565	Bw6	Bw12	Cf9
1	S	S	S	S	S	S	S	S	S	S	S	R	R	S	S
2	S	S	S	S	S	S	S	S	S	S	S	R	R	S	S
3	S	S	S	S	S	S	S	S	S	S	S	R	R	S	S
4	S	S	S	S	S	S	S	S	S	S	S	R	R	S	S
5	S	S	S	S	S	S	S	S	S	S	S	R	R	S	S
6	S	S	S	S	S	S	S	S	S	S	S	R	R	S	S
7	S	S	S	S	S	S	S	S	S	S	S	R	R	S	S

8	S	S	S	S	S	S	S	S	S	S	S	S	R	R	S	S
9	S	S	S	S	S	S	S	S	S	S	S	S	R	R	S	S
10	S	S	S	S	S	S	S	S	S	S	S	S	R	R	S	S

표 19. 순천대학교 7점의 시료에 대하여, 병 관련 15개의 마커를 이용한 서비스 결과

순번	샘플명	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Ph3	Sm-565	Bw6	Bw12	Cf9
1	ITF1	H	S	S	R	H	S	H	S	S	R	S	H	H	S	H
2	ITF2	S	S	S	R	H	S	S	S	S	H	S	S	S	H	S
3	ITF3	S	S	S	R	H	S	S	H	S	R	S	H	S	H	S
4	ITF4	S	S	H	R	S	S	S	S	S	H	H	H	S	H	H
5	ITF5	S	S	H	R	S	S	S	S	S	H	H	H	S	H	H
6	ITF6	S	S	S	R	H	S	S	S	S	H	S	H	S	H	H
7	ITF7	S	S	S	R	H	S	H	S	S	S	S	R	S	H	H

표 20. 순천대학교 2점의 시료에 대하여, 병 관련 15개의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Ph3	Sm-565	Bw6	Bw12	Cf9
1	S	S	S	S	R	R	R	S	S	R	S	S	R	S	S
2	S	S	S	S	R	R	R	S	S	R	S	S	R	S	S

표 21. 순천대학교 96점의 시료에 대하여, 원예 형질 관련 1개의 마커를 이용한 서비스 결과

순번	샘플명	RIN	순번	샘플명	RIN	순번	샘플명	RIN	순번	샘플명	RIN
1	STF2-1#01	Rin	25	STF2-5#10	Rin	49	STF2-15#03	Rin	73	STF2-17#10	Rin
2	STF2-1#02	Rin	26	STF2-5#11	Rin	50	STF2-15#04	Rin	74	STF2-17#11	H
3	STF2-1#03	Rin	27	STF2-5#12	Rin	51	STF2-15#05	Rin	75	STF2-17#12	H
4	STF2-1#04	Rin	28	STF2-5#13	Rin	52	STF2-15#06	Rin	76	STF2-17#13	H
5	STF2-1#05	Rin	29	STF2-5#14	Rin	53	STF2-15#07	Rin	77	STF2-17#14	rin
6	STF2-1#06	Rin	30	STF2-5#15	Rin	54	STF2-15#08	Rin	78	STF2-17#15	H
7	STF2-1#07	Rin	31	STF2-5#16	Rin	55	STF2-15#09	Rin	79	STF2-17#16	Rin
8	STF2-1#08	Rin	32	STF2-14#01	Rin	56	STF2-15#10	Rin	80	STF2-24#01	H
9	STF2-1#09	Rin	33	STF2-14#02	Rin	57	STF2-15#11	Rin	81	STF2-24#02	rin
10	STF2-1#10	Rin	34	STF2-14#03	Rin	58	STF2-15#12	Rin	82	STF2-24#03	H
11	STF2-1#11	Rin	35	STF2-14#04	Rin	59	STF2-15#13	Rin	83	STF2-24#04	H
12	STF2-1#12	Rin	36	STF2-14#05	Rin	60	STF2-15#14	Rin	84	STF2-24#05	H
13	STF2-1#13	Rin	37	STF2-14#06	Rin	61	STF2-15#15	Rin	85	STF2-24#06	H
14	STF2-1#14	Rin	38	STF2-14#07	Rin	62	STF2-15#16	Rin	86	STF2-24#07	Rin
15	STF2-1#15	Rin	39	STF2-14#08	Rin	63	STF2-15#17	Rin	87	STF2-24#08	rin
16	STF2-5#01	Rin	40	STF2-14#09	Rin	64	STF2-17#01	rin	88	STF2-24#09	H
17	STF2-5#02	Rin	41	STF2-14#10	Rin	65	STF2-17#02	rin	89	STF2-24#10	H
18	STF2-5#03	Rin	42	STF2-14#11	Rin	66	STF2-17#03	Rin	90	STF2-24#11	rin
19	STF2-5#04	Rin	43	STF2-14#12	Rin	67	STF2-17#04	rin	91	STF2-24#12	H
20	STF2-5#05	Rin	44	STF2-14#13	Rin	68	STF2-17#05	H	92	STF2-24#13	H
21	STF2-5#06	Rin	45	STF2-14#14	Rin	69	STF2-17#06	H	93	STF2-24#14	rin
22	STF2-5#07	Rin	46	STF2-14#15	Rin	70	STF2-17#07	Rin	94	STF2-24#15	Rin
23	STF2-5#08	Rin	47	STF2-15#01	Rin	71	STF2-17#08	H	95	STF2-24#16	rin
24	STF2-5#09	Rin	48	STF2-15#02	Rin	72	STF2-17#09	Rin	96	STF2-24#17	rin

표 22. 순천대학교 2,481점의 시료에 대하여, 병 관련 9개의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	Tm2a	Mi23	J3	Ve2	Ph3	Sm-565	Bw12	No.	Ty1	Ty2	Tm2a	Mi23	J3	Ve2	Ph3	Sm-565	Bw12
1	H	S	H	S	S	R	S	S	S	1242	H	S	H	S	S	S	R	H	S
2	H	S	H	S	S	R	S	S	S	1243	H	S	H	S	S	S	R	H	S
3	H	S	H	S	S	R	S	S	S	1244	H	S	H	S	S	S	R	H	S
4	H	S	H	S	S	R	S	S	S	1245	H	S	H	S	S	S	R	H	S
5	H	S	H	S	S	R	S	S	S	1246	H	S	H	S	S	S	R	H	S
6	H	S	H	S	S	R	S	S	S	1247	H	S	H	S	S	S	R	H	S
7	H	S	H	S	S	R	S	S	S	1248	H	S	H	S	S	S	R	H	S
8	H	S	H	S	S	R	S	S	S	1249	H	S	H	S	S	S	R	H	S
9	H	S	H	S	S	R	S	S	S	1250	H	S	H	S	S	S	R	H	S
10	H	S	H	S	S	R	S	S	S	1251	H	S	H	S	S	S	R	H	S

11	H	S	H	S	S	R	S	S	S
12	H	S	H	S	S	R	S	S	S
13	H	S	H	S	S	R	S	S	S
14	H	S	H	S	S	R	S	S	S
15	H	S	H	S	S	R	S	S	S
16	H	S	H	S	S	R	S	S	S
17	H	S	H	S	S	R	S	S	S
18	H	S	H	S	S	R	S	S	S
19	H	S	H	S	S	R	S	S	S
20	H	S	H	S	S	R	S	S	S
21	H	S	H	S	S	R	S	S	S
22	H	S	H	S	S	R	S	S	S
23	H	S	H	S	S	R	S	S	S
24	H	S	H	S	S	R	S	S	S
25	H	S	H	S	S	R	S	S	S
26	H	S	H	S	S	R	S	S	S
27	H	S	H	S	S	R	S	S	S
28	H	S	H	S	S	R	S	S	S
29	H	S	H	S	S	R	S	S	S
30	H	S	H	S	S	R	S	S	S
31	H	S	H	S	S	R	S	S	S
32	H	S	H	S	S	R	S	S	S
33	H	S	H	S	S	R	S	S	S
34	H	S	H	S	S	R	S	S	S
35	H	S	H	S	S	R	S	S	S
36	H	S	H	S	S	R	S	S	S
37	H	S	H	S	S	R	S	S	S
38	H	S	H	S	S	R	S	S	S
39	H	S	H	S	S	R	S	S	S
40	H	S	H	S	S	R	S	S	S
41	H	S	H	S	S	R	S	S	S
42	H	S	H	S	S	R	S	S	S
43	H	S	H	S	S	R	S	S	S
44	H	S	H	S	S	R	S	S	S
45	H	S	H	S	S	R	S	S	S
46	H	S	H	S	S	R	S	S	S
47	H	S	H	S	S	R	S	S	S
48	H	S	H	S	S	R	S	S	S
49	H	S	H	S	S	R	S	S	S
50	H	S	H	S	S	R	S	S	S
51	H	S	H	S	S	R	S	S	S
52	H	S	H	S	S	R	S	S	S
53	H	S	H	S	S	R	S	S	S
54	H	S	H	S	S	R	S	S	S
55	H	S	H	S	S	R	S	S	S
56	H	S	H	S	S	R	S	S	S
57	H	S	H	S	S	R	S	S	S
58	H	S	H	S	S	R	S	S	S
59	H	S	H	S	S	R	S	S	S
60	H	S	H	S	S	R	S	S	S
61	H	S	H	S	S	R	S	S	S
62	H	S	H	S	S	R	S	S	S
63	H	S	H	S	S	R	S	S	S
64	H	S	H	S	S	R	S	S	S
65	H	S	H	S	S	R	S	S	S
66	H	S	H	S	S	R	S	S	S
67	H	S	H	S	S	R	S	S	S
68	H	S	H	S	S	R	S	S	S
69	H	S	H	S	S	R	S	S	S
70	H	S	H	S	S	R	S	S	S
71	H	S	H	S	S	R	S	S	S
72	H	S	H	S	S	R	S	S	S
73	H	S	H	S	S	R	S	S	S
74	H	S	H	S	S	R	S	S	S

1252	H	S	H	S	S	S	R	H	S
1253	H	S	H	S	S	S	R	H	S
1254	H	S	H	S	S	S	R	H	S
1255	H	S	H	S	S	S	R	H	S
1256	H	S	H	S	S	S	R	H	S
1257	H	S	H	S	S	S	R	H	S
1258	H	S	H	S	S	S	R	H	S
1259	H	S	H	S	S	S	R	H	S
1260	H	S	H	S	S	S	R	H	S
1261	H	S	H	S	S	S	R	H	S
1262	H	S	H	S	S	S	R	H	S
1263	H	S	H	S	S	S	R	H	S
1264	H	S	H	S	S	S	R	H	S
1265	H	S	H	S	S	S	R	H	S
1266	H	S	H	S	S	S	R	H	S
1267	H	S	H	S	S	S	R	H	S
1268	H	S	H	S	S	S	R	H	S
1269	H	S	H	S	S	S	R	H	S
1270	H	S	H	S	S	S	R	H	S
1271	H	S	H	S	S	S	R	H	S
1272	H	S	H	S	S	S	R	H	S
1273	H	S	H	S	S	S	R	H	S
1274	H	S	H	S	S	S	R	H	S
1275	H	S	H	S	S	S	R	H	S
1276	H	S	H	S	S	S	R	H	S
1277	H	S	H	S	S	S	R	H	S
1278	H	S	H	S	S	S	R	H	S
1279	H	S	H	S	S	S	R	H	S
1280	H	S	H	S	S	S	R	H	S
1281	H	S	H	S	S	S	R	H	S
1282	H	S	H	S	S	S	R	H	S
1283	H	S	H	S	S	S	R	H	S
1284	H	S	H	S	S	S	R	H	S
1285	H	S	H	S	S	S	R	H	S
1286	H	S	H	S	S	S	R	H	S
1287	H	S	H	S	S	S	R	H	S
1288	H	S	H	S	S	S	R	H	S
1289	H	S	H	S	S	S	R	H	S
1290	H	S	H	S	S	S	R	H	S
1291	H	S	H	S	S	S	R	H	S
1292	H	S	H	S	S	S	R	H	S
1293	H	S	H	S	S	S	R	H	S
1294	H	S	H	S	S	S	R	H	S
1295	H	S	H	S	S	S	R	H	S
1296	H	S	H	S	S	S	R	H	S
1297	H	S	H	S	S	S	R	H	S
1298	H	S	H	S	S	S	R	H	S
1299	H	S	H	S	S	S	R	H	S
1300	H	S	H	S	S	S	R	H	S
1301	H	S	H	S	S	S	R	H	S
1302	H	S	H	S	S	S	R	H	S
1303	H	S	H	S	S	S	R	H	S
1304	H	S	H	S	S	S	R	H	S
1305	H	S	H	S	S	S	R	H	S
1306	H	S	H	S	S	S	R	H	S
1307	H	S	H	S	S	S	R	H	S
1308	H	S	H	S	S	S	R	H	S
1309	H	S	H	S	S	S	R	H	S
1310	H	S	H	S	S	S	R	H	S
1311	H	S	H	S	S	S	R	H	S
1312	H	S	H	S	S	S	R	H	S
1313	H	S	H	S	S	S	R	H	S
1314	H	S	H	S	S	S	R	H	S
1315	H	S	H	S	S	S	R	H	S

75	H	S	H	S	S	R	S	S	S
76	H	S	H	S	S	R	S	S	S
77	H	S	H	S	S	R	S	S	S
78	H	S	H	S	S	R	S	S	S
79	H	S	H	S	S	R	S	S	S
80	H	S	H	S	S	R	S	S	S
81	H	S	H	S	S	R	S	S	S
82	H	S	H	S	S	R	S	S	S
83	H	S	H	S	S	R	S	S	S
84	H	S	H	S	S	R	S	S	S
85	H	S	H	S	S	R	S	S	S
86	H	S	H	S	S	R	S	S	S
87	H	S	H	S	S	R	S	S	S
88	H	S	H	S	S	R	S	S	S
89	H	S	H	S	S	R	S	S	S
90	H	S	H	S	S	R	S	S	S
91	H	S	H	S	S	R	S	S	S
92	H	S	H	S	S	R	S	S	S
93	H	S	H	S	S	R	S	S	S
94	H	S	H	S	S	R	S	S	S
95	H	S	H	S	S	R	S	S	S
96	H	S	H	S	S	R	S	S	S
97	H	S	H	S	S	R	S	S	S
98	H	S	H	S	S	R	S	S	S
99	H	S	H	S	S	R	S	S	S
100	H	S	H	S	S	R	S	S	S
101	H	S	H	S	S	R	S	S	S
102	H	S	H	S	S	R	S	S	S
103	H	S	H	S	S	R	S	S	S
104	H	S	H	S	S	R	S	S	S
105	H	S	H	S	S	R	S	S	S
106	H	S	H	S	S	R	S	S	S
107	H	S	H	S	S	R	S	S	S
108	H	S	H	S	S	R	S	S	S
109	H	S	H	S	S	R	S	S	S
110	H	S	H	S	S	R	S	S	S
111	H	S	H	S	S	R	S	S	S
112	H	S	H	S	S	R	S	S	S
113	H	S	H	S	S	R	S	S	S
114	H	S	H	S	S	R	S	S	S
115	H	S	H	S	S	R	S	S	S
116	H	S	H	S	S	R	S	S	S
117	H	S	H	S	S	R	S	S	S
118	H	S	H	S	S	R	S	S	S
119	H	S	H	S	S	R	S	S	S
120	H	S	H	S	S	R	S	S	S
121	H	S	H	S	S	R	S	S	S
122	H	S	H	S	S	R	S	S	S
123	H	S	H	S	S	R	S	S	S
124	H	S	H	S	S	R	S	S	S
125	H	S	H	S	S	R	S	S	S
126	H	S	H	S	S	R	S	S	S
127	H	S	H	S	S	R	S	S	S
128	H	S	H	S	S	R	S	S	S
129	H	S	H	S	S	R	S	S	S
130	H	S	H	S	S	R	S	S	S
131	H	S	H	S	S	R	S	S	S
132	H	S	H	S	S	R	S	S	S
133	H	S	H	S	S	R	S	S	S
134	H	S	H	S	S	R	S	S	S
135	H	S	H	S	S	R	S	S	S
136	H	S	H	S	S	R	S	S	S
137	H	S	H	S	S	R	S	S	S
138	H	S	H	S	S	R	S	S	S

1316	H	S	H	S	S	S	R	H	S
1317	H	S	H	S	S	S	R	H	S
1318	H	S	H	S	S	S	R	H	S
1319	H	S	H	S	S	S	R	H	S
1320	H	S	H	S	S	S	R	H	S
1321	H	S	H	S	S	S	R	H	S
1322	H	S	H	S	S	S	R	H	S
1323	H	S	H	S	S	S	R	H	S
1324	H	S	H	S	S	S	R	H	S
1325	H	S	H	S	S	S	R	H	S
1326	H	S	H	S	S	S	R	H	S
1327	H	S	H	S	S	S	R	H	S
1328	H	S	H	S	S	S	R	H	S
1329	H	S	H	S	S	S	R	H	S
1330	H	S	H	S	S	S	R	H	S
1331	H	S	H	S	S	S	R	H	S
1332	H	S	H	S	S	S	R	H	S
1333	H	S	H	S	S	S	R	H	S
1334	H	S	H	S	S	S	R	H	S
1335	H	S	H	S	S	S	R	H	S
1336	H	S	H	S	S	S	R	H	S
1337	H	S	H	S	S	S	R	H	S
1338	H	S	H	S	S	S	R	H	S
1339	H	S	H	S	S	S	R	H	S
1340	H	S	H	S	S	S	R	H	S
1341	H	H	H	H	H	H	H	R	R
1342	H	H	H	H	H	H	H	R	R
1343	H	H	H	H	H	H	H	R	R
1344	H	H	H	H	H	H	H	R	R
1345	H	H	H	H	H	H	H	R	R
1346	H	H	H	H	H	H	H	R	R
1347	H	H	H	H	H	H	H	R	R
1348	H	H	H	H	H	H	H	R	R
1349	H	H	H	H	H	H	H	R	R
1350	H	H	H	H	H	H	H	R	R
1351	H	H	H	H	H	H	H	R	R
1352	H	H	H	H	H	H	H	R	R
1353	H	H	H	H	H	H	H	R	R
1354	H	H	H	H	H	H	H	R	R
1355	H	H	H	H	H	H	H	R	R
1356	H	H	H	H	H	H	H	R	R
1357	H	H	H	H	H	H	H	R	R
1358	H	H	H	H	H	H	H	R	R
1359	H	H	H	H	H	H	H	R	R
1360	H	H	H	H	H	H	H	R	R
1361	H	H	H	H	H	H	H	R	R
1362	H	H	H	H	H	H	H	R	R
1363	H	H	H	H	H	H	H	R	R
1364	H	H	H	H	H	H	H	R	R
1365	H	H	H	H	H	H	H	R	R
1366	H	H	H	H	H	H	H	R	R
1367	H	H	H	H	H	H	H	R	R
1368	H	H	H	H	H	H	H	R	R
1369	H	H	H	H	H	H	H	R	R
1370	H	H	H	H	H	H	H	R	R
1371	H	H	H	H	H	H	H	R	R
1372	H	H	H	H	H	H	H	R	R
1373	H	H	H	H	H	H	H	R	R
1374	H	H	H	H	H	H	H	R	R
1375	H	H	H	H	H	H	H	R	R
1376	H	H	H	H	H	H	H	R	R
1377	H	H	H	H	H	H	H	R	R
1378	H	H	H	H	H	H	H	R	R
1379	H	H	H	H	H	H	H	R	R

139	H	S	H	S	S	R	S	S	S
140	H	S	H	S	S	R	S	S	S
141	H	S	H	S	S	R	S	S	S
142	H	S	H	S	S	R	S	S	S
143	H	S	H	S	S	R	S	S	S
144	H	S	H	S	S	R	S	S	S
145	H	S	H	S	S	R	S	S	S
146	H	S	H	S	S	R	S	S	S
147	H	S	H	S	S	R	S	S	S
148	H	S	H	S	S	R	S	S	S
149	H	S	H	S	S	R	S	S	S
150	H	S	H	S	S	R	S	S	S
151	H	S	H	S	S	R	S	S	S
152	H	S	H	S	S	R	S	S	S
153	H	S	H	S	S	R	S	S	S
154	H	S	H	S	S	R	S	S	S
155	H	S	H	S	S	R	S	S	S
156	H	S	H	S	S	R	S	S	S
157	H	S	H	S	S	R	S	S	S
158	H	S	H	S	S	R	S	S	S
159	H	S	H	S	S	R	S	S	S
160	H	S	H	S	S	R	S	S	S
161	H	S	H	S	S	R	S	S	S
162	H	S	H	S	S	R	S	S	S
163	H	S	H	S	S	R	S	S	S
164	H	S	H	S	S	R	S	S	S
165	H	S	H	S	S	R	S	S	S
166	H	S	H	S	S	R	S	S	S
167	H	S	H	S	S	R	S	S	S
168	H	S	H	S	S	R	S	S	S
169	H	S	H	S	S	R	S	S	S
170	H	S	H	S	S	R	S	S	S
171	H	S	H	S	S	R	S	S	S
172	H	S	H	S	S	R	S	S	S
173	H	S	H	S	S	R	S	S	S
174	H	S	H	S	S	R	S	S	S
175	H	S	H	S	S	R	S	S	S
176	H	S	H	S	S	R	S	S	S
177	H	S	H	S	S	R	S	S	S
178	H	S	H	S	S	R	S	S	S
179	H	S	H	S	S	R	S	S	S
180	H	S	H	S	S	R	S	S	S
181	H	S	H	S	S	R	S	S	S
182	H	S	H	S	S	R	S	S	S
183	H	S	H	S	S	R	S	S	S
184	H	S	H	S	S	R	S	S	S
185	H	S	H	S	S	R	S	S	S
186	H	S	H	S	S	R	S	S	S
187	H	S	H	S	S	R	S	S	S
188	H	S	H	S	S	R	S	S	S
189	H	S	H	S	S	R	S	S	S
190	H	S	H	S	S	R	S	S	S
191	H	S	H	S	S	R	S	S	S
192	H	S	H	S	S	R	S	S	S
193	H	S	H	H	S	S	H	H	S
194	H	S	H	H	S	S	H	H	S
195	H	S	H	H	S	S	H	H	S
196	H	S	H	H	S	S	H	H	S
197	H	S	H	H	S	S	H	H	S
198	H	S	H	H	S	S	H	H	S
199	H	S	H	H	S	S	H	H	S
200	H	S	H	H	S	S	H	H	S
201	H	S	H	H	S	S	H	H	S
202	H	S	H	H	S	S	H	H	S

1380	H	H	H	H	H	H	H	R	R
1381	H	H	H	H	H	H	H	R	R
1382	H	H	H	H	H	H	H	R	R
1383	H	H	H	H	H	H	H	R	R
1384	H	H	H	H	H	H	H	R	R
1385	H	H	H	H	H	H	H	R	R
1386	H	H	H	H	H	H	H	R	R
1387	H	H	H	H	H	H	H	R	R
1388	H	H	H	H	H	H	H	R	R
1389	H	H	H	H	H	H	H	R	R
1390	H	H	H	H	H	H	H	R	R
1391	H	H	H	H	H	H	H	R	R
1392	H	H	H	H	H	H	H	R	R
1393	H	H	H	H	H	H	H	R	R
1394	H	H	H	H	H	H	H	R	R
1395	H	H	H	H	H	H	H	R	R
1396	H	H	H	H	H	H	H	R	R
1397	H	H	H	H	H	H	H	R	R
1398	H	H	H	H	H	H	H	R	R
1399	H	H	H	H	H	H	H	R	R
1400	H	H	H	H	H	H	H	R	R
1401	H	H	H	H	H	H	H	R	R
1402	H	H	H	H	H	H	H	R	R
1403	H	H	H	H	H	H	H	R	R
1404	H	H	H	H	H	H	H	R	R
1405	H	H	H	H	H	H	H	R	R
1406	H	H	H	H	H	H	H	R	R
1407	H	H	H	H	H	H	H	R	R
1408	H	H	H	H	H	H	H	R	R
1409	H	H	H	H	H	H	H	R	R
1410	H	H	H	H	H	H	H	R	R
1411	H	H	H	H	H	H	H	R	R
1412	H	H	H	H	H	H	H	R	R
1413	H	H	H	H	H	H	H	R	R
1414	H	H	H	H	H	H	H	R	R
1415	H	H	H	H	H	H	H	R	R
1416	R	S	R	S	R	S	S	R	R
1417	H	H	H	H	H	H	H	R	R
1418	H	H	H	H	H	H	H	R	R
1419	H	H	H	H	H	H	H	R	R
1420	H	H	H	H	H	H	H	R	R
1421	H	H	H	H	H	H	H	R	R
1422	H	H	H	H	H	H	H	R	R
1423	H	H	H	H	H	H	H	R	R
1424	H	H	H	H	H	H	H	R	R
1425	H	H	H	H	H	H	H	R	R
1426	H	H	H	H	H	H	H	R	R
1427	H	H	H	H	H	H	H	R	R
1428	H	H	H	H	H	H	H	R	R
1429	H	H	H	H	H	H	H	R	R
1430	H	H	H	H	H	H	H	R	R
1431	H	H	H	H	H	H	H	R	R
1432	H	H	H	H	H	H	H	R	R
1433	H	H	H	H	H	H	H	R	R
1434	H	H	H	H	H	H	H	R	R
1435	H	H	H	H	H	H	H	R	R
1436	H	H	H	H	H	H	H	R	R
1437	H	H	H	H	H	H	H	R	R
1438	H	H	H	H	H	H	H	R	R
1439	H	H	H	H	H	H	H	R	R
1440	H	H	H	H	H	H	H	R	R
1441	H	H	H	H	H	H	H	R	R
1442	H	H	H	H	H	H	H	R	R
1443	H	H	H	H	H	H	H	R	R

203	H	S	H	H	S	S	H	H	S
204	H	S	H	H	S	S	H	H	S
205	H	S	H	H	S	S	H	H	S
206	H	S	H	H	S	S	H	H	S
207	H	S	H	H	S	S	H	H	S
208	H	S	H	H	S	S	H	H	S
209	H	S	H	H	S	S	H	H	S
210	H	S	H	H	S	S	H	H	S
211	H	S	H	H	S	S	H	H	S
212	H	S	H	H	S	S	H	H	S
213	H	S	H	H	S	S	H	H	S
214	H	S	H	H	S	S	H	H	S
215	H	S	H	H	S	S	H	H	S
216	H	S	H	H	S	S	H	H	S
217	H	S	H	H	S	S	H	H	S
218	H	S	H	H	S	S	H	H	S
219	H	S	H	H	S	S	H	H	S
220	H	S	H	H	S	S	H	H	S
221	H	S	H	H	S	S	H	H	S
222	H	S	H	H	S	S	H	H	S
223	H	S	H	H	S	S	H	H	S
224	H	S	H	H	S	S	H	H	S
225	H	S	H	H	S	S	H	H	S
226	H	S	H	H	S	S	H	H	S
227	H	S	H	H	S	S	H	H	S
228	H	S	H	H	S	S	H	H	S
229	H	S	H	H	S	S	H	H	S
230	H	S	H	H	S	S	H	H	S
231	H	S	H	H	S	S	H	H	S
232	H	S	H	H	S	S	H	H	S
233	H	S	H	H	S	S	H	H	S
234	H	S	H	H	S	S	H	H	S
235	H	S	H	H	S	S	H	H	S
236	H	S	H	H	S	S	H	H	S
237	H	S	H	H	S	S	H	H	S
238	H	S	H	H	S	S	H	H	S
239	H	S	H	H	S	S	H	H	S
240	H	S	H	H	S	S	H	H	S
241	H	S	H	H	S	S	H	H	S
242	H	S	H	H	S	S	H	H	S
243	H	S	H	H	S	S	H	H	S
244	H	S	H	H	S	S	H	H	S
245	H	S	H	H	S	S	H	H	S
246	H	S	H	H	S	S	H	H	S
247	H	S	H	H	S	S	H	H	S
248	H	S	H	H	S	S	H	H	S
249	H	S	H	H	S	S	H	H	S
250	H	S	H	H	S	S	H	H	S
251	H	S	H	H	S	S	H	H	S
252	H	S	H	H	S	S	H	H	S
253	H	S	H	H	S	S	H	H	S
254	H	S	H	H	S	S	H	H	S
255	H	S	H	H	S	S	H	H	S
256	H	S	H	H	S	S	H	H	S
257	H	S	H	H	S	S	H	H	S
258	H	S	H	H	S	S	H	H	S
259	H	S	H	H	S	S	H	H	S
260	H	S	H	H	S	S	H	H	S
261	H	S	H	H	S	S	H	H	S
262	H	S	H	H	S	S	H	H	S
263	H	S	H	H	S	S	H	H	S
264	H	S	H	H	S	S	H	H	S
265	H	S	H	H	S	S	H	H	S
266	H	S	H	H	S	S	H	H	S

1444	H	H	H	H	H	H	H	R	R
1445	H	H	H	H	H	H	H	R	R
1446	H	H	H	H	H	H	H	R	R
1447	H	H	H	H	H	H	H	R	R
1448	H	H	H	H	H	H	H	R	R
1449	H	H	H	H	H	H	H	R	R
1450	H	H	H	H	H	H	H	R	R
1451	H	H	H	H	H	H	H	R	R
1452	H	H	H	H	H	H	H	R	R
1453	H	H	H	H	H	H	H	R	R
1454	H	H	H	H	H	H	H	R	R
1455	H	H	H	H	H	H	H	R	R
1456	H	H	H	H	H	H	H	R	R
1457	H	H	H	H	H	H	H	R	R
1458	H	H	H	H	H	H	H	R	R
1459	H	H	H	H	H	H	H	R	R
1460	H	H	H	H	H	H	H	R	R
1461	H	H	H	H	H	H	H	R	R
1462	H	H	H	H	H	H	H	R	R
1463	H	H	H	H	H	H	H	R	R
1464	H	H	H	H	H	H	H	R	R
1465	H	H	H	H	H	H	H	R	R
1466	H	H	H	H	H	H	H	R	R
1467	H	H	H	H	H	H	H	R	R
1468	H	H	H	H	H	H	H	R	R
1469	H	H	H	H	H	H	H	R	R
1470	H	H	H	H	H	H	H	R	R
1471	H	H	H	H	H	H	H	R	R
1472	H	H	H	H	H	H	H	R	R
1473	H	H	H	H	H	H	H	R	R
1474	H	H	H	H	H	H	H	R	R
1475	H	H	H	H	H	H	H	R	R
1476	H	H	H	H	H	H	H	R	R
1477	H	H	H	H	H	H	H	R	R
1478	H	H	H	H	H	H	H	R	R
1479	H	H	H	H	H	H	H	R	R
1480	H	H	H	H	H	H	H	R	R
1481	H	H	H	H	H	H	H	R	R
1482	H	H	H	H	H	H	H	R	R
1483	H	H	H	H	H	H	H	R	R
1484	H	H	H	H	H	H	H	R	R
1485	H	H	H	H	H	H	H	R	R
1486	H	H	H	H	H	H	H	R	R
1487	H	H	H	H	H	H	H	R	R
1488	H	H	H	H	H	H	H	R	R
1489	H	H	H	H	H	H	H	R	R
1490	H	H	H	H	H	H	H	R	R
1491	H	H	H	H	H	H	H	R	R
1492	H	H	H	H	H	H	H	R	R
1493	H	H	H	H	H	H	H	R	R
1494	H	H	H	H	H	H	H	R	R
1495	H	H	H	H	H	H	H	R	R
1496	H	H	H	H	H	H	H	R	R
1497	H	H	H	H	H	H	H	R	R
1498	H	H	H	H	H	H	H	R	R
1499	H	H	H	H	H	H	H	R	R
1500	H	H	H	H	H	H	H	R	R
1501	H	H	H	H	H	H	H	R	R
1502	H	H	H	H	H	H	H	R	R
1503	H	H	H	H	H	H	H	R	R
1504	H	H	H	H	H	H	H	R	R
1505	H	H	H	H	H	H	H	R	R
1506	H	H	H	H	H	H	H	R	R
1507	H	H	H	H	H	H	H	R	R

267	H	S	H	H	S	S	H	H	S
268	H	S	H	H	S	S	H	H	S
269	H	S	H	H	S	S	H	H	S
270	H	S	H	H	S	S	H	H	S
271	H	S	H	H	S	S	H	H	S
272	H	S	H	H	S	S	H	H	S
273	H	S	H	H	S	S	H	H	S
274	H	S	H	H	S	S	H	H	S
275	H	S	H	H	S	S	H	H	S
276	H	S	H	H	S	S	H	H	S
277	H	S	H	H	S	S	H	H	S
278	H	S	H	H	S	S	H	H	S
279	H	S	H	H	S	S	H	H	S
280	H	S	H	H	S	S	H	H	S
281	H	S	H	H	S	S	H	H	S
282	H	S	H	H	S	S	H	H	S
283	H	S	H	H	S	S	H	H	S
284	H	S	H	H	S	S	H	H	S
285	H	S	H	H	S	S	H	H	S
286	H	S	H	H	S	S	H	H	S
287	H	S	H	H	S	S	H	H	S
288	H	S	H	H	S	S	H	H	S
289	H	S	H	H	S	S	H	H	S
290	H	S	H	H	S	S	H	H	S
291	H	S	H	H	S	S	H	H	S
292	H	S	H	H	S	S	H	H	S
293	H	S	H	H	S	S	H	H	S
294	H	S	H	H	S	S	H	H	S
295	H	S	H	H	S	S	H	H	S
296	H	S	H	H	S	S	H	H	S
297	H	S	H	H	S	S	H	H	S
298	H	S	H	H	S	S	H	H	S
299	H	S	H	H	S	S	H	H	S
300	H	S	H	H	S	S	H	H	S
301	H	S	H	H	S	S	H	H	S
302	H	S	H	H	S	S	H	H	S
303	H	S	H	H	S	S	H	H	S
304	H	S	H	H	S	S	H	H	S
305	H	S	H	H	S	S	H	H	S
306	H	S	H	H	S	S	H	H	S
307	H	S	H	H	S	S	H	H	S
308	H	S	H	H	S	S	H	H	S
309	H	S	H	H	S	S	H	H	S
310	H	S	H	H	S	S	H	H	S
311	H	S	H	H	S	S	H	H	S
312	H	S	H	H	S	S	H	H	S
313	H	S	H	H	S	S	H	H	S
314	H	S	H	H	S	S	H	H	S
315	H	S	H	H	S	S	H	H	S
316	H	S	H	H	S	S	H	H	S
317	H	S	H	H	S	S	H	H	S
318	H	S	H	H	S	S	H	H	S
319	H	S	H	H	S	S	H	H	S
320	H	S	H	H	S	S	H	H	S
321	H	S	H	H	S	S	H	H	S
322	H	S	H	H	S	S	H	H	S
323	H	S	H	H	S	S	H	H	S
324	H	S	H	H	S	S	H	H	S
325	H	S	H	H	S	S	H	H	S
326	H	S	H	H	S	S	H	H	S
327	H	S	H	H	S	S	H	H	S
328	H	S	H	H	S	S	H	H	S
329	H	S	H	H	S	S	H	H	S
330	H	S	H	H	S	S	H	H	S

1508	H	H	H	H	H	H	H	R	R
1509	H	H	H	H	H	H	H	R	R
1510	H	H	H	H	H	H	H	R	R
1511	H	H	H	H	H	H	H	R	R
1512	H	H	H	H	H	H	H	R	R
1513	H	H	H	H	H	H	H	R	R
1514	H	H	H	H	H	H	H	R	R
1515	H	H	H	H	H	H	H	R	R
1516	H	H	H	H	H	H	H	R	R
1517	H	H	H	H	H	H	H	R	R
1518	H	H	H	H	H	H	H	R	R
1519	H	H	H	H	H	H	H	R	R
1520	H	H	H	H	H	H	H	R	R
1521	H	H	H	H	H	H	H	R	R
1522	H	H	H	H	H	H	H	R	R
1523	H	H	H	H	H	H	H	R	R
1524	H	H	H	H	H	H	H	R	R
1525	H	H	H	H	H	H	H	R	R
1526	H	H	H	H	H	H	H	R	R
1527	H	H	H	H	H	H	H	R	R
1528	H	H	H	H	H	H	H	R	R
1529	H	H	H	H	H	H	H	R	R
1530	H	H	H	H	H	H	H	R	R
1531	H	H	H	H	H	H	H	R	R
1532	H	H	H	H	H	H	H	R	R
1533	H	H	H	H	H	H	H	R	R
1534	H	H	H	H	H	H	H	R	R
1535	H	H	H	H	H	H	H	R	R
1536	H	H	H	H	H	H	H	R	R
1537	H	H	H	H	H	H	H	R	R
1538	R	S	R	S	R	S	S	R	R
1539	H	H	H	H	H	H	H	R	R
1540	H	H	H	H	H	H	H	R	R
1541	H	H	H	H	H	H	H	R	R
1542	H	H	H	H	H	H	H	R	R
1543	H	H	H	H	H	H	H	R	R
1544	H	H	H	H	H	H	H	R	R
1545	H	H	H	H	H	H	H	R	R
1546	H	H	H	H	H	H	H	R	R
1547	H	H	H	H	H	H	H	R	R
1548	H	H	H	H	H	H	H	R	R
1549	H	H	H	H	H	H	H	R	R
1550	H	H	H	H	H	H	H	R	R
1551	H	H	H	H	H	H	H	R	R
1552	H	H	H	H	H	H	H	R	R
1553	H	H	H	H	H	H	H	R	R
1554	H	H	H	H	H	H	H	R	R
1555	H	H	H	H	H	H	H	R	R
1556	H	H	H	H	H	H	H	R	R
1557	H	H	H	H	H	H	H	R	R
1558	H	H	H	H	H	H	H	R	R
1559	H	H	H	H	H	H	H	R	R
1560	H	H	H	H	H	H	H	R	R
1561	H	H	H	H	H	H	H	R	R
1562	H	H	H	H	H	H	H	R	R
1563	R	S	R	S	R	S	S	R	R
1564	H	H	H	H	H	H	H	R	R
1565	H	H	H	H	H	H	H	R	R
1566	H	H	H	H	H	H	H	R	R
1567	H	H	H	H	H	H	H	R	R
1568	H	H	H	H	H	H	H	R	R
1569	H	H	H	H	H	H	H	R	R
1570	H	H	H	H	H	H	H	R	R
1571	H	H	H	H	H	H	H	R	R

331	H	S	H	H	S	S	H	H	S
332	H	S	H	H	S	S	H	H	S
333	H	S	H	H	S	S	H	H	S
334	H	S	H	H	S	S	H	H	S
335	H	S	H	H	S	S	H	H	S
336	H	S	H	H	S	S	H	H	S
337	H	S	H	H	S	S	H	H	S
338	H	S	H	H	S	S	H	H	S
339	H	S	H	H	S	S	H	H	S
340	H	S	H	H	S	S	H	H	S
341	H	S	H	H	S	S	H	H	S
342	H	S	H	H	S	S	H	H	S
343	H	S	H	H	S	S	H	H	S
344	H	S	H	H	S	S	H	H	S
345	H	S	H	H	S	S	H	H	S
346	H	S	H	H	S	S	H	H	S
347	H	S	H	H	S	S	H	H	S
348	H	S	H	H	S	S	H	H	S
349	H	S	H	H	S	S	H	H	S
350	H	S	H	H	S	S	H	H	S
351	H	S	H	H	S	S	H	H	S
352	H	S	H	H	S	S	H	H	S
353	H	S	H	H	S	S	H	H	S
354	H	S	H	H	S	S	H	H	S
355	H	S	H	H	S	S	H	H	S
356	H	S	H	H	S	S	H	H	S
357	H	S	H	H	S	S	H	H	S
358	H	S	H	H	S	S	H	H	S
359	H	S	H	H	S	S	H	H	S
360	H	S	H	H	S	S	H	H	S
361	H	S	H	H	S	S	H	H	S
362	H	S	H	H	S	S	H	H	S
363	H	S	H	H	S	S	H	H	S
364	H	S	H	H	S	S	H	H	S
365	H	S	H	H	S	S	H	H	S
366	H	S	H	H	S	S	H	H	S
367	H	S	H	H	S	S	H	H	S
368	H	S	H	H	S	S	H	H	S
369	H	S	H	H	S	S	H	H	S
370	H	S	H	H	S	S	H	H	S
371	H	S	H	H	S	S	H	H	S
372	H	S	H	H	S	S	H	H	S
373	H	S	H	H	S	S	H	H	S
374	H	S	H	H	S	S	H	H	S
375	H	S	H	H	S	S	H	H	S
376	H	S	H	H	S	S	H	H	S
377	H	S	H	H	S	S	H	H	S
378	H	S	H	H	S	S	H	H	S
379	H	S	H	H	S	S	H	H	S
380	H	S	H	H	S	S	H	H	S
381	H	S	H	H	S	S	H	H	S
382	H	S	H	H	S	S	H	H	S
383	H	S	H	H	S	S	H	H	S
384	H	S	H	H	S	S	H	H	S
385	H	S	H	H	S	H	S	R	H
386	H	S	H	H	S	H	S	R	H
387	H	S	H	H	S	H	S	R	H
388	H	S	H	H	S	H	S	R	H
389	H	S	H	H	S	H	S	R	H
390	H	S	H	H	S	H	S	R	H
391	H	S	H	H	S	H	S	R	H
392	H	S	H	H	S	H	S	R	H
393	H	S	H	H	S	H	S	R	H
394	H	S	H	H	S	H	S	R	H

1572	H	H	H	H	H	H	H	R	R
1573	H	H	H	H	H	H	H	R	R
1574	H	H	H	H	H	H	H	R	R
1575	H	H	H	H	H	H	H	R	R
1576	H	H	H	H	H	H	H	R	R
1577	H	H	H	H	H	H	H	R	R
1578	H	H	H	H	H	H	H	R	R
1579	H	H	H	H	H	H	H	R	R
1580	H	H	H	H	H	H	H	R	R
1581	H	H	H	H	H	H	H	R	R
1582	H	H	H	H	H	H	H	R	R
1583	H	H	H	H	H	H	H	R	R
1584	H	H	H	H	H	H	H	R	R
1585	H	H	H	H	H	H	H	R	R
1586	H	H	H	H	H	H	H	R	R
1587	H	H	H	H	H	H	H	R	R
1588	H	H	H	H	H	H	H	R	R
1589	H	H	H	H	H	H	H	R	R
1590	H	H	H	H	H	H	H	R	R
1591	H	H	H	H	H	H	H	R	R
1592	H	H	H	H	H	H	H	R	R
1593	H	H	H	H	H	H	H	R	R
1594	H	H	H	H	H	H	H	R	R
1595	H	H	H	H	H	H	H	R	R
1596	H	H	H	H	H	H	H	R	R
1597	H	H	H	H	H	H	H	R	R
1598	H	H	H	H	H	H	H	R	R
1599	H	H	H	H	H	H	H	R	R
1600	H	H	H	H	H	H	H	R	R
1601	H	H	H	H	H	H	H	R	R
1602	H	H	H	H	H	H	H	R	R
1603	H	H	H	H	H	H	H	R	R
1604	H	H	H	H	H	H	H	R	R
1605	H	H	H	H	H	H	H	R	R
1606	H	H	H	H	H	H	H	R	R
1607	H	H	H	H	H	H	H	R	R
1608	H	H	H	H	H	H	H	R	R
1609	H	H	H	H	H	H	H	R	R
1610	H	H	H	H	H	H	H	R	R
1611	H	H	H	H	H	H	H	R	R
1612	H	H	H	H	H	H	H	R	R
1613	H	H	H	H	H	H	H	R	R
1614	H	H	H	H	H	H	H	R	R
1615	H	H	H	H	H	H	H	R	R
1616	H	H	H	H	H	H	H	R	R
1617	H	H	H	H	H	H	H	R	R
1618	H	H	H	H	H	H	H	R	R
1619	H	H	H	H	H	H	H	R	R
1620	H	H	H	H	H	H	H	R	R
1621	H	H	H	H	H	H	H	R	R
1622	H	H	H	H	H	H	H	R	R
1623	H	H	H	H	H	H	H	R	R
1624	H	H	H	H	H	H	H	R	R
1625	H	H	H	H	H	H	H	R	R
1626	H	H	H	H	H	H	H	R	R
1627	H	H	H	H	H	H	H	R	R
1628	H	H	H	H	H	H	H	R	R
1629	H	H	H	H	H	H	H	R	R
1630	H	H	H	H	H	H	H	R	R
1631	H	H	H	H	H	H	H	R	R
1632	H	H	H	H	H	H	H	R	R
1633	H	H	H	H	H	H	H	R	R
1634	H	H	H	H	H	H	H	R	R
1635	H	H	H	H	H	H	H	R	R

395	H	S	H	H	S	H	S	R	H
396	H	S	H	H	S	H	S	R	H
397	H	S	H	H	S	H	S	R	H
398	H	S	H	H	S	H	S	R	H
399	H	S	H	H	S	H	S	R	H
400	H	S	H	H	S	H	S	R	H
401	H	S	H	H	S	H	S	R	H
402	H	S	H	H	S	H	S	R	H
403	H	S	H	H	S	H	S	R	H
404	H	S	H	H	S	H	S	R	H
405	H	S	H	H	S	H	S	R	H
406	H	S	H	H	S	H	S	R	H
407	H	S	H	H	S	H	S	R	H
408	H	S	H	H	S	H	S	R	H
409	H	S	H	H	S	H	S	R	H
410	H	S	H	H	S	H	S	R	H
411	H	S	H	H	S	H	S	R	H
412	H	S	H	H	S	H	S	R	H
413	H	S	H	H	S	H	S	R	H
414	H	S	H	H	S	H	S	R	H
415	H	S	H	H	S	H	S	R	H
416	H	S	H	H	S	H	S	R	H
417	H	S	H	H	S	H	S	R	H
418	H	S	H	H	S	H	S	R	H
419	H	S	H	H	S	H	S	R	H
420	H	S	H	H	S	H	S	R	H
421	H	S	H	H	S	H	S	R	H
422	H	S	H	H	S	H	S	R	H
423	H	S	H	H	S	H	S	R	H
424	H	S	H	H	S	H	S	R	H
425	H	S	H	H	S	H	S	R	H
426	H	S	H	H	S	H	S	R	H
427	H	S	H	H	S	H	S	R	H
428	H	S	H	H	S	H	S	R	H
429	H	S	H	H	S	H	S	R	H
430	H	S	H	H	S	H	S	R	H
431	H	S	H	H	S	H	S	R	H
432	H	S	H	H	S	H	S	R	H
433	H	S	H	H	S	H	S	R	H
434	H	S	H	H	S	H	S	R	H
435	H	S	H	H	S	H	S	R	H
436	H	S	H	H	S	H	S	R	H
437	H	S	H	H	S	H	S	R	H
438	H	S	H	H	S	H	S	R	H
439	H	S	H	H	S	H	S	R	H
440	H	S	H	H	S	H	S	R	H
441	H	S	H	H	S	H	S	R	H
442	H	S	H	H	S	H	S	R	H
443	H	S	H	H	S	H	S	R	H
444	H	S	H	H	S	H	S	R	H
445	H	S	H	H	S	H	S	R	H
446	H	S	H	H	S	H	S	R	H
447	H	S	H	H	S	H	S	R	H
448	H	S	H	H	S	H	S	R	H
449	H	S	H	H	S	H	S	R	H
450	H	S	H	H	S	H	S	R	H
451	H	S	H	H	S	H	S	R	H
452	H	S	H	H	S	H	S	R	H
453	H	S	H	H	S	H	S	R	H
454	H	S	H	H	S	H	S	R	H
455	H	S	H	H	S	H	S	R	H
456	H	S	H	H	S	H	S	R	H
457	H	S	H	H	S	H	S	R	H
458	H	S	H	H	S	H	S	R	H

1636	H	H	H	H	H	H	H	R	R
1637	H	H	H	H	H	H	H	R	R
1638	H	H	H	H	H	H	H	R	R
1639	H	H	H	H	H	H	H	R	R
1640	H	H	H	H	H	H	H	R	R
1641	H	H	H	H	H	H	H	R	R
1642	H	H	H	H	H	H	H	R	R
1643	H	H	H	H	H	H	H	R	R
1644	H	H	H	H	H	H	H	R	R
1645	H	H	H	H	H	H	H	R	R
1646	H	H	H	H	H	H	H	R	R
1647	H	H	H	H	H	H	H	R	R
1648	H	H	H	H	H	H	H	R	R
1649	H	H	H	H	H	H	H	R	R
1650	H	H	H	H	H	H	H	R	R
1651	H	H	H	H	H	H	H	R	R
1652	H	H	H	H	H	H	H	R	R
1653	H	H	H	H	H	H	H	R	R
1654	H	H	H	H	H	H	H	R	R
1655	H	H	H	H	H	H	H	R	R
1656	H	H	H	H	H	H	H	R	R
1657	H	H	H	H	H	H	H	R	R
1658	H	H	H	H	H	H	H	R	R
1659	H	H	H	H	H	H	H	R	R
1660	H	H	H	H	H	H	H	R	R
1661	H	H	H	H	H	H	H	R	R
1662	H	H	H	H	H	H	H	R	R
1663	H	H	H	H	H	H	H	R	R
1664	H	H	H	H	H	H	H	R	R
1665	H	H	H	H	H	H	H	R	R
1666	H	H	H	H	H	H	H	R	R
1667	H	H	H	H	H	H	H	R	R
1668	H	H	H	H	H	H	H	R	R
1669	H	H	H	H	H	H	H	R	R
1670	H	H	H	H	H	H	H	R	R
1671	H	H	H	H	H	H	H	R	R
1672	H	H	H	H	H	H	H	R	R
1673	H	H	H	H	H	H	H	R	R
1674	H	H	H	H	H	H	H	R	R
1675	H	H	H	H	H	H	H	R	R
1676	H	H	H	H	H	H	H	R	R
1677	H	H	H	H	H	H	H	R	R
1678	H	H	H	H	H	H	H	R	R
1679	H	H	H	H	H	H	H	R	R
1680	H	H	H	H	H	H	H	R	R
1681	H	H	H	H	H	H	H	R	R
1682	H	H	H	H	H	H	H	R	R
1683	H	H	H	H	H	H	H	R	R
1684	H	H	H	H	H	H	H	R	R
1685	H	H	H	H	H	H	H	R	R
1686	H	H	H	H	H	H	H	R	R
1687	H	H	H	H	H	H	H	R	R
1688	H	H	H	H	H	H	H	R	R
1689	H	H	H	H	H	H	H	R	R
1690	H	H	H	H	H	H	H	R	R
1691	H	H	H	H	H	H	H	R	R
1692	H	H	H	H	H	H	H	R	R
1693	H	H	H	H	H	H	H	R	R
1694	H	H	H	H	H	H	H	R	R
1695	H	H	H	H	H	H	H	R	R
1696	H	H	H	H	H	H	H	R	R
1697	H	H	H	H	H	H	H	R	R
1698	H	H	H	H	H	H	H	R	R
1699	H	H	H	H	H	H	H	R	R

459	H	S	H	H	S	H	S	R	H
460	H	S	H	H	S	H	S	R	H
461	H	S	H	H	S	H	S	R	H
462	H	S	H	H	S	H	S	R	H
463	H	S	H	H	S	H	S	R	H
464	H	S	H	H	S	H	S	R	H
465	H	S	H	H	S	H	S	R	H
466	H	S	H	H	S	H	S	R	H
467	H	S	H	H	S	H	S	R	H
468	H	S	H	H	S	H	S	R	H
469	H	S	H	H	S	H	S	R	H
470	H	S	H	H	S	H	S	R	H
471	H	S	H	H	S	H	S	R	H
472	H	S	H	H	S	H	S	R	H
473	H	S	H	H	S	H	S	R	H
474	H	S	H	H	S	H	S	R	H
475	H	S	H	H	S	H	S	R	H
476	H	S	H	H	S	H	S	R	H
477	H	S	H	H	S	H	S	R	H
478	H	S	H	H	S	H	S	R	H
479	H	S	H	H	S	H	S	R	H
480	H	S	H	H	S	H	S	R	H
481	H	S	H	H	S	H	S	R	H
482	H	S	H	H	S	H	S	R	H
483	H	S	H	H	S	H	S	R	H
484	H	S	H	H	S	H	S	R	H
485	H	S	H	H	S	H	S	R	H
486	H	S	H	H	S	H	S	R	H
487	H	S	H	H	S	H	S	R	H
488	H	S	H	H	S	H	S	R	H
489	H	S	H	H	S	H	S	R	H
490	H	S	H	H	S	H	S	R	H
491	H	S	H	H	S	H	S	R	H
492	H	S	H	H	S	H	S	R	H
493	H	S	H	H	S	H	S	R	H
494	H	S	H	H	S	H	S	R	H
495	H	S	H	H	S	H	S	R	H
496	H	S	H	H	S	H	S	R	H
497	H	S	H	H	S	H	S	R	H
498	H	S	H	H	S	H	S	R	H
499	H	S	H	H	S	H	S	R	H
500	H	S	H	H	S	H	S	R	H
501	H	S	H	H	S	H	S	R	H
502	H	S	H	H	S	H	S	R	H
503	H	S	H	H	S	H	S	R	H
504	H	S	H	H	S	H	S	R	H
505	H	S	H	H	S	H	S	R	H
506	H	S	H	H	S	H	S	R	H
507	H	S	H	H	S	H	S	R	H
508	H	S	H	H	S	H	S	R	H
509	H	S	H	H	S	H	S	R	H
510	H	S	H	H	S	H	S	R	H
511	H	S	H	H	S	H	S	R	H
512	H	S	H	H	S	H	S	R	H
513	H	S	H	H	S	H	S	R	H
514	H	S	H	H	S	H	S	R	H
515	H	S	H	H	S	H	S	R	H
516	H	S	H	H	S	H	S	R	H
517	H	S	H	H	S	H	S	R	H
518	H	S	H	H	S	H	S	R	H
519	H	S	H	H	S	H	S	R	H
520	H	S	H	H	S	H	S	R	H
521	H	S	H	H	S	H	S	R	H
522	H	S	H	H	S	H	S	R	H

1700	H	H	H	H	H	H	H	R	R
1701	H	H	H	H	H	H	H	R	R
1702	H	H	H	H	H	H	H	R	R
1703	H	H	H	H	H	H	H	R	R
1704	H	H	H	H	H	H	H	R	R
1705	H	H	H	H	H	H	H	R	R
1706	H	H	H	H	H	H	H	R	R
1707	H	H	H	H	H	H	H	R	R
1708	H	H	H	H	H	H	H	R	R
1709	H	H	H	H	H	H	H	R	R
1710	H	H	H	H	H	H	H	R	R
1711	H	H	H	H	H	H	H	R	R
1712	H	H	H	H	H	H	H	R	R
1713	H	H	H	H	H	H	H	R	R
1714	H	H	H	H	H	H	H	R	R
1715	H	H	H	H	H	H	H	R	R
1716	H	H	H	H	H	H	H	R	R
1717	H	H	H	H	H	H	H	R	R
1718	H	H	H	H	H	H	H	R	R
1719	H	H	H	H	H	H	H	R	R
1720	H	H	H	H	H	H	H	R	R
1721	H	H	H	H	H	H	H	R	R
1722	H	H	H	H	H	H	H	R	R
1723	H	H	H	H	H	H	H	R	R
1724	H	H	H	H	H	H	H	R	R
1725	H	H	H	S	H	S	S	H	H
1726	H	H	H	S	H	S	S	H	H
1727	H	H	H	S	H	S	S	H	H
1728	H	H	H	S	H	S	S	H	H
1729	H	H	H	S	H	S	S	H	H
1730	H	H	H	S	H	S	S	H	H
1731	H	H	H	S	H	S	S	H	H
1732	H	H	H	S	H	S	S	H	H
1733	H	H	H	S	H	S	S	H	H
1734	H	H	H	S	H	S	S	H	H
1735	H	H	H	S	H	S	S	H	H
1736	H	H	H	S	H	S	S	H	H
1737	H	H	H	S	H	S	S	H	H
1738	H	H	H	S	H	S	S	H	H
1739	H	H	H	S	H	S	S	H	H
1740	H	H	H	S	H	S	S	H	H
1741	H	H	H	S	H	S	S	H	H
1742	H	H	H	S	H	S	S	H	H
1743	H	H	H	S	H	S	S	H	H
1744	H	H	H	S	H	S	S	H	H
1745	H	H	H	S	H	S	S	H	H
1746	H	H	H	S	H	S	S	H	H
1747	H	H	H	S	H	S	S	H	H
1748	H	H	H	S	H	S	S	H	H
1749	H	H	H	S	H	S	S	H	H
1750	H	H	H	S	H	S	S	H	H
1751	H	H	H	S	H	S	S	H	H
1752	H	H	H	S	H	S	S	H	H
1753	H	H	H	S	H	S	S	H	H
1754	H	H	H	S	H	S	S	H	H
1755	H	H	H	S	H	S	S	H	H
1756	H	H	H	S	H	S	S	H	H
1757	H	H	H	S	H	S	S	H	H
1758	H	H	H	S	H	S	S	H	H
1759	H	H	H	S	H	S	S	H	H
1760	H	H	H	S	H	S	S	H	H
1761	H	H	H	S	H	S	S	H	H
1762	H	H	H	S	H	S	S	H	H
1763	H	H	H	S	H	S	S	H	H

523	H	S	H	H	S	H	S	R	H
524	H	S	H	H	S	H	S	R	H
525	H	S	H	H	S	H	S	R	H
526	H	S	H	H	S	H	S	R	H
527	H	S	H	H	S	H	S	R	H
528	H	S	H	H	S	H	S	R	H
529	H	S	H	H	S	H	S	R	H
530	H	S	H	H	S	H	S	R	H
531	H	S	H	H	S	H	S	R	H
532	H	S	H	H	S	H	S	R	H
533	H	S	H	H	S	H	S	R	H
534	H	S	H	H	S	H	S	R	H
535	H	S	H	H	S	H	S	R	H
536	H	S	H	H	S	H	S	R	H
537	H	S	H	H	S	H	S	R	H
538	H	S	H	H	S	H	S	R	H
539	H	S	H	H	S	H	S	R	H
540	H	S	H	H	S	H	S	R	H
541	H	S	H	H	S	H	S	R	H
542	H	S	H	H	S	H	S	R	H
543	H	S	H	H	S	H	S	R	H
544	H	S	H	H	S	H	S	R	H
545	H	S	H	H	S	H	S	R	H
546	H	S	H	H	S	H	S	R	H
547	H	S	H	H	S	H	S	R	H
548	H	S	H	H	S	H	S	R	H
549	H	S	H	H	S	H	S	R	H
550	H	S	H	H	S	H	S	R	H
551	H	S	H	H	S	H	S	R	H
552	H	S	H	H	S	H	S	R	H
553	H	S	H	H	S	H	S	R	H
554	H	S	H	H	S	H	S	R	H
555	H	S	H	H	S	H	S	R	H
556	H	S	H	H	S	H	S	R	H
557	H	S	H	H	S	H	S	R	H
558	H	S	H	H	S	H	S	R	H
559	H	S	H	H	S	H	S	R	H
560	H	S	H	H	S	H	S	R	H
561	H	S	H	H	S	H	S	R	H
562	H	S	H	H	S	H	S	R	H
563	H	S	H	H	S	H	S	R	H
564	H	S	H	H	S	H	S	R	H
565	H	S	H	H	S	H	S	R	H
566	H	S	H	H	S	H	S	R	H
567	H	S	H	H	S	H	S	R	H
568	H	S	H	H	S	H	S	R	H
569	H	S	H	H	S	H	S	R	H
570	H	S	H	H	S	H	S	R	H
571	H	S	H	H	S	H	S	R	H
572	H	S	H	H	S	H	S	R	H
573	H	S	H	H	S	H	S	R	H
574	H	S	H	H	S	H	S	R	H
575	H	S	H	H	S	H	S	R	H
576	H	S	H	H	S	H	S	R	H
577	H	S	R	H	H	H	S	R	S
578	H	S	R	H	H	H	S	R	S
579	H	S	R	H	H	H	S	R	S
580	H	S	R	H	H	H	S	R	S
581	H	S	R	H	H	H	S	R	S
582	H	S	R	H	H	H	S	R	S
583	H	S	R	H	H	H	S	R	S
584	H	S	R	H	H	H	S	R	S
585	H	S	R	H	H	H	S	R	S
586	H	S	R	H	H	H	S	R	S

1764	H	H	H	S	H	S	S	H	H
1765	H	H	H	S	H	S	S	H	H
1766	H	H	H	S	H	S	S	H	H
1767	H	H	H	S	H	S	S	H	H
1768	H	H	H	S	H	S	S	H	H
1769	H	H	H	S	H	S	S	H	H
1770	H	H	H	S	H	S	S	H	H
1771	H	H	H	S	H	S	S	H	H
1772	H	H	H	S	H	S	S	H	H
1773	H	H	H	S	H	S	S	H	H
1774	H	H	H	S	H	S	S	H	H
1775	H	H	H	S	H	S	S	H	H
1776	H	H	H	S	H	S	S	H	H
1777	H	H	H	S	H	S	S	H	H
1778	H	H	H	S	H	S	S	H	H
1779	H	H	H	S	H	S	S	H	H
1780	H	H	H	S	H	S	S	H	H
1781	H	H	H	S	H	S	S	H	H
1782	H	H	H	S	H	S	S	H	H
1783	H	H	H	S	H	S	S	H	H
1784	H	H	H	S	H	S	S	H	H
1785	H	H	H	S	H	S	S	H	H
1786	H	H	H	S	H	S	S	H	H
1787	H	H	H	S	H	S	S	H	H
1788	H	H	H	S	H	S	S	H	H
1789	H	H	H	S	H	S	S	H	H
1790	H	H	H	S	H	S	S	H	H
1791	H	H	H	S	H	S	S	H	H
1792	H	H	H	S	H	S	S	H	H
1793	H	H	H	S	H	S	S	H	H
1794	H	H	H	S	H	S	S	H	H
1795	H	H	H	S	H	S	S	H	H
1796	H	H	H	S	H	S	S	H	H
1797	H	H	H	S	H	S	S	H	H
1798	H	H	H	S	H	S	S	H	H
1799	H	H	H	S	H	S	S	H	H
1800	H	H	H	S	H	S	S	H	H
1801	H	H	H	S	H	S	S	H	H
1802	H	H	H	S	H	S	S	H	H
1803	H	H	H	S	H	S	S	H	H
1804	H	H	H	S	H	S	S	H	H
1805	H	H	H	S	H	S	S	H	H
1806	H	H	H	S	H	S	S	H	H
1807	H	H	H	S	H	S	S	H	H
1808	H	H	H	S	H	S	S	H	H
1809	H	H	H	S	H	S	S	H	H
1810	H	H	H	S	H	S	S	H	H
1811	H	H	H	S	H	S	S	H	H
1812	H	H	H	S	H	S	S	H	H
1813	H	H	H	S	H	S	S	H	H
1814	H	H	H	S	H	S	S	H	H
1815	H	H	H	S	H	S	S	H	H
1816	H	H	H	S	H	S	S	H	H
1817	H	H	H	S	H	S	S	H	H
1818	H	H	H	S	H	S	S	H	H
1819	H	H	H	S	H	S	S	H	H
1820	H	H	H	S	H	S	S	H	H
1821	H	H	H	S	H	S	S	H	H
1822	H	H	H	S	H	S	S	H	H
1823	H	H	H	S	H	S	S	H	H
1824	H	H	H	S	H	S	S	H	H
1825	H	H	H	S	H	S	S	H	H
1826	H	H	H	S	H	S	S	H	H
1827	H	H	H	S	H	S	S	H	H

651	H	S	R	H	H	H	S	R	S
652	H	S	R	H	H	H	S	R	S
653	H	S	R	H	H	H	S	R	S
654	H	S	R	H	H	H	S	R	S
655	H	S	R	H	H	H	S	R	S
656	H	S	R	H	H	H	S	R	S
657	H	S	R	H	H	H	S	R	S
658	H	S	R	H	H	H	S	R	S
659	H	S	R	H	H	H	S	R	S
660	H	S	R	H	H	H	S	R	S
661	H	S	R	H	H	H	S	R	S
662	H	S	R	H	H	H	S	R	S
663	H	S	R	H	H	H	S	R	S
664	H	S	R	H	H	H	S	R	S
665	H	S	R	H	H	H	S	R	S
666	H	S	R	H	H	H	S	R	S
667	H	S	R	H	H	H	S	R	S
668	H	S	R	H	H	H	S	R	S
669	H	S	R	H	H	H	S	R	S
670	H	S	R	H	H	H	S	R	S
671	H	S	R	H	H	H	S	R	S
672	H	S	R	H	H	H	S	R	S
673	H	S	R	H	H	H	S	R	S
674	H	S	R	H	H	H	S	R	S
675	H	S	R	H	H	H	S	R	S
676	H	S	R	H	H	H	S	R	S
677	H	S	R	H	H	H	S	R	S
678	H	S	R	H	H	H	S	R	S
679	H	S	R	H	H	H	S	R	S
680	H	S	R	H	H	H	S	R	S
681	H	S	R	H	H	H	S	R	S
682	H	S	R	H	H	H	S	R	S
683	H	S	R	H	H	H	S	R	S
684	H	S	R	H	H	H	S	R	S
685	H	S	R	H	H	H	S	R	S
686	H	S	R	H	H	H	S	R	S
687	H	S	R	H	H	H	S	R	S
688	H	S	R	H	H	H	S	R	S
689	H	S	R	H	H	H	S	R	S
690	H	S	R	H	H	H	S	R	S
691	H	S	R	H	H	H	S	R	S
692	H	S	R	H	H	H	S	R	S
693	H	S	R	H	H	H	S	R	S
694	H	S	R	H	H	H	S	R	S
695	H	S	R	H	H	H	S	R	S
696	H	S	R	H	H	H	S	R	S
697	H	S	R	H	H	H	S	R	S
698	H	S	R	H	H	H	S	R	S
699	H	S	R	H	H	H	S	R	S
700	H	S	R	H	H	H	S	R	S
701	H	S	R	H	H	H	S	R	S
702	H	S	R	H	H	H	S	R	S
703	H	S	R	H	H	H	S	R	S
704	H	S	R	H	H	H	S	R	S
705	H	S	R	H	H	H	S	R	S
706	H	S	R	H	H	H	S	R	S
707	H	S	R	H	H	H	S	R	S
708	H	S	R	H	H	H	S	R	S
709	H	S	R	H	H	H	S	R	S
710	H	S	R	H	H	H	S	R	S
711	H	S	R	H	H	H	S	R	S
712	H	S	R	H	H	H	S	R	S
713	H	S	R	H	H	H	S	R	S
714	H	S	R	H	H	H	S	R	S

1892	H	H	H	S	H	S	S	H	H
1893	H	H	H	S	H	S	S	H	H
1894	H	H	H	S	H	S	S	H	H
1895	H	H	H	S	H	S	S	H	H
1896	H	H	H	S	H	S	S	H	H
1897	H	H	H	S	H	S	S	H	H
1898	H	H	H	S	H	S	S	H	H
1899	H	H	H	S	H	S	S	H	H
1900	H	H	H	S	H	S	S	H	H
1901	H	H	H	S	H	S	S	H	H
1902	H	H	H	S	H	S	S	H	H
1903	H	H	H	S	H	S	S	H	H
1904	H	H	H	S	H	S	S	H	H
1905	H	H	H	S	H	S	S	H	H
1906	H	H	H	S	H	S	S	H	H
1907	H	H	H	S	H	S	S	H	H
1908	H	H	H	S	H	S	S	H	H
1909	H	H	H	S	H	S	S	H	H
1910	H	H	H	S	H	S	S	H	H
1911	H	H	H	S	H	S	S	H	H
1912	H	H	H	S	H	S	S	H	H
1913	H	H	H	S	H	S	S	H	H
1914	H	H	H	S	H	S	S	H	H
1915	H	H	H	S	H	S	S	H	H
1916	H	H	H	S	H	S	S	H	H
1917	H	H	H	S	H	S	S	H	H
1918	H	H	H	S	H	S	S	H	H
1919	H	H	H	S	H	S	S	H	H
1920	H	H	H	S	H	S	S	H	H
1921	H	H	H	S	H	S	S	H	H
1922	H	H	H	S	H	S	S	H	H
1923	H	H	H	S	H	S	S	H	H
1924	H	H	H	S	H	S	S	H	H
1925	H	H	H	S	H	S	S	H	H
1926	H	H	H	S	H	S	S	H	H
1927	H	H	H	S	H	S	S	H	H
1928	H	H	H	S	H	S	S	H	H
1929	H	H	H	S	H	S	S	H	H
1930	H	H	H	S	H	S	S	H	H
1931	H	H	H	S	H	S	S	H	H
1932	H	H	H	S	H	S	S	H	H
1933	H	H	H	S	H	S	S	H	H
1934	H	H	H	S	H	S	S	H	H
1935	H	H	H	S	H	S	S	H	H
1936	H	H	H	S	H	S	S	H	H
1937	H	H	H	S	H	S	S	H	H
1938	H	H	H	S	H	S	S	H	H
1939	H	H	H	S	H	S	S	H	H
1940	H	H	H	S	H	S	S	H	H
1941	H	H	H	S	H	S	S	H	H
1942	H	H	H	S	H	S	S	H	H
1943	H	H	H	S	H	S	S	H	H
1944	H	H	H	S	H	S	S	H	H
1945	H	H	H	S	H	S	S	H	H
1946	H	H	H	S	H	S	S	H	H
1947	H	H	H	S	H	S	S	H	H
1948	H	H	H	S	H	S	S	H	H
1949	H	H	H	S	H	S	S	H	H
1950	H	H	H	S	H	S	S	H	H
1951	H	H	H	S	H	S	S	H	H
1952	H	H	H	S	H	S	S	H	H
1953	H	H	H	S	H	S	S	H	H
1954	H	H	H	S	H	S	S	H	H
1955	H	H	H	S	H	S	S	H	H

715	H	S	R	H	H	H	S	R	S
716	H	S	R	H	H	H	S	R	S
717	H	S	R	H	H	H	S	R	S
718	H	S	R	H	H	H	S	R	S
719	H	S	R	H	H	H	S	R	S
720	H	S	R	H	H	H	S	R	S
721	H	S	R	H	H	H	S	R	S
722	H	S	R	H	H	H	S	R	S
723	H	S	R	H	H	H	S	R	S
724	H	S	R	H	H	H	S	R	S
725	H	S	R	H	H	H	S	R	S
726	H	S	R	H	H	H	S	R	S
727	H	S	R	H	H	H	S	R	S
728	H	S	R	H	H	H	S	R	S
729	H	S	R	H	H	H	S	R	S
730	H	S	R	H	H	H	S	R	S
731	H	S	R	H	H	H	S	R	S
732	H	S	R	H	H	H	S	R	S
733	H	S	R	H	H	H	S	R	S
734	H	S	R	H	H	H	S	R	S
735	H	S	R	H	H	H	S	R	S
736	H	S	R	H	H	H	S	R	S
737	H	S	R	H	H	H	S	R	S
738	H	S	R	H	H	H	S	R	S
739	H	S	R	H	H	H	S	R	S
740	H	S	R	H	H	H	S	R	S
741	H	S	R	H	H	H	S	R	S
742	H	S	R	H	H	H	S	R	S
743	H	S	R	H	H	H	S	R	S
744	H	S	R	H	H	H	S	R	S
745	H	S	R	H	H	H	S	R	S
746	H	S	R	H	H	H	S	R	S
747	H	S	R	H	H	H	S	R	S
748	H	S	R	H	H	H	S	R	S
749	H	S	R	H	H	H	S	R	S
750	H	S	R	H	H	H	S	R	S
751	H	S	R	H	H	H	S	R	S
752	H	S	R	H	H	H	S	R	S
753	H	S	R	H	H	H	S	R	S
754	H	S	R	H	H	H	S	R	S
755	H	S	R	H	H	H	S	R	S
756	H	S	R	H	H	H	S	R	S
757	H	S	R	H	H	H	S	R	S
758	H	S	R	H	H	H	S	R	S
759	H	S	R	H	H	H	S	R	S
760	H	S	R	H	H	H	S	R	S
761	H	S	R	H	H	H	S	R	S
762	H	S	R	H	H	H	S	R	S
763	H	S	R	H	H	H	S	R	S
764	H	S	R	H	H	H	S	R	S
765	H	S	H	R	H	R	S	R	S
766	H	S	H	R	H	R	S	R	S
767	H	S	H	R	H	R	S	R	S
768	H	S	H	R	H	R	S	R	S
769	H	S	H	R	H	R	S	R	S
770	H	S	H	R	H	R	S	R	S
771	H	S	H	R	H	R	S	R	S
772	H	S	H	R	H	R	S	R	S
773	H	S	H	R	H	R	S	R	S
774	H	S	H	R	H	R	S	R	S
775	H	S	H	R	H	R	S	R	S
776	H	S	H	R	H	R	S	R	S
777	H	S	H	R	H	R	S	R	S
778	H	S	H	R	H	R	S	R	S

1956	H	H	H	S	H	S	S	H	H
1957	H	H	H	S	H	S	S	H	H
1958	H	H	H	S	H	S	S	H	H
1959	H	H	H	S	H	S	S	H	H
1960	H	H	H	S	H	S	S	H	H
1961	H	H	H	S	H	S	S	H	H
1962	H	H	H	S	H	S	S	H	H
1963	H	H	H	S	H	S	S	H	H
1964	H	H	H	S	H	S	S	H	H
1965	H	H	H	S	H	S	S	H	H
1966	H	H	H	S	H	S	S	H	H
1967	H	H	H	S	H	S	S	H	H
1968	H	H	H	S	H	S	S	H	H
1969	H	H	H	S	H	S	S	H	H
1970	H	H	H	S	H	S	S	H	H
1971	H	H	H	S	H	S	S	H	H
1972	H	H	H	S	H	S	S	H	H
1973	H	H	H	S	H	S	S	H	H
1974	H	H	H	S	H	S	S	H	H
1975	H	H	H	S	H	S	S	H	H
1976	H	H	H	S	H	S	S	H	H
1977	H	H	H	S	H	S	S	H	H
1978	H	H	H	S	H	S	S	H	H
1979	H	H	H	S	H	S	S	H	H
1980	H	H	H	S	H	S	S	H	H
1981	H	H	H	S	H	S	S	H	H
1982	H	H	H	S	H	S	S	H	H
1983	H	H	H	S	H	S	S	H	H
1984	H	H	H	S	H	S	S	H	H
1985	H	H	H	S	H	S	S	H	H
1986	H	H	H	S	H	S	S	H	H
1987	H	H	H	S	H	S	S	H	H
1988	H	H	H	S	H	S	S	H	H
1989	H	H	H	S	H	S	S	H	H
1990	H	H	H	S	H	S	S	H	H
1991	H	H	H	S	H	S	S	H	H
1992	H	H	H	S	H	S	S	H	H
1993	H	H	H	S	H	S	S	H	H
1994	H	H	H	S	H	S	S	H	H
1995	H	H	H	S	H	S	S	H	H
1996	H	H	H	S	H	S	S	H	H
1997	H	H	H	S	H	S	S	H	H
1998	H	H	H	S	H	S	S	H	H
1999	H	H	H	S	H	S	S	H	H
2000	H	H	H	S	H	S	S	H	H
2001	H	H	H	S	H	S	S	H	H
2002	H	H	H	S	H	S	S	H	H
2003	H	H	H	S	H	S	S	H	H
2004	H	H	H	S	H	S	S	H	H
2005	H	H	H	S	H	S	S	H	H
2006	H	H	H	S	H	S	S	H	H
2007	H	H	H	S	H	S	S	H	H
2008	H	H	H	S	H	S	S	H	H
2009	H	H	H	S	H	S	S	H	H
2010	H	H	H	S	H	S	S	H	H
2011	H	H	H	S	H	S	S	H	H
2012	H	H	H	S	H	S	S	H	H
2013	H	H	H	S	H	S	S	H	H
2014	H	H	H	S	H	S	S	H	H
2015	H	H	H	S	H	S	S	H	H
2016	H	H	H	S	H	S	S	H	H
2017	H	H	H	S	H	S	S	H	H
2018	H	H	H	S	H	S	S	H	H
2019	H	H	H	S	H	S	S	H	H

779	H	S	H	R	H	R	S	R	S
780	H	S	H	R	H	R	S	R	S
781	H	S	H	R	H	R	S	R	S
782	H	S	H	R	H	R	S	R	S
783	H	S	H	R	H	R	S	R	S
784	H	S	H	R	H	R	S	R	S
785	H	S	H	R	H	R	S	R	S
786	H	S	H	R	H	R	S	R	S
787	H	S	H	R	H	R	S	R	S
788	H	S	H	R	H	R	S	R	S
789	H	S	H	R	H	R	S	R	S
790	H	S	H	R	H	R	S	R	S
791	H	S	H	R	H	R	S	R	S
792	H	S	H	R	H	R	S	R	S
793	H	S	H	R	H	R	S	R	S
794	H	S	H	R	H	R	S	R	S
795	H	S	H	R	H	R	S	R	S
796	H	S	H	R	H	R	S	R	S
797	H	S	H	R	H	R	S	R	S
798	H	S	H	R	H	R	S	R	S
799	H	S	H	R	H	R	S	R	S
800	H	S	H	R	H	R	S	R	S
801	H	S	H	R	H	R	S	R	S
802	H	S	H	R	H	R	S	R	S
803	H	S	H	R	H	R	S	R	S
804	H	S	H	R	H	R	S	R	S
805	H	S	H	R	H	R	S	R	S
806	H	S	H	R	H	R	S	R	S
807	H	S	H	R	H	R	S	R	S
808	H	S	H	R	H	R	S	R	S
809	H	S	H	R	H	R	S	R	S
810	H	S	H	R	H	R	S	R	S
811	H	S	H	R	H	R	S	R	S
812	H	S	H	R	H	R	S	R	S
813	H	S	H	R	H	R	S	R	S
814	H	S	H	R	H	R	S	R	S
815	H	S	H	R	H	R	S	R	S
816	H	S	H	R	H	R	S	R	S
817	H	S	H	R	H	R	S	R	S
818	H	S	H	R	H	R	S	R	S
819	H	S	H	R	H	R	S	R	S
820	H	S	H	R	H	R	S	R	S
821	H	S	H	R	H	R	S	R	S
822	H	S	H	R	H	R	S	R	S
823	H	S	H	R	H	R	S	R	S
824	H	S	H	R	H	R	S	R	S
825	H	S	H	R	H	R	S	R	S
826	H	S	H	R	H	R	S	R	S
827	H	S	H	R	H	R	S	R	S
828	H	S	H	R	H	R	S	R	S
829	H	S	H	R	H	R	S	R	S
830	H	S	H	R	H	R	S	R	S
831	H	S	H	R	H	R	S	R	S
832	H	S	H	R	H	R	S	R	S
833	H	S	H	R	H	R	S	R	S
834	H	S	H	R	H	R	S	R	S
835	H	S	H	R	H	R	S	R	S
836	H	S	H	R	H	R	S	R	S
837	H	S	H	R	H	R	S	R	S
838	H	S	H	R	H	R	S	R	S
839	H	S	H	R	H	R	S	R	S
840	H	S	H	R	H	R	S	R	S
841	H	S	H	R	H	R	S	R	S
842	H	S	H	R	H	R	S	R	S

2020	H	H	H	S	H	S	S	H	H
2021	H	H	H	S	H	S	S	H	H
2022	H	H	H	S	H	S	S	H	H
2023	H	H	H	S	H	S	S	H	H
2024	H	H	H	S	H	S	S	H	H
2025	H	H	H	S	H	S	S	H	H
2026	H	H	H	S	H	S	S	H	H
2027	H	H	H	S	H	S	S	H	H
2028	H	H	H	S	H	S	S	H	H
2029	H	H	H	S	H	S	S	H	H
2030	H	H	H	S	H	S	S	H	H
2031	H	H	H	S	H	S	S	H	H
2032	H	H	H	S	H	S	S	H	H
2033	H	H	H	S	H	S	S	H	H
2034	H	H	H	S	H	S	S	H	H
2035	H	H	H	S	H	S	S	H	H
2036	H	H	H	S	H	S	S	H	H
2037	H	H	H	S	H	S	S	H	H
2038	H	H	H	S	H	S	S	H	H
2039	H	H	H	S	H	S	S	H	H
2040	H	H	H	S	H	S	S	H	H
2041	H	H	H	S	H	S	S	H	H
2042	H	H	H	S	H	S	S	H	H
2043	H	H	H	S	H	S	S	H	H
2044	H	H	H	S	H	S	S	H	H
2045	H	H	H	S	H	S	S	H	H
2046	H	H	H	S	H	S	S	H	H
2047	H	H	H	S	H	S	S	H	H
2048	H	H	H	S	H	S	S	H	H
2049	H	H	H	S	H	S	S	H	H
2050	H	H	H	S	H	S	S	H	H
2051	H	H	H	S	H	S	S	H	H
2052	H	H	H	S	H	S	S	H	H
2053	H	H	H	S	H	S	S	H	H
2054	H	H	H	S	H	S	S	H	H
2055	H	H	H	S	H	S	S	H	H
2056	H	H	H	S	H	S	S	H	H
2057	H	H	H	S	H	S	S	H	H
2058	H	H	H	S	H	S	S	H	H
2059	H	H	H	S	H	S	S	H	H
2060	H	H	H	S	H	S	S	H	H
2061	H	H	H	S	H	S	S	H	H
2062	H	H	H	S	H	S	S	H	H
2063	H	H	H	S	H	S	S	H	H
2064	H	H	H	S	H	S	S	H	H
2065	H	H	H	S	H	S	S	H	H
2066	H	H	H	S	H	S	S	H	H
2067	H	H	H	S	H	S	S	H	H
2068	H	H	H	S	H	S	S	H	H
2069	H	H	H	S	H	S	S	H	H
2070	H	H	H	S	H	S	S	H	H
2071	H	H	H	S	H	S	S	H	H
2072	H	H	H	S	H	S	S	H	H
2073	H	H	H	S	H	S	S	H	H
2074	H	H	H	S	H	S	S	H	H
2075	H	H	H	S	H	S	S	H	H
2076	H	H	H	S	H	S	S	H	H
2077	H	H	H	S	H	S	S	H	H
2078	H	H	H	S	H	S	S	H	H
2079	H	H	H	S	H	S	S	H	H
2080	H	H	H	S	H	S	S	H	H
2081	H	H	H	S	H	S	S	H	H
2082	H	H	H	S	H	S	S	H	H
2083	H	H	H	S	H	S	S	H	H

843	H	S	H	R	H	R	S	R	S
844	H	S	H	R	H	R	S	R	S
845	H	S	H	R	H	R	S	R	S
846	H	S	H	R	H	R	S	R	S
847	H	S	H	R	H	R	S	R	S
848	H	S	H	R	H	R	S	R	S
849	H	S	H	R	H	R	S	R	S
850	H	S	H	R	H	R	S	R	S
851	H	S	H	R	H	R	S	R	S
852	H	S	H	R	H	R	S	R	S
853	H	S	H	R	H	R	S	R	S
854	H	S	H	R	H	R	S	R	S
855	H	S	H	R	H	R	S	R	S
856	H	S	H	R	H	R	S	R	S
857	H	S	H	R	H	R	S	R	S
858	H	S	H	R	H	R	S	R	S
859	H	S	H	R	H	R	S	R	S
860	H	S	H	R	H	R	S	R	S
861	H	S	H	R	H	R	S	R	S
862	H	S	H	R	H	R	S	R	S
863	H	S	H	R	H	R	S	R	S
864	H	S	H	R	H	R	S	R	S
865	H	S	H	R	H	R	S	R	S
866	H	S	H	R	H	R	S	R	S
867	H	S	H	R	H	R	S	R	S
868	H	S	H	R	H	R	S	R	S
869	H	S	H	R	H	R	S	R	S
870	H	S	H	R	H	R	S	R	S
871	H	S	H	R	H	R	S	R	S
872	H	S	H	R	H	R	S	R	S
873	H	S	H	R	H	R	S	R	S
874	H	S	H	R	H	R	S	R	S
875	H	S	H	R	H	R	S	R	S
876	H	S	H	R	H	R	S	R	S
877	H	S	H	R	H	R	S	R	S
878	H	S	H	R	H	R	S	R	S
879	H	S	H	R	H	R	S	R	S
880	H	S	H	R	H	R	S	R	S
881	H	S	H	R	H	R	S	R	S
882	H	S	H	R	H	R	S	R	S
883	H	S	H	R	H	R	S	R	S
884	H	S	H	R	H	R	S	R	S
885	H	S	H	R	H	R	S	R	S
886	H	S	H	R	H	R	S	R	S
887	H	S	H	R	H	R	S	R	S
888	H	S	H	R	H	R	S	R	S
889	H	S	H	R	H	R	S	R	S
890	H	S	H	R	H	R	S	R	S
891	H	S	H	R	H	R	S	R	S
892	H	S	H	R	H	R	S	R	S
893	H	S	H	R	H	R	S	R	S
894	H	S	H	R	H	R	S	R	S
895	H	S	H	R	H	R	S	R	S
896	H	S	H	R	H	R	S	R	S
897	H	S	H	R	H	R	S	R	S
898	H	S	H	R	H	R	S	R	S
899	H	S	H	R	H	R	S	R	S
900	H	S	H	R	H	R	S	R	S
901	H	S	H	R	H	R	S	R	S
902	H	S	H	R	H	R	S	R	S
903	H	S	H	R	H	R	S	R	S
904	H	S	H	R	H	R	S	R	S
905	H	S	H	R	H	R	S	R	S
906	H	S	H	R	H	R	S	R	S

2084	H	H	H	S	H	S	S	H	H
2085	H	H	H	S	H	S	S	H	H
2086	H	H	H	S	H	S	S	H	H
2087	H	H	H	S	H	S	S	H	H
2088	H	H	H	S	H	S	S	H	H
2089	H	H	H	S	H	S	S	H	H
2090	H	H	H	S	H	S	S	H	H
2091	H	H	H	S	H	S	S	H	H
2092	H	H	H	S	H	S	S	H	H
2093	H	H	H	S	H	S	S	H	H
2094	H	H	H	S	H	S	S	H	H
2095	H	H	H	S	H	S	S	H	H
2096	H	H	H	S	H	S	S	H	H
2097	H	H	H	S	H	S	S	H	H
2098	H	H	H	H	H	H	H	R	R
2099	H	H	H	H	H	H	H	R	R
2100	H	H	H	H	H	H	H	R	R
2101	H	H	H	H	H	H	H	R	R
2102	H	H	H	H	H	H	H	R	R
2103	H	H	H	H	H	H	H	R	R
2104	H	H	H	H	H	H	H	R	R
2105	H	H	H	H	H	H	H	R	R
2106	H	H	H	H	H	H	H	R	R
2107	H	H	H	H	H	H	H	R	R
2108	H	H	H	H	H	H	H	R	R
2109	H	H	H	H	H	H	H	R	R
2110	H	H	H	H	H	H	H	R	R
2111	H	H	H	H	H	H	H	R	R
2112	H	H	H	H	H	H	H	R	R
2113	H	H	H	H	H	H	H	R	R
2114	H	H	H	H	H	H	H	R	R
2115	H	H	H	H	H	H	H	R	R
2116	H	H	H	H	H	H	H	R	R
2117	H	H	H	H	H	H	H	R	R
2118	H	H	H	H	H	H	H	R	R
2119	H	H	H	H	H	H	H	R	R
2120	H	H	H	H	H	H	H	R	R
2121	H	H	H	H	H	H	H	R	R
2122	H	H	H	H	H	H	H	R	R
2123	H	H	H	H	H	H	H	R	R
2124	H	H	H	H	H	H	H	R	R
2125	H	H	H	H	H	H	H	R	R
2126	H	H	H	H	H	H	H	R	R
2127	H	H	H	H	H	H	H	R	R
2128	H	H	H	H	H	H	H	R	R
2129	H	H	H	H	H	H	H	R	R
2130	H	H	H	H	H	H	H	R	R
2131	H	H	H	H	H	H	H	R	R
2132	H	H	H	H	H	H	H	R	R
2133	H	H	H	H	H	H	H	R	R
2134	H	H	H	H	H	H	H	R	R
2135	H	H	H	H	H	H	H	R	R
2136	H	H	H	H	H	H	H	R	R
2137	H	H	H	H	H	H	H	R	R
2138	H	H	H	H	H	H	H	R	R
2139	H	H	H	H	H	H	H	R	R
2140	H	H	H	H	H	H	H	R	R
2141	H	H	H	H	H	H	H	R	R
2142	H	H	H	H	H	H	H	R	R
2143	H	H	H	H	H	H	H	R	R
2144	H	H	H	H	H	H	H	R	R
2145	H	H	H	H	H	H	H	R	R
2146	H	H	H	H	H	H	H	R	R
2147	H	H	H	H	H	H	H	R	R

907	H	S	H	R	H	R	S	R	S
908	H	S	H	R	H	R	S	R	S
909	H	S	H	R	H	R	S	R	S
910	H	S	H	R	H	R	S	R	S
911	H	S	H	R	H	R	S	R	S
912	H	S	H	R	H	R	S	R	S
913	H	S	H	R	H	R	S	R	S
914	H	S	H	R	H	R	S	R	S
915	H	S	H	R	H	R	S	R	S
916	H	S	H	R	H	R	S	R	S
917	H	S	H	R	H	R	S	R	S
918	H	S	H	R	H	R	S	R	S
919	H	S	H	R	H	R	S	R	S
920	H	S	H	R	H	R	S	R	S
921	H	S	H	R	H	R	S	R	S
922	H	S	H	R	H	R	S	R	S
923	H	S	H	R	H	R	S	R	S
924	H	S	H	R	H	R	S	R	S
925	H	S	H	R	H	R	S	R	S
926	H	S	H	R	H	R	S	R	S
927	H	S	H	R	H	R	S	R	S
928	H	S	H	R	H	R	S	R	S
929	H	S	H	R	H	R	S	R	S
930	H	S	H	R	H	R	S	R	S
931	H	S	H	R	H	R	S	R	S
932	H	S	H	R	H	R	S	R	S
933	H	S	H	R	H	R	S	R	S
934	H	S	H	R	H	R	S	R	S
935	H	S	H	R	H	R	S	R	S
936	H	S	H	R	H	R	S	R	S
937	H	S	H	R	H	R	S	R	S
938	H	S	H	R	H	R	S	R	S
939	H	S	H	R	H	R	S	R	S
940	H	S	H	R	H	R	S	R	S
941	H	S	H	R	H	R	S	R	S
942	H	S	H	R	H	R	S	R	S
943	H	S	H	R	H	R	S	R	S
944	H	S	H	R	H	R	S	R	S
945	H	S	H	R	H	R	S	R	S
946	H	S	H	R	H	R	S	R	S
947	H	S	H	R	H	R	S	R	S
948	H	S	H	R	H	R	S	R	S
949	H	S	H	R	H	R	S	R	S
950	H	S	H	R	H	R	S	R	S
951	H	S	H	R	H	R	S	R	S
952	H	S	H	R	H	R	S	R	S
953	H	S	H	R	H	R	S	R	S
954	H	S	H	R	H	R	S	R	S
955	H	S	H	R	H	R	S	R	S
956	H	S	H	R	H	R	S	R	S
957	S	S	R	H	R	H	S	R	H
958	S	S	R	H	R	H	S	R	H
959	S	S	R	H	R	H	S	R	H
960	S	S	R	H	R	H	S	R	H
961	S	S	R	H	R	H	S	R	H
962	S	S	R	H	R	H	S	R	H
963	S	S	R	H	R	H	S	R	H
964	S	S	R	H	R	H	S	R	H
965	S	S	R	H	R	H	S	R	H
966	S	S	R	H	R	H	S	R	H
967	S	S	R	H	R	H	S	R	H
968	S	S	R	H	R	H	S	R	H
969	S	S	R	H	R	H	S	R	H
970	S	S	R	H	R	H	S	R	H

2148	H	H	H	H	H	H	H	R	R
2149	H	H	H	H	H	H	H	R	R
2150	H	H	H	H	H	H	H	R	R
2151	H	H	H	H	H	H	H	R	R
2152	H	H	H	H	H	H	H	R	R
2153	H	H	H	H	H	H	H	R	R
2154	H	H	H	H	H	H	H	R	R
2155	H	H	H	H	H	H	H	R	R
2156	H	H	H	H	H	H	H	R	R
2157	H	H	H	H	H	H	H	R	R
2158	H	H	H	H	H	H	H	R	R
2159	H	H	H	H	H	H	H	R	R
2160	H	H	H	H	H	H	H	R	R
2161	H	H	H	H	H	H	H	R	R
2162	H	H	H	H	H	H	H	R	R
2163	H	H	H	H	H	H	H	R	R
2164	H	H	H	H	H	H	H	R	R
2165	H	H	H	H	H	H	H	R	R
2166	H	H	H	H	H	H	H	R	R
2167	H	H	H	H	H	H	H	R	R
2168	H	H	H	H	H	H	H	R	R
2169	H	H	H	H	H	H	H	R	R
2170	H	H	H	H	H	H	H	R	R
2171	H	H	H	H	H	H	H	R	R
2172	H	H	H	H	H	H	H	R	R
2173	H	H	H	H	H	H	H	R	R
2174	H	H	H	H	H	H	H	R	R
2175	H	H	H	H	H	H	H	R	R
2176	H	H	H	H	H	H	H	R	R
2177	H	H	H	H	H	H	H	R	R
2178	H	H	H	H	H	H	H	R	R
2179	H	H	H	H	H	H	H	R	R
2180	H	H	H	H	H	H	H	R	R
2181	H	H	H	H	H	H	H	R	R
2182	H	H	H	H	H	H	H	R	R
2183	H	H	H	H	H	H	H	R	R
2184	H	H	H	H	H	H	H	R	R
2185	H	H	H	H	H	H	H	R	R
2186	H	H	H	H	H	H	H	R	R
2187	H	H	H	H	H	H	H	R	R
2188	H	H	H	H	H	H	H	R	R
2189	H	H	H	H	H	H	H	R	R
2190	H	H	H	H	H	H	H	R	R
2191	H	H	H	H	H	H	H	R	R
2192	H	H	H	H	H	H	H	R	R
2193	H	H	H	H	H	H	H	R	R
2194	H	H	H	H	H	H	H	R	R
2195	H	H	H	H	H	H	H	R	R
2196	H	H	H	H	H	H	H	R	R
2197	H	H	H	H	H	H	H	R	R
2198	H	H	H	H	H	H	H	R	R
2199	H	H	H	H	H	H	H	R	R
2200	H	H	H	H	H	H	H	R	R
2201	H	H	H	H	H	H	H	R	R
2202	H	H	H	H	H	H	H	R	R
2203	H	H	H	H	H	H	H	R	R
2204	H	H	H	H	H	H	H	R	R
2205	H	H	H	H	H	H	H	R	R
2206	H	H	H	H	H	H	H	R	R
2207	H	H	H	H	H	H	H	R	R
2208	H	H	H	H	H	H	H	R	R
2209	H	H	H	H	H	H	H	R	R
2210	H	H	H	H	H	H	H	R	R
2211	H	H	H	H	H	H	H	R	R

1035	S	S	R	H	R	H	S	R	H
1036	S	S	R	H	R	H	S	R	H
1037	S	S	R	H	R	H	S	R	H
1038	S	S	R	H	R	H	S	R	H
1039	S	S	R	H	R	H	S	R	H
1040	S	S	R	H	R	H	S	R	H
1041	S	S	R	H	R	H	S	R	H
1042	S	S	R	H	R	H	S	R	H
1043	S	S	R	H	R	H	S	R	H
1044	S	S	R	H	R	H	S	R	H
1045	S	S	R	H	R	H	S	R	H
1046	S	S	R	H	R	H	S	R	H
1047	S	S	R	H	R	H	S	R	H
1048	S	S	R	H	R	H	S	R	H
1049	S	S	R	H	R	H	S	R	H
1050	S	S	R	H	R	H	S	R	H
1051	S	S	R	H	R	H	S	R	H
1052	S	S	R	H	R	H	S	R	H
1053	S	S	R	H	R	H	S	R	H
1054	S	S	R	H	R	H	S	R	H
1055	S	S	R	H	R	H	S	R	H
1056	S	S	R	H	R	H	S	R	H
1057	S	S	R	H	R	H	S	R	H
1058	S	S	R	H	R	H	S	R	H
1059	S	S	R	H	R	H	S	R	H
1060	S	S	R	H	R	H	S	R	H
1061	S	S	R	H	R	H	S	R	H
1062	S	S	R	H	R	H	S	R	H
1063	S	S	R	H	R	H	S	R	H
1064	S	S	R	H	R	H	S	R	H
1065	S	S	R	H	R	H	S	R	H
1066	S	S	R	H	R	H	S	R	H
1067	S	S	R	H	R	H	S	R	H
1068	S	S	R	H	R	H	S	R	H
1069	S	S	R	H	R	H	S	R	H
1070	S	S	R	H	R	H	S	R	H
1071	S	S	R	H	R	H	S	R	H
1072	S	S	R	H	R	H	S	R	H
1073	S	S	R	H	R	H	S	R	H
1074	S	S	R	H	R	H	S	R	H
1075	S	S	R	H	R	H	S	R	H
1076	S	S	R	H	R	H	S	R	H
1077	S	S	R	H	R	H	S	R	H
1078	S	S	R	H	R	H	S	R	H
1079	S	S	R	H	R	H	S	R	H
1080	S	S	R	H	R	H	S	R	H
1081	S	S	R	H	R	H	S	R	H
1082	S	S	R	H	R	H	S	R	H
1083	S	S	R	H	R	H	S	R	H
1084	S	S	R	H	R	H	S	R	H
1085	S	S	R	H	R	H	S	R	H
1086	S	S	R	H	R	H	S	R	H
1087	S	S	R	H	R	H	S	R	H
1088	S	S	R	H	R	H	S	R	H
1089	S	S	R	H	R	H	S	R	H
1090	S	S	R	H	R	H	S	R	H
1091	S	S	R	H	R	H	S	R	H
1092	S	S	R	H	R	H	S	R	H
1093	S	S	R	H	R	H	S	R	H
1094	S	S	R	H	R	H	S	R	H
1095	S	S	R	H	R	H	S	R	H
1096	S	S	R	H	R	H	S	R	H
1097	S	S	R	H	R	H	S	R	H
1098	S	S	R	H	R	H	S	R	H

2276	H	H	H	H	H	H	H	R	R
2277	H	H	H	H	H	H	H	R	R
2278	H	H	H	H	H	H	H	R	R
2279	H	H	H	H	H	H	H	R	R
2280	H	H	H	H	H	H	H	R	R
2281	H	H	H	H	H	H	H	R	R
2282	H	H	H	H	H	H	H	R	R
2283	H	H	H	H	H	H	H	R	R
2284	H	H	H	H	H	H	H	R	R
2285	H	H	H	H	H	H	H	R	R
2286	H	H	H	H	H	H	H	R	R
2287	H	H	H	H	H	H	H	R	R
2288	H	H	H	H	H	H	H	R	R
2289	H	H	H	H	H	H	H	R	R
2290	H	H	H	H	H	H	H	R	R
2291	H	H	H	H	H	H	H	R	R
2292	H	H	H	H	H	H	H	R	R
2293	H	H	H	H	H	H	H	R	R
2294	H	H	H	H	H	H	H	R	R
2295	H	H	H	H	H	H	H	R	R
2296	H	H	H	H	H	H	H	R	R
2297	H	H	H	H	H	H	H	R	R
2298	H	H	H	H	H	H	H	R	R
2299	H	H	H	H	H	H	H	R	R
2300	H	H	H	H	H	H	H	R	R
2301	H	H	H	H	H	H	H	R	R
2302	H	H	H	H	H	H	H	R	R
2303	H	H	H	H	H	H	H	R	R
2304	H	H	H	H	H	H	H	R	R
2305	H	H	H	H	H	H	H	R	R
2306	H	H	H	H	H	H	H	R	R
2307	H	H	H	H	H	H	H	R	R
2308	H	H	H	H	H	H	H	R	R
2309	H	H	H	H	H	H	H	R	R
2310	H	H	H	H	H	H	H	R	R
2311	H	H	H	H	H	H	H	R	R
2312	H	H	H	H	H	H	H	R	R
2313	H	H	H	H	H	H	H	R	R
2314	H	H	H	H	H	H	H	R	R
2315	H	H	H	H	H	H	H	R	R
2316	H	H	H	H	H	H	H	R	R
2317	H	H	H	H	H	H	H	R	R
2318	H	H	H	H	H	H	H	R	R
2319	H	H	H	H	H	H	H	R	R
2320	H	H	H	H	H	H	H	R	R
2321	H	H	H	H	H	H	H	R	R
2322	H	H	H	H	H	H	H	R	R
2323	H	H	H	H	H	H	H	R	R
2324	H	H	H	H	H	H	H	R	R
2325	H	H	H	H	H	H	H	R	R
2326	H	H	H	H	H	H	H	R	R
2327	H	H	H	H	H	H	H	R	R
2328	H	H	H	H	H	H	H	R	R
2329	H	H	H	H	H	H	H	R	R
2330	H	H	H	H	H	H	H	R	R
2331	H	H	H	H	H	H	H	R	R
2332	H	H	H	H	H	H	H	R	R
2333	H	H	H	H	H	H	H	R	R
2334	H	H	H	H	H	H	H	R	R
2335	H	H	H	H	H	H	H	R	R
2336	H	H	H	H	H	H	H	R	R
2337	H	H	H	H	H	H	H	R	R
2338	H	H	H	H	H	H	H	R	R
2339	H	H	H	H	H	H	H	R	R

1099	S	S	R	H	R	H	S	R	H
1100	S	S	R	H	R	H	S	R	H
1101	S	S	R	H	R	H	S	R	H
1102	S	S	R	H	R	H	S	R	H
1103	S	S	R	H	R	H	S	R	H
1104	S	S	R	H	R	H	S	R	H
1105	S	S	R	H	R	H	S	R	H
1106	S	S	R	H	R	H	S	R	H
1107	S	S	R	H	R	H	S	R	H
1108	S	S	R	H	R	H	S	R	H
1109	S	S	R	H	R	H	S	R	H
1110	S	S	R	H	R	H	S	R	H
1111	S	S	R	H	R	H	S	R	H
1112	S	S	R	H	R	H	S	R	H
1113	S	S	R	H	R	H	S	R	H
1114	S	S	R	H	R	H	S	R	H
1115	S	S	R	H	R	H	S	R	H
1116	S	S	R	H	R	H	S	R	H
1117	S	S	R	H	R	H	S	R	H
1118	S	S	R	H	R	H	S	R	H
1119	S	S	R	H	R	H	S	R	H
1120	S	S	R	H	R	H	S	R	H
1121	S	S	R	H	R	H	S	R	H
1122	S	S	R	H	R	H	S	R	H
1123	S	S	R	H	R	H	S	R	H
1124	S	S	R	H	R	H	S	R	H
1125	S	S	R	H	R	H	S	R	H
1126	S	S	R	H	R	H	S	R	H
1127	S	S	R	H	R	H	S	R	H
1128	S	S	R	H	R	H	S	R	H
1129	S	S	R	H	R	H	S	R	H
1130	S	S	R	H	R	H	S	R	H
1131	S	S	R	H	R	H	S	R	H
1132	S	S	R	H	R	H	S	R	H
1133	S	S	R	H	R	H	S	R	H
1134	S	S	R	H	R	H	S	R	H
1135	S	S	R	H	R	H	S	R	H
1136	S	S	R	H	R	H	S	R	H
1137	S	S	R	H	R	H	S	R	H
1138	S	S	R	H	R	H	S	R	H
1139	S	S	R	H	R	H	S	R	H
1140	S	S	R	H	R	H	S	R	H
1141	S	S	R	H	R	H	S	R	H
1142	S	S	R	H	R	H	S	R	H
1143	S	S	R	H	R	H	S	R	H
1144	S	S	R	H	R	H	S	R	H
1145	S	S	R	H	R	H	S	R	H
1146	S	S	R	H	R	H	S	R	H
1147	S	S	R	H	R	H	S	R	H
1148	S	S	R	H	R	H	S	R	H
1149	H	S	H	S	S	S	R	H	S
1150	H	S	H	S	S	S	R	H	S
1151	H	S	H	S	S	S	R	H	S
1152	H	S	H	S	S	S	R	H	S
1153	H	S	H	S	S	S	R	H	S
1154	H	S	H	S	S	S	R	H	S
1155	H	S	H	S	S	S	R	H	S
1156	H	S	H	S	S	S	R	H	S
1157	H	S	H	S	S	S	R	H	S
1158	H	S	H	S	S	S	R	H	S
1159	H	S	H	S	S	S	R	H	S
1160	H	S	H	S	S	S	R	H	S
1161	H	S	H	S	S	S	R	H	S
1162	H	S	H	S	S	S	R	H	S

2340	H	H	H	H	H	H	H	R	R
2341	H	H	H	H	H	H	H	R	R
2342	H	H	H	H	H	H	H	R	R
2343	H	H	H	H	H	H	H	R	R
2344	H	H	H	H	H	H	H	R	R
2345	H	H	H	H	H	H	H	R	R
2346	H	H	H	H	H	H	H	R	R
2347	H	H	H	H	H	H	H	R	R
2348	H	H	H	H	H	H	H	R	R
2349	H	H	H	H	H	H	H	R	R
2350	R	S	R	S	R	S	S	R	R
2351	H	H	H	H	H	H	H	R	R
2352	H	H	H	H	H	H	H	R	R
2353	H	H	H	H	H	H	H	R	R
2354	H	H	H	H	H	H	H	R	R
2355	H	H	H	H	H	H	H	R	R
2356	H	H	H	H	H	H	H	R	R
2357	H	H	H	H	H	H	H	R	R
2358	H	H	H	H	H	H	H	R	R
2359	H	H	H	H	H	H	H	R	R
2360	H	H	H	H	H	H	H	R	R
2361	H	H	H	H	H	H	H	R	R
2362	H	H	H	H	H	H	H	R	R
2363	H	H	H	H	H	H	H	R	R
2364	H	H	H	H	H	H	H	R	R
2365	H	H	H	H	H	H	H	R	R
2366	H	H	H	H	H	H	H	R	R
2367	H	H	H	H	H	H	H	R	R
2368	H	H	H	H	H	H	H	R	R
2369	H	H	H	H	H	H	H	R	R
2370	H	H	H	H	H	H	H	R	R
2371	H	H	H	H	H	H	H	R	R
2372	H	H	H	H	H	H	H	R	R
2373	H	H	H	H	H	H	H	R	R
2374	H	H	H	H	H	H	H	R	R
2375	H	H	H	H	H	H	H	R	R
2376	H	H	H	H	H	H	H	R	R
2377	H	H	H	H	H	H	H	R	R
2378	H	H	H	H	H	H	H	R	R
2379	H	H	H	H	H	H	H	R	R
2380	H	H	H	H	H	H	H	R	R
2381	H	H	H	H	H	H	H	R	R
2382	H	H	H	H	H	H	H	R	R
2383	H	H	H	H	H	H	H	R	R
2384	H	H	H	H	H	H	H	R	R
2385	H	H	H	H	H	H	H	R	R
2386	H	H	H	H	H	H	H	R	R
2387	H	H	H	H	H	H	H	R	R
2388	H	H	H	H	H	H	H	R	R
2389	H	H	H	H	H	H	H	R	R
2390	H	H	H	H	H	H	H	R	R
2391	H	H	H	H	H	H	H	R	R
2392	H	H	H	H	H	H	H	R	R
2393	H	H	H	H	H	H	H	R	R
2394	H	H	H	H	H	H	H	R	R
2395	H	H	H	H	H	H	H	R	R
2396	H	H	H	H	H	H	H	R	R
2397	H	H	H	H	H	H	H	R	R
2398	H	H	H	H	H	H	H	R	R
2399	H	H	H	H	H	H	H	R	R
2400	H	H	H	H	H	H	H	R	R
2401	H	H	H	H	H	H	H	R	R
2402	H	H	H	H	H	H	H	R	R
2403	H	H	H	H	H	H	H	R	R

1163	H	S	H	S	S	S	R	H	S
1164	H	S	H	S	S	S	R	H	S
1165	H	S	H	S	S	S	R	H	S
1166	H	S	H	S	S	S	R	H	S
1167	H	S	H	S	S	S	R	H	S
1168	H	S	H	S	S	S	R	H	S
1169	H	S	H	S	S	S	R	H	S
1170	H	S	H	S	S	S	R	H	S
1171	H	S	H	S	S	S	R	H	S
1172	H	S	H	S	S	S	R	H	S
1173	H	S	H	S	S	S	R	H	S
1174	H	S	H	S	S	S	R	H	S
1175	H	S	H	S	S	S	R	H	S
1176	H	S	H	S	S	S	R	H	S
1177	H	S	H	S	S	S	R	H	S
1178	H	S	H	S	S	S	R	H	S
1179	H	S	H	S	S	S	R	H	S
1180	H	S	H	S	S	S	R	H	S
1181	H	S	H	S	S	S	R	H	S
1182	H	S	H	S	S	S	R	H	S
1183	H	S	H	S	S	S	R	H	S
1184	H	S	H	S	S	S	R	H	S
1185	H	S	H	S	S	S	R	H	S
1186	H	S	H	S	S	S	R	H	S
1187	H	S	H	S	S	S	R	H	S
1188	H	S	H	S	S	S	R	H	S
1189	H	S	H	S	S	S	R	H	S
1190	H	S	H	S	S	S	R	H	S
1191	H	S	H	S	S	S	R	H	S
1192	H	S	H	S	S	S	R	H	S
1193	H	S	H	S	S	S	R	H	S
1194	H	S	H	S	S	S	R	H	S
1195	H	S	H	S	S	S	R	H	S
1196	H	S	H	S	S	S	R	H	S
1197	H	S	H	S	S	S	R	H	S
1198	H	S	H	S	S	S	R	H	S
1199	H	S	H	S	S	S	R	H	S
1200	H	S	H	S	S	S	R	H	S
1201	H	S	H	S	S	S	R	H	S
1202	H	S	H	S	S	S	R	H	S
1203	H	S	H	S	S	S	R	H	S
1204	H	S	H	S	S	S	R	H	S
1205	H	S	H	S	S	S	R	H	S
1206	H	S	H	S	S	S	R	H	S
1207	H	S	H	S	S	S	R	H	S
1208	H	S	H	S	S	S	R	H	S
1209	H	S	H	S	S	S	R	H	S
1210	H	S	H	S	S	S	R	H	S
1211	H	S	H	S	S	S	R	H	S
1212	H	S	H	S	S	S	R	H	S
1213	H	S	H	S	S	S	R	H	S
1214	H	S	H	S	S	S	R	H	S
1215	H	S	H	S	S	S	R	H	S
1216	H	S	H	S	S	S	R	H	S
1217	H	S	H	S	S	S	R	H	S
1218	H	S	H	S	S	S	R	H	S
1219	H	S	H	S	S	S	R	H	S
1220	H	S	H	S	S	S	R	H	S
1221	H	S	H	S	S	S	R	H	S
1222	H	S	H	S	S	S	R	H	S
1223	H	S	H	S	S	S	R	H	S
1224	H	S	H	S	S	S	R	H	S
1225	H	S	H	S	S	S	R	H	S
1226	H	S	H	S	S	S	R	H	S

2404	H	H	H	H	H	H	H	R	R
2405	H	H	H	H	H	H	H	R	R
2406	H	H	H	H	H	H	H	R	R
2407	H	H	H	H	H	H	H	R	R
2408	H	H	H	H	H	H	H	R	R
2409	H	H	H	H	H	H	H	R	R
2410	H	H	H	H	H	H	H	R	R
2411	H	H	H	H	H	H	H	R	R
2412	H	H	H	H	H	H	H	R	R
2413	H	H	H	H	H	H	H	R	R
2414	H	H	H	H	H	H	H	R	R
2415	H	H	H	H	H	H	H	R	R
2416	H	H	H	H	H	H	H	R	R
2417	H	H	H	H	H	H	H	R	R
2418	H	H	H	H	H	H	H	R	R
2419	H	H	H	H	H	H	H	R	R
2420	H	H	H	H	H	H	H	R	R
2421	H	H	H	H	H	H	H	R	R
2422	H	H	H	H	H	H	H	R	R
2423	H	H	H	H	H	H	H	R	R
2424	H	H	H	H	H	H	H	R	R
2425	H	H	H	H	H	H	H	R	R
2426	H	H	H	H	H	H	H	R	R
2427	H	H	H	H	H	H	H	R	R
2428	H	H	H	H	H	H	H	R	R
2429	H	H	H	H	H	H	H	R	R
2430	H	H	H	H	H	H	H	R	R
2431	H	H	H	H	H	H	H	R	R
2432	H	H	H	H	H	H	H	R	R
2433	H	H	H	H	H	H	H	R	R
2434	H	H	H	H	H	H	H	R	R
2435	H	H	H	H	H	H	H	R	R
2436	H	H	H	H	H	H	H	R	R
2437	H	H	H	H	H	H	H	R	R
2438	H	H	H	H	H	H	H	R	R
2439	H	H	H	H	H	H	H	R	R
2440	H	H	H	H	H	H	H	R	R
2441	H	H	H	H	H	H	H	R	R
2442	H	H	H	H	H	H	H	R	R
2443	H	H	H	H	H	H	H	R	R
2444	H	H	H	H	H	H	H	R	R
2445	H	H	H	H	H	H	H	R	R
2446	H	H	H	H	H	H	H	R	R
2447	H	H	H	H	H	H	H	R	R
2448	H	H	H	H	H	H	H	R	R
2449	H	H	H	H	H	H	H	R	R
2450	H	H	H	H	H	H	H	R	R
2451	H	H	H	H	H	H	H	R	R
2452	H	H	H	H	H	H	H	R	R
2453	H	H	H	H	H	H	H	R	R
2454	H	H	H	H	H	H	H	R	R
2455	H	H	H	H	H	H	H	R	R
2456	H	H	H	H	H	H	H	R	R
2457	H	H	H	H	H	H	H	R	R
2458	H	H	H	H	H	H	H	R	R
2459	H	H	H	H	H	H	H	R	R
2460	H	H	H	H	H	H	H	R	R
2461	H	H	H	H	H	H	H	R	R
2462	H	H	H	H	H	H	H	R	R
2463	H	H	H	H	H	H	H	R	R
2464	H	H	H	H	H	H	H	R	R
2465	H	H	H	H	H	H	H	R	R
2466	H	H	H	H	H	H	H	R	R
2467	H	H	H	H	H	H	H	R	R

1227	H	S	H	S	S	S	R	H	S
1228	H	S	H	S	S	S	R	H	S
1229	H	S	H	S	S	S	R	H	S
1230	H	S	H	S	S	S	R	H	S
1231	H	S	H	S	S	S	R	H	S
1232	H	S	H	S	S	S	R	H	S
1233	H	S	H	S	S	S	R	H	S
1234	H	S	H	S	S	S	R	H	S
1235	H	S	H	S	S	S	R	H	S
1236	H	S	H	S	S	S	R	H	S
1237	H	S	H	S	S	S	R	H	S
1238	H	S	H	S	S	S	R	H	S
1239	H	S	H	S	S	S	R	H	S
1240	H	S	H	S	S	S	R	H	S
1241	H	S	H	S	S	S	R	H	S

2468	H	H	H	H	H	H	H	R	R
2469	H	H	H	H	H	H	H	R	R
2470	H	H	H	H	H	H	H	R	R
2471	H	H	H	H	H	H	H	R	R
2472	H	H	H	H	H	H	H	R	R
2473	H	H	H	H	H	H	H	R	R
2474	H	H	H	H	H	H	H	R	R
2475	H	H	H	H	H	H	H	R	R
2476	H	H	H	H	H	H	H	R	R
2477	H	H	H	H	H	H	H	R	R
2478	H	H	H	H	H	H	H	R	R
2479	H	H	H	H	H	H	H	R	R
2480	H	H	H	H	H	H	H	R	R
2481	H	H	H	H	H	H	H	R	R

표 23. 순천대학교 66점의 시료에 대하여, 병 관련 5개의 마커를 이용한 서비스 결과

순번	샘플명	Ty2	Ph3	Sm-565	J3	Bw6
1	F3 1-1	S	S	R	H	R
2	F3 1-2	S	S	R	H	R
3	F3 1-3	S	S	R	S	R
4	F3 1-4	S	S	R	H	R
5	F3 1-5	S	S	R	R	R
6	F3 1-6	S	S	R	H	R
7	F3 1-7	S	S	R	S	R
8	F3 1-8	S	S	R	H	R
9	F3 1-9	S	S	R	R	R
10	F3 1-10	S	S	R	H	R
11	F3 1-11	S	S	R	H	R
12	F3 1-12	S	S	R	H	R
13	F3 2-1	S	R	H	H	H
14	F3 2-2	S	R	R	S	H
15	F3 2-3	S	R	H	S	S
16	F3 2-4	S	R	H	H	R
17	F3 2-5	S	R	R	R	H
18	F3 4-1	R	H	R	S	R
19	F3 4-2	R	S	R	S	R
20	F3 4-3	R	R	R	S	R
21	F3 5-1	S	S	H	R	S
22	F3 6-1	S	R	R	R	R
23	F3 6-2	S	R	R	R	R
24	F3 7-1	R	R	R	H	R
25	F3 7-2	R	R	R	H	R
26	F3 7-3	R	R	R	S	R
27	F3 7-4	R	R	R	H	R
28	F3 7-5	R	R	R	H	R
29	F3 7-6	R	R	R	H	R
30	F3 8-1	S	S	R	S	R
31	F3 8-2	S	S	H	S	R
32	F3 8-3	S	S	H	S	R
33	F3 8-4	S	S	H	S	R

순번	샘플명	Ty2	Ph3	Sm-565	J3	Bw6
34	F3 8-5	S	S	H	S	R
35	F3 8-6	S	S	R	S	R
36	F3 8-7	S	S	H	S	R
37	F3 9-1	S	S	H	R	S
38	F3 9-2	S	S	H	R	S
39	F3 9-3	S	S	R	R	S
40	F3 9-4	S	S	H	R	S
41	F3 9-5	S	S	H	R	S
42	F3 9-6	S	S	S	R	S
43	F3 9-7	S	S	H	R	S
44	F3 9-8	S	S	H	R	S
45	F3 9-9	S	S	H	R	S
46	F3 9-10	S	S	R	R	S
47	F3 10-1	R	R	S	S	H
48	F3 10-2	R	R	R	S	H
49	F3 10-3	R	R	H	S	H
50	F3 10-4	R	R	H	S	H
51	F3 10-5	R	R	R	S	S
52	F3 10-6	R	R	S	S	H
53	F3 10-7	R	R	S	S	S
54	F3 10-8	R	R	S	S	S
55	F3 10-9	R	R	H	S	H
56	F3 10-10	R	R	R	S	H
57	F3 10-11	R	R	R	S	H
58	F3 10-12	R	R	H	S	R
59	F3 10-13	R	R	R	S	H
60	F3 10-14	R	R	H	S	S
61	F3 10-15	R	R	S	S	R
62	F3 10-16	R	R	R	S	H
63	F3 10-17	R	R	H	S	S
64	F3 10-18	R	R	H	S	H
65	F3 10-19	R	R	S	S	R
66	F3 10-20	R	R	H	S	H

표 24. 순천대학교 65점의 시료에 대하여, 병 관련 8개의 마커를 이용한 서비스 결과

No.	I2	I3	Ve2	J3	py1	Mi23	Bw6	Bw12
1	R	S	R	R	S	R	S	S
2	R	S	R	R	S	R	S	S
3	R	S	R	R	S	S	S	S
4	R	S	R	R	S	H	S	S
5	R	S	R	R	S	R	S	S
6	R	S	R	R	S	S	S	S
7	R	H	H	R	R	R	R	R

No.	I2	I3	Ve2	J3	py1	Mi23	Bw6	Bw12
34	R	S	R	S	S	R	H	R
35	H	S	R	S	S	R	S	R
36	S	R	R	R	R	R	R	R
37	S	R	R	R	R	R	R	R
38	S	R	R	R	R	R	R	R
39	S	R	R	R	R	R	R	R
40	S	R	R	R	R	R	R	H

8	R	H	R	R	R	R	R	R
9	R	H	R	R	R	R	R	R
10	R	H	H	R	R	R	R	R
11	R	S	H	R	R	R	R	R
12	R	H	R	R	R	R	R	R
13	R	S	S	R	R	R	R	R
14	R	H	R	R	R	R	R	R
15	R	H	H	R	R	R	R	R
16	R	H	H	R	R	R	R	R
17	R	R	S	R	R	R	R	R
18	R	R	H	R	R	R	R	R
19	n/a	R	R	R	R	R	R	R
20	R	H	H	R	R	R	R	R
21	R	R	R	R	R	R	R	R
22	H	S	S	H	S	H	H	R
23	H	S	H	S	S	H	H	R
24	R	S	H	H	S	H	R	R
25	H	S	H	R	S	S	H	R
26	R	S	H	H	S	H	H	R
27	R	S	S	H	S	R	S	R
28	H	S	H	H	S	H	H	R
29	S	S	H	R	S	H	H	R
30	H	S	S	H	S	H	S	R
31	H	S	S	H	S	S	S	R
32	S	S	H	H	S	H	H	R
33	H	S	R	S	S	H	H	R

41	S	R	R	R	R	R	R	R
42	S	R	R	R	R	R	R	R
43	S	R	R	R	R	R	R	R
44	S	R	R	R	R	R	R	R
45	S	R	R	R	R	R	R	R
46	S	R	R	R	R	R	R	R
47	S	R	R	R	R	R	R	R
48	S	R	R	R	R	R	R	R
49	S	R	R	R	R	R	R	R
50	S	R	R	R	R	R	R	R
51	S	R	R	R	R	R	R	R
52	S	R	R	R	R	R	R	R
53	S	R	R	R	R	R	R	R
54	S	S	S	S	S	R	R	R
55	S	S	S	H	S	R	H	R
56	S	S	S	H	S	R	H	R
57	S	S	S	H	S	R	H	R
58	S	S	S	H	S	R	S	R
59	S	S	S	H	S	R	H	R
60	S	S	S	H	S	R	R	R
61	S	S	S	R	S	R	H	R
62	S	S	S	H	S	R	H	R
63	S	S	S	H	S	R	H	R
64	S	S	S	H	S	R	S	R
65	S	S	S	R	S	R	S	R

표 25. 순천대학교 9점의 시료에 대하여, 병 관련 14개의 마커를 이용한 서비스 결과

No.	I2	I3	Ve2	J3	py1	Mi23	Bw6	Bw12	Sw5	Tm2a	Ty1	ty5	Ph3	Sm-565
1	H	S	R	R	S	H	S	S	S	R	S	S	S	R
2	H	S	R	R	S	H	S	S	S	R	S	S	S	R
3	H	S	R	R	S	H	S	S	S	R	S	S	S	R
4	H	S	R	R	S	R	S	S	S	R	S	S	S	R
5	n/a	S	R	R	S	H	S	S	S	R	S	S	S	R
6	n/a	S	R	R	S	R	S	S	S	R	S	S	S	R
7	R	S	R	R	S	H	S	S	S	R	S	S	S	R
8	H	S	R	R	S	S	S	S	S	R	S	S	S	R
9	S	S	R	R	S	H	S	S	S	R	S	S	S	R

표 26. 순천대학교 321점의 시료에 대하여, 병 관련 1개의 마커를 이용한 서비스 결과

순번	샘플명	Ty1	순번	샘플명	Ty1	순번	샘플명	Ty1	순번	샘플명	Ty1
1	TUR4-95#1	S	82	TUR4-122#7	S	163	TUR4-146#5	R	244	TUR4-163#7	H
2	TUR4-95#2	R	83	TUR4-122#8	H	164	TUR4-146#6	S	245	TUR4-163#8	H
3	TUR4-95#3	R	84	TUR4-122#9	H	165	TUR4-146#7	H	246	TUR4-163#9	R
4	TUR4-95#4	R	85	TUR4-122#10	H	166	TUR4-146#8	H	247	TUR4-163#10	R
5	TUR4-95#5	S	86	TUR4-136#1	H	167	TUR4-146#9	S	248	TUR4-164#1	R
6	TUR4-95#6	S	87	TUR4-136#2	H	168	TUR4-146#10	S	249	TUR4-164#2	H
7	TUR4-95#7	S	88	TUR4-136#3	H	169	TUR4-147#1	H	250	TUR4-164#3	H
8	TUR4-97#1	S	89	TUR4-136#4	R	170	TUR4-147#2	H	251	TUR4-164#4	H
9	TUR4-97#2	R	90	TUR4-136#5	H	171	TUR4-147#3	S	252	TUR4-164#5	S
10	TUR4-97#3	H	91	TUR4-136#6	H	172	TUR4-147#4	H	253	TUR4-164#6	H
11	TUR4-97#4	H	92	TUR4-136#7	H	173	TUR4-147#5	H	254	TUR4-164#7	R
12	TUR4-97#5	H	93	TUR4-136#8	R	174	TUR4-147#6	H	255	TUR4-164#8	H
13	TUR4-97#6	H	94	TUR4-136#9	S	175	TUR4-147#7	H	256	TUR4-164#9	R
14	TUR4-97#7	H	95	TUR4-136#10	R	176	TUR4-147#8	H	257	TUR4-164#10	H
15	TUR4-97#8	H	96	TUR4-137#1	H	177	TUR4-147#9	H	258	TUR4-164#11	R
16	TUR4-97#9	R	97	TUR4-137#2	R	178	TUR4-147#10	H	259	TUR4-165#1	S
17	TUR4-98#1	H	98	TUR4-137#3	H	179	TUR4-148#1	H	260	TUR4-165#2	H
18	TUR4-98#2	R	99	TUR4-137#4	S	180	TUR4-148#2	H	261	TUR4-165#3	H
19	TUR4-98#3	H	100	TUR4-137#5	H	181	TUR4-148#3	H	262	TUR4-165#4	H
20	TUR4-98#4	H	101	TUR4-137#6	S	182	TUR4-148#4	R	263	TUR4-165#5	H

21	TUR4-98#5	S	102	TUR4-138#1	H	183	TUR4-148#5	H	264	TUR4-165#6	H
22	TUR4-98#6	H	103	TUR4-138#2	H	184	TUR4-148#6	H	265	TUR4-165#7	S
23	TUR4-98#7	R	104	TUR4-138#3	H	185	TUR4-148#7	H	266	TUR4-165#8	S
24	TUR4-98#8	S	105	TUR4-138#4	H	186	TUR4-148#8	H	267	TUR4-165#9	R
25	TUR4-98#9	H	106	TUR4-138#5	H	187	TUR4-148#9	H	268	TUR4-165#10	R
26	TUR4-98#10	R	107	TUR4-138#6	S	188	TUR4-148#10	S	269	TUR4-166#1	H
27	TUR4-99#1	R	108	TUR4-138#7	H	189	TUR4-152#1	S	270	TUR4-166#2	R
28	TUR4-99#2	R	109	TUR4-139#1	S	190	TUR4-152#2	H	271	TUR4-166#3	H
29	TUR4-99#3	R	110	TUR4-139#2	H	191	TUR4-152#3	R	272	TUR4-166#4	H
30	TUR4-99#4	R	111	TUR4-139#3	S	192	TUR4-152#4	H	273	TUR4-166#5	H
31	TUR4-99#5	R	112	TUR4-139#4	H	193	TUR4-152#5	H	274	TUR4-166#6	H
32	TUR4-99#6	R	113	TUR4-139#5	R	194	TUR4-152#6	H	275	TUR4-166#7	S
33	TUR4-99#7	R	114	TUR4-139#6	H	195	TUR4-152#7	H	276	TUR4-166#8	H
34	TUR4-99#8	R	115	TUR4-139#7	R	196	TUR4-152#8	H	277	TUR4-166#9	R
35	TUR4-99#9	R	116	TUR4-139#8	H	197	TUR4-152#9	H	278	TUR4-166#10	S
36	TUR4-102#1	H	117	TUR4-139#9	H	198	TUR4-152#10	S	279	TUR4-167#1	R
37	TUR4-102#2	S	118	TUR4-139#10	H	199	TUR4-154#1	H	280	TUR4-167#2	S
38	TUR4-102#3	H	119	TUR4-140#1	R	200	TUR4-154#2	R	281	TUR4-167#3	H
39	TUR4-102#4	H	120	TUR4-140#2	R	201	TUR4-154#3	H	282	TUR4-167#4	R
40	TUR4-102#5	R	121	TUR4-140#3	R	202	TUR4-154#4	H	283	TUR4-167#5	R
41	TUR4-102#6	H	122	TUR4-140#4	R	203	TUR4-154#5	H	284	TUR4-167#6	S
42	TUR4-103#1	R	123	TUR4-140#5	R	204	TUR4-154#6	S	285	TUR4-167#7	H
43	TUR4-103#2	S	124	TUR4-140#6	R	205	TUR4-154#7	R	286	TUR4-167#8	H
44	TUR4-103#3	R	125	TUR4-140#7	R	206	TUR4-154#8	S	287	TUR4-167#9	H
45	TUR4-103#4	R	126	TUR4-140#8	R	207	TUR4-154#9	R	288	TUR4-168#1	H
46	TUR4-103#5	R	127	TUR4-140#9	R	208	TUR4-154#10	S	289	TUR4-168#2	H
47	TUR4-104#1	R	128	TUR4-140#10	R	209	TUR4-155#1	R	290	TUR4-168#3	H
48	TUR4-104#2	S	129	TUR4-141#1	H	210	TUR4-155#2	R	291	TUR4-168#4	S
49	TUR4-104#3	H	130	TUR4-141#2	H	211	TUR4-155#3	R	292	TUR4-168#5	H
50	TUR4-104#4	H	131	TUR4-141#3	R	212	TUR4-155#4	R	293	TUR4-168#6	H
51	TUR4-104#5	H	132	TUR4-141#4	R	213	TUR4-155#5	H	294	TUR4-168#7	R
52	TUR4-117#1	S	133	TUR4-141#5	H	214	TUR4-155#6	S	295	TUR4-168#8	R
53	TUR4-117#2	H	134	TUR4-141#6	R	215	TUR4-155#7	H	296	TUR4-168#9	H
54	TUR4-117#3	R	135	TUR4-141#7	R	216	TUR4-155#8	H	297	TUR4-174#1	H
55	TUR4-117#4	R	136	TUR4-141#8	R	217	TUR4-155#9	H	298	TUR4-174#2	S
56	TUR4-117#5	R	137	TUR4-141#9	R	218	TUR4-155#10	H	299	TUR4-174#3	R
57	TUR4-118#1	H	138	TUR4-141#10	S	219	TUR4-156#1	H	300	TUR4-174#4	H
58	TUR4-118#2	S	139	TUR4-142#1	R	220	TUR4-156#2	R	301	TUR4-174#5	H
59	TUR4-118#3	H	140	TUR4-142#2	R	221	TUR4-156#3	S	302	TUR4-174#6	H
60	TUR4-118#4	H	141	TUR4-142#3	R	222	TUR4-156#4	H	303	TUR4-174#7	S
61	TUR4-118#5	R	142	TUR4-142#4	R	223	TUR4-156#5	R	304	TUR4-174#8	H
62	TUR4-118#6	R	143	TUR4-142#5	R	224	TUR4-156#6	H	305	TUR4-174#9	R
63	TUR4-118#7	R	144	TUR4-142#6	R	225	TUR4-156#7	R	306	TUR4-175#1	H
64	TUR4-118#8	H	145	TUR4-142#7	H	226	TUR4-156#8	H	307	TUR4-175#2	R
65	TUR4-118#9	H	146	TUR4-142#8	R	227	TUR4-156#9	R	308	TUR4-175#3	H
66	TUR4-121#1	H	147	TUR4-142#9	R	228	TUR4-156#10	H	309	TUR4-175#4	S
67	TUR4-121#2	S	148	TUR4-142#10	R	229	TUR4-158#1	S	310	TUR4-175#5	H
68	TUR4-121#3	S	149	TUR4-143#1	R	230	TUR4-158#2	H	311	TUR4-175#6	R
69	TUR4-121#4	H	150	TUR4-143#2	S	231	TUR4-158#3	R	312	TUR4-175#7	R
70	TUR4-121#5	H	151	TUR4-143#3	S	232	TUR4-158#4	H	313	TUR4-175#8	H
71	TUR4-121#6	R	152	TUR4-143#4	H	233	TUR4-158#5	H	314	TUR4-175#9	R
72	TUR4-121#7	R	153	TUR4-143#5	S	234	TUR4-158#6	R	315	TUR4-222#1	S
73	TUR4-121#8	H	154	TUR4-143#6	H	235	TUR4-158#7	H	316	TUR4-222#2	H
74	TUR4-121#9	S	155	TUR4-143#7	H	236	TUR4-158#8	H	317	TUR4-222#3	H
75	TUR4-121#10	H	156	TUR4-143#8	H	237	TUR4-158#9	S	318	TUR4-222#4	H
76	TUR4-122#1	R	157	TUR4-143#9	S	238	TUR4-163#1	S	319	TUR4-222#5	S
77	TUR4-122#2	H	158	TUR4-143#10	R	239	TUR4-163#2	H	320	TUR4-222#6	R
78	TUR4-122#3	R	159	TUR4-146#1	R	240	TUR4-163#3	S	321	TUR4-222#7	S
79	TUR4-122#4	H	160	TUR4-146#2	H	241	TUR4-163#4	H			
80	TUR4-122#5	R	161	TUR4-146#3	H	242	TUR4-163#5	H			
81	TUR4-122#6	R	162	TUR4-146#4	S	243	TUR4-163#6	H			

표 27. 순천대학교 98점의 시료에 대하여, 병 관련 1개의 마커를 이용한 서비스 결과

순번	샘플명	Sm-565	순번	샘플명	Sm-565	순번	샘플명	Sm-565	순번	샘플명	Sm-565
1	TUR4-85#1	S	26	TUR4-88#2	R	51	TUR4-90#7	H	76	TUR4-122#7	H
2	TUR4-85#2	S	27	TUR4-88#3	R	52	TUR4-90#8	S	77	TUR4-122#8	H
3	TUR4-85#3	S	28	TUR4-88#4	R	53	TUR4-90#9	H	78	TUR4-122#9	H
4	TUR4-85#4	S	29	TUR4-88#5	R	54	TUR4-91#1	S	79	TUR4-122#10	H
5	TUR4-86#1	R	30	TUR4-88#6	R	55	TUR4-91#2	S	80	TUR4-156#1	H
6	TUR4-86#2	R	31	TUR4-88#7	R	56	TUR4-91#3	S	81	TUR4-156#2	R
7	TUR4-86#3	R	32	TUR4-88#8	R	57	TUR4-91#4	S	82	TUR4-156#3	H
8	TUR4-86#4	R	33	TUR4-88#9	R	58	TUR4-91#5	S	83	TUR4-156#4	H
9	TUR4-86#5	R	34	TUR4-88#10	R	59	TUR4-91#6	S	84	TUR4-156#5	S
10	TUR4-86#6	R	35	TUR4-89#1	H	60	TUR4-121#1	R	85	TUR4-156#6	H
11	TUR4-86#7	R	36	TUR4-89#2	R	61	TUR4-121#2	R	86	TUR4-156#7	H
12	TUR4-86#8	R	37	TUR4-89#3	S	62	TUR4-121#3	R	87	TUR4-156#8	S
13	TUR4-86#9	R	38	TUR4-89#4	S	63	TUR4-121#4	R	88	TUR4-156#9	H
14	TUR4-86#10	R	39	TUR4-89#5	S	64	TUR4-121#5	R	89	TUR4-156#10	H
15	TUR4-87#1	H	40	TUR4-89#6	R	65	TUR4-121#6	R	90	TUR4-175#1	S
16	TUR4-87#2	R	41	TUR4-89#7	R	66	TUR4-121#7	R	91	TUR4-175#2	H
17	TUR4-87#3	R	42	TUR4-89#8	H	67	TUR4-121#8	R	92	TUR4-175#3	H
18	TUR4-87#4	H	43	TUR4-89#9	H	68	TUR4-121#9	R	93	TUR4-175#4	R
19	TUR4-87#5	R	44	TUR4-89#10	H	69	TUR4-121#10	R	94	TUR4-175#5	R
20	TUR4-87#6	H	45	TUR4-90#1	H	70	TUR4-122#1	S	95	TUR4-175#6	H
21	TUR4-87#7	H	46	TUR4-90#2	S	71	TUR4-122#2	S	96	TUR4-175#7	R
22	TUR4-87#8	S	47	TUR4-90#3	H	72	TUR4-122#3	H	97	TUR4-175#8	H
23	TUR4-87#9	H	48	TUR4-90#4	H	73	TUR4-122#4	H	98	TUR4-175#9	H
24	TUR4-87#10	R	49	TUR4-90#5	R	74	TUR4-122#5	S			
25	TUR4-88#1	R	50	TUR4-90#6	H	75	TUR4-122#6	S			

표 28. 순천대학교 26점의 시료에 대하여, 병 관련 1개의 마커를 이용한 서비스 결과

순번	샘플명	Cf9	순번	샘플명	Cf9	순번	샘플명	Cf9	순번	샘플명	Cf9
1	TUR4-125#1	H	8	TUR4-125#8	R	15	TUR4-126#5	H	22	TUR4-134#4	R
2	TUR4-125#2	S	9	TUR4-125#9	n/a	16	TUR4-126#6	H	23	TUR4-134#5	S
3	TUR4-125#3	S	10	TUR4-125#10	H	17	TUR4-126#7	H	24	TUR4-134#6	H
4	TUR4-125#4	H	11	TUR4-126#1	R	18	TUR4-126#8	R	25	TUR4-134#7	H
5	TUR4-125#5	S	12	TUR4-126#2	R	19	TUR4-134#1	H	26	TUR4-134#8	H
6	TUR4-125#6	R	13	TUR4-126#3	H	20	TUR4-134#2	S			
7	TUR4-125#7	R	14	TUR4-126#4	H	21	TUR4-134#3	H			

표 29. 순천대학교 645점의 시료에 대하여, 병 관련 11개의 마커를 이용한 서비스 결과

No.	I2	I3	Ve2	J3	Mi 23	Bw6	Bw 12	Cf9	Tm 2a	Ph3	Sm-565	No.	I2	I3	Ve2	J3	Mi 23	Bw6	Bw 12	Cf9	Tm 2a	Ph3	Sm-565
1	R	R	R	R	S	R	R	S	R	S	R	324	S	S	R	R	R	H	R	S	R	S	R
2	S	R	R	R	H	R	R	S	R	S	R	325	S	S	R	R	R	H	R	S	R	S	R
3	H	R	R	R	H	R	R	S	R	S	R	326	S	S	R	R	R	H	R	S	R	S	R
4	R	R	R	R	H	R	R	S	R	S	R	327	R	S	R	R	H	H	R	S	R	S	S
5	H	R	R	R	H	R	R	S	R	S	R	328	H	S	R	R	S	R	R	S	R	S	S
6	H	R	R	R	H	R	R	S	R	S	R	329	H	S	R	R	S	R	R	S	R	S	H
7	S	R	R	R	S	R	R	S	R	S	R	330	S	S	R	R	H	H	R	S	R	S	R
8	S	R	R	R	R	R	R	S	R	S	R	331	S	S	R	R	H	S	R	S	R	S	R
9	H	R	R	R	S	R	R	S	R	S	R	332	S	S	R	R	H	H	R	S	R	S	R
10	H	R	R	R	R	R	R	S	R	S	R	333	H	S	R	R	H	R	R	S	R	S	H
11	H	R	R	R	R	H	R	S	R	S	R	334	H	S	R	R	S	R	R	S	R	S	H
12	S	R	R	R	R	S	R	S	R	S	R	335	H	S	R	R	S	H	R	S	R	S	H
13	H	R	R	R	R	H	R	S	R	S	R	336	S	S	R	R	H	H	R	S	R	S	H
14	H	R	R	R	R	H	R	S	R	S	R	337	S	S	R	R	R	H	R	R	R	S	S
15	S	R	R	R	R	R	R	S	R	S	R	338	S	S	R	R	R	R	R	R	R	S	S
16	R	R	R	R	R	H	R	S	R	S	R	339	S	S	R	R	R	H	S	R	R	S	S
17	H	R	R	R	R	S	R	S	R	S	R	340	S	S	R	R	R	H	S	R	R	S	S
18	R	R	R	R	R	H	R	S	R	S	R	341	S	S	R	R	R	S	R	R	R	H	S
19	R	R	R	R	R	S	R	S	R	S	R	342	S	S	R	R	R	H	H	R	R	R	S
20	S	S	R	S	R	R	R	S	R	S	S	343	S	S	R	R	R	R	R	R	R	R	S
21	S	S	R	R	R	R	R	S	R	S	S	344	S	S	R	R	R	H	S	R	R	R	S

No.	I2	I3	Ve2	J3	Mi 23	Bw6	Bw 12	Cf9	Tm 2a	Ph3	Sm-565
22	S	S	R	R	R	R	R	S	R	S	S
23	S	S	R	H	R	R	R	S	R	S	S
24	S	S	R	H	R	R	R	S	R	S	S
25	S	S	R	H	R	R	R	S	R	S	S
26	S	S	R	H	R	R	R	S	R	S	S
27	S	S	R	R	R	R	R	S	R	S	S
28	S	S	R	S	R	R	R	S	R	S	S
29	S	S	R	R	R	R	R	S	R	S	S
30	S	S	R	H	R	R	R	S	R	S	S
31	S	S	R	H	R	R	R	S	R	S	S
32	S	S	R	H	R	R	R	S	R	S	S
33	S	S	R	R	R	R	R	S	R	S	S
34	S	S	R	H	R	R	R	S	R	S	S
35	S	S	R	S	R	R	R	S	R	S	S
36	S	S	R	H	R	R	R	S	R	S	S
37	S	S	R	S	R	R	R	S	R	S	S
38	S	S	R	H	R	R	R	S	R	S	S
39	S	S	R	H	R	R	R	S	R	S	S
40	R	S	R	R	R	R	R	S	R	S	R
41	R	R	R	R	R	R	R	S	R	S	R
42	R	H	S	R	R	R	R	S	R	S	R
43	R	H	S	R	R	R	R	S	R	S	R
44	R	H	R	R	R	R	R	S	R	S	R
45	R	H	H	R	R	R	R	S	R	S	R
46	R	H	S	R	R	R	R	S	R	S	R
47	R	H	H	R	R	R	R	S	R	S	R
48	R	S	H	R	R	R	R	S	R	S	R
49	R	R	H	R	R	R	R	S	R	S	R
50	R	R	R	R	R	R	R	S	R	S	R
51	R	R	R	R	R	R	R	S	R	S	R
52	R	R	R	R	R	R	R	S	R	S	R
53	R	R	R	R	R	R	R	S	R	S	R
54	R	R	R	R	R	R	R	S	R	S	R
55	R	R	R	R	R	R	R	S	R	S	R
56	R	R	R	R	R	R	R	S	R	S	R
57	R	R	R	R	R	R	R	S	R	S	R
58	R	R	R	R	R	R	R	S	R	S	R
59	R	R	R	R	R	R	R	S	R	S	R
60	R	R	R	S	R	S	R	S	R	S	R
61	R	R	R	S	R	S	R	S	R	S	R
62	R	R	R	S	R	S	R	S	R	S	R
63	R	R	R	H	R	S	R	S	R	S	R
64	R	R	R	S	R	S	R	S	R	S	R
65	R	R	R	H	R	S	R	S	R	S	R
66	R	R	R	H	R	S	R	S	R	S	R
67	R	R	R	H	R	S	R	S	R	S	R
68	R	R	R	H	R	S	R	S	R	S	R
69	R	R	R	H	R	S	R	S	R	S	R
70	R	R	R	H	R	S	R	S	R	S	R
71	R	R	R	H	R	S	R	S	R	S	R
72	R	R	R	H	R	S	R	S	R	S	R
73	R	R	R	S	R	S	R	S	R	S	R
74	R	R	R	H	R	S	R	S	R	S	R
75	R	R	R	H	R	S	R	S	R	S	R
76	R	R	R	S	R	S	R	S	R	S	R
77	R	R	R	H	R	S	R	S	R	S	R
78	R	R	R	S	R	S	R	S	R	S	R
79	R	R	R	S	R	S	R	S	R	S	R
80	R	S	R	R	H	R	R	S	R	S	H
81	R	S	R	R	H	R	R	S	R	S	R
82	R	S	R	R	R	R	R	S	R	S	R
83	R	S	R	R	H	R	R	S	R	S	H

No.	I2	I3	Ve2	J3	Mi 23	Bw6	Bw 12	Cf9	Tm 2a	Ph3	Sm-565
345	S	S	R	R	R	R	H	R	R	S	S
346	S	S	R	R	R	R	H	R	R	H	S
347	S	S	R	R	R	S	H	R	R	R	S
348	S	S	H	R	R	S	H	R	R	R	S
349	S	S	H	R	R	S	H	R	R	R	S
350	S	S	H	R	R	S	H	R	R	R	S
351	S	S	H	R	R	S	H	R	R	R	S
352	S	S	H	R	R	S	H	R	R	R	S
353	S	S	S	R	R	S	S	R	R	R	S
354	S	S	R	R	R	S	R	R	R	R	S
355	S	S	R	R	R	S	S	R	R	R	S
356	S	S	H	R	R	S	H	R	R	R	S
357	S	S	R	R	R	H	S	R	R	S	S
358	S	S	R	R	R	H	S	R	R	R	S
359	S	S	R	R	R	S	S	R	R	S	S
360	S	S	R	R	R	R	R	R	R	H	S
361	S	S	R	R	R	S	R	R	R	H	S
362	S	S	R	R	R	H	H	R	R	S	S
363	S	S	R	R	R	S	H	R	R	R	S
364	S	S	R	R	R	S	S	R	R	H	S
365	S	S	R	R	R	S	H	R	R	H	S
366	R	S	S	H	R	S	R	S	R	S	R
367	R	S	S	H	R	S	R	S	R	S	R
368	R	S	S	H	R	S	R	S	R	S	R
369	R	S	S	H	R	S	R	S	R	S	R
370	R	S	S	H	R	S	R	S	R	S	R
371	R	S	S	H	R	S	R	S	R	S	R
372	R	S	S	H	R	S	R	S	R	S	R
373	R	S	S	H	R	S	R	S	R	S	R
374	R	S	S	H	R	S	R	S	R	S	R
375	R	S	S	S	R	S	R	S	R	S	R
376	R	S	R	S	R	S	R	S	R	S	R
377	R	S	R	H	H	S	R	S	R	S	R
378	R	S	R	S	R	S	R	S	R	S	R
379	R	S	R	H	R	S	R	S	R	S	R
380	R	S	R	H	S	S	R	S	R	S	R
381	R	H	R	S	H	S	R	S	R	S	R
382	R	S	R	H	S	S	R	S	R	S	R
383	R	H	R	H	R	S	R	S	R	S	R
384	R	R	R	H	H	S	R	S	R	S	R
385	R	S	R	H	H	S	R	S	R	S	R
386	R	R	R	H	R	S	R	S	R	S	S
387	R	R	H	S	R	S	R	S	R	S	S
388	R	R	H	S	R	S	R	S	R	S	S
389	R	R	S	H	R	S	R	S	R	S	S
390	R	R	H	H	R	S	R	S	R	S	S
391	R	R	H	H	R	S	R	S	R	S	S
392	R	R	R	H	R	S	R	S	R	S	S
393	R	R	R	H	R	S	R	S	R	S	S
394	R	R	S	H	R	S	R	S	R	S	S
395	R	R	R	H	R	S	R	S	R	S	S
396	S	S	S	S	R	R	R	S	R	S	R
397	S	S	S	S	R	R	R	S	R	S	R
398	S	S	S	S	R	R	R	S	R	S	R
399	S	S	S	S	R	R	R	S	R	S	R
400	S	S	S	S	R	R	R	S	R	S	R
401	S	S	S	S	R	R	R	S	R	S	R
402	S	S	S	S	R	R	R	S	R	S	R
403	S	S	S	S	R	R	R	S	R	S	R
404	R	S	R	R	R	R	R	S	R	S	R
405	R	S	R	H	R	R	R	S	R	S	R
406	R	S	R	H	R	R	R	S	R	S	R

No.	I2	I3	Ve2	J3	Mi 23	Bw6	Bw 12	Cf9	Tm 2a	Ph3	Sm-565
84	R	S	R	R	R	R	R	S	R	S	H
85	R	S	R	R	R	R	R	S	R	S	R
86	R	S	R	R	H	R	R	S	R	S	R
87	R	S	R	R	H	R	R	S	R	S	H
88	R	S	R	R	S	R	R	S	R	S	S
89	R	S	R	R	R	R	R	S	R	S	R
90	R	S	R	R	R	R	R	S	R	S	R
91	R	S	R	R	R	R	R	S	R	S	R
92	R	S	R	R	R	R	R	S	R	S	R
93	R	S	R	R	R	R	R	S	R	S	R
94	R	S	R	R	R	R	R	S	R	S	R
95	R	S	R	R	R	R	R	S	R	S	R
96	R	S	R	R	R	R	R	S	R	S	R
97	R	S	R	R	R	R	R	S	R	S	R
98	R	S	R	R	R	R	R	S	R	S	R
99	R	S	R	R	R	R	R	S	R	S	R
100	R	S	R	R	H	R	R	S	R	S	R
101	R	S	R	R	R	R	R	S	R	S	R
102	R	S	R	R	S	R	R	S	R	S	R
103	R	S	R	R	n/a	n/a	R	S	R	S	R
104	R	S	R	R	H	R	R	S	R	S	R
105	R	S	R	R	H	R	R	S	R	S	R
106	R	S	R	R	H	R	R	S	R	S	R
107	R	S	R	R	S	R	R	S	R	S	R
108	R	S	R	R	H	R	R	S	R	S	R
109	R	S	R	R	R	R	R	S	R	S	R
110	R	S	S	R	R	R	R	S	R	S	S
111	R	S	S	R	R	R	R	S	R	S	S
112	R	S	S	R	R	R	R	S	R	S	S
113	R	S	S	R	R	R	R	S	R	S	S
114	R	S	S	R	R	R	R	S	R	S	S
115	R	S	S	R	R	R	R	S	R	S	S
116	R	S	S	R	R	R	R	S	R	S	S
117	R	S	S	R	R	R	R	S	R	S	S
118	H	S	S	R	R	R	R	S	R	S	S
119	R	S	S	R	R	R	R	S	R	S	S
120	R	H	S	R	R	R	R	S	R	S	R
121	R	H	S	R	R	R	R	S	R	S	R
122	R	n/a	S	R	R	R	R	S	R	S	R
123	R	H	S	R	R	R	R	S	R	S	R
124	R	H	S	R	R	R	R	S	R	S	R
125	R	R	S	R	R	R	R	S	R	S	R
126	R	H	S	R	R	R	R	S	R	S	R
127	R	H	S	R	R	R	R	S	R	S	R
128	R	H	S	R	R	R	R	S	R	S	R
129	R	H	S	R	R	R	R	S	R	S	R
130	R	H	S	R	R	R	R	S	R	S	R
131	R	S	S	R	R	R	R	S	R	S	R
132	R	H	S	R	R	R	R	S	R	S	R
133	R	H	S	R	R	R	R	S	R	S	R
134	R	H	S	R	R	R	R	S	R	S	R
135	R	H	S	R	R	R	R	S	R	S	R
136	R	S	S	R	R	R	R	S	R	S	R
137	R	S	S	R	R	R	R	S	R	S	R
138	R	S	S	R	R	R	R	S	R	S	R
139	R	S	S	R	R	R	R	S	R	S	R
140	R	S	S	R	R	R	R	S	R	S	R
141	R	S	S	R	R	R	R	S	R	S	R
142	R	S	S	R	R	R	R	S	R	S	R
143	R	S	S	R	R	R	R	S	R	S	R
144	R	S	S	R	R	R	R	S	R	S	R
145	R	S	S	R	R	R	R	S	R	S	R

No.	I2	I3	Ve2	J3	Mi 23	Bw6	Bw 12	Cf9	Tm 2a	Ph3	Sm-565
407	R	S	R	H	R	R	R	S	R	S	R
408	R	S	R	H	R	R	R	S	R	S	R
409	R	S	R	H	R	R	R	S	R	S	R
410	R	S	R	H	R	R	R	S	R	S	R
411	R	S	R	H	R	R	R	S	R	S	R
412	R	S	R	H	R	R	R	S	R	S	R
413	R	S	R	H	R	R	R	S	R	S	R
414	H	S	S	R	H	R	R	S	R	S	R
415	H	S	S	R	H	S	R	S	R	S	R
416	S	S	S	R	S	R	R	S	R	S	R
417	R	S	S	R	H	H	R	S	R	S	R
418	H	S	S	R	R	S	R	S	R	S	R
419	R	S	S	R	H	R	R	S	R	S	R
420	H	S	S	R	H	R	R	S	R	S	R
421	H	S	S	R	S	R	R	S	R	S	R
422	R	S	S	R	S	R	R	S	R	S	R
423	R	S	S	R	R	S	R	S	R	S	R
424	R	S	H	S	R	S	R	S	R	S	R
425	R	S	R	S	R	S	R	S	R	S	R
426	R	S	H	S	R	S	R	S	R	S	R
427	R	S	H	S	R	S	R	S	R	S	R
428	R	S	H	S	R	S	R	S	R	S	R
429	R	S	H	S	R	S	R	S	R	S	R
430	R	S	H	S	R	S	R	S	R	S	R
431	R	S	H	S	R	S	R	S	R	S	R
432	R	S	H	S	R	S	R	S	R	S	R
433	R	S	R	S	R	S	R	S	R	S	R
434	S	S	H	S	R	S	R	S	H	S	R
435	S	S	R	S	R	S	R	S	H	S	R
436	S	S	S	S	R	S	R	S	S	S	R
437	S	S	S	S	R	S	R	S	S	S	R
438	S	S	R	S	R	S	R	S	R	S	R
439	S	S	H	S	R	S	R	S	H	S	R
440	S	S	H	S	R	S	R	S	R	S	R
441	S	S	H	S	R	S	R	S	R	S	R
442	S	S	S	S	R	S	R	S	H	S	R
443	S	S	R	S	R	S	R	S	R	S	R
444	R	S	H	S	R	R	R	S	S	S	R
445	R	S	S	S	R	R	R	S	S	S	R
446	R	S	S	S	R	R	R	S	S	S	R
447	R	S	H	S	S	R	R	S	S	S	R
448	R	S	R	S	H	R	R	S	S	S	R
449	R	S	H	S	H	R	R	S	S	S	R
450	R	S	H	S	R	R	R	S	S	S	R
451	R	S	R	S	H	R	R	S	S	S	R
452	R	S	R	S	R	R	R	S	S	S	R
453	R	S	H	S	H	R	R	S	S	S	R
454	R	S	R	S	R	R	R	S	S	S	R
455	R	S	R	S	R	R	R	S	S	S	R
456	R	S	R	S	R	R	R	S	S	S	R
457	R	S	R	S	R	R	R	S	S	S	R
458	R	S	R	S	R	R	R	S	S	S	R
459	R	S	R	S	R	R	R	S	S	S	R
460	R	S	R	S	R	R	R	S	S	S	R
461	R	S	R	S	R	R	R	S	S	S	R
462	R	S	R	S	R	R	R	S	S	S	R
463	R	S	R	S	R	R	R	S	S	S	R
464	S	S	R	S	H	R	R	S	S	S	R
465	R	S	R	S	H	R	R	S	S	S	R
466	H	S	R	S	H	R	R	S	S	S	R
467	H	S	R	S	S	R	R	S	S	S	R
468	S	S	R	S	S	R	R	S	S	S	R

No.	I2	I3	Ve2	J3	Mi 23	Bw6	Bw 12	Cf9	Tm 2a	Ph3	Sm-565
146	R	S	S	R	R	R	R	S	R	S	R
147	S	S	R	R	S	R	R	S	R	S	R
148	S	S	R	R	S	R	R	S	R	S	R
149	S	S	R	R	S	R	R	S	R	S	R
150	S	S	R	R	S	R	R	S	R	S	R
151	S	S	R	R	S	R	R	S	R	S	R
152	S	S	R	R	S	R	R	S	R	S	R
153	S	S	R	R	S	R	R	S	R	S	R
154	S	S	R	R	S	R	R	S	R	S	R
155	S	S	R	R	S	R	R	S	R	S	R
156	S	S	R	R	S	R	R	S	R	S	R
157	R	R	R	R	R	R	R	S	R	S	S
158	R	R	R	R	R	R	R	S	R	S	S
159	R	R	R	R	R	R	R	S	R	S	S
160	R	R	R	R	R	R	R	S	R	S	S
161	R	R	R	R	R	R	R	S	R	S	S
162	R	R	R	R	R	R	R	S	R	S	S
163	R	R	R	R	R	R	R	S	R	S	S
164	R	R	R	R	R	R	R	S	R	S	S
165	R	R	R	R	R	R	R	S	R	S	S
166	R	R	R	R	R	R	R	S	R	S	S
167	R	R	R	R	R	R	R	S	R	S	S
168	R	R	S	R	R	R	R	S	R	S	S
169	R	R	H	R	R	R	R	S	R	S	S
170	R	R	S	R	R	R	R	S	R	S	S
171	R	R	H	R	R	R	R	S	R	S	S
172	R	R	R	R	R	R	R	S	R	S	S
173	R	R	S	R	R	R	R	S	R	S	S
174	R	R	H	R	R	R	R	S	R	S	S
175	R	R	H	R	R	R	R	S	R	S	S
176	R	R	H	R	R	R	R	S	R	S	S
177	R	S	H	R	R	R	S	S	R	S	H
178	S	S	H	R	R	R	S	S	R	S	H
179	S	S	R	H	R	R	H	S	R	S	S
180	S	S	H	S	R	R	R	S	R	S	R
181	S	S	S	H	R	R	R	S	R	S	S
182	S	S	H	H	R	R	R	S	R	S	R
183	S	S	R	R	R	R	S	S	R	S	S
184	S	S	R	R	R	R	H	S	R	S	R
185	S	S	H	R	R	R	R	S	R	S	H
186	S	S	S	H	R	R	H	S	R	S	H
187	R	S	S	H	R	S	R	S	R	S	R
188	H	S	S	H	R	H	R	S	R	S	R
189	H	S	S	S	R	H	R	S	R	S	R
190	S	S	S	H	R	H	R	S	R	S	R
191	H	S	S	H	R	R	R	S	R	S	R
192	R	S	S	H	R	H	R	S	R	S	R
193	R	S	S	H	R	H	R	S	R	S	R
194	S	S	S	H	R	R	R	S	R	S	R
195	H	S	S	S	R	S	R	S	R	S	R
196	H	S	S	S	R	H	R	S	R	S	R
197	R	S	R	H	H	R	R	S	R	S	R
198	R	S	R	H	H	R	R	S	R	S	R
199	R	S	R	H	H	R	R	S	R	S	R
200	R	S	R	H	S	R	R	S	R	S	R
201	R	S	R	H	S	R	R	S	R	S	R
202	R	S	R	S	R	S	R	S	S	S	R
203	H	S	R	S	R	H	R	S	S	S	R
204	S	S	R	S	H	H	R	S	S	S	R
205	S	S	R	S	H	H	R	S	S	S	R
206	S	S	R	S	S	R	R	S	S	S	R
207	H	S	R	S	H	H	R	S	S	S	R

No.	I2	I3	Ve2	J3	Mi 23	Bw6	Bw 12	Cf9	Tm 2a	Ph3	Sm-565
469	H	S	R	S	H	R	R	S	S	S	R
470	R	S	R	S	R	R	R	S	S	S	R
471	H	S	R	S	S	R	R	S	S	S	R
472	R	S	R	S	H	R	R	S	S	S	R
473	H	S	R	S	H	R	R	S	S	S	R
474	S	S	S	R	R	R	R	S	R	S	S
475	S	S	S	R	R	R	H	S	R	S	S
476	S	S	S	R	R	R	R	S	R	S	S
477	S	S	S	R	R	R	S	S	R	S	S
478	S	S	S	R	R	R	S	S	R	S	S
479	R	S	S	H	R	R	H	S	R	S	S
480	H	S	H	R	R	R	H	S	R	S	H
481	R	S	R	R	R	R	H	S	R	S	H
482	R	S	R	H	R	R	H	S	R	S	H
483	R	S	H	R	R	R	H	S	R	S	R
484	R	S	H	H	R	R	H	S	R	S	S
485	R	S	H	H	R	R	R	S	R	S	H
486	R	S	H	S	R	R	S	S	R	S	H
487	R	S	S	H	R	R	R	S	R	S	H
488	R	S	H	S	R	R	H	S	R	S	H
489	S	S	S	R	R	R	R	S	R	S	R
490	S	S	S	H	R	R	R	S	R	S	R
491	S	S	S	R	R	R	R	S	R	S	R
492	S	S	S	H	R	R	R	S	R	S	R
493	S	S	S	H	R	R	R	S	R	S	R
494	S	S	S	H	R	R	R	S	R	S	R
495	S	S	S	H	R	R	R	S	R	S	R
496	S	S	S	H	R	R	R	S	R	S	R
497	S	S	S	H	R	R	R	S	R	S	R
498	S	S	S	R	R	R	R	S	R	S	R
499	S	S	R	S	R	R	R	S	R	S	S
500	S	S	R	R	R	R	R	S	R	S	S
501	S	S	R	H	R	R	R	S	R	S	S
502	S	S	R	H	R	R	R	S	R	S	S
503	S	S	R	H	R	R	R	S	R	S	S
504	S	S	R	H	R	R	R	S	R	S	S
505	S	S	R	H	R	R	R	S	R	S	S
506	S	S	S	S	R	S	S	R	S	S	R
507	S	S	S	S	R	S	S	R	S	S	R
508	S	S	S	S	R	S	H	R	S	S	R
509	S	S	S	S	R	S	H	R	S	S	R
510	S	S	S	S	R	S	H	R	S	S	R
511	S	S	S	S	R	S	H	R	S	S	R
512	S	S	S	S	R	S	H	R	S	S	R
513	S	S	S	S	R	S	H	R	S	S	R
514	S	S	S	S	R	S	H	R	S	S	R
515	S	S	S	S	R	S	R	R	S	S	R
516	S	S	S	H	S	H	H	R	H	S	H
517	S	S	S	S	S	H	H	R	H	S	H
518	S	S	S	H	H	H	S	R	H	S	H
519	S	S	S	H	S	S	H	R	H	S	S
520	S	S	S	H	H	H	R	R	H	S	H
521	S	S	S	H	R	H	H	R	H	S	R
522	S	S	S	H	H	H	H	R	H	S	R
523	S	S	S	H	H	R	R	R	H	S	R
524	S	S	S	S	H	S	R	R	S	S	H
525	S	S	S	H	S	H	R	R	H	S	R
526	R	S	R	H	S	S	R	S	R	S	R
527	H	S	R	H	H	S	R	S	R	S	R
528	H	S	R	H	H	S	R	S	R	S	R
529	H	S	R	H	H	S	R	S	R	S	R
530	S	S	R	H	R	S	R	S	R	S	R

No.	I2	I3	Ve2	J3	Mi 23	Bw6	Bw 12	Cf9	Tm 2a	Ph3	Sm-565
208	R	S	R	S	H	R	R	S	S	S	R
209	H	S	R	S	R	S	R	S	S	S	R
210	R	S	R	S	S	H	R	S	S	S	R
211	H	S	R	S	H	H	R	S	S	S	R
212	R	S	R	S	H	R	R	S	S	S	R
213	R	S	R	S	R	R	R	S	S	S	R
214	R	S	R	S	S	R	R	S	S	S	R
215	R	S	R	S	S	R	R	S	S	S	R
216	R	S	R	S	R	R	R	S	S	S	R
217	R	S	R	S	S	R	R	S	S	S	R
218	n/a	S	R	S	n/a	R	R	S	S	S	R
219	R	S	R	S	H	R	R	S	S	S	R
220	R	S	R	S	H	R	R	S	S	S	R
221	R	S	R	S	S	R	R	S	S	S	R
222	H	S	S	S	R	H	R	S	R	S	H
223	H	S	S	S	R	H	R	S	R	S	H
224	H	S	S	S	R	H	R	S	R	S	H
225	H	S	S	S	R	R	R	S	R	S	R
226	R	S	S	H	R	R	R	S	R	S	S
227	H	S	S	H	R	H	R	S	R	S	R
228	H	S	S	H	R	R	R	S	R	S	R
229	R	S	S	H	R	S	R	S	R	S	H
230	R	S	S	H	R	H	R	S	R	S	H
231	H	S	S	H	R	R	R	S	R	S	S
232	S	S	R	H	R	R	R	S	R	S	H
233	H	S	R	H	R	R	R	S	R	S	S
234	S	S	R	H	R	R	R	S	R	S	H
235	S	S	R	S	R	R	R	S	R	S	S
236	R	S	R	H	R	R	R	S	R	S	R
237	S	S	S	H	R	R	R	S	R	S	S
238	S	S	S	H	R	R	R	S	R	S	S
239	S	S	S	H	R	R	R	S	R	S	S
240	S	S	S	H	R	R	R	S	R	S	S
241	S	S	S	H	R	R	R	S	R	S	S
242	S	S	S	H	R	R	R	S	R	S	S
243	S	S	S	S	R	R	R	S	R	S	S
244	S	S	S	S	R	R	R	S	R	S	S
245	S	S	S	H	R	R	R	S	R	S	S
246	S	S	S	H	R	R	R	S	R	S	S
247	S	S	S	H	R	R	R	S	R	S	S
248	S	S	S	S	R	S	R	S	R	S	S
249	S	S	S	H	R	R	R	S	R	S	S
250	S	S	S	S	R	H	R	S	R	S	S
251	S	S	S	H	R	R	R	S	R	S	S
252	S	S	S	H	R	H	R	S	R	S	S
253	S	S	S	S	R	S	R	S	R	S	S
254	S	S	S	S	R	H	R	S	R	S	S
255	S	S	S	S	R	H	R	S	R	S	S
256	S	S	S	H	R	R	R	S	R	S	S
257	S	S	S	S	R	R	R	S	R	S	S
258	S	S	S	S	R	R	R	S	R	S	S
259	S	S	S	H	R	R	R	S	R	S	S
260	S	S	S	S	R	R	R	S	R	S	S
261	S	S	S	H	R	R	R	S	R	S	S
262	S	S	S	S	R	R	R	S	R	S	S
263	S	S	S	H	R	R	R	S	R	S	S
264	S	S	S	H	R	R	R	S	R	S	S
265	S	S	S	H	R	R	R	S	R	S	S
266	S	S	S	S	R	R	R	S	R	S	S
267	R	S	R	S	R	R	R	S	S	S	R
268	R	S	R	H	R	R	R	S	H	S	R
269	R	S	R	H	R	R	R	S	H	S	R

No.	I2	I3	Ve2	J3	Mi 23	Bw6	Bw 12	Cf9	Tm 2a	Ph3	Sm-565
531	H	S	R	H	H	S	R	S	R	S	R
532	S	S	R	H	H	S	R	S	R	S	R
533	R	S	R	S	H	S	R	S	R	S	R
534	H	S	R	H	H	S	R	S	R	S	R
535	R	S	R	S	S	S	R	S	R	S	R
536	R	S	R	S	S	S	R	S	R	S	R
537	R	S	R	H	S	S	R	S	R	S	R
538	R	S	H	S	S	S	R	S	R	S	R
539	R	S	H	H	S	S	R	S	R	S	R
540	R	S	H	H	S	S	R	S	R	S	R
541	R	S	R	H	S	S	R	S	R	S	R
542	R	S	R	S	S	S	R	S	R	S	R
543	R	S	H	H	S	S	R	S	R	S	R
544	R	S	H	H	S	S	R	S	R	S	R
545	R	S	H	S	S	S	R	S	R	S	R
546	H	S	S	H	H	R	R	S	H	S	R
547	S	S	S	H	S	R	R	S	H	S	R
548	R	S	S	S	S	R	R	S	H	S	R
549	H	S	S	H	H	R	R	S	H	S	R
550	H	S	S	H	H	R	R	S	H	S	R
551	H	S	S	H	S	R	R	S	H	S	R
552	H	S	S	H	H	R	R	S	H	S	R
553	S	S	S	H	H	R	R	S	R	S	R
554	H	S	S	H	S	R	R	S	S	S	R
555	S	S	S	H	R	R	R	S	H	S	R
556	S	S	S	R	H	H	R	S	R	S	R
557	S	S	S	R	H	R	R	S	R	S	R
558	S	S	S	R	H	H	R	S	R	S	R
559	S	S	S	R	R	S	R	S	R	S	R
560	S	S	S	R	S	R	R	S	R	S	R
561	S	S	S	R	S	H	R	S	R	S	R
562	S	S	S	R	S	H	R	S	R	S	R
563	S	S	S	R	S	R	R	S	R	S	R
564	S	S	S	R	H	H	R	S	R	S	R
565	S	S	S	R	H	H	R	S	R	S	R
566	R	S	R	R	R	R	R	S	S	S	S
567	R	S	R	R	R	R	R	S	S	S	S
568	R	S	R	R	R	R	R	S	S	S	S
569	R	S	R	R	R	R	R	S	S	S	S
570	R	S	R	R	R	R	R	S	S	S	S
571	R	S	R	R	R	R	R	S	S	S	S
572	R	S	R	R	R	R	R	S	S	S	S
573	R	S	R	R	R	R	R	S	S	S	S
574	R	S	R	R	R	R	R	S	S	S	S
575	R	S	R	R	R	R	R	S	S	S	S
576	H	S	R	R	S	S	R	S	R	S	S
577	R	S	R	S	R	S	R	S	R	S	S
578	S	S	R	H	S	S	R	S	R	S	S
579	R	S	R	R	H	S	R	S	R	S	S
580	H	S	R	S	H	S	R	S	R	S	S
581	S	S	R	H	S	S	R	S	R	S	S
582	R	S	R	H	S	S	R	S	R	S	S
583	H	S	R	S	S	S	R	S	R	S	S
584	H	S	R	H	H	S	R	S	R	S	S
585	R	S	R	S	S	S	R	S	R	S	S
586	R	S	R	S	H	S	R	S	S	S	R
587	H	S	R	S	H	S	R	S	S	S	R
588	S	S	R	S	S	S	R	S	S	S	R
589	H	S	R	S	H	S	R	S	S	S	R
590	R	S	R	S	H	S	R	S	S	S	R
591	R	S	R	S	H	S	R	S	S	S	R
592	R	S	R	S	S	S	R	S	S	S	R

No.	I2	I3	Ve2	J3	Mi 23	Bw6	Bw 12	Cf9	Tm 2a	Ph3	Sm-565
270	R	S	R	H	R	R	R	S	H	S	R
271	R	S	R	H	R	R	R	S	H	S	R
272	R	S	R	H	R	R	R	S	H	S	R
273	R	S	R	S	R	R	R	S	S	S	R
274	R	S	R	H	R	R	R	S	H	S	R
275	R	S	R	H	R	R	R	S	H	S	R
276	R	S	R	S	R	R	R	S	S	S	R
277	H	S	R	H	R	R	R	S	H	S	H
278	H	S	R	H	R	R	R	R	H	S	H
279	R	S	R	H	R	R	R	R	H	S	S
280	S	S	R	H	R	R	R	H	H	S	H
281	S	S	R	S	R	R	R	R	S	S	R
282	H	S	R	S	R	R	R	H	S	S	H
283	R	S	R	H	R	R	R	H	H	S	S
284	R	S	R	S	R	R	R	H	S	S	S
285	R	S	R	S	R	R	R	R	S	S	S
286	R	S	R	S	R	R	R	S	S	S	S
287	R	R	R	R	R	R	R	S	R	S	R
288	R	R	R	R	R	R	R	S	R	S	R
289	R	R	H	R	R	R	R	S	R	S	R
290	R	R	S	R	R	R	R	S	R	S	R
291	R	R	S	R	R	R	R	S	R	S	R
292	R	R	H	R	R	R	R	S	R	S	R
293	R	R	H	R	R	R	R	S	R	S	R
294	R	R	S	R	R	R	R	S	R	S	R
295	R	R	H	R	R	R	R	S	R	S	R
296	R	R	H	R	R	R	R	S	R	S	R
297	R	S	H	R	R	S	R	S	R	S	R
298	H	S	H	R	S	S	R	S	R	S	R
299	H	S	S	R	R	S	R	S	R	S	R
300	R	S	H	R	S	S	R	S	R	S	R
301	H	S	H	R	H	S	R	S	R	S	R
302	H	S	S	R	H	S	R	S	R	S	R
303	H	S	H	R	H	S	R	S	R	S	R
304	H	S	R	R	S	S	R	S	R	S	R
305	R	S	R	R	H	S	R	S	R	S	R
306	R	S	H	R	H	S	R	S	R	S	R
307	R	S	R	R	H	H	R	S	R	S	S
308	R	S	R	R	H	H	R	S	R	S	S
309	R	S	R	R	H	H	R	S	R	S	S
310	R	S	R	R	S	R	R	S	R	S	S
311	R	S	R	R	H	R	R	S	R	S	S
312	R	S	R	R	R	S	R	S	R	S	S
313	R	S	R	R	R	H	R	S	R	S	S
314	R	S	R	R	S	R	R	S	R	S	S
315	R	S	R	R	S	R	R	S	R	S	S
316	R	S	R	R	H	S	R	S	R	S	S
317	S	S	R	R	R	H	R	S	R	S	R
318	S	S	R	R	R	H	R	S	R	S	R
319	S	S	R	R	R	R	R	S	R	S	R
320	S	S	R	R	R	H	R	S	R	S	R
321	S	S	R	R	R	H	R	S	R	S	R
322	S	S	R	R	R	H	R	S	R	S	R
323	S	S	R	R	R	R	R	S	R	S	R

No.	I2	I3	Ve2	J3	Mi 23	Bw6	Bw 12	Cf9	Tm 2a	Ph3	Sm-565
593	H	S	R	S	H	S	R	S	S	S	R
594	H	S	R	S	R	S	R	S	S	S	R
595	S	S	R	S	H	S	R	S	S	S	R
596	R	S	R	S	S	S	R	S	S	S	R
597	R	S	R	S	S	S	R	S	S	S	R
598	H	S	R	S	H	S	R	S	S	S	R
599	H	S	R	S	R	S	R	S	S	S	R
600	H	S	R	S	R	S	R	S	S	S	R
601	H	S	R	S	H	S	R	S	S	S	R
602	R	S	R	S	R	S	R	S	S	S	R
603	R	S	R	S	H	S	R	S	S	S	R
604	H	S	R	S	H	S	R	S	S	S	R
605	R	S	R	S	H	S	R	S	S	S	R
606	R	S	R	H	R	R	R	S	H	S	R
607	R	S	R	H	R	R	R	S	H	S	R
608	R	S	R	H	R	R	R	S	S	S	S
609	R	S	R	H	R	R	R	S	H	S	S
610	R	S	R	H	R	R	R	S	H	S	S
611	R	S	R	S	R	R	R	S	H	S	H
612	R	S	R	H	R	R	R	S	H	S	H
613	R	S	R	H	R	R	R	S	H	S	H
614	R	S	R	H	R	R	R	S	H	S	H
615	R	S	R	H	R	R	R	S	H	S	S
616	R	S	R	H	R	R	R	S	R	S	S
617	R	S	R	H	R	R	R	S	R	S	S
618	R	S	R	H	R	R	R	S	R	S	S
619	R	S	R	S	R	R	R	S	R	S	S
620	R	S	R	H	R	R	R	S	R	S	S
621	R	S	R	H	R	R	R	S	R	S	S
622	R	S	R	S	R	R	R	S	R	S	S
623	R	S	R	S	R	R	R	S	R	S	S
624	R	S	R	S	R	R	R	S	R	S	S
625	R	S	R	S	R	R	R	S	R	S	S
626	R	S	R	S	S	S	R	S	R	S	R
627	R	S	R	H	H	S	R	S	R	S	R
628	R	S	R	H	H	S	R	S	R	S	R
629	R	S	R	S	H	S	R	S	R	S	R
630	R	S	R	H	H	S	R	S	R	S	R
631	R	S	R	H	H	S	R	S	R	S	R
632	R	S	R	H	H	S	R	S	R	S	R
633	R	S	R	H	S	S	R	S	R	S	R
634	R	S	R	S	H	S	R	S	R	S	R
635	R	S	R	S	S	S	R	S	R	S	R
636	R	S	R	S	H	S	R	S	R	S	R
637	R	S	R	S	S	S	R	S	R	S	R
638	R	S	R	S	R	S	R	S	R	S	R
639	R	S	R	S	H	S	R	S	R	S	R
640	R	S	R	S	H	S	R	S	R	S	R
641	R	S	R	S	H	S	R	S	R	S	R
642	R	S	R	S	H	S	R	S	R	S	R
643	R	S	R	S	H	S	R	S	R	S	R
644	R	S	R	S	H	S	R	S	R	S	R
645	R	S	R	S	S	S	R	S	R	S	R

표 30. 순천대학교 2점의 시료에 대하여, 원예 형질 관련 2개의 마커를 이용한 서비스 결과

순번	샘플명	RIN	NOR
1	NBR	RIN	H
2	SS	RIN	NOR

표 31. 순천대학교 321점의 시료에 대하여, 병 관련 2개의 마커를 이용한 서비스 결과

순번	샘플명	Tm _a ²	Cf9
1	HSC-GT-1#01	S	R
2	HSC-GT-1#02	S	R
3	HSC-GT-1#03	S	R
4	HSC-GT-1#04	S	R
5	HSC-GT-1#05	S	R
6	HSC-GT-1#06	S	R
7	HSC-GT-1#07	S	R
8	HSC-GT-1#08	S	R
9	HSC-GT-1#09	S	R
10	HSC-GT-1#10	S	R
11	HSC-GT-1#11	S	R
12	HSC-GT-1#12	S	R
13	HSC-GT-1#13	S	R
14	HSC-GT-1#14	S	R
15	HSC-GT-1#15	S	R
16	HSC-GT-1#16	S	R
17	HSC-GT-1#17	S	R
18	HSC-GT-1#18	S	R
19	HSC-GT-1#19	S	R
20	HSC-GT-1#20	S	R
21	HSC-GT-1#21	S	R
22	HSC-GT-1#22	S	R
23	HSC-GT-1#23	S	R
24	HSC-GT-1#24	S	R
25	HSC-GT-1#25	S	n/a
26	HSC-GT-1#26	S	R
27	HSC-GT-1#27	S	R
28	HSC-GT-1#28	S	R
29	HSC-GT-1#29	S	R
30	HSC-GT-1#30	S	R
31	HSC-GT-1#31	S	R
32	HSC-GT-1#32	S	R
33	HSC-GT-1#33	S	R
34	HSC-GT-1#34	S	R
35	HSC-GT-1#35	S	R
36	HSC-GT-1#36	S	R
37	HSC-GT-1#37	S	R
38	HSC-GT-1#38	S	R
39	HSC-GT-1#39	S	R
40	HSC-GT-1#40	S	R
41	HSC-GT-1#41	S	R
42	HSC-GT-1#42	S	R
43	HSC-GT-1#43	S	R
44	HSC-GT-1#44	S	R
45	HSC-GT-1#45	S	R
46	HSC-GT-1#46	S	R
47	HSC-GT-1#47	S	R
48	HSC-GT-1#48	S	R
49	HSC-GT-1#49	S	R
50	HSC-GT-1#50	S	R
51	HSC-GT-1#51	S	R
52	HSC-GT-1#52	S	R
53	HSC-GT-1#53	S	R
54	HSC-GT-1#54	S	R
55	HSC-GT-1#55	S	R
56	HSC-GT-1#56	S	R
57	HSC-GT-1#57	S	R
58	HSC-GT-1#58	S	R
59	HSC-GT-1#59	S	R
60	HSC-GT-1#60	S	R
61	HSC-GT-1#61	S	R
62	HSC-GT-1#62	S	R
63	HSC-GT-1#63	S	R
64	HSC-GT-1#64	S	R
65	HSC-GT-1#65	S	R
66	HSC-GT-1#66	S	R
67	HSC-GT-1#67	S	R
68	HSC-GT-1#68	S	R
69	HSC-GT-1#69	S	R

순번	샘플명	Tm _a ²	Cf9
82	HSC-GT-2#08	R	R
83	HSC-GT-2#09	R	R
84	HSC-GT-2#10	R	R
85	HSC-GT-2#11	R	R
86	HSC-GT-2#12	R	R
87	HSC-GT-2#13	R	R
88	HSC-GT-2#14	R	R
89	HSC-GT-2#15	R	R
90	HSC-GT-2#16	R	R
91	HSC-GT-2#17	R	R
92	HSC-GT-2#18	R	R
93	HSC-GT-2#19	R	R
94	HSC-GT-2#20	R	R
95	HSC-GT-2#21	R	R
96	HSC-GT-2#22	R	R
97	HSC-GT-2#23	R	R
98	HSC-GT-2#24	R	R
99	HSC-GT-2#25	R	R
100	HSC-GT-2#26	R	R
101	HSC-GT-2#27	R	R
102	HSC-GT-2#28	R	R
103	HSC-GT-2#29	R	R
104	HSC-GT-2#30	R	R
105	HSC-GT-2#31	R	R
106	HSC-GT-2#32	R	R
107	HSC-GT-2#33	R	R
108	HSC-GT-2#34	R	R
109	HSC-GT-2#35	R	R
110	HSC-GT-2#36	R	R
111	HSC-GT-2#37	R	R
112	HSC-GT-2#38	R	R
113	HSC-GT-2#39	R	R
114	HSC-GT-2#40	R	R
115	HSC-GT-2#41	R	R
116	HSC-GT-2#42	R	R
117	HSC-GT-2#43	R	R
118	HSC-GT-2#44	R	R
119	HSC-GT-2#45	R	R
120	HSC-GT-2#46	R	R
121	HSC-GT-2#47	R	R
122	HSC-GT-2#48	R	R
123	HSC-GT-2#49	R	R
124	HSC-GT-2#50	R	R
125	HSC-GT-2#51	R	R
126	HSC-GT-2#52	R	R
127	HSC-GT-2#53	R	R
128	HSC-GT-2#54	R	R
129	HSC-GT-2#55	R	R
130	HSC-GT-2#56	R	R
131	HSC-GT-2#57	R	R
132	HSC-GT-2#58	R	R
133	HSC-GT-2#59	R	R
134	HSC-GT-2#60	R	R
135	HSC-GT-2#61	R	R
136	HSC-GT-2#62	R	R
137	HSC-GT-2#63	R	R
138	HSC-GT-2#64	R	R
139	HSC-GT-2#65	R	R
140	HSC-GT-2#66	R	R
141	HSC-GT-2#67	R	R
142	HSC-GT-2#68	R	R
143	HSC-GT-2#69	R	R
144	HSC-GT-2#70	R	R
145	HSC-GT-2#71	R	R
146	HSC-GT-2#72	R	R
147	HSC-GT-2#73	R	R
148	HSC-GT-2#74	R	R
149	HSC-GT-2#75	R	R
150	HSC-GT-2#76	R	R

순번	샘플명	Tm _a ²	Cf9
163	HSC-GT-4#09	H	S
164	HSC-GT-4#10	S	S
165	HSC-GT-4#11	H	S
166	HSC-GT-4#12	H	S
167	HSC-GT-4#13	R	S
168	HSC-GT-4#14	R	S
169	HSC-GT-4#15	H	S
170	HSC-GT-4#16	H	S
171	HSC-GT-4#17	R	S
172	HSC-GT-4#18	R	S
173	HSC-GT-4#19	S	S
174	HSC-GT-4#20	R	S
175	HSC-GT-4#21	H	S
176	HSC-GT-4#22	H	S
177	HSC-GT-4#23	R	S
178	HSC-GT-4#24	H	S
179	HSC-GT-4#25	R	S
180	HSC-GT-4#26	H	S
181	HSC-GT-4#27	R	S
182	HSC-GT-4#28	H	S
183	HSC-GT-4#29	H	S
184	HSC-GT-4#30	H	S
185	HSC-GT-4#31	H	S
186	HSC-GT-4#32	S	S
187	HSC-GT-4#33	R	S
188	HSC-GT-4#34	R	S
189	HSC-GT-4#35	H	S
190	HSC-GT-4#36	H	S
191	HSC-GT-4#37	H	S
192	HSC-GT-4#38	H	S
193	HSC-GT-4#39	H	S
194	HSC-GT-4#40	H	S
195	HSC-GT-4#41	H	S
196	HSC-GT-4#42	H	S
197	HSC-GT-4#43	S	S
198	HSC-GT-4#44	H	S
199	HSC-GT-4#45	H	S
200	HSC-GT-4#46	H	S
201	HSC-GT-4#47	R	S
202	HSC-GT-7#01	H	S
203	HSC-GT-7#02	H	S
204	HSC-GT-7#03	S	S
205	HSC-GT-7#04	H	S
206	HSC-GT-7#05	H	S
207	HSC-GT-7#06	S	S
208	HSC-GT-7#07	n/a	S
209	HSC-GT-7#08	S	S
210	HSC-GT-7#09	S	S
211	HSC-GT-7#10	S	S
212	HSC-GT-7#11	S	S
213	HSC-GT-7#12	H	S
214	HSC-GT-7#13	S	S
215	HSC-GT-7#14	H	S
216	HSC-GT-7#15	S	S
217	HSC-GT-7#16	H	S
218	HSC-GT-7#17	H	S
219	HSC-GT-7#18	H	S
220	HSC-GT-7#19	H	S
221	HSC-GT-7#20	H	S
222	HSC-GT-7#21	S	S
223	HSC-GT-7#22	H	S
224	HSC-GT-7#23	H	S
225	HSC-GT-7#24	S	S
226	HSC-GT-7#25	S	S
227	HSC-GT-7#26	H	S
228	HSC-GT-7#27	S	S
229	HSC-GT-7#28	S	S
230	HSC-GT-7#29	S	S
231	HSC-GT-7#30	S	S

순번	샘플명	Tm _a ²	Cf9
244	HSC-GT-8#06	S	R
245	HSC-GT-8#07	S	R
246	HSC-GT-8#08	S	R
247	HSC-GT-8#09	S	R
248	HSC-GT-8#10	S	R
249	HSC-GT-8#11	S	R
250	HSC-GT-8#12	S	R
251	HSC-GT-8#13	S	R
252	HSC-GT-8#14	S	R
253	HSC-GT-8#15	S	R
254	HSC-GT-8#16	S	R
255	HSC-GT-8#17	S	R
256	HSC-GT-8#18	S	R
257	HSC-GT-8#19	S	R
258	HSC-GT-12#01	S	S
259	HSC-GT-12#02	S	S
260	HSC-GT-12#03	S	S
261	HSC-GT-12#04	S	S
262	HSC-GT-12#05	S	S
263	HSC-GT-12#06	S	S
264	HSC-GT-12#07	S	S
265	HSC-GT-12#08	S	S
266	HSC-GT-12#09	S	S
267	HSC-GT-12#10	S	S
268	HSC-GT-12#11	S	S
269	HSC-GT-12#12	S	S
270	HSC-GT-12#13	S	S
271	HSC-GT-12#14	S	S
272	HSC-GT-12#15	S	S
273	HSC-GT-12#16	S	S
274	HSC-GT-12#17	S	S
275	HSC-GT-12#18	S	S
276	HSC-GT-12#19	S	S
277	HSC-GT-12#20	S	S
278	HSC-GT-12#21	S	S
279	HSC-GT-12#22	S	S
280	HSC-GT-12#23	S	S
281	HSC-GT-12#24	S	S
282	HSC-GT-12#25	S	S
283	HSC-GT-12#26	S	S
284	HSC-GT-12#27	S	S
285	HSC-GT-12#28	S	S
286	HSC-GT-12#29	S	S
287	HSC-GT-12#30	S	S
288	HSC-GT-12#31	S	S
289	HSC-GT-12#32	S	S
290	HSC-GT-12#33	S	S
291	HSC-GT-12#34	S	S
292	HSC-GT-12#35	S	S
293	HSC-GT-12#36	S	S
294	HSC-GT-12#37	S	S
295	HSC-GT-12#38	S	S
296	HSC-GT-12#39	S	S
297	HSC-GT-12#40	S	S
298	HSC-GT-14#01	S	S
299	HSC-GT-14#02	S	S
300	HSC-GT-14#03	S	S
301	HSC-GT-14#04	S	S
302	HSC-GT-14#05	S	S
303	HSC-GT-14#06	S	S
304	HSC-GT-14#07	S	S
305	HSC-GT-14#08	S	S
306	HSC-GT-14#09	S	S
307	HSC-GT-14#10	S	S
308	HSC-GT-14#11	S	S
309	HSC-GT-14#12	S	S
310	HSC-GT-14#13	S	S
311	HSC-GT-14#14	S	S
312	HSC-GT-14#15	S	S

70	HSC-GT-1#70	S	R	151	HSC-GT-2#77	R	R	232	HSC-GT-7#31	S	S	313	HSC-GT-14#16	S	S
71	HSC-GT-1#71	S	R	152	HSC-GT-2#78	R	R	233	HSC-GT-7#32	S	S	314	HSC-GT-14#17	S	S
72	HSC-GT-1#72	S	R	153	HSC-GT-2#79	R	R	234	HSC-GT-7#33	S	n/a	315	HSC-GT-14#18	S	S
73	HSC-GT-1#73	S	R	154	HSC-GT-2#80	R	R	235	HSC-GT-7#34	S	n/a	316	HSC-GT-14#19	S	S
74	HSC-GT-1#74	S	R	155	HSC-GT-4#01	R	S	236	HSC-GT-7#35	H	n/a	317	HSC-GT-14#20	S	S
75	HSC-GT-2#01	R	R	156	HSC-GT-4#02	H	S	237	HSC-GT-7#36	S	n/a	318	HSC-GT-14#21	S	S
76	HSC-GT-2#02	R	R	157	HSC-GT-4#03	R	S	238	HSC-GT-7#37	H	n/a	319	HSC-GT-14#22	S	S
77	HSC-GT-2#03	R	R	158	HSC-GT-4#04	H	S	239	HSC-GT-8#01	S	R	320	HSC-GT-14#23	S	S
78	HSC-GT-2#04	R	R	159	HSC-GT-4#05	H	S	240	HSC-GT-8#02	S	R	321	HSC-GT-14#24	S	S
79	HSC-GT-2#05	R	R	160	HSC-GT-4#06	H	S	241	HSC-GT-8#03	S	R				
80	HSC-GT-2#06	R	R	161	HSC-GT-4#07	S	S	242	HSC-GT-8#04	S	R				
81	HSC-GT-2#07	R	R	162	HSC-GT-4#08	S	S	243	HSC-GT-8#05	S	R				

표 32. 순천대학교 44점의 시료에 대하여, 병 관련 2개의 마커를 이용한 서비스 결과

순번	샘플명	Ty1	Tm 2a	순번	샘플명	Ty1	Tm 2a	순번	샘플명	Ty1	Tm 2a	순번	샘플명	Ty1	Tm 2a
1	HSC-ETF-15#01	S	H	12	HSC-ETF-15#12	S	R	23	HSC-ETF-15#23	S	H	34	HSC-ETF-16#08	S	R
2	HSC-ETF-15#02	S	H	13	HSC-ETF-15#13	S	H	24	HSC-ETF-15#24	S	S	35	HSC-ETF-16#09	S	R
3	HSC-ETF-15#03	S	S	14	HSC-ETF-15#14	S	S	25	HSC-ETF-15#25	S	H	36	HSC-ETF-16#10	S	R
4	HSC-ETF-15#04	S	S	15	HSC-ETF-15#15	S	H	26	HSC-ETF-15#26	S	H	37	HSC-ETF-16#11	S	R
5	HSC-ETF-15#05	S	H	16	HSC-ETF-15#16	S	R	27	HSC-ETF-16#01	S	R	38	HSC-ETF-16#12	S	R
6	HSC-ETF-15#06	S	H	17	HSC-ETF-15#17	S	H	28	HSC-ETF-16#02	S	R	39	HSC-ETF-16#13	S	R
7	HSC-ETF-15#07	S	H	18	HSC-ETF-15#18	S	H	29	HSC-ETF-16#03	S	R	40	HSC-ETF-16#14	S	R
8	HSC-ETF-15#08	S	H	19	HSC-ETF-15#19	S	R	30	HSC-ETF-16#04	S	R	41	HSC-ETF-16#15	S	R
9	HSC-ETF-15#09	S	H	20	HSC-ETF-15#20	S	S	31	HSC-ETF-16#05	S	R	42	HSC-ETF-16#16	S	R
10	HSC-ETF-15#10	S	H	21	HSC-ETF-15#21	S	H	32	HSC-ETF-16#06	S	R	43	HSC-ETF-16#17	S	R
11	HSC-ETF-15#11	S	S	22	HSC-ETF-15#22	S	S	33	HSC-ETF-16#07	S	R	44	HSC-ETF-16#18	S	R

표 33. 순천대학교 365점의 시료에 대하여, 병 관련 7개의 마커를 이용한 서비스 결과

순번	샘플명	Ty1	Tm 2a	Cf9	Sm-565	Sw5	Bw 12	Ph3	순번	샘플명	Ty1	Tm 2a	Cf9	Sm-565	Sw5	Bw 12	Ph3
1	HSC-JTF-17#01	S	S	S	R	S	S	S	184	HSC-JTF-21#42	S	S	S	R	S	S	H
2	HSC-JTF-17#02	S	S	S	H	S	S	S	185	HSC-JTF-21#43	S	S	S	R	S	S	S
3	HSC-JTF-17#03	S	S	S	R	S	S	S	186	HSC-JTF-21#44	S	S	S	H	S	S	R
4	HSC-JTF-17#04	S	S	S	S	S	S	S	187	HSC-JTF-21#45	S	S	S	H	S	S	S
5	HSC-JTF-17#05	S	S	S	S	S	S	S	188	HSC-JTF-21#46	S	S	S	S	S	S	R
6	HSC-JTF-17#06	S	S	S	R	S	S	S	189	HSC-JTF-21#47	S	S	S	H	S	S	H
7	HSC-JTF-17#07	S	S	S	H	S	S	S	190	HSC-JTF-21#48	S	S	S	R	S	S	H
8	HSC-JTF-17#08	S	S	S	H	S	S	S	191	HSC-JTF-21#49	S	S	S	S	S	S	R
9	HSC-JTF-17#09	S	S	S	S	S	S	S	192	HSC-JTF-22#01	S	S	S	R	S	S	R
10	HSC-JTF-17#10	S	S	S	H	S	S	S	193	HSC-JTF-22#02	S	S	S	S	S	S	R
11	HSC-JTF-17#11	S	S	S	R	S	S	S	194	HSC-JTF-22#03	S	S	S	S	S	S	R
12	HSC-JTF-17#12	S	S	S	S	S	S	S	195	HSC-JTF-22#04	S	S	S	S	S	S	R
13	HSC-JTF-17#13	S	S	S	S	S	S	S	196	HSC-JTF-22#05	S	S	S	S	S	S	R
14	HSC-JTF-17#14	S	S	S	S	S	S	S	197	HSC-JTF-22#06	S	S	S	H	S	S	R
15	HSC-JTF-17#15	S	S	S	S	S	S	S	198	HSC-JTF-22#07	S	S	S	H	S	S	R
16	HSC-JTF-17#16	S	S	S	H	S	S	S	199	HSC-JTF-22#08	S	S	S	H	S	S	R
17	HSC-JTF-17#17	S	S	S	R	S	S	S	200	HSC-JTF-22#09	S	S	S	H	S	S	R
18	HSC-JTF-17#18	S	S	S	R	S	S	S	201	HSC-JTF-22#10	S	S	S	R	S	S	R
19	HSC-JTF-17#19	S	S	S	H	S	S	S	202	HSC-JTF-22#11	S	S	S	H	S	S	R
20	HSC-JTF-17#20	S	S	S	S	S	S	S	203	HSC-JTF-22#12	S	S	S	H	S	S	R
21	HSC-JTF-17#21	S	S	S	S	S	S	S	204	HSC-JTF-22#13	S	S	S	H	S	S	R
22	HSC-JTF-17#22	S	S	S	H	S	S	S	205	HSC-JTF-22#14	S	S	S	R	S	S	R
23	HSC-JTF-17#23	S	S	S	R	S	S	S	206	HSC-JTF-22#15	S	S	S	H	S	S	R
24	HSC-JTF-17#24	S	S	S	R	S	S	S	207	HSC-JTF-22#16	S	n/a	S	S	S	S	R
25	HSC-JTF-17#25	S	S	n/a	H	S	S	S	208	HSC-JTF-22#17	S	S	S	H	S	S	R
26	HSC-JTF-17#26	S	S	S	H	S	S	S	209	HSC-JTF-22#18	S	S	S	R	S	S	R
27	HSC-JTF-17#27	S	S	S	H	S	S	S	210	HSC-JTF-22#19	S	S	S	H	S	S	R
28	HSC-JTF-17#28	S	S	S	H	S	S	S	211	HSC-JTF-22#20	S	S	S	H	S	S	R
29	HSC-JTF-17#29	S	S	S	H	S	S	S	212	HSC-JTF-22#21	S	S	S	H	S	S	R
30	HSC-JTF-17#30	S	S	S	S	S	S	S	213	HSC-JTF-22#22	S	S	S	S	S	S	R
31	HSC-JTF-17#31	S	S	S	S	S	S	S	214	HSC-JTF-22#23	S	S	S	R	S	S	R

순번	샘플명	Ty1	Tm 2a	Cf9	Sm- 565	Sw5	Bw 12	Ph3
32	HSC-JTF-17#32	S	S	n/a	H	S	S	S
33	HSC-JTF-17#33	S	S	S	S	S	S	S
34	HSC-JTF-17#34	S	S	n/a	S	S	S	S
35	HSC-JTF-17#35	S	S	S	S	S	S	S
36	HSC-JTF-17#36	S	S	S	H	S	S	S
37	HSC-JTF-17#37	S	S	S	S	S	S	S
38	HSC-JTF-17#38	S	S	S	H	S	S	S
39	HSC-JTF-17#39	S	S	n/a	H	S	S	S
40	HSC-JTF-17#40	S	S	S	S	S	S	S
41	HSC-JTF-17#41	S	S	S	H	S	S	S
42	HSC-JTF-17#42	S	S	S	H	S	S	S
43	HSC-JTF-17#43	S	S	S	H	S	S	S
44	HSC-JTF-17#44	S	S	S	H	S	S	S
45	HSC-JTF-17#45	S	S	S	H	S	S	S
46	HSC-JTF-17#46	S	S	S	S	S	S	S
47	HSC-JTF-17#47	S	S	S	R	S	S	S
48	HSC-JTF-17#48	S	S	S	R	S	S	S
49	HSC-JTF-18#01	S	S	S	R	S	S	S
50	HSC-JTF-18#02	S	S	S	R	S	S	S
51	HSC-JTF-18#03	S	S	S	R	S	S	S
52	HSC-JTF-18#04	S	S	S	R	S	S	S
53	HSC-JTF-18#05	S	S	S	R	S	S	S
54	HSC-JTF-18#06	S	S	S	R	S	S	S
55	HSC-JTF-18#07	S	S	S	R	S	S	S
56	HSC-JTF-18#08	S	S	S	R	S	S	S
57	HSC-JTF-18#09	S	S	S	R	S	S	S
58	HSC-JTF-18#10	S	S	S	R	S	S	S
59	HSC-JTF-18#11	S	S	S	R	S	S	S
60	HSC-JTF-18#12	S	S	S	R	S	S	S
61	HSC-JTF-18#13	S	S	S	R	S	S	S
62	HSC-JTF-18#14	S	S	S	R	S	S	S
63	HSC-JTF-18#15	S	S	S	R	S	S	S
64	HSC-JTF-18#16	S	S	S	R	S	S	S
65	HSC-JTF-18#17	S	S	S	R	S	S	S
66	HSC-JTF-18#18	S	S	S	R	S	S	S
67	HSC-JTF-18#19	S	S	n/a	R	S	S	S
68	HSC-JTF-18#20	S	S	S	R	S	S	S
69	HSC-JTF-18#21	S	S	S	R	S	S	S
70	HSC-JTF-18#22	S	S	S	R	S	S	S
71	HSC-JTF-18#23	S	S	S	R	S	S	S
72	HSC-JTF-18#24	S	S	S	R	S	S	S
73	HSC-JTF-18#25	S	S	S	R	S	S	S
74	HSC-JTF-18#26	S	S	S	R	S	S	S
75	HSC-JTF-18#27	S	S	S	R	S	S	S
76	HSC-JTF-18#28	S	S	S	R	S	S	S
77	HSC-JTF-18#29	S	S	S	R	S	S	S
78	HSC-JTF-18#30	S	S	n/a	R	S	S	S
79	HSC-JTF-18#31	S	S	S	R	S	S	S
80	HSC-JTF-18#32	S	S	S	R	S	S	S
81	HSC-JTF-18#33	S	S	S	R	S	S	S
82	HSC-JTF-18#34	S	S	S	R	S	S	S
83	HSC-JTF-18#35	S	S	S	R	S	S	S
84	HSC-JTF-18#36	S	S	S	R	S	S	S
85	HSC-JTF-18#37	S	S	S	R	S	S	S
86	HSC-JTF-18#38	S	S	S	R	S	S	S
87	HSC-JTF-18#39	S	S	S	R	S	S	S
88	HSC-JTF-18#40	S	S	S	R	S	S	S

순번	샘플명	Ty1	Tm2 a	Cf9	Sm- 565	Sw5	Bw 12	Ph3
215	HSC-JTF-22#24	S	S	S	R	S	S	R
216	HSC-JTF-22#25	S	S	S	H	S	S	R
217	HSC-JTF-22#26	S	S	S	R	S	S	R
218	HSC-JTF-22#27	S	S	S	H	S	S	R
219	HSC-JTF-22#28	S	S	S	R	S	S	R
220	HSC-JTF-22#29	S	S	S	R	S	S	R
221	HSC-JTF-22#30	S	S	S	H	S	S	R
222	HSC-JTF-22#31	S	S	S	R	S	S	R
223	HSC-JTF-22#32	S	S	S	H	S	S	R
224	HSC-JTF-22#33	S	S	S	H	S	S	R
225	HSC-JTF-22#34	S	S	S	H	S	S	R
226	HSC-JTF-22#35	S	S	S	H	S	S	R
227	HSC-JTF-22#36	S	S	S	H	S	S	R
228	HSC-JTF-22#37	S	S	S	R	S	S	R
229	HSC-JTF-22#38	S	S	S	H	S	S	R
230	HSC-JTF-22#39	S	S	S	H	S	S	R
231	HSC-JTF-22#40	S	S	S	H	S	S	R
232	HSC-JTF-22#41	S	S	S	H	S	S	R
233	HSC-JTF-22#42	S	S	S	R	S	S	R
234	HSC-JTF-22#43	S	S	S	S	S	S	R
235	HSC-JTF-22#44	S	S	n/a	R	S	S	R
236	HSC-JTF-22#45	S	S	S	n/a	S	S	R
237	HSC-JTF-22#46	S	S	S	H	S	S	R
238	HSC-JTF-22#47	S	S	S	H	S	n/a	R
239	HSC-JTF-27#01	S	S	S	S	S	S	n/a
240	HSC-JTF-27#02	S	S	R	S	S	S	R
241	HSC-JTF-27#03	S	S	H	S	S	S	R
242	HSC-JTF-27#04	S	H	S	S	S	S	R
243	HSC-JTF-27#05	S	S	S	S	S	S	R
244	HSC-JTF-27#06	S	H	R	S	S	S	R
245	HSC-JTF-27#07	S	S	R	S	S	S	R
246	HSC-JTF-27#08	S	S	H	S	S	S	R
247	HSC-JTF-27#09	S	S	H	S	S	S	R
248	HSC-JTF-27#10	S	H	H	S	S	S	R
249	HSC-JTF-27#11	S	H	H	S	S	S	R
250	HSC-JTF-27#12	S	S	R	S	S	S	R
251	HSC-JTF-27#13	S	S	R	S	S	S	R
252	HSC-JTF-27#14	S	S	R	S	S	S	R
253	HSC-JTF-27#15	S	S	H	S	S	S	R
254	HSC-JTF-27#16	S	H	R	S	S	S	R
255	HSC-JTF-27#17	S	H	S	S	S	S	R
256	HSC-JTF-27#18	S	S	R	S	S	S	R
257	HSC-JTF-27#19	S	S	H	S	S	S	R
258	HSC-JTF-27#20	S	S	H	S	S	S	R
259	HSC-JTF-27#21	S	H	H	S	S	S	R
260	HSC-JTF-27#22	S	S	H	S	S	S	R
261	HSC-JTF-27#23	S	H	S	S	S	S	R
262	HSC-JTF-27#24	S	S	S	S	S	S	R
263	HSC-JTF-27#25	S	H	R	S	S	S	R
264	HSC-JTF-27#26	S	S	H	S	S	S	R
265	HSC-JTF-27#27	S	H	H	S	S	S	R
266	HSC-JTF-27#28	S	H	S	S	S	S	R
267	HSC-JTF-27#29	S	R	H	S	S	S	R
268	HSC-JTF-27#30	S	H	R	S	S	S	R
269	HSC-JTF-27#31	S	S	S	S	S	S	R
270	HSC-JTF-27#32	S	H	H	S	S	S	R
271	HSC-JTF-27#33	S	H	R	S	S	S	R

순번	샘플명	Ty1	Tm 2a	Cf9	Sm- 565	Sw5	Bw 12	Ph3
89	HSC-JTF-18#41	S	S	S	R	S	S	S
90	HSC-JTF-18#42	S	S	S	R	S	S	S
91	HSC-JTF-18#43	S	S	S	R	S	S	S
92	HSC-JTF-18#44	S	S	S	R	S	S	S
93	HSC-JTF-18#45	S	S	S	R	S	S	S
94	HSC-JTF-18#46	S	S	S	R	S	S	S
95	HSC-JTF-18#47	S	S	S	R	S	S	S
96	HSC-JTF-18#48	S	S	S	R	S	S	S
97	HSC-JTF-20#01	S	S	S	S	S	S	R
98	HSC-JTF-20#02	S	S	S	S	S	S	R
99	HSC-JTF-20#03	S	S	S	S	S	S	R
100	HSC-JTF-20#04	S	S	S	S	S	S	R
101	HSC-JTF-20#05	S	S	S	S	S	S	R
102	HSC-JTF-20#06	S	S	S	S	S	S	R
103	HSC-JTF-20#07	S	S	S	S	S	S	R
104	HSC-JTF-20#08	S	S	S	S	S	S	R
105	HSC-JTF-20#09	S	S	S	S	S	S	R
106	HSC-JTF-20#10	S	S	S	S	S	S	R
107	HSC-JTF-20#11	S	S	S	S	S	S	R
108	HSC-JTF-20#12	S	S	S	S	S	S	R
109	HSC-JTF-20#13	S	S	S	S	S	S	R
110	HSC-JTF-20#14	S	S	S	S	S	S	R
111	HSC-JTF-20#15	S	S	S	S	S	S	R
112	HSC-JTF-20#16	S	S	S	S	S	S	R
113	HSC-JTF-20#17	S	S	S	S	S	S	R
114	HSC-JTF-20#18	S	S	S	S	S	S	R
115	HSC-JTF-20#19	S	S	S	S	S	S	R
116	HSC-JTF-20#20	S	S	S	S	S	S	R
117	HSC-JTF-20#21	S	S	S	S	S	S	R
118	HSC-JTF-20#22	S	S	S	S	S	S	R
119	HSC-JTF-20#23	S	S	S	S	S	S	R
120	HSC-JTF-20#24	S	S	S	S	S	S	R
121	HSC-JTF-20#25	S	S	S	S	S	S	R
122	HSC-JTF-20#26	S	S	S	S	S	S	R
123	HSC-JTF-20#27	S	S	S	S	S	S	R
124	HSC-JTF-20#28	S	S	S	S	S	S	R
125	HSC-JTF-20#29	S	S	S	S	S	S	R
126	HSC-JTF-20#30	S	S	S	S	S	S	R
127	HSC-JTF-20#31	S	S	S	S	S	S	R
128	HSC-JTF-20#32	S	S	S	S	S	S	R
129	HSC-JTF-20#33	S	S	S	S	S	S	R
130	HSC-JTF-20#34	S	S	S	S	S	S	R
131	HSC-JTF-20#35	S	S	S	S	S	S	R
132	HSC-JTF-20#36	S	S	S	S	S	S	R
133	HSC-JTF-20#37	S	S	S	S	S	S	R
134	HSC-JTF-20#38	S	S	S	S	S	S	R
135	HSC-JTF-20#39	S	S	S	S	S	S	R
136	HSC-JTF-20#40	S	S	S	S	S	S	R
137	HSC-JTF-20#41	S	S	S	S	S	S	R
138	HSC-JTF-20#42	S	S	S	S	S	S	R
139	HSC-JTF-20#43	S	S	S	S	S	S	R
140	HSC-JTF-20#44	S	S	S	S	S	S	R
141	HSC-JTF-20#45	S	S	S	S	S	S	R
142	HSC-JTF-20#46	S	S	S	S	S	S	R
143	HSC-JTF-21#01	S	S	S	R	S	S	S
144	HSC-JTF-21#02	S	S	S	H	S	S	R
145	HSC-JTF-21#03	S	S	S	H	S	S	H

순번	샘플명	Ty1	Tm2 a	Cf9	Sm- 565	Sw5	Bw 12	Ph3
272	HSC-JTF-27#34	S	S	R	S	S	S	R
273	HSC-JTF-27#35	S	S	H	S	S	S	R
274	HSC-JTF-27#36	S	S	R	S	S	S	R
275	HSC-JTF-27#37	S	H	S	S	S	S	R
276	HSC-JTF-27#38	S	n/a	R	S	S	S	R
277	NOR-ETF-28#01	S	R	S	S	S	S	R
278	NOR-ETF-28#02	S	R	S	S	S	S	R
279	NOR-ETF-28#03	S	R	S	S	S	S	R
280	NOR-ETF-28#04	S	R	S	S	S	S	R
281	NOR-ETF-28#05	S	R	S	S	S	S	R
282	NOR-ETF-28#06	S	R	S	S	S	S	R
283	NOR-ETF-28#07	S	R	S	S	S	S	R
284	NOR-ETF-28#08	S	R	S	S	S	S	R
285	NOR-ETF-28#09	S	R	S	S	S	S	R
286	NOR-ETF-28#10	S	R	S	S	S	S	R
287	NOR-ETF-28#11	S	R	S	S	S	S	R
288	NOR-ETF-28#12	S	R	S	S	S	S	R
289	NOR-ETF-28#13	S	R	S	S	S	S	R
290	NOR-ETF-28#14	S	R	S	S	S	S	R
291	NOR-ETF-28#15	S	R	S	S	S	S	R
292	NOR-ETF-28#16	S	R	S	S	S	S	R
293	NOR-ETF-28#17	S	n/a	S	S	S	S	R
294	NOR-ETF-28#18	S	R	S	S	S	S	R
295	NOR-ETF-28#19	S	R	S	S	S	S	R
296	NOR-ETF-28#20	S	R	S	S	S	S	R
297	NOR-ETF-28#21	S	R	S	S	S	S	R
298	NOR-ETF-28#22	S	R	S	S	S	S	R
299	NOR-ETF-28#23	S	R	S	S	S	S	R
300	NOR-ETF-28#24	S	R	S	S	S	S	R
301	NOR-ETF-28#25	S	R	S	S	S	S	R
302	NOR-ETF-28#26	S	R	S	S	S	S	R
303	NOR-ETF-28#27	S	R	S	S	S	S	R
304	NOR-ETF-28#28	S	R	S	S	S	S	R
305	NOR-ETF-28#29	S	R	S	S	S	S	R
306	NOR-ETF-28#30	S	R	S	S	S	S	R
307	NOR-ETF-28#31	S	R	S	S	S	S	R
308	NOR-ETF-28#32	S	R	S	S	S	S	R
309	NOR-ETF-28#33	S	R	S	S	S	S	R
310	NOR-ETF-28#34	S	R	S	S	S	S	R
311	NOR-ETF-28#35	S	R	S	S	S	S	R
312	NOR-ETF-28#36	S	R	S	S	S	S	R
313	NOR-ETF-28#37	S	R	S	S	S	S	R
314	NOR-ETF-28#38	S	R	S	S	S	S	R
315	NOR-ETF-28#39	S	R	S	S	S	S	R
316	NOR-ETF-28#40	S	R	S	S	S	S	R
317	NOR-ETF-28#41	S	R	S	S	S	S	R
318	NOR-ETF-28#42	S	R	S	S	S	S	R
319	NOR-ETF-28#43	S	R	S	S	S	S	R
320	NOR-ETF-28#44	S	R	S	S	S	S	R
321	NOR-ETF-28#45	S	R	S	S	S	S	R
322	NOR-ETF-29#01	S	R	S	S	S	S	R
323	NOR-ETF-29#02	S	R	S	S	S	S	R
324	NOR-ETF-29#03	S	R	S	S	S	S	R
325	NOR-ETF-29#04	S	R	S	S	S	S	R
326	NOR-ETF-29#05	S	R	S	S	S	S	R
327	NOR-ETF-29#06	S	R	S	S	S	S	R
328	NOR-ETF-29#07	S	R	S	S	S	S	R

순번	샘플명	Ty1	Tm2a	Cf9	Sm-565	Sw5	Bw12	Ph3
146	HSC-JTF-21#04	S	S	S	R	S	S	H
147	HSC-JTF-21#05	S	S	S	S	S	S	S
148	HSC-JTF-21#06	S	S	S	H	S	S	R
149	HSC-JTF-21#07	S	S	S	R	S	S	H
150	HSC-JTF-21#08	S	S	S	H	S	S	R
151	HSC-JTF-21#09	S	S	S	R	S	S	H
152	HSC-JTF-21#10	S	S	S	H	S	S	H
153	HSC-JTF-21#11	S	S	S	H	S	S	H
154	HSC-JTF-21#12	S	S	S	S	S	S	S
155	HSC-JTF-21#13	S	S	S	S	S	S	H
156	HSC-JTF-21#14	S	S	S	H	S	S	R
157	HSC-JTF-21#15	S	S	S	H	S	S	S
158	HSC-JTF-21#16	S	S	S	R	S	S	H
159	HSC-JTF-21#17	S	S	S	H	S	S	S
160	HSC-JTF-21#18	S	S	S	H	S	S	H
161	HSC-JTF-21#19	S	S	S	H	S	S	R
162	HSC-JTF-21#20	S	S	S	S	S	S	H
163	HSC-JTF-21#21	S	S	S	S	S	S	R
164	HSC-JTF-21#22	S	S	S	H	S	S	R
165	HSC-JTF-21#23	S	S	S	R	S	S	H
166	HSC-JTF-21#24	S	S	S	H	S	S	H
167	HSC-JTF-21#25	S	S	S	H	S	S	R
168	HSC-JTF-21#26	S	S	S	H	S	S	H
169	HSC-JTF-21#27	S	S	S	S	S	S	H
170	HSC-JTF-21#28	S	S	S	H	S	S	H
171	HSC-JTF-21#29	S	S	S	H	S	S	H
172	HSC-JTF-21#30	S	S	S	H	S	S	H
173	HSC-JTF-21#31	S	S	S	H	S	S	H
174	HSC-JTF-21#32	S	S	S	H	S	S	S
175	HSC-JTF-21#33	S	S	S	H	S	S	S
176	HSC-JTF-21#34	S	S	S	H	S	S	H
177	HSC-JTF-21#35	S	S	S	H	S	S	S
178	HSC-JTF-21#36	S	S	S	H	S	S	H
179	HSC-JTF-21#37	S	S	S	H	S	S	S
180	HSC-JTF-21#38	S	S	S	R	S	S	H
181	HSC-JTF-21#39	S	S	S	S	S	S	R
182	HSC-JTF-21#40	S	S	S	H	S	S	H
183	HSC-JTF-21#41	S	S	S	H	S	S	H

순번	샘플명	Ty1	Tm2a	Cf9	Sm-565	Sw5	Bw12	Ph3
329	NOR-ETF-29#08	S	R	S	S	S	S	R
330	NOR-ETF-29#09	S	R	S	S	S	S	R
331	NOR-ETF-29#10	S	R	S	S	S	S	R
332	NOR-ETF-29#11	S	R	S	S	S	S	R
333	NOR-ETF-29#12	S	R	S	S	S	S	R
334	NOR-ETF-29#13	S	R	S	S	S	S	R
335	NOR-ETF-29#14	S	R	S	S	S	S	R
336	NOR-ETF-29#15	S	R	S	S	S	S	R
337	NOR-ETF-29#16	S	R	S	S	S	S	R
338	NOR-ETF-29#17	S	R	S	S	S	S	R
339	NOR-ETF-29#18	S	R	S	S	S	S	R
340	NOR-ETF-29#19	S	R	S	S	S	S	R
341	NOR-ETF-29#20	S	R	S	S	S	S	R
342	NOR-ETF-29#21	S	R	S	S	S	S	R
343	NOR-ETF-29#22	S	R	S	S	S	S	R
344	NOR-ETF-29#23	S	R	S	S	S	S	R
345	NOR-ETF-29#24	S	R	S	S	S	S	R
346	NOR-ETF-29#25	S	R	S	S	S	S	R
347	NOR-ETF-29#26	S	R	S	S	S	S	R
348	NOR-ETF-29#27	S	R	S	S	S	S	R
349	NOR-ETF-29#28	S	R	S	S	S	S	R
350	NOR-ETF-29#29	S	R	S	S	S	S	R
351	NOR-ETF-29#30	S	R	S	S	S	S	R
352	NOR-ETF-29#31	S	R	S	S	S	S	R
353	NOR-ETF-29#32	S	R	S	S	S	S	R
354	NOR-ETF-29#33	S	R	S	S	S	S	R
355	NOR-ETF-29#34	S	R	S	S	S	S	R
356	NOR-ETF-29#35	S	R	S	S	S	S	R
357	NOR-ETF-29#36	S	R	S	S	S	S	R
358	NOR-ETF-29#37	S	R	S	S	S	S	R
359	NOR-ETF-29#38	S	R	S	S	S	S	R
360	NOR-ETF-29#39	S	R	S	S	S	S	R
361	NOR-ETF-29#40	S	R	S	S	S	S	R
362	NOR-ETF-29#41	S	R	S	S	S	S	R
363	NOR-ETF-29#42	S	R	S	S	S	S	R
364	NOR-ETF-29#43	S	R	S	S	S	S	R
365	NOR-ETF-29#44	S	R	S	S	S	S	R

표 34. 순천대학교 115점의 시료에 대하여, 원예 형질 관련 1개의 마커를 이용한 서비스 결과

순번	샘플명	MS
1	K1BC3 F1#01	Ms
2	K1BC3 F1#02	Ms
3	K1BC3 F1#03	Ms
4	K1BC3 F1#04	H
5	K1BC3 F1#05	H
6	K1BC3 F1#06	H
7	K1BC3 F1#07	Ms
8	K1BC3 F1#08	H
9	K1BC3 F1#09	Ms
10	K1BC3 F1#10	Ms
11	K1BC3 F1#11	Ms
12	K11BC3 F1#01	Ms
13	K11BC3 F1#02	Ms
14	K11BC3 F1#03	Ms
15	K11BC3 F1#04	H
16	K11BC3 F1#05	H

순번	샘플명	MS
30	K5BC4 F1#01	Ms
31	K5BC4 F1#02	Ms
32	K5BC4 F1#03	Ms
33	K5BC4 F1#04	H
34	K5BC4 F1#05	H
35	K5BC4 F1#06	H
36	K5BC4 F1#07	Ms
37	K5BC4 F1#08	H
38	K5BC4 F1#09	H
39	K5BC4 F1#10	ms
40	K5BC4 F1#11	H
41	K5BC4 F1#12	H
42	K5BC4 F1#13	Ms
43	K5BC4 F1#14	Ms
44	K5BC4 F1#15	Ms
45	K5BC4 F1#16	H

순번	샘플명	MS
59	K7BC4 F1#08	H
60	K7BC4 F1#09	ms
61	K7BC4 F1#10	Ms
62	K7BC4 F1#11	H
63	K7BC4 F1#12	Ms
64	K7BC4 F1#13	H
65	K7BC4 F1#14	H
66	K7BC4 F1#15	H
67	K7BC4 F1#16	Ms
68	K7BC4 F1#17	Ms
69	K7BC4 F1#18	Ms
70	K7BC4 F1#19	Ms
71	K7BC4 F1#20	ms
72	K7BC4 F1#21	H
73	K7BC4 F1#22	H
74	K7BC4 F1#23	H

순번	샘플명	MS
88	K13BC3 F1#01	Ms
89	K13BC3 F1#02	H
90	K13BC3 F1#03	Ms
91	K13BC3 F1#04	H
92	K13BC3 F1#05	H
93	K13BC3 F1#06	ms
94	K13BC3 F1#07	Ms
95	K13BC3 F1#08	H
96	K13BC3 F1#09	H
97	K13BC3 F1#10	H
98	K13BC3 F1#11	Ms
99	K13BC3 F1#12	ms
100	K13BC3 F1#13	Ms
101	K13BC3 F1#14	H
102	K13BC3 F1#15	Ms
103	K13BC3 F1#16	ms

17	K11BC3 F1#06	ms	46	K5BC4 F1#17	Ms	75	K7BC4 F1#24	Ms	104	K18BC3 F1#01	Ms
18	K11BC3 F1#07	Ms	47	K5BC4 F1#18	H	76	K10BC3 F1#01	H	105	K18BC3 F1#02	H
19	K11BC3 F1#08	Ms	48	K5BC4 F1#19	Ms	77	K10BC3 F1#02	H	106	K18BC3 F1#03	H
20	K11BC3 F1#09	Ms	49	K5BC4 F1#20	H	78	K10BC3 F1#03	ms	107	K18BC3 F1#04	H
21	K11BC3 F1#10	ms	50	K5BC4 F1#21	H	79	K10BC3 F1#04	ms	108	K18BC3 F1#05	H
22	K11BC3 F1#11	Ms	51	K5BC4 F1#22	H	80	K10BC3 F1#05	H	109	K18BC3 F1#06	Ms
23	K11BC3 F1#12	Ms	52	K7BC4 F1#01	Ms	81	K10BC3 F1#06	H	110	K18BC3 F1#07	Ms
24	K11BC3 F1#13	H	53	K7BC4 F1#02	H	82	K10BC3 F1#07	ms	111	K18BC3 F1#08	H
25	K11BC3 F1#14	Ms	54	K7BC4 F1#03	Ms	83	K10BC3 F1#08	H	112	K18BC3 F1#09	H
26	K11BC3 F1#15	H	55	K7BC4 F1#04	Ms	84	K10BC3 F1#09	H	113	K18BC3 F1#10	H
27	K11BC3 F1#16	H	56	K7BC4 F1#05	Ms	85	K10BC3 F1#10	Ms	114	K18BC3 F1#11	Ms
28	K11BC3 F1#17	H	57	K7BC4 F1#06	Ms	86	K10BC3 F1#11	ms	115	K18BC3 F1#12	Ms
29	K11BC3 F1#18	H	58	K7BC4 F1#07	ms	87	K10BC3 F1#12	ms			

표 35. 순천대학교 6점의 시료에 대하여, 병 관련 16개의 마커를 이용한 서비스 결과

순번	샘플명	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	PH3	Sm-565	Bw6	Bw12	py1-4	Cf9
1	HRC	S	H	S	H	H	R	R	S	S	H	H	H	H	R	S	S
2	BRW	S	S	S	S	R	R	H	S	S	S	S	H	R	R	S	S
3	SHS	S	S	S	S	R	R	R	S	S	R	S	R	H	R	S	S
4	WTR	S	S	S	S	R	R	R	S	S	R	S	R	H	R	S	S
5	CNS	S	S	S	S	R	H	H	R	S	R	S	R	S	R	S	S
6	PTG	S	S	S	S	R	H	R	H	S	R	S	H	H	R	S	S

② 가나종묘

가나종묘로부터 총 864점의 시료를 받아 3번의 서비스를 진행하였다. 처음 96점의 시료에 대하여, 병 관련 12종의 마커로 서비스를 진행하였다(표 36). 2번째로는 192점의 시료에 대하여, 병 관련 12종의 마커로 서비스를 진행하였다(표 37). 3번째로는 576점의 시료에 대하여, 병 관련 12종의 마커로 서비스를 진행하였다(표 38). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 36~38).

표 36. 가나종묘 96점의 시료에 대하여, 병 관련 12개의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi23	Tm2a	Sw5	Cf9
1	S	S	R	S	S	R	R	R	S	R	S	S
2	S	S	R	S	S	R	R	R	S	R	S	S
3	R	S	S	S	S	S	R	R	R	R	S	R
4	R	S	S	S	S	S	R	S	R	R	S	H
5	S	S	S	S	S	S	R	H	H	S	S	S
6	R	S	R	S	S	R	R	R	R	R	S	R
7	R	S	R	S	S	R	R	R	R	R	S	R
8	S	S	R	S	S	R	R	R	S	R	S	R
9	S	S	S	S	S	S	R	R	R	S	S	R
10	S	S	S	S	S	S	R	S	R	S	S	R
11	S	S	H	S	S	R	R	R	S	H	S	R
12	H	S	R	S	S	R	R	R	H	R	S	R
13	S	R	R	R	R	S	H	S	S	R	S	R
14	S	R	R	R	R	S	R	S	S	R	S	R
15	S	S	R	S	R	R	R	R	S	R	S	R
16	H	S	S	S	H	S	S	R	H	S	S	S
17	S	R	H	R	S	H	H	S	S	H	S	S
18	S	S	S	S	R	S	S	S	H	S	S	S
19	S	S	S	R	S	S	S	S	S	S	S	S
20	S	S	S	R	R	S	S	S	S	R	S	S
21	S	S	H	R	S	H	S	S	H	H	S	S
22	S	S	R	S	S	R	S	S	H	R	S	S
23	S	S	R	S	S	H	S	S	R	R	S	S
24	S	S	S	R	S	S	S	R	R	R	S	R
25	S	S	S	R	S	S	S	S	R	R	S	R
26	R	S	S	R	S	S	S	R	H	S	S	S

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi23	Tm2a	Sw5	Cf9
27	S	S	S	R	S	S	S	R	R	R	S	R
28	H	S	S	R	S	S	S	S	H	R	S	R
29	S	S	R	R	H	S	H	R	H	R	S	R
30	S	S	S	R	R	S	S	R	S	S	S	S
31	R	S	S	R	S	S	S	R	S	R	S	R
32	R	S	S	R	S	S	S	R	S	H	S	R
33	S	S	S	R	R	S	S	R	S	S	S	R
34	R	S	S	R	S	S	S	S	S	R	S	S
35	S	R	S	S	R	S	S	S	S	S	S	H
36	S	S	H	R	S	S	S	S	S	H	S	S
37	S	S	S	R	R	S	S	S	H	S	S	S
38	S	S	S	R	R	S	S	S	S	S	S	S
39	R	S	S	R	S	S	S	S	S	R	S	S
40	S	S	S	R	R	S	S	S	R	S	S	H
41	R	S	S	R	S	S	S	R	S	R	S	R
42	S	S	S	R	R	S	R	S	S	S	S	S
43	S	S	S	R	R	S	R	S	S	S	S	S
44	S	S	S	H	R	S	S	S	S	S	S	S
45	S	S	S	S	R	S	S	S	S	S	S	R
46	S	S	S	H	R	S	S	S	S	S	S	S
47	S	S	S	R	R	S	S	S	S	S	S	S
48	S	S	S	R	R	S	R	R	S	S	S	R
49	S	S	S	R	R	S	S	S	S	S	S	S
50	S	H	S	R	R	S	H	H	S	S	S	S
51	S	H	S	R	R	S	S	H	S	S	S	S
52	S	S	S	R	S	S	R	S	S	S	S	S
53	R	S	S	R	S	S	R	S	R	S	S	S
54	S	S	S	R	S	S	S	R	S	H	S	S
55	R	S	S	R	S	S	S	R	S	R	S	S
56	S	S	S	R	S	S	S	S	S	S	S	S
57	S	S	S	R	S	S	S	S	S	S	S	S
58	S	S	S	S	S	S	S	S	S	R	S	S
59	S	S	S	S	S	S	S	S	S	R	S	S
60	S	S	R	R	S	S	S	S	H	R	S	S
61	S	S	H	R	S	S	S	S	R	R	S	H
62	S	S	H	H	S	S	S	S	R	R	S	H
63	S	S	S	H	S	S	S	S	R	R	S	H
64	S	S	S	R	R	S	S	S	S	S	S	H
65	S	S	S	R	R	S	S	S	S	S	S	R
66	S	S	S	R	R	S	S	R	S	H	S	R
67	R	S	S	R	S	S	S	R	S	S	S	S
68	S	S	S	S	S	S	R	R	S	R	S	S
69	S	S	S	S	S	S	R	R	S	R	S	S
70	S	S	S	R	S	S	R	R	R	R	S	S
71	R	S	H	S	S	S	S	R	S	H	S	R
72	S	S	S	S	S	S	R	R	S	S	S	S
73	R	S	R	S	S	S	S	R	S	R	S	R
74	R	S	H	H	S	S	S	R	S	H	S	R
75	R	S	S	S	S	S	R	R	S	R	R	S
76	H	S	S	S	S	S	R	R	S	S	R	S
77	S	S	S	S	S	S	R	R	S	H	S	S
78	S	S	S	R	R	S	S	S	S	S	S	R
79	S	S	S	R	S	S	R	S	R	S	S	S
80	S	S	S	R	S	S	S	R	S	R	S	S
81	R	S	S	R	S	S	S	R	S	R	R	S
82	R	S	S	H	R	S	S	R	S	R	H	R
83	S	S	S	S	S	S	R	R	R	R	S	R
84	S	S	S	S	S	S	R	R	R	R	S	R
85	R	S	S	S	S	S	R	H	S	R	S	S
86	R	S	S	S	S	S	R	S	S	R	S	S
87	R	S	S	R	S	S	R	R	S	R	H	S
88	R	S	S	S	S	S	R	R	S	R	S	S
89	R	S	R	S	S	R	S	S	S	R	S	S

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi23	Tm2a	Sw5	Cf9
90	H	S	S	S	S	S	R	R	S	R	S	S
91	S	S	S	S	S	S	R	R	S	R	S	S
92	H	S	S	S	S	S	R	R	S	R	S	S
93	H	S	R	S	S	S	R	R	S	S	S	S
94	S	S	R	R	S	S	R	R	R	R	H	S
95	S	S	S	R	S	S	R	R	R	R	S	S
96	S	S	S	R	S	S	R	R	R	R	S	S

표 37. 가나종묘 192점의 시료에 대하여, 병 관련 12개의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi23	Tm2a	Sw5	Cf9
1	R	S	S	R	S	S	H	S	S	H	S	S
2	R	S	S	R	S	S	R	S	S	H	R	S
3	R	S	S	R	H	S	H	S	S	R	S	S
4	R	S	S	R	H	S	R	S	S	H	H	S
5	R	S	S	R	H	S	H	S	S	S	S	S
6	R	S	S	R	R	S	R	S	S	H	H	S
7	R	S	S	R	H	S	H	S	S	H	H	S
8	S	H	S	S	H	S	S	S	S	R	S	S
9	S	R	H	H	R	S	S	S	S	R	S	S
10	S	H	H	H	H	S	S	S	S	R	S	S
11	S	S	H	R	H	S	S	S	S	H	S	S
12	S	H	S	R	H	H	S	S	S	S	S	S
13	H	S	S	R	H	S	S	S	S	H	S	S
14	H	S	S	R	H	S	S	S	S	H	S	S
15	H	S	S	R	S	S	S	S	S	H	S	S
16	H	S	S	R	R	S	S	R	S	S	S	S
17	S	S	S	R	H	S	S	S	S	S	S	S
18	S	S	S	R	R	S	S	H	S	S	S	S
19	H	S	S	R	H	S	S	H	S	R	S	S
20	S	S	S	R	R	S	S	H	S	H	S	S
21	H	S	S	R	H	S	S	H	S	H	S	S
22	S	S	S	R	R	S	S	R	S	R	S	S
23	H	S	S	R	S	S	S	H	S	H	S	S
24	S	S	S	R	S	S	R	S	S	H	S	R
25	R	S	S	R	S	S	S	S	R	H	S	R
26	R	S	S	R	R	S	S	S	S	H	S	S
27	H	S	S	S	R	S	S	R	S	H	S	S
28	S	S	S	H	R	S	S	S	S	H	S	S
29	H	S	S	R	R	S	S	H	S	H	S	S
30	S	S	S	R	R	S	S	R	S	H	S	S
31	S	S	S	S	S	S	S	S	R	R	S	R
32	H	S	S	S	R	S	S	S	S	R	S	S
33	H	S	S	S	R	S	S	S	S	S	S	S
34	S	S	S	R	S	S	H	R	R	H	S	R
35	S	S	S	H	R	S	S	H	S	H	S	S
36	S	S	S	S	R	S	S	R	S	H	S	S
37	S	S	S	R	R	S	S	H	S	H	S	S
38	S	S	S	H	R	S	S	H	S	S	S	S
39	R	S	S	R	S	S	S	R	S	R	S	H
40	H	S	S	R	S	S	S	R	H	R	S	S
41	R	S	S	R	S	S	H	S	R	H	S	R
42	H	S	S	R	S	S	H	S	H	S	S	R
43	S	S	S	R	H	S	R	S	S	H	S	S
44	S	S	S	R	H	S	R	S	S	R	S	S
45	S	S	S	S	H	R	S	S	S	S	S	S
46	S	S	S	R	S	S	H	S	S	H	S	R
47	H	S	S	R	S	S	H	S	H	S	S	R
48	S	S	S	R	S	S	H	S	S	S	S	S
49	S	S	R	H	S	R	S	S	H	R	S	S
50	H	S	H	H	S	S	R	S	S	R	S	S
51	S	S	H	S	S	S	R	S	S	R	S	S
52	H	S	S	S	S	S	H	H	S	H	S	S

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi23	Tm2a	Sw5	Cf9
53	S	S	R	S	S	S	R	R	S	R	S	H
54	S	S	R	S	S	S	H	R	S	R	S	R
55	H	S	R	H	S	S	R	R	S	S	S	S
56	H	S	H	S	S	S	R	R	S	H	S	S
57	H	S	H	S	S	S	S	S	S	H	S	S
58	H	S	R	S	S	S	S	S	S	R	S	S
59	S	S	R	S	S	S	S	S	S	R	S	S
60	S	S	S	S	S	S	S	R	R	R	S	R
61	S	S	S	S	S	S	S	R	R	R	S	R
62	S	S	S	R	S	S	S	S	R	R	S	R
63	R	S	S	R	S	S	S	R	S	S	S	S
64	S	S	S	S	S	S	R	R	S	R	S	S
65	S	S	S	S	S	S	R	R	S	R	S	S
66	S	S	S	S	S	S	R	R	S	R	S	S
67	S	S	S	S	S	S	R	R	S	R	S	S
68	S	S	S	S	S	S	R	R	S	R	S	S
69	S	S	S	S	S	S	R	R	S	R	S	S
70	S	S	S	S	S	S	R	R	S	R	S	S
71	S	S	S	S	S	S	R	R	S	R	S	S
72	S	S	S	S	S	S	R	R	S	R	S	S
73	S	S	S	S	S	S	R	R	S	R	S	S
74	S	S	S	S	S	S	R	R	S	R	S	S
75	S	S	S	S	S	S	R	R	S	R	S	S
76	S	S	S	S	S	S	R	R	S	R	S	S
77	S	S	S	R	S	S	R	S	R	S	S	S
78	R	S	R	H	S	S	S	R	S	R	S	R
79	R	S	S	S	S	S	R	R	S	R	R	S
80	R	S	S	S	S	S	R	R	S	R	R	S
81	R	S	R	S	S	H	S	S	S	R	S	S
82	H	S	S	S	S	S	R	R	S	S	R	S
83	H	S	S	S	S	S	R	R	S	S	R	S
84	S	S	S	S	S	S	R	R	S	S	R	S
85	S	S	S	S	S	S	R	R	S	H	S	S
86	S	S	S	R	S	S	R	R	R	R	S	S
87	S	S	S	S	S	S	R	R	R	R	S	R
88	S	S	S	S	S	S	R	R	R	R	S	R
89	S	S	S	S	S	S	R	R	R	R	S	R
90	S	S	S	S	S	S	R	R	R	R	S	R
91	S	S	S	S	S	S	R	R	R	R	S	R
92	S	S	S	S	S	S	R	R	R	R	S	R
93	S	S	S	S	S	S	R	R	R	R	S	R
94	S	S	S	S	S	S	R	R	R	R	S	R
95	R	S	S	S	S	S	R	R	S	R	S	R
96	R	S	S	S	S	S	R	R	S	R	S	R
97	S	S	S	S	S	S	R	R	R	R	S	R
98	H	S	S	S	S	S	R	R	H	R	S	R
99	R	S	S	S	S	S	R	R	S	R	S	R
100	H	S	S	S	S	S	R	R	H	R	S	R
101	S	S	S	R	S	S	S	S	S	S	S	S
102	S	S	S	R	S	S	S	S	S	S	S	S
103	S	S	S	R	S	S	S	S	S	S	S	S
104	S	S	R	R	S	S	S	S	H	R	S	S
105	S	S	S	R	R	S	S	S	S	S	S	S
106	S	S	S	R	R	S	S	S	S	S	S	S
107	S	H	S	R	R	S	H	H	S	S	S	S
108	S	H	S	R	R	S	H	H	S	S	S	S
109	H	S	S	R	S	S	S	R	S	H	S	S
110	R	S	S	R	S	S	S	R	S	R	S	S
111	S	S	S	R	R	S	R	S	S	S	S	S
112	S	S	S	S	R	S	S	S	S	S	S	H
113	S	S	S	S	R	S	S	S	S	S	S	R
114	S	S	S	R	R	S	S	S	S	S	S	S
115	S	H	S	R	R	S	R	H	S	S	S	R

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi23	Tm2a	Sw5	Cf9
116	S	H	S	R	R	S	R	H	S	S	S	R
117	H	S	S	H	S	S	S	R	H	R	S	R
118	S	S	R	R	S	S	H	R	R	R	S	R
119	H	S	H	H	S	S	R	H	S	R	S	S
120	S	S	H	S	S	S	S	H	S	H	S	S
121	S	S	S	S	R	S	S	S	S	S	S	S
122	S	S	S	R	S	S	S	R	S	R	S	S
123	R	S	S	R	S	S	S	R	S	R	H	S
124	S	S	S	R	S	S	S	S	S	R	S	S
125	S	S	S	R	S	S	H	S	S	S	S	S
126	S	H	H	R	H	S	R	S	S	H	S	H
127	S	H	S	H	H	S	H	S	S	S	S	H
128	S	H	S	H	H	S	H	S	S	S	S	R
129	S	S	H	R	H	S	R	H	H	R	S	H
130	S	S	H	R	H	S	R	H	H	R	H	H
131	S	S	H	R	S	S	R	S	H	H	S	S
132	S	S	H	R	S	S	R	S	H	H	S	S
133	S	S	S	R	H	S	H	R	H	R	H	R
134	S	S	S	R	R	S	S	R	R	R	S	R
135	H	S	R	S	H	S	S	R	H	R	S	S
136	H	S	H	S	H	S	S	S	H	R	S	S
137	S	S	H	R	S	S	S	S	S	R	S	H
138	S	S	R	R	S	S	S	H	H	R	S	H
139	S	S	R	R	S	S	R	R	S	R	R	R
140	S	S	S	R	S	S	S	R	S	R	H	R
141	S	S	S	R	H	S	R	R	H	R	R	R
142	S	S	S	R	S	S	H	R	H	R	H	R
143	H	S	H	H	S	H	R	R	H	R	S	R
144	R	S	H	H	S	S	R	R	S	R	S	S
145	S	S	S	R	S	S	H	R	S	R	S	R
146	S	S	H	H	H	S	S	H	R	R	S	S
147	S	S	R	S	S	R	R	R	S	R	S	S
148	S	S	R	S	S	R	R	R	S	R	S	S
149	S	S	R	S	S	R	R	R	S	R	S	S
150	S	S	R	S	S	R	R	R	S	R	S	S
151	S	S	R	S	S	R	R	R	S	R	S	S
152	S	S	R	S	S	R	R	R	S	R	S	S
153	S	S	R	S	S	R	R	R	S	R	S	S
154	S	S	R	S	S	R	R	R	S	R	S	S
155	S	S	R	S	S	R	R	R	S	R	S	S
156	S	S	R	S	S	R	R	R	S	R	S	S
157	S	S	R	S	S	R	R	R	S	R	S	S
158	S	S	R	S	S	R	R	R	S	R	S	S
159	S	S	R	S	S	R	R	R	S	R	S	S
160	S	S	R	S	S	R	R	R	S	R	S	S
161	S	S	R	S	S	R	R	R	S	R	S	S
162	S	S	R	S	S	R	R	R	S	R	S	S
163	S	S	R	S	S	R	R	R	S	R	S	S
164	R	S	S	S	S	S	R	R	R	H	S	R
165	R	S	S	S	S	S	R	R	R	H	S	H
166	R	S	S	S	S	S	R	R	R	H	S	H
167	R	S	S	S	S	S	R	R	R	H	S	R
168	R	S	S	S	S	S	R	R	R	R	S	S
169	R	S	S	S	S	S	R	R	R	S	S	H
170	R	S	S	S	S	S	R	R	R	S	S	S
171	R	S	S	S	S	S	R	R	R	H	S	S
172	R	S	S	S	S	S	R	R	R	H	S	S
173	R	S	S	S	S	S	R	R	R	H	S	S
174	R	S	S	S	S	S	R	R	R	H	S	H
175	R	S	S	S	S	S	R	R	R	H	S	H
176	R	S	S	S	S	S	R	R	R	S	S	S
177	R	S	S	S	S	S	R	S	R	R	S	H
178	R	S	S	S	S	S	R	S	R	R	S	H

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi23	Tm2a	Sw5	Cf9
179	R	S	S	S	S	S	R	S	R	H	S	H
180	R	S	S	S	S	S	R	S	R	H	S	R
181	H	S	R	S	S	R	R	R	H	R	S	R
182	H	S	R	S	S	R	R	R	H	R	S	R
183	H	S	R	S	S	R	R	R	H	R	S	R
184	H	S	R	S	S	R	R	R	R	R	S	R
185	H	S	R	S	S	R	R	R	H	R	S	R
186	H	S	R	S	S	R	R	R	H	R	S	R
187	S	S	H	S	S	R	R	R	S	H	S	R
188	S	S	H	S	S	R	R	R	S	H	S	R
189	S	R	R	R	R	S	R	S	S	R	S	R
190	H	R	R	R	H	S	S	S	H	R	S	R
191	S	S	R	S	R	R	R	R	S	R	S	R
192	S	R	H	R	S	R	H	S	S	H	S	S

표 38. 가나종묘 576점의 시료에 대하여, 병 관련 12개의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi-23	Tm2a	Sw5	Cf9
1	R	S	S	R	S	S	R	S	S	H	R	S
2	R	S	S	R	S	S	R	S	S	H	R	S
3	R	S	S	R	S	S	R	S	S	S	R	S
4	R	S	S	R	S	S	R	S	S	H	R	S
5	R	S	S	R	S	S	R	S	S	H	R	S
6	R	S	S	R	S	S	R	S	S	S	R	S
7	R	S	S	R	S	S	R	S	S	H	R	S
8	R	S	S	R	S	S	R	S	S	n/a	R	S
9	R	S	S	R	S	S	R	S	S	R	R	S
10	R	S	S	R	S	S	R	S	S	H	R	S
11	R	S	S	R	S	S	R	S	S	R	R	S
12	R	S	S	R	S	S	R	S	S	H	R	S
13	R	S	S	R	S	S	R	S	S	H	R	S
14	R	S	S	R	S	S	R	S	S	R	R	S
15	R	S	S	R	S	S	R	S	S	R	R	S
16	R	S	S	R	S	S	R	S	S	R	R	S
17	R	S	n/a	R	S	S	R	S	S	S	R	S
18	R	S	S	R	S	S	R	S	S	H	R	S
19	R	S	S	R	S	S	R	S	S	R	R	S
20	R	S	S	R	S	S	R	S	S	R	R	S
21	R	S	S	R	R	S	R	S	S	H	R	S
22	R	S	S	R	R	S	R	S	S	H	S	S
23	R	S	S	R	R	S	R	S	S	S	H	S
24	R	S	S	R	R	S	R	S	S	R	H	S
25	R	S	S	R	R	S	R	S	S	H	H	S
26	R	S	S	R	R	S	R	S	S	R	R	S
27	R	S	S	R	R	S	R	S	S	R	S	S
28	R	S	S	R	R	S	R	S	S	S	R	S
29	R	S	S	R	R	S	R	S	S	H	S	S
30	R	S	S	R	R	S	R	S	S	R	R	S
31	R	S	S	R	R	S	R	S	S	S	R	S
32	R	S	S	R	R	S	R	S	S	S	R	S
33	R	S	S	R	R	S	R	S	S	H	R	S
34	R	S	S	R	R	S	R	S	S	S	H	S
35	R	S	S	R	R	S	R	S	S	S	H	S
36	R	S	S	R	R	S	R	S	S	H	H	S
37	R	S	S	R	R	S	R	S	S	H	S	S
38	R	S	S	R	R	S	R	S	S	H	S	S
39	R	S	S	R	R	S	R	S	S	H	R	S
40	R	S	S	R	R	S	R	S	S	H	S	S
41	R	S	S	R	R	S	R	S	S	H	R	S
42	R	S	S	R	R	S	R	S	S	H	S	S
43	R	S	S	R	R	S	R	S	S	H	H	S
44	R	S	S	R	H	S	R	S	S	R	R	S

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi-23	Tm2a	Sw5	Cf9
289	S	S	S	R	R	S	S	H	S	R	S	S
290	S	S	S	R	R	S	S	H	S	R	S	S
291	S	S	S	R	R	S	S	R	S	R	S	S
292	S	S	S	R	R	S	S	R	S	R	S	S
293	S	S	S	R	R	S	S	R	S	R	S	S
294	S	S	S	R	R	S	S	R	S	R	S	S
295	S	S	S	R	R	S	S	R	S	R	S	S
296	S	S	S	R	R	S	S	R	S	R	S	S
297	S	S	S	R	R	S	S	H	S	R	S	S
298	H	S	S	R	R	S	S	R	S	S	S	S
299	H	S	S	R	R	S	S	R	S	S	S	S
300	H	S	S	R	R	S	S	R	S	S	S	S
301	H	S	S	R	R	S	S	R	S	S	S	S
302	R	S	S	R	R	S	S	R	S	S	S	S
303	R	S	S	R	R	S	S	R	S	S	S	S
304	H	S	S	R	R	S	S	n/a	S	S	S	S
305	H	S	S	R	R	S	S	n/a	n/a	S	S	n/a
306	H	S	S	R	R	S	S	R	S	S	S	S
307	S	S	S	R	R	S	S	R	S	S	S	S
308	H	S	S	R	R	S	S	R	S	S	S	S
309	S	S	S	R	R	S	S	R	S	S	S	S
310	R	S	S	R	R	S	S	R	S	S	S	S
311	H	S	S	R	R	S	S	R	S	S	S	S
312	R	S	S	R	R	S	S	R	S	S	S	S
313	H	S	S	R	R	S	S	R	S	S	S	S
314	H	S	S	R	R	S	S	R	S	S	S	S
315	R	S	S	R	R	S	S	R	S	S	S	S
316	R	S	S	R	R	S	S	R	S	S	S	S
317	H	S	S	R	R	S	S	R	S	S	S	S
318	S	S	S	R	R	S	S	H	S	S	S	S
319	S	S	S	R	R	S	S	H	S	S	S	S
320	S	S	S	R	R	S	S	n/a	S	S	S	S
321	S	S	S	R	R	S	S	H	S	S	S	S
322	S	S	S	R	R	S	S	H	S	S	S	S
323	S	S	S	R	R	S	S	S	S	S	S	S
324	S	S	S	R	R	S	S	H	S	S	S	S
325	S	S	S	R	R	S	S	n/a	n/a	S	S	n/a
326	S	S	S	R	R	S	S	R	S	S	S	S
327	S	S	S	R	R	S	S	R	S	S	S	S
328	S	S	S	R	R	S	S	R	S	S	S	S
329	S	S	S	R	R	S	S	S	S	S	S	S
330	S	S	S	R	R	S	S	H	S	S	S	S
331	S	S	S	R	R	S	S	H	S	S	S	S
332	S	S	S	R	R	S	S	R	S	S	S	S

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi-23	Tm2a	Sw5	Cf9
45	R	S	S	R	R	S	R	S	S	S	S	S
46	R	S	S	R	R	S	R	S	S	H	H	S
47	R	S	S	R	R	S	R	S	S	H	R	S
48	R	S	S	R	R	S	R	S	S	H	R	S
49	R	S	S	R	R	S	R	S	S	S	S	S
50	R	S	S	R	R	S	R	S	S	H	R	S
51	R	S	S	R	R	S	R	S	S	H	S	S
52	R	S	S	R	R	S	R	S	S	R	H	S
53	R	S	S	R	R	S	R	S	S	H	R	S
54	R	S	S	R	R	S	R	S	S	S	H	S
55	R	S	S	R	R	S	R	S	S	H	H	S
56	R	S	S	R	R	S	R	S	S	H	R	S
57	R	S	S	R	R	S	R	S	S	S	H	S
58	R	S	S	R	R	S	R	S	S	R	H	S
59	R	S	S	R	R	S	R	S	S	H	R	S
60	R	S	S	R	R	S	R	S	S	R	S	S
61	S	H	S	S	H	S	S	S	S	R	S	S
62	S	H	S	S	R	S	S	S	S	R	S	S
63	S	H	S	S	H	S	S	S	S	R	S	S
64	S	H	S	S	H	S	S	S	S	R	S	S
65	S	H	S	S	S	S	S	S	S	R	S	S
66	S	R	S	S	R	S	S	S	S	R	S	S
67	S	S	S	S	S	S	S	S	S	R	S	S
68	S	H	S	S	R	S	S	S	S	R	S	S
69	S	H	S	S	R	S	S	S	S	R	S	S
70	S	H	S	S	H	S	S	S	S	R	S	S
71	S	H	S	S	S	S	S	S	S	R	S	S
72	S	R	S	S	R	S	S	S	S	R	S	S
73	S	H	S	S	S	S	S	S	S	R	S	S
74	S	R	S	S	R	S	S	S	S	R	S	S
75	S	H	S	S	R	S	S	S	S	R	S	S
76	S	R	S	S	R	S	S	S	S	R	S	S
77	S	S	S	S	R	S	S	S	S	R	S	S
78	S	S	S	S	R	S	S	S	S	R	S	S
79	S	R	S	S	H	S	S	S	S	R	S	S
80	S	S	S	S	H	S	S	S	S	R	S	S
81	R	S	S	R	R	S	S	S	S	S	H	S
82	R	S	S	R	R	S	R	S	S	H	R	S
83	R	S	S	R	S	S	R	S	S	R	R	S
84	R	S	S	R	S	S	R	S	S	H	H	S
85	R	S	S	R	S	S	H	S	S	H	R	S
86	R	S	S	R	R	S	R	S	S	H	R	S
87	R	S	S	R	H	S	S	S	S	H	H	S
88	R	S	S	R	H	S	S	S	S	H	H	S
89	R	S	S	R	S	S	R	S	S	S	H	S
90	R	S	S	R	H	S	H	S	S	H	H	S
91	R	S	S	R	H	S	H	S	S	H	S	S
92	R	S	S	R	H	n/a	R	S	S	R	H	S
93	R	S	S	R	R	S	H	S	S	H	R	S
94	R	S	S	R	S	S	H	S	S	H	H	S
95	R	S	S	R	H	S	R	S	S	S	H	S
96	R	S	S	R	S	S	S	S	S	R	H	S
97	R	S	S	R	R	S	R	S	S	H	S	S
98	R	S	S	R	S	S	H	S	S	H	H	S
99	R	S	S	R	R	S	R	S	S	R	H	S
100	R	S	S	R	R	S	R	S	S	H	S	S
101	S	R	S	H	R	S	S	S	S	R	S	S
102	S	R	H	H	R	S	S	S	S	R	S	S
103	S	R	H	R	R	S	S	S	S	R	S	S
104	S	R	R	S	R	S	S	S	S	R	n/a	S
105	S	R	H	R	R	S	S	S	S	R	S	S
106	S	R	H	S	R	S	S	S	S	R	S	S

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi-23	Tm2a	Sw5	Cf9
333	S	S	S	R	R	S	S	H	S	S	S	S
334	S	n/a	S	R	R	S	S	S	S	S	S	S
335	S	S	S	R	R	S	S	S	S	S	S	S
336	S	S	S	R	R	S	S	H	S	S	S	S
337	S	S	S	R	R	S	S	H	S	S	S	S
338	H	S	S	R	S	S	S	S	S	S	S	S
339	H	S	S	R	S	S	S	H	S	R	S	S
340	R	S	S	R	S	S	S	S	S	R	S	S
341	H	S	S	R	S	S	S	H	S	H	S	S
342	H	S	S	R	S	S	S	R	S	R	S	S
343	S	S	S	R	S	S	S	H	S	R	S	S
344	S	S	S	R	S	S	S	R	S	S	S	n/a
345	H	S	S	R	S	n/a	S	S	S	R	S	S
346	H	S	S	R	S	S	S	H	S	H	S	S
347	H	S	S	R	S	S	S	H	S	H	S	S
348	H	S	S	R	S	S	S	H	S	S	S	S
349	H	S	S	R	S	S	S	R	S	S	S	S
350	S	S	S	R	S	S	S	H	S	S	S	S
351	H	S	S	R	S	S	S	R	S	S	S	S
352	H	S	S	R	S	S	S	R	S	S	S	S
353	H	S	S	R	S	S	S	H	S	H	S	S
354	H	S	S	R	S	S	S	H	S	H	S	S
355	S	S	S	R	S	S	S	H	S	H	S	S
356	S	S	S	R	S	S	S	R	S	H	S	S
357	S	S	S	R	S	S	S	H	S	H	S	S
358	R	S	S	R	S	S	S	R	S	S	S	S
359	R	S	S	R	S	S	S	R	S	S	S	S
360	R	S	S	R	S	S	S	R	S	S	S	S
361	R	S	S	R	S	S	S	R	S	S	S	S
362	R	S	S	R	S	S	S	R	S	S	S	S
363	R	S	S	R	S	S	S	R	S	S	S	S
364	R	S	S	R	S	S	S	R	S	S	S	S
365	R	S	S	R	S	S	S	R	S	S	S	S
366	R	S	S	R	S	S	S	R	S	S	S	S
367	R	S	S	R	S	S	S	R	S	S	S	S
368	R	S	S	R	S	S	S	R	S	S	S	S
369	R	S	S	R	S	S	S	R	S	S	S	S
370	R	S	S	R	S	S	S	R	S	S	S	S
371	R	S	S	R	S	S	S	R	S	S	S	S
372	R	S	S	R	S	S	S	R	S	S	S	S
373	H	S	S	R	S	S	S	n/a	n/a	S	S	S
374	R	S	S	R	S	S	S	R	S	S	S	S
375	R	S	S	R	S	S	S	R	S	S	S	S
376	R	S	S	R	S	S	S	R	n/a	S	S	S
377	R	S	S	R	S	S	S	R	S	S	S	S
378	R	S	S	R	S	S	S	R	S	S	S	S
379	S	S	H	H	S	S	S	n/a	R	R	S	H
380	S	S	H	S	S	S	S	S	R	R	S	H
381	S	S	H	H	S	S	S	S	R	R	S	H
382	S	S	H	H	S	S	S	S	R	R	S	H
383	S	S	R	H	S	S	S	S	R	R	S	R
384	S	S	H	H	S	S	S	S	R	R	S	R
385	S	S	H	R	S	S	S	S	R	R	S	R
386	S	S	H	S	S	S	S	S	R	R	S	R
387	S	S	H	S	S	S	S	S	R	R	S	R
388	S	S	H	H	S	S	S	S	R	R	S	H
389	S	S	H	S	S	S	S	S	R	R	S	R
390	S	S	H	H	S	S	S	S	R	R	S	H
391	S	S	H	R	S	S	S	S	R	R	S	H
392	S	S	H	H	S	S	S	S	R	R	S	S
393	S	S	H	S	S	S	S	S	R	R	S	H
394	S	S	H	R	S	S	S	S	R	R	S	S

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi-23	Tm2a	Sw5	Cf9
107	S	R	H	S	R	S	S	S	S	R	S	S
108	S	R	S	R	R	S	S	S	S	R	S	S
109	S	R	H	S	R	S	S	S	S	R	S	S
110	S	R	H	H	R	S	S	S	S	R	S	S
111	S	R	H	H	R	S	S	S	S	R	S	S
112	S	R	S	R	R	S	S	S	S	R	S	S
113	S	R	H	H	R	S	S	S	S	R	S	S
114	S	R	R	H	R	S	S	S	S	R	S	S
115	S	R	R	R	R	S	S	S	S	R	S	S
116	S	R	H	R	R	S	S	S	S	R	S	S
117	S	R	H	R	R	S	S	S	S	R	S	S
118	S	R	S	R	R	S	S	S	S	R	S	S
119	S	R	H	R	R	S	S	S	S	R	S	S
120	S	H	H	S	R	S	S	S	S	R	S	S
121	S	S	S	R	H	S	S	S	S	R	S	S
122	S	S	H	H	H	S	S	S	S	R	S	S
123	S	R	H	H	H	S	S	S	S	R	S	S
124	S	H	H	R	S	S	S	S	S	R	S	S
125	S	H	H	H	S	S	S	S	S	R	S	S
126	S	S	S	H	R	S	S	S	S	R	S	S
127	S	R	S	R	S	S	S	S	S	R	S	S
128	S	S	H	H	R	S	S	S	S	R	S	S
129	S	H	S	H	S	S	S	S	S	R	S	S
130	S	H	H	S	R	S	S	S	S	R	S	S
131	S	S	S	R	H	S	S	S	S	R	S	S
132	S	H	H	H	H	S	S	S	S	R	S	S
133	S	H	H	R	S	S	S	S	S	R	S	S
134	S	S	S	H	H	S	S	S	S	R	S	S
135	S	S	R	R	H	S	S	S	S	R	S	S
136	S	H	S	H	H	S	S	S	S	R	S	S
137	S	H	R	H	H	S	S	S	S	R	S	S
138	S	H	S	R	S	S	S	S	S	R	S	S
139	S	S	H	H	H	S	S	S	S	R	S	S
140	S	S	S	R	R	S	S	S	S	S	S	S
141	H	S	S	R	H	S	S	S	S	H	S	S
142	H	S	S	R	H	S	S	S	S	H	S	S
143	H	S	S	R	R	S	S	S	S	S	S	S
144	H	S	S	R	H	S	S	S	S	R	S	S
145	H	S	S	R	H	S	S	S	S	R	S	S
146	R	S	S	R	S	S	S	S	S	S	S	S
147	R	S	S	R	S	S	S	S	S	R	S	S
148	H	S	S	R	H	S	S	S	S	S	S	S
149	H	S	S	R	H	S	S	S	S	H	S	S
150	H	S	S	R	R	S	S	S	S	H	S	S
151	H	S	S	R	H	S	S	S	S	S	S	S
152	H	S	S	R	H	S	S	S	S	H	S	S
153	H	S	S	R	H	S	S	S	S	H	S	S
154	H	S	S	R	H	S	S	S	S	H	S	S
155	R	S	S	R	S	S	S	S	S	S	S	S
156	S	S	S	R	H	S	S	S	S	S	S	S
157	S	S	S	R	R	S	S	S	S	H	S	S
158	S	S	S	R	R	S	S	S	S	H	S	S
159	S	S	S	R	H	S	S	S	S	S	S	S
160	H	S	S	R	H	S	S	S	S	S	S	S
161	R	S	S	R	S	S	S	S	S	H	S	S
162	R	S	S	R	S	S	S	S	S	R	S	S
163	H	S	S	R	S	S	S	S	S	H	S	S
164	R	S	S	R	S	S	S	S	S	H	S	S
165	H	S	S	R	S	S	S	S	S	R	S	S
166	H	S	S	R	H	S	S	S	S	H	S	S
167	S	S	S	R	R	S	S	S	S	H	S	n/a
168	S	S	S	R	R	S	S	S	S	S	S	S

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi-23	Tm2a	Sw5	Cf9
395	S	S	S	H	S	S	S	S	R	R	S	H
396	S	S	H	H	S	S	S	S	R	R	S	R
397	S	S	S	S	S	S	S	S	R	R	S	H
398	S	S	R	S	S	S	S	S	R	R	S	H
399	R	S	S	R	S	S	S	R	S	R	S	R
400	R	S	S	R	S	S	S	R	S	R	S	R
401	R	S	S	R	S	S	S	R	S	R	S	R
402	R	S	S	R	S	S	S	R	S	R	S	R
403	R	S	S	R	S	S	S	R	S	R	S	R
404	R	S	S	R	S	S	S	R	S	R	S	R
405	R	S	S	R	S	S	S	R	S	R	S	R
406	R	S	S	R	S	S	S	R	S	R	S	R
407	R	S	S	R	S	S	S	R	S	R	S	R
408	R	S	S	R	S	S	S	R	S	R	S	R
409	R	S	S	R	S	S	S	R	S	R	S	R
410	R	S	S	R	S	S	S	R	S	R	S	R
411	R	S	S	R	S	S	S	R	S	R	S	R
412	R	S	S	R	S	S	S	R	S	R	S	R
413	R	S	S	R	S	S	S	R	S	R	S	R
414	R	S	S	R	S	S	S	R	S	R	S	R
415	R	S	S	R	S	S	S	R	S	R	S	R
416	R	S	S	R	S	S	S	R	S	R	S	R
417	R	S	S	R	S	S	S	R	S	R	S	R
418	R	S	S	R	S	S	S	R	S	R	S	R
419	S	S	S	R	R	S	S	R	S	S	S	S
420	S	S	S	R	R	S	S	R	S	S	S	S
421	S	S	S	R	R	S	S	R	S	S	S	S
422	S	S	S	R	R	S	S	R	S	S	S	S
423	S	S	S	R	R	S	S	R	S	S	S	S
424	S	S	S	R	R	S	S	R	S	S	S	S
425	S	S	S	R	R	S	S	R	S	S	S	S
426	S	S	S	R	R	S	S	R	S	S	S	S
427	S	S	S	R	R	S	S	R	S	S	S	S
428	S	S	S	R	R	S	S	R	S	S	S	S
429	S	S	S	R	R	S	S	R	S	S	S	S
430	S	S	S	R	R	S	S	R	S	S	S	S
431	S	S	S	R	R	S	S	R	S	S	S	S
432	S	S	S	R	R	S	S	R	S	S	S	S
433	S	S	S	R	R	S	S	R	S	S	S	S
434	S	S	S	R	R	S	S	R	S	S	S	S
435	S	S	S	R	R	S	S	R	S	S	S	S
436	S	S	S	R	R	S	S	R	S	S	S	S
437	S	S	S	R	R	S	S	R	S	S	S	S
438	S	S	S	R	R	S	S	R	S	S	S	S
439	S	S	S	R	R	S	S	R	S	S	S	S
440	S	S	S	R	R	S	S	R	S	S	S	S
441	S	S	S	R	R	S	S	R	S	S	S	S
442	S	S	S	R	R	S	S	R	S	S	S	S
443	S	S	S	R	R	S	S	R	S	S	S	S
444	S	S	S	R	R	S	S	R	S	S	S	S
445	S	S	S	R	R	S	S	R	S	S	S	S
446	S	S	S	R	R	S	S	R	S	S	S	S
447	R	S	S	R	S	S	n/a	S	R	S	S	S
448	R	S	S	R	S	S	R	S	R	S	S	S
449	R	S	S	R	S	S	R	S	R	S	S	S
450	R	S	S	R	S	S	R	S	R	S	S	S
451	R	S	S	R	S	S	R	S	R	S	S	S
452	R	S	S	R	S	S	R	S	R	S	S	S
453	R	S	S	R	S	S	R	S	R	S	S	S
454	R	S	S	R	S	S	R	S	R	S	S	S
455	R	S	S	R	S	S	R	S	R	S	S	S
456	R	S	S	R	S	S	R	S	R	S	S	S

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi-23	Tm2a	Sw5	Cf9
169	H	S	S	R	H	S	S	S	S	S	S	S
170	H	S	S	R	H	S	S	S	S	S	S	S
171	H	S	S	R	H	S	S	S	S	H	S	S
172	H	S	S	R	H	S	S	S	S	S	S	S
173	H	S	S	R	H	S	S	S	S	S	S	S
174	H	S	S	R	H	S	S	S	S	R	S	S
175	S	S	S	R	R	S	S	S	S	S	S	S
176	H	S	S	R	S	S	S	S	S	H	S	S
177	H	S	S	R	H	S	S	S	S	H	S	S
178	S	S	S	R	R	S	S	S	S	H	S	S
179	S	S	S	R	R	S	S	S	S	H	S	S
180	R	S	S	R	S	S	S	S	S	H	S	S
181	S	S	S	R	S	S	S	S	S	S	S	S
182	H	S	S	R	S	S	S	S	S	S	S	S
183	R	S	S	R	S	S	S	S	S	H	S	S
184	H	S	S	R	S	S	S	S	S	H	S	S
185	H	S	S	R	S	S	S	S	S	H	S	S
186	H	S	S	R	S	S	S	S	S	H	S	S
187	S	S	S	R	S	S	S	S	S	H	S	S
188	H	S	S	R	S	S	S	S	S	H	S	S
189	R	S	S	R	S	S	S	S	S	H	S	S
190	H	S	S	R	S	S	S	S	S	R	S	S
191	H	S	S	R	S	S	S	S	S	H	S	S
192	R	S	S	R	S	S	S	S	S	H	S	S
193	R	S	S	R	S	S	S	S	S	S	S	S
194	S	S	S	R	S	S	S	S	S	H	S	S
195	R	S	S	R	S	S	S	S	S	H	S	S
196	H	S	S	R	S	S	S	S	S	S	S	S
197	R	S	S	R	S	S	S	S	S	H	S	S
198	S	S	S	R	S	S	S	S	S	S	S	S
199	S	S	S	R	H	S	S	S	S	S	S	S
200	S	S	S	R	H	S	S	S	S	S	S	S
201	S	S	S	R	H	S	S	S	S	S	S	S
202	S	S	S	R	S	S	S	S	S	S	S	S
203	S	S	S	R	H	S	S	S	S	S	S	S
204	S	S	S	R	R	S	S	S	S	S	S	S
205	S	S	S	R	H	S	S	S	S	S	S	S
206	S	S	S	R	S	S	S	S	S	S	S	S
207	S	S	S	R	S	S	S	S	S	S	S	S
208	S	S	S	R	H	S	S	S	S	S	S	S
209	S	S	S	R	H	S	S	S	S	S	S	S
210	S	S	S	R	S	S	S	S	S	S	S	S
211	S	S	S	R	R	S	S	S	S	S	S	S
212	S	S	S	R	H	S	S	S	S	S	S	S
213	S	n/a	S	R	S	S	S	S	S	S	S	S
214	S	S	S	R	R	S	S	S	S	S	S	S
215	S	S	S	R	H	S	S	S	S	S	S	S
216	S	S	S	R	S	S	S	S	S	S	S	S
217	S	S	S	R	H	S	S	S	S	S	S	S
218	S	S	S	R	H	S	S	S	S	S	S	S
219	H	S	S	R	H	S	S	R	S	R	S	S
220	R	S	S	R	S	S	S	H	S	R	S	S
221	S	S	S	R	H	S	S	S	S	R	S	S
222	H	S	S	R	S	S	S	S	S	R	S	n/a
223	R	S	S	R	S	S	S	H	S	R	S	S
224	H	S	S	R	H	S	S	H	S	R	S	S
225	H	S	S	R	S	S	S	H	S	R	S	S
226	R	S	S	R	H	S	S	H	S	R	S	S
227	H	S	S	R	H	S	S	R	S	R	S	S
228	H	S	S	R	H	S	S	H	S	R	S	S
229	H	S	S	R	H	S	S	S	S	R	S	S
230	R	S	S	R	S	S	S	R	S	R	S	S

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi-23	Tm2a	Sw5	Cf9
457	S	S	S	R	H	S	R	S	S	R	S	S
458	S	S	S	R	R	S	R	S	S	H	S	S
459	S	S	S	R	S	S	R	S	S	S	S	S
460	S	S	S	R	H	S	R	S	S	H	S	S
461	S	S	S	R	H	S	R	S	S	R	S	S
462	S	S	S	R	S	S	R	S	S	R	S	S
463	S	S	S	R	H	S	R	S	S	R	S	S
464	S	S	S	R	R	S	R	S	S	R	S	S
465	S	S	S	R	H	S	R	S	S	R	S	S
466	S	S	S	R	H	S	R	S	S	R	S	S
467	S	R	S	S	R	S	S	S	S	S	S	H
468	S	R	S	S	R	S	S	S	S	S	S	R
469	S	R	S	S	R	S	S	S	S	S	S	R
470	S	R	S	S	R	S	S	S	S	S	S	H
471	S	R	S	S	R	S	S	S	S	S	S	S
472	S	R	S	S	R	S	S	S	S	S	S	R
473	S	R	S	S	R	S	S	S	S	S	S	S
474	S	H	S	R	R	S	R	H	S	S	S	R
475	S	H	S	R	R	S	R	H	S	S	S	R
476	S	H	S	R	R	S	R	H	S	S	S	R
477	S	S	S	R	R	S	R	R	S	S	S	R
478	S	R	S	R	R	S	R	S	S	S	S	R
479	S	H	S	R	R	S	R	H	S	S	S	R
480	S	S	S	R	R	S	R	R	S	S	S	R
481	S	H	S	R	R	S	R	H	S	S	S	R
482	S	R	S	R	R	S	R	S	S	S	S	R
483	S	H	S	R	R	S	R	H	S	S	S	R
484	S	H	S	R	R	S	R	H	S	S	S	R
485	S	H	S	R	R	S	R	H	S	S	S	R
486	S	R	S	R	R	S	R	S	S	S	S	R
487	S	H	S	R	R	S	R	S	S	S	S	R
488	S	R	S	R	R	S	R	S	S	S	S	R
489	S	S	S	S	R	S	S	S	S	S	S	H
490	S	S	S	S	R	S	S	S	S	S	S	R
491	S	S	S	S	R	S	S	S	S	S	S	H
492	S	S	S	S	R	S	S	S	S	S	S	H
493	S	S	S	S	R	S	S	S	S	S	S	H
494	S	S	S	S	R	S	S	S	S	S	S	R
495	S	S	S	S	R	S	S	S	S	S	S	R
496	S	S	S	S	R	S	S	S	S	S	S	R
497	S	S	S	S	R	S	S	S	S	S	S	R
498	S	S	S	S	R	S	S	S	S	S	S	R
499	R	S	R	R	S	S	S	R	S	R	S	R
500	R	S	H	H	S	S	S	R	S	H	S	n/a
501	R	S	R	H	S	S	S	R	S	R	S	R
502	R	S	H	S	S	S	S	R	S	H	S	R
503	R	S	R	R	S	S	S	R	S	R	S	R
504	R	S	H	R	S	S	S	R	S	H	S	R
505	R	S	H	H	S	S	S	R	S	H	S	R
506	R	S	S	S	S	S	S	R	S	S	S	R
507	R	S	S	H	S	S	S	R	S	S	S	R
508	R	S	H	H	S	S	S	R	S	H	S	R
509	R	S	H	R	S	S	S	R	S	H	S	R
510	R	S	H	H	S	S	S	R	S	H	S	R
511	S	S	S	S	S	S	R	R	S	S	R	n/a
512	S	S	S	S	S	S	R	R	S	S	R	S
513	R	S	S	S	S	S	R	R	S	S	R	S
514	S	S	S	S	S	S	R	R	S	S	R	S
515	H	S	S	S	S	S	R	R	S	S	R	S
516	H	S	S	S	n/a	S	R	R	S	S	R	S
517	H	S	S	S	n/a	S	R	R	S	S	R	S
518	S	S	S	S	S	S	R	R	S	S	R	S

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi-23	Tm2a	Sw5	Cf9
231	R	S	S	R	S	S	S	H	S	R	S	S
232	R	S	S	R	R	S	S	S	S	R	S	S
233	H	S	S	R	S	S	S	S	S	R	S	S
234	H	S	S	R	R	S	S	H	S	R	S	S
235	S	S	S	R	H	S	S	S	S	R	S	S
236	R	S	S	R	H	S	S	H	S	R	S	S
237	H	S	S	R	H	S	S	H	S	R	S	S
238	R	S	S	R	S	S	S	H	S	R	S	S
239	S	S	S	R	R	S	S	H	S	H	S	S
240	S	S	S	R	R	S	S	H	S	R	S	S
241	S	S	S	R	R	S	S	S	S	R	S	S
242	S	S	S	R	R	S	S	H	S	S	S	S
243	S	S	S	R	R	S	S	H	S	R	S	S
244	S	S	S	R	R	S	S	S	S	R	S	S
245	S	S	S	R	R	S	S	S	S	S	S	S
246	S	S	S	R	R	S	S	S	S	S	S	S
247	S	S	S	R	R	S	S	R	S	S	S	S
248	S	S	S	R	R	S	S	n/a	S	H	S	S
249	S	S	S	R	R	S	S	H	S	H	S	S
250	S	S	S	R	R	S	S	H	S	R	S	S
251	S	S	S	R	R	S	S	H	S	H	S	S
252	S	S	S	R	R	S	S	S	S	H	S	S
253	S	S	S	R	R	S	S	S	S	S	S	S
254	S	S	S	R	R	S	S	R	S	R	S	S
255	S	S	S	R	R	S	S	R	S	S	S	S
256	S	S	S	R	R	S	S	R	S	H	S	S
257	S	S	S	R	R	S	S	H	S	S	S	S
258	S	S	S	R	R	S	S	H	S	H	S	S
259	R	S	S	R	S	S	S	S	S	R	S	S
260	R	S	S	R	S	S	S	S	S	R	S	S
261	R	S	S	R	S	S	S	S	S	R	S	S
262	H	S	S	R	H	S	S	S	S	R	S	S
263	R	S	S	R	S	S	S	S	S	R	S	S
264	H	S	S	R	S	S	S	S	S	R	S	S
265	H	S	S	R	H	S	S	S	S	R	S	S
266	H	S	S	R	H	S	S	S	S	R	S	S
267	R	S	S	R	S	S	S	S	S	R	S	S
268	R	S	S	R	S	S	S	S	S	R	S	S
269	H	S	S	R	H	S	S	S	S	R	S	S
270	R	S	S	R	S	S	S	S	S	R	S	S
271	H	S	S	R	H	S	S	S	S	R	S	S
272	H	S	S	R	H	S	S	S	S	R	S	S
273	H	S	S	R	R	S	S	S	S	R	S	S
274	H	S	S	R	R	S	S	S	S	R	S	S
275	H	S	S	R	R	S	S	S	S	R	S	S
276	R	S	S	R	H	S	S	S	S	R	S	S
277	H	S	S	R	R	S	S	S	S	R	S	S
278	H	S	S	R	H	S	S	S	S	R	S	S
279	S	S	S	R	R	S	S	R	S	R	S	S
280	S	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
281	S	S	S	R	R	S	S	R	S	R	S	S
282	S	n/a	n/a	n/a	R	S	S	n/a	n/a	R	S	n/a
283	S	S	S	R	R	S	S	R	S	R	S	S
284	S	S	S	R	R	S	S	R	S	R	S	S
285	S	S	S	R	R	S	S	R	S	R	S	S
286	S	S	S	R	R	S	S	R	S	R	S	S
287	S	S	S	R	R	S	S	n/a	S	R	S	S
288	S	S	S	R	R	S	S	H	S	R	S	S

No.	Ty1	Ty2	J3	Ph3	Bw6	Bw12	Ve2	I2	Mi-23	Tm2a	Sw5	Cf9
519	S	S	S	S	S	S	R	R	S	S	R	S
520	R	S	S	S	S	S	n/a	R	S	S	R	S
521	S	S	S	S	S	S	R	R	S	H	S	S
522	S	S	S	S	S	S	R	R	S	H	S	S
523	S	S	S	S	S	S	R	R	S	H	S	S
524	S	S	S	S	S	S	R	R	S	S	S	S
525	S	S	S	S	S	S	R	R	S	S	S	S
526	S	S	S	S	S	S	R	R	S	H	S	S
527	S	S	S	S	S	S	R	R	S	H	S	S
528	S	S	S	S	S	S	n/a	R	S	S	S	S
529	S	S	S	S	S	S	R	R	S	S	S	S
530	S	S	S	S	S	S	R	R	S	R	S	S
531	R	S	R	S	S	S	S	R	S	R	S	R
532	R	S	R	S	S	S	S	R	S	R	S	R
533	R	S	R	S	S	S	S	R	S	R	S	R
534	R	S	R	S	S	S	S	R	S	R	S	R
535	R	S	R	S	S	S	S	R	S	R	S	R
536	R	S	R	S	S	S	S	R	S	R	S	R
537	R	S	R	S	S	S	S	R	S	R	S	R
538	R	S	R	S	S	S	S	R	S	R	S	R
539	R	S	R	S	S	S	S	R	S	R	S	R
540	R	S	R	S	S	S	S	R	S	R	S	R
541	H	S	S	S	S	S	R	R	S	S	R	S
542	S	S	S	S	S	S	R	R	S	S	R	S
543	H	S	S	S	S	S	R	R	S	S	R	S
544	S	S	S	S	S	S	R	R	S	S	R	S
545	S	S	S	S	S	S	R	R	S	S	R	S
546	S	S	S	S	S	S	R	R	S	S	R	S
547	S	H	S	R	R	S	S	H	S	S	S	S
548	S	H	S	R	R	S	S	H	S	S	S	S
549	S	H	S	R	R	S	H	H	S	S	S	S
550	S	S	S	R	R	S	H	R	S	S	S	S
551	S	H	S	R	R	S	H	H	S	S	S	S
552	S	H	S	R	R	S	H	H	S	S	S	S
553	S	H	S	R	R	S	R	H	S	S	S	S
554	R	S	S	S	S	S	R	S	R	R	S	R
555	R	S	S	S	S	S	R	S	R	R	S	R
556	R	S	S	S	S	S	R	S	R	R	S	H
557	R	S	S	S	S	S	R	S	R	R	S	R
558	R	S	S	n/a	S	S	R	S	R	R	S	R
559	R	S	S	S	S	S	R	S	R	R	S	H
560	R	S	S	S	S	S	R	S	R	R	S	R
561	R	S	S	S	S	S	R	S	R	R	S	S
562	R	S	S	S	S	S	R	S	R	R	S	R
563	R	S	S	S	S	S	R	S	R	R	S	H
564	R	S	S	S	S	S	R	S	R	R	S	S
565	R	S	S	S	S	S	R	S	R	R	S	H
566	S	S	R	n/a	S	R	R	R	S	R	S	S
567	n/a	S	S	S	S	S	R	S	R	R	S	H
568	R	S	S	S	S	S	R	S	R	R	S	H
569	H	S	R	S	S	R	R	R	H	R	S	n/a
570	R	S	R	n/a	S	R	R	R	R	R	S	R
571	S	S	R	S	S	R	R	R	S	R	S	R
572	H	S	R	S	S	R	R	R	H	R	S	R
573	R	S	R	S	S	R	R	R	R	R	S	R
574	H	S	R	S	S	R	R	R	H	R	S	R
575	H	S	R	S	S	R	R	R	H	R	S	R
576	H	S	R	S	S	R	R	R	H	R	S	R

③ 현대종묘

현대종묘로부터 총 96점의 시료를 받아 1번의 서비스를 진행하였다. 96점의 시료에 대하여, 계통의 순도 검정으로 96종의 마커로 서비스를 진행하였으며, 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 39).

표 39. 현대종묘 96점의 시료에 대하여, 계통 고정도 관련 96개의 마커를 이용한 서비스 결과

No.	Sample name	20T-001	20T-002	20T-003	20T-004	20T-005	20T-006	20T-007	20T-008	20T-009	20T-010	20T-011	20T-012	20T-013	20T-014	20T-015	20T-016	20T-017	20T-018	20T-019	20T-020	20T-021	20T-022	20T-023	20T-024
		Chr. 1.1	Chr. 1.2	Chr. 1.3	Chr. 1.4	Chr. 1.5	Chr. 2.1	Chr. 2.2	Chr. 2.3	Chr. 2.4	Chr. 2.5	Chr. 3.1	Chr. 3.2	Chr. 3.3	Chr. 3.4	Chr. 3.5	Chr. 4.1	Chr. 4.2	Chr. 4.3	Chr. 4.4	Chr. 4.5	Chr. 5.1	Chr. 5.2	Chr. 5.3	Chr. 6.1
1	A	XX	YY	YY	XX	XX	XX	XX	YY	YY	YY	YY	XX	YY	YY	XX	YY	XX	YY	XX	YY	YY	XX	YY	YY
2	A	XX	YY	YY	XX	XX	XX	XX	YY	YY	YY	YY	XX	YY	YY	XX	YY	XX	YY	XX	YY	YY	XX	YY	YY
3	A	XX	YY	YY	XX	XX	XX	XX	YY	YY	YY	YY	XX	YY	YY	XX	YY	XX	YY	XX	YY	YY	XX	YY	YY
4	A	XX	YY	YY	XX	XX	XX	XX	YY	YY	YY	YY	XX	YY	YY	XX	YY	XX	YY	XX	YY	YY	XX	YY	YY
5	A	XX	YY	YY	XX	XX	XX	XX	YY	YY	YY	YY	XX	YY	YY	XX	YY	XX	YY	XX	YY	YY	XX	YY	YY
6	A	XX	YY	YY	XX	XX	XX	XX	YY	YY	YY	YY	XX	YY	YY	XX	YY	XX	YY	XX	YY	YY	XX	YY	YY
7	A1	XX	YY	YY	XX	XX	XX	XX	YY	YY	YY	YY	XX	YY	YY	XX	YY	XX	YY	XX	YY	YY	XX	YY	YY
8	A1	XX	YY	YY	XX	XX	XX	XX	YY	YY	YY	YY	XX	YY	YY	XX	YY	XX	YY	XX	YY	YY	XX	YY	YY
9	A1	XX	YY	YY	XX	XX	XX	XX	YY	YY	YY	YY	XX	YY	YY	XX	YY	XX	YY	XX	YY	YY	XX	YY	YY
10	A1	XX	YY	YY	n/a	n/a	n/a	n/a	YY	YY	YY	YY	n/a	n/a	n/a	n/a	YY	XX	YY	XX	n/a	n/a	n/a	YY	YY
11	A1	XX	YY	YY	XX	XX	XX	XX	YY	YY	YY	YY	XX	YY	YY	XX	YY	XX	YY	XY	YY	YY	XX	YY	YY
12	A1	XX	YY	YY	XX	XX	XX	XX	YY	YY	YY	YY	XX	YY	YY	XX	YY	XX	YY	XY	YY	YY	XX	YY	YY
13	A1	XX	YY	YY	XX	XX	XX	XX	YY	YY	YY	YY	XX	YY	YY	XX	YY	XX	YY	XY	YY	YY	XX	YY	YY
14	A1	XX	YY	YY	XX	XX	XX	XX	YY	YY	YY	YY	XX	YY	YY	XX	YY	XX	YY	XY	YY	YY	XX	YY	YY
15	A1	XX	YY	YY	XX	XX	XX	XX	YY	YY	YY	YY	XX	YY	YY	XX	YY	XX	YY	XX	YY	YY	XX	YY	YY
16	A1	XX	YY	YY	XX	XX	XX	XX	YY	YY	YY	YY	XX	YY	YY	XX	YY	XX	YY	XX	YY	YY	XX	YY	YY
17	A2	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
18	A2	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
19	A2	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
20	A2	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
21	A2	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
22	A2	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
23	A2	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
24	A2	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
25	A2	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
26	A2	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
27	B	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
28	B	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
29	B	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
30	B	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
31	B	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
32	B	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
33	B	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
34	B	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
35	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
36	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
37	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
38	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
39	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
40	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
41	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
42	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
43	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
44	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
45	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
46	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
47	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
48	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
49	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
50	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
51	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
52	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY
53	B1	XX	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	YY	YY

77	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
78	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
79	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
80	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
81	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
82	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
83	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
84	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
85	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
86	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
87	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
88	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
89	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
90	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
91	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
92	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
93	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
94	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
95	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY
96	B3	XX	XX	YY	YY	n/a	XX	YY	XX	YY	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	YY	XX	YY

④ 토마토연구소

토마토연구소로부터 총 206점의 시료를 받아 3번의 서비스를 진행하였다. 처음 98점의 시료에 대하여, 병 관련 18종의 마커로 서비스를 진행하였다(표 40). 2번째로는 61점의 시료에 대하여, 병 관련 18종의 마커로 서비스를 진행하였다(표 41). 3번째로는 47점의 시료에 대하여, 병 관련 19종의 마커로 서비스를 진행하였다(표 42). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 40~42).

표 40. 토마토연구소 98점의 시료에 대하여, 병 관련 18개의 마커를 이용한 서비스 결과

No.	BN	Ty1	Ty2	ty5	Sw5	Tm 2a	Mi 23	J3	I2	I3	Ve2	py1	Cf9	Ph3	Sm- 565	ol2	Bw6	Bw12	Pto
1	645-5	R	S	S	S	S	S	S	S	S	S	S	S	R	S	S	R	S	S
2	646-2	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
3	647-9	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S
4	753-5	S	S	S	S	R	S	S	S	S	S	S	S	R	S	S	S	S	S
5	754-5	R	S	S	S	R	S	S	S	S	S	S	S	S	S	S	R	S	S
6	755-4	R	S	S	S	R	S	S	S	S	S	S	R	R	S	S	S	S	S
7	751-5	S	S	S	H	R	S	S	S	S	S	S	S	S	H	S	S	S	S
8	752-2	S	S	S	H	R	S	S	S	S	S	S	S	S	H	S	S	S	S
9	238-2	S	S	S	S	R	S	S	S	S	S	S	S	S	H	S	S	S	S
10	756-2	S	S	S	S	R	S	R	S	S	S	S	S	S	R	S	S	S	S
11	648-7	S	H	S	S	R	S	S	S	S	S	S	S	R	H	S	S	S	S
12	652-13	S	R	S	S	R	S	S	S	S	S	S	S	H	S	S	R	S	S
13	910-10	S	R	S	S	R	S	R	S	S	S	S	S	R	S	S	S	S	S
14	913-1	S	H	S	S	R	S	S	S	S	S	S	S	H	S	S	S	S	S
15	655-2	H	S	S	S	S	S	S	R	S	S	S	S	R	S	S	S	S	S
16	916-3	R	S	S	S	R	S	S	R	S	S	S	S	R	R	S	R	S	S
17	763-2	S	S	S	S	H	S	S	R	S	S	S	S	R	H	S	R	S	S
18	658-5	R	S	S	H	R	S	S	S	S	S	S	H	H	S	S	R	S	S
19	659-1	R	S	S	S	R	S	S	S	S	S	S	S	R	S	S	R	S	S
20	904-1	R	S	S	H	R	S	S	S	S	S	S	R	H	S	S	R	S	S
21	766-4	R	S	S	S	R	S	S	S	S	S	S	H	R	S	S	R	S	S
22	766-5	R	S	S	S	R	S	R	S	S	R	S	S	S	S	S	S	R	S
23	905-2	S	S	S	R	R	S	S	S	S	S	S	S	S	S	S	R	S	S
24	905-20	H	S	S	R	R	S	S	S	S	S	S	S	S	S	S	R	S	S
25	906-9	S	S	S	S	R	S	S	S	S	S	S	S	R	S	S	S	S	S
26	909-5	H	S	S	S	R	S	S	S	S	S	S	S	R	S	S	H	S	S
27	741-5	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S	S
28	742-3	H	S	S	S	S	H	S	S	S	H	S	S	S	S	S	H	S	S
29	743-3	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

30	745-5	R	S	S	R	S	S	S	S	S	R	S	S	R	S	S	S	S	S
31	745-12	R	S	S	R	S	S	S	S	S	R	S	S	R	S	S	S	S	S
32	919-2	H	S	S	S	S	H	S	S	S	S	S	S	S	S	S	H	S	S
33	920-2	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S	S
34	750-2	R	S	S	S	R	S	S	S	S	S	S	H	R	S	S	S	S	S
35	921-7	R	S	S	S	R	S	S	S	S	R	S	H	R	S	S	S	S	S
36	917-1	R	S	S	R	S	S	S	S	S	R	S	S	R	S	S	S	S	S
37	661-13	R	S	S	H	H	S	S	S	H	S	S	R	S	S	H	S	S	S
38	662-1	R	S	S	S	S	S	S	S	S	S	S	H	S	S	H	S	S	S
39	662-5	R	S	S	S	S	S	S	S	S	S	S	H	S	S	S	S	S	S
40	663-3	S	H	S	S	R	S	H	S	S	S	S	R	H	S	S	S	S	S
41	922-6	S	S	S	S	S	S	S	S	S	S	S	R	S	S	H	S	S	S
42	923-7	S	S	S	S	R	H	H	R	S	H	S	H	R	S	S	S	S	S
43	802-2	S	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S	S
44	842-3	H	S	S	R	R	H	S	R	S	R	S	H	R	S	S	S	S	S
45	843-7	H	S	S	R	R	H	S	R	S	R	S	R	S	S	S	S	S	S
46	1001-1	S	S	S	R	S	R	S	R	S	R	S	R	R	S	S	S	S	S
47	1002-3	S	S	S	R	S	R	S	R	S	R	S	R	R	S	S	S	S	S
48	811-2	H	S	S	R	R	S	S	R	S	R	S	R	S	R	S	S	R	S
49	812-1	R	S	S	R	R	S	S	R	S	R	S	R	S	R	S	S	R	S
50	813-3	R	S	S	R	R	S	S	R	S	R	S	R	S	R	S	S	R	S
51	814-2	R	S	S	R	R	S	S	R	S	R	S	R	S	R	S	S	R	S
52	815-4	R	S	S	R	S	S	S	R	S	R	S	R	S	R	S	S	R	S
53	816-1	R	S	S	R	S	S	S	R	S	R	S	R	S	R	S	S	R	S
54	817-2	R	S	S	S	S	S	S	R	S	R	S	R	S	R	S	S	R	S
55	1009-7	H	S	S	R	R	S	S	R	S	R	S	R	S	R	S	S	R	S
56	820-1	S	S	S	S	H	S	S	S	S	R	S	S	S	S	S	S	S	S
57	820-5	S	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S	S
58	824-5	H	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S	S
59	803-16	R	S	S	S	S	S	S	R	S	R	S	S	R	S	S	S	S	S
60	808-1	R	S	S	S	S	S	S	R	S	R	S	R	R	S	S	S	S	S
61	1004-2	R	S	S	S	R	S	S	R	S	R	S	S	S	R	S	S	S	S
62	579-2	R	S	S	S	R	S	H	R	S	R	S	R	S	S	S	S	S	S
63	581-1	H	S	S	S	R	H	R	R	S	R	S	S	S	S	S	S	S	S
64	774-10	S	S	S	S	R	S	H	R	S	R	S	R	S	S	S	S	S	S
65	775-8	S	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S
66	775-15	S	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S
67	777-8	H	S	S	S	H	S	H	R	S	R	S	S	S	S	S	S	S	S
68	778-1	R	S	S	R	R	S	R	R	S	R	S	S	R	S	S	S	S	S
69	778-2	H	S	S	H	R	H	R	R	S	R	S	S	R	S	S	S	S	S
70	779-1	R	S	S	H	R	S	R	R	S	R	S	H	R	S	S	S	S	S
71	781-1	H	S	S	R	H	H	H	R	S	R	S	H	R	S	S	S	S	S
72	781-7	S	S	S	R	H	R	H	R	S	R	S	S	R	S	S	S	S	S
73	785-5	H	S	S	S	R	H	H	R	S	R	S	S	S	S	S	S	S	S
74	786-2	S	S	S	S	R	R	R	R	S	R	S	S	H	S	S	S	S	S
75	786-6	H	S	S	S	R	H	R	R	S	R	S	S	H	S	S	S	S	S
76	788-3	S	S	S	S	H	S	H	R	S	R	S	R	S	S	S	S	S	S
77	789-3	H	S	S	H	H	H	H	R	S	R	S	S	R	S	S	S	S	S
78	790-3	S	S	S	S	H	R	H	R	H	R	S	R	S	S	S	S	S	S
79	791-4	H	S	S	S	S	H	R	S	S	S	S	S	S	S	S	S	S	S
80	792-4	S	R	S	S	R	S	R	S	S	S	S	S	R	R	S	S	R	S
81	770-4	S	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S	S
82	771-3	H	S	S	R	H	S	S	R	R	R	S	S	R	R	S	S	S	S
83	772-2	H	S	S	S	R	S	S	R	S	R	S	S	S	R	S	S	S	S
84	772-3	S	S	S	H	R	S	S	R	S	R	S	S	H	R	S	S	S	S
85	773-4	S	S	S	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S
86	773-5	S	S	S	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S
87	583-2	R	S	S	S	R	S	S	R	S	S	S	S	S	R	S	S	S	S
88	902-3	S	S	S	R	R	R	S	S	S	R	S	R	S	R	S	S	S	S
89	903-1	S	S	S	S	S	R	H	S	S	R	S	S	S	R	S	S	S	S
90	840-2	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S	S	S	S
91	901-14	R	S	S	S	R	S	S	R	S	R	S	S	S	H	S	S	S	S
92	1018-3	S	S	S	S	R	S	S	R	S	H	S	S	S	R	S	S	S	S
93	769-3	H	S	S	S	R	S	S	R	S	R	S	S	S	R	S	S	S	S

94	769-5	H	S	S	S	R	S	S	R	S	R	S	S	S	R	S	S	S	S
95	924-2	S	S	S	S	R	R	R	R	S	S	S	S	S	S	S	S	S	S
96	925-6	H	S	S	R	R	S	S	R	S	R	S	S	S	S	S	S	S	S
97	794-3	S	S	S	S	R	H	S	R	R	R	S	S	S	R	S	R	R	S
98	793-3	S	S	S	S	S	S	R	R	S	R	S	S	R	S	S	R	R	S

표 41. 토마토연구소 61점의 시료에 대하여, 병 관련 18개의 마커를 이용한 서비스 결과

순번	샘플명	Ty1	Ty2	ty5	Sw5	Tm 2a	Mi 23	J3	I2	I3	V2	py1	Cf9	Ph3	Sm- 565	ol2	Bw6	Bw 12	Pto
1	21-5	R	H	S	S	R	S	S	S	S	S	S	S	R	R	S	S	S	S
2	21-15	R	R	S	S	R	S	S	S	S	S	S	S	R	H	S	S	S	S
3	22-11	R	H	S	S	R	S	S	S	S	S	S	S	R	H	S	S	S	S
4	1035-5	S	S	S	R	R	S	S	S	S	S	S	R	S	S	S	S	S	S
5	1035-6	S	S	S	H	R	S	S	S	S	S	S	R	H	S	S	S	S	S
6	1036-14	R	S	S	R	R	S	S	S	S	S	S	S	S	S	S	R	S	S
7	51-4	S	S	S	S	H	S	S	S	S	R	S	S	S	R	S	S	S	S
8	51-5	S	S	S	S	S	S	S	S	S	R	S	R	S	R	S	S	S	S
9	226-1	S	S	S	S	R	R	S	R	S	R	S	S	S	H	S	S	S	S
10	227-1	H	S	S	S	R	H	S	R	S	R	S	S	S	H	S	S	S	S
11	228-1	H	S	S	S	R	H	S	R	S	R	S	S	S	S	S	S	S	S
12	229-1	H	S	S	S	R	H	S	R	S	R	S	S	S	R	S	S	S	S
13	235-1	R	S	S	R	R	R	S	S	S	R	S	R	S	R	S	S	S	S
14	239-1	R	S	S	R	R	R	S	S	S	R	S	R	S	R	S	S	S	S
15	240-1	R	S	S	R	R	R	S	S	S	R	S	R	S	R	S	S	S	S
16	244-1	S	S	S	R	R	S	S	S	S	R	S	R	S	R	S	S	S	S
17	250-1	S	S	S	H	R	S	S	R	S	R	S	R	S	R	S	S	S	S
18	258-1	S	S	S	R	R	S	S	R	S	S	S	R	S	R	S	S	S	S
19	261-1	S	S	S	S	R	S	S	R	S	S	S	R	S	R	S	S	S	S
20	269-1	R	S	S	S	H	R	H	S	S	S	S	H	S	R	S	S	S	S
21	277g-1	S	S	S	R	R	S	S	S	S	R	S	R	S	R	S	S	S	S
22	281g-1	S	S	S	S	R	S	S	R	S	H	S	R	S	R	S	S	S	S
23	288p-1	H	S	S	S	S	H	R	R	S	S	S	R	S	R	S	S	S	S
24	288g-1	H	S	S	S	S	H	R	R	S	S	S	R	S	R	S	S	S	S
25	792-3	S	S	S	S	S	S	S	S	S	S	S	H	H	S	S	S	S	S
26	768-1	S	S	S	S	R	S	R	S	S	R	S	S	S	S	S	S	R	S
27	768-2	S	S	S	S	R	S	R	S	S	R	S	S	S	S	S	S	R	S
28	101-1	H	S	S	S	R	S	H	R	S	R	S	H	S	R	S	S	S	S
29	101-2	H	S	S	S	H	S	S	R	S	R	S	H	S	R	S	S	S	S
30	101-3	H	S	S	S	H	S	S	R	S	R	S	H	S	R	S	S	S	S
31	121-1	H	S	S	S	H	S	S	R	S	R	S	H	S	R	S	S	S	S
32	102-1	R	S	S	S	H	H	S	R	S	S	S	S	S	H	S	S	S	S
33	126-1	H	S	S	S	H	S	S	H	S	H	S	S	S	S	S	H	S	S
34	126s-1	R	S	S	S	S	H	S	H	S	H	S	S	S	H	S	S	S	S
35	126s-2	R	S	S	S	S	H	H	R	S	H	S	S	S	H	S	S	S	S
36	127-1	H	S	S	S	R	S	S	R	S	H	S	S	S	H	S	H	S	S
37	104-1	H	S	S	S	H	S	S	R	S	H	S	S	S	H	S	S	S	S
38	sk940	H	S	S	S	H	H	H	H	S	S	S	H	S	R	S	S	S	S
39	sk942	R	S	S	S	S	H	H	S	S	R	S	S	S	H	S	S	S	S
40	128-1	R	S	S	S	H	H	S	S	S	R	S	S	S	H	S	S	S	S
41	sk945	S	S	S	H	H	S	S	R	S	R	S	R	H	H	S	S	H	S
42	sk946	S	S	S	S	H	S	S	R	S	R	S	H	S	S	S	S	H	S
43	177-1	R	S	S	S	S	S	S	S	S	H	S	S	H	H	S	S	H	S
44	178-1	R	S	S	S	H	H	S	R	S	H	S	S	H	S	S	S	S	S
45	179-1	H	S	S	S	H	S	S	S	S	R	S	S	S	S	S	S	S	S
46	168-1	H	S	S	S	S	S	H	H	S	S	S	S	S	H	S	S	S	S
47	169-1	R	S	S	S	S	S	S	H	S	R	S	S	H	H	S	S	S	S
48	170-1	R	S	S	S	S	H	S	H	S	R	S	S	S	R	S	S	S	S
49	171-1	R	S	S	S	S	S	S	H	S	H	S	S	H	R	S	S	S	S
50	sk950	H	S	S	H	R	S	S	S	S	H	S	S	H	S	S	H	S	S
51	289-1	S	S	S	H	R	S	S	S	S	H	S	S	H	S	S	H	S	S
52	sk949	H	S	S	S	R	S	S	S	S	H	S	S	H	S	S	S	S	S
53	290-1	H	S	S	S	R	S	S	S	S	H	S	H	H	S	S	S	S	S
54	291-1	R	S	S	S	H	H	S	S	S	S	S	S	S	H	S	H	S	S

55	155-1	H	S	S	H	H	S	S	S	S	H	S	S	R	S	S	S	S	S
56	156-1	H	S	S	S	S	S	S	S	S	S	S	S	H	S	S	R	S	S
57	157-1	R	S	S	S	S	S	S	S	S	S	S	S	S	S	H	S	S	S
58	pps	H	S	S	H	R	S	S	S	S	S	S	H	H	S	S	S	S	S
59	pps	H	S	S	H	R	S	S	S	S	S	S	H	H	S	S	S	S	S
60	158-1	R	S	S	H	R	H	S	R	S	H	S	S	S	S	S	S	S	S
61	159-1	R	S	S	H	R	H	H	R	S	H	S	S	S	S	S	S	S	S

표 42. 토마토연구소 47점의 시료에 대하여, 병 관련 19개의 마커를 이용한 서비스 결과

순번	샘플명	Ty1	Ty2	ty5	Sw5	Tm 2a	Mi 23	J3	I2	I3	V2	py1 -2	py1 -4	Cf9	Ph3	Sm- 565	ol2	Bw6	Bw 12	Pto
1	468-1	H	S	S	S	R	S	S	S	S	H	R	S	S	H	S	S	H	S	S
2	469-1	R	S	S	H	R	S	S	S	S	H	H	S	S	H	S	S	H	S	S
3	470-1	R	S	S	H	H	S	S	S	S	H	H	S	S	H	S	S	H	S	S
4	471-1	R	S	S	H	H	S	S	S	S	H	H	S	S	H	S	S	H	S	S
5	472-1	R	S	S	H	H	S	S	S	S	H	H	S	S	R	S	S	H	S	S
6	473-1	H	H	S	H	R	S	H	S	S	H	R	S	H	S	H	S	S	S	S
7	474-1	H	S	S	H	R	S	S	S	S	S	R	S	H	H	S	S	S	S	S
8	475-1	H	S	S	S	R	S	S	S	S	H	R	S	H	R	S	S	H	S	S
9	476-1	H	S	S	S	H	H	S	S	S	H	H	S	S	H	S	S	H	S	S
10	477-1	R	S	S	H	H	S	S	S	S	R	S	S	S	R	S	S	S	S	S
11	413-1	H	S	S	S	H	S	S	R	S	R	S	S	S	S	R	S	S	S	S
12	411-1	H	S	S	S	R	S	H	R	S	R	S	S	S	S	H	S	S	S	S
13	412-1	H	S	S	S	R	S	H	R	S	H	S	S	S	S	H	S	S	S	S
14	451-1	H	S	S	S	R	S	H	R	S	R	S	S	S	S	H	S	S	S	S
15	415-1	R	S	S	S	R	S	S	R	S	H	S	S	H	S	R	S	S	S	S
16	452-1	H	H	S	S	H	H	S	H	S	R	S	S	S	S	S	S	S	H	S
17	453-1	R	S	S	S	S	S	S	R	S	R	S	S	H	S	R	S	S	S	S
18	454-1	H	S	S	S	H	H	H	H	S	H	S	S	H	S	R	S	S	S	S
19	455-1	H	S	S	S	H	S	S	R	S	H	S	S	R	S	R	S	S	S	S
20	456-1	H	S	S	S	R	S	S	R	S	H	S	S	H	S	R	S	S	S	S
21	414-1	S	S	S	S	H	S	S	H	S	R	S	S	H	S	H	S	S	S	S
22	418-1	H	S	S	H	H	H	S	R	S	R	S	S	H	H	H	S	S	S	S
23	433-1	S	H	S	S	H	H	R	S	S	H	S	S	S	H	H	S	S	H	S
24	434-1	H	S	S	H	H	S	S	R	S	R	S	S	S	R	H	S	S	S	S
25	163-1	S	H	S	S	H	S	H	H	S	H	S	S	S	S	R	S	S	H	S
26	478-1	S	S	S	S	H	H	H	R	S	R	S	S	S	H	H	S	S	R	S
27	479-1	H	H	S	S	R	S	R	S	S	H	S	S	S	H	H	S	S	R	S
28	396-1	S	S	S	S	H	H	R	H	S	R	S	R	S	S	H	S	S	S	S
29	394-1	R	S	S	S	R	S	H	R	S	H	S	S	S	S	R	S	S	R	S
30	395-4	S	S	S	S	S	S	R	R	S	R	S	S	S	R	S	S	S	R	S
31	70-9	R	S	S	S	R	S	S	S	S	H	R	S	R	R	S	S	S	S	S
32	71-1	R	S	S	H	R	S	S	S	S	H	R	S	R	R	S	S	S	S	S
33	71-7	R	S	S	S	R	S	S	S	S	H	R	S	R	R	S	S	S	S	S
34	72-2	R	S	S	S	S	S	S	S	S	H	S	S	S	R	S	S	R	S	S
35	76-3	S	H	S	S	S	S	S	S	S	H	R	S	S	R	S	S	R	S	S
36	83-1	S	R	S	S	R	S	H	S	S	H	R	S	S	H	S	S	H	S	S
37	83-4	S	R	S	S	R	S	H	S	S	H	R	S	S	H	H	S	H	S	S
38	86-10	H	S	S	S	R	S	S	S	S	H	R	S	S	H	S	S	H	S	S
39	387-4	R	S	S	S	S	S	S	S	S	H	H	S	S	R	H	S	S	S	S
40	79-1	S	S	S	S	R	S	S	S	S	H	S	S	S	H	S	S	R	S	S
41	388-7	S	S	S	S	H	R	S	R	S	H	S	S	S	S	S	S	S	S	S
42	392-2	R	S	S	R	R	S	S	R	S	R	S	S	S	S	S	S	S	S	S
43	353-1	S	R	S	S	R	S	R	S	S	H	R	S	H	S	R	S	S	H	S
44	353-2	S	H	S	S	R	S	R	S	S	H	S	S	S	R	R	S	S	S	S
45	355-1	S	H	S	S	R	S	R	S	S	H	R	S	S	R	H	S	S	H	S
46	356-1	S	R	R	S	R	S	R	S	S	H	S	S	S	S	R	S	S	R	S
47	357-2	S	S	R	S	S	S	S	S	S	R	S	S	S	S	S	S	S	S	S

⑤ 한경대학교

환경대학교로부터 총 268점의 시료를 받아 5번의 서비스를 진행하였다. 처음 47점의 시료에 대하여, 원예 형질 관련 1종의 마커로 서비스를 진행하였다(표 43). 2번째로는 135점의 시료에 대하여, 원예 형질 관련 1종의 마커로 서비스를 진행하였다(표 44). 3번째로는 18점의 시료에 대하여, 병 관련 14종의 마커로 서비스를 진행하였다(표 45). 4번째로는 11점의 시료에 대하여, 원예 형질 관련 1종의 마커로 서비스를 진행하였다(표 46). 5번째로는 57점의 시료에 대하여, 원예 형질 관련 1종의 마커로 서비스를 진행하였다.(표 47). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 43~47).

표 43. 환경대학교 47점의 시료에 대하여, 원예 형질 관련 1개의 마커를 이용한 서비스 결과

No.	MS마커	No.	MS마커	No.	MS마커	No.	MS마커	No.	MS마커	No.	MS마커
1	H	9	H	17	Ms	25	ms	33	Ms	41	Ms
2	H	10	Ms	18	Ms	26	H	34	Ms	42	Ms
3	ms	11	Ms	19	ms	27	Ms	35	Ms	43	Ms
4	ms	12	H	20	ms	28	ms	36	Ms	44	ms
5	Ms	13	Ms	21	ms	29	ms	37	Ms	45	Ms
6	H	14	ms	22	ms	30	Ms	38	Ms	46	H
7	ms	15	Ms	23	Ms	31	Ms	39	Ms	47	Ms
8	n/a	16	Ms	24	ms	32	Ms	40	Ms		

표 44. 환경대학교 135점의 시료에 대하여, 원예 형질 관련 1개의 마커를 이용한 서비스 결과

순번	샘플명	MS결과	순번	샘플명	MS결과	순번	샘플명	MS결과	순번	샘플명	MS결과
1	BC1-1	H	35	BC1-73	H	69	BC2-13	H	103	BC2-73	H
2	BC1-5	H	36	BC1-74	H	70	BC2-15	H	104	BC2-74	H
3	BC1-6	H	37	BC1-75	H	71	BC2-16	H	105	BC2-75	H
4	BC1-10	H	38	BC1-78	Ms	72	BC2-18	H	106	BC2-76	ms
5	BC1-12	H	39	BC1-79	H	73	BC2-20	H	107	BC2-79	H
6	BC1-13	Ms	40	BC1-81	H	74	BC2-21	H	108	BC2-80	H
7	BC1-14	H	41	BC1-82	H	75	BC2-22	H	109	BC2-82	H
8	BC1-16	ms	42	BC1-83	H	76	BC2-23	H	110	BC2-84	H
9	BC1-17	H	43	BC1-84	H	77	BC2-31	H	111	BC2-85	H
10	BC1-19	H	44	BC1-85	H	78	BC2-32	H	112	BC2-86	H
11	BC1-22	H	45	BC1-87	H	79	BC2-35	H	113	BC2-89	H
12	BC1-23	H	46	BC1-89	H	80	BC2-36	ms	114	BC2-90	H
13	BC1-29	H	47	BC1-92	H	81	BC2-38	ms	115	BC2-92	H
14	BC1-30	H	48	BC1-96	H	82	BC2-41	ms	116	BC2-93	H
15	BC1-31	H	49	BC1-97	H	83	BC2-43	H	117	BC2-94	H
16	BC1-33	H	50	BC1-99	H	84	BC2-45	H	118	BC2-95	H
17	BC1-34	H	51	BC1-100	H	85	BC2-47	ms	119	BC2-96	H
18	BC1-36	H	52	BC1-101	H	86	BC2-49	H	120	BC2-97	H
19	BC1-40	H	53	BC1-104	H	87	BC2-51	H	121	BC2-98	ms
20	BC1-42	H	54	BC1-105	H	88	BC2-52	H	122	BC2-100	H
21	BC1-43	H	55	BC1-107	H	89	BC2-53	H	123	BC2-101	H
22	BC1-46	H	56	BC1-108	H	90	BC2-54	H	124	BC2-102	H
23	BC1-48	H	57	BC1-109	H	91	BC2-55	Ms	125	BC2-105	H
24	BC1-49	ms	58	BC1-112	H	92	BC2-56	H	126	BC2-106	H
25	BC1-52	H	59	BC1-113	H	93	BC2-57	H	127	BC2-108	H
26	BC1-55	H	60	BC1-114	H	94	BC2-58	H	128	BC2-110	H
27	BC1-59	Ms	61	BC1-116	H	95	BC2-59	H	129	BC2-111	H
28	BC1-64	H	62	BC1-117	Ms	96	BC2-61	H	130	BC2-115	H
29	BC1-66	H	63	BC2-4	H	97	BC2-62	H	131	BC2-116	H
30	BC1-67	H	64	BC2-5	H	98	BC2-63	H	132	BC2-118	H
31	BC1-69	H	65	BC2-6	H	99	BC2-66	H	133	BC2-119	Ms
32	BC1-70	H	66	BC2-7	H	100	BC2-68	H	134	P1-4	ms
33	BC1-71	H	67	BC2-10	H	101	BC2-70	H	135	P2-8	H
34	BC1-72	ms	68	BC2-11	H	102	BC2-71	H			

표 45. 환경대학교 18점의 시료에 대하여, 병 관련 14개의 마커를 이용한 서비스 결과

순번	샘플명	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	Ve2	I2	I3	Sm-565	Ph3	Bw6	Bw12
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1	K1	S	S	S	S	R	S	S	R	S	S	S	S	S	S
2	K2	R	S	S	S	R	S	S	S	R	S	R	S	S	S
3	K3	S	S	S	S	S	S	R	R	R	S	S	R	S	S
4	K4	S	S	S	S	R	H	R	S	R	S	R	S	S	S
5	K5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
6	K6	R	n/a	S	S	n/a	n/a	S	n/a	R	S	n/a	S	S	n/a
7	K7	S	S	S	S	S	R	R	R	R	S	R	S	S	S
8	K8	S	S	S	S	R	S	S	R	R	S	S	S	S	S
9	K9	S	S	S	H	S	S	S	R	R	S	S	R	S	n/a
10	K10	H	S	S	S	S	S	S	R	S	S	S	S	S	S
11	K11	S	n/a	S	S	S	H	S	R	S	S	R	S	n/a	n/a
12	K12	S	n/a	S	S	S	S	R	R	S	S	R	S	n/a	n/a
13	K13	S	n/a	S	S	R	S	S	R	S	S	S	n/a	n/a	n/a
14	K14	H	S	S	S	R	H	R	S	R	S	S	S	S	S
15	K15	S	S	S	S	R	S	S	S	S	S	H	S	S	S
16	K16	S	S	S	S	S	S	S	S	R	S	S	S	S	S
17	K17	S	S	S	S	S	S	S	R	S	S	R	S	S	S
18	K18	S	n/a	S	S	R	S	S	R	R	S	S	n/a	n/a	n/a

표 46. 한경대학교 11점의 시료에 대하여, 원예 형질 관련 1개의 마커를 이용한 서비스 결과

No.	MS마커	No.	MS마커	No.	MS마커	No.	MS마커	No.	MS마커	No.	MS마커
1	H	3	H	5	H	7	H	9	H	11	H
2	H	4	H	6	H	8	H	10	H		

표 47. 한경대학교 57점의 시료에 대하여, 원예 형질 관련 1개의 마커를 이용한 서비스 결과

순번	샘플명	MS결과	순번	샘플명	MS결과	순번	샘플명	MS결과	순번	샘플명	MS결과
1	6-1	H	16	8-3	ms	31	14-4	Ms	46	16-9	H
2	6-2	H	17	8-4	H	32	14-5	Ms	47	16-10	H
3	6-3	H	18	8-5	H	33	14-6	Ms	48	17-1	H
4	6-4	H	19	12-1	Ms	34	14-7	Ms	49	17-2	Ms
5	6-5	H	20	12-2	Ms	35	14-8	Ms	50	17-3	H
6	6-6	H	21	12-3	H	36	14-9	Ms	51	17-4	Ms
7	6-7	H	22	13-1	H	37	14-10	Ms	52	17-5	H
8	6-8	H	23	13-2	H	38	16-1	H	53	17-6	H
9	6-9	H	24	13-3	H	39	16-2	H	54	17-7	H
10	6-10	H	25	13-4	H	40	16-3	H	55	17-8	Ms
11	6-11	H	26	13-5	H	41	16-4	H	56	17-9	Ms
12	6-12	H	27	13-6	H	42	16-5	H	57	17-10	Ms
13	6-13	H	28	14-1	Ms	43	16-6	H			
14	8-1	ms	29	14-2	Ms	44	16-7	H			
15	8-2	H	30	14-3	Ms	45	16-8	H			

⑥ 더기반

더기반으로부터 총 85점의 시료를 받아 1번의 서비스를 진행하였다. 85점의 시료에 대하여, 원예 형질 관련 1종의 마커로 서비스를 진행하였으며, 외뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 48).

표 48. 더기반 85점의 시료에 대하여, 원예 형질 관련 1개의 마커를 이용한 서비스 결과

순번	샘플명	Ms	순번	샘플명	Ms	순번	샘플명	Ms	순번	샘플명	Ms
1	2063(2-1)-1	Ms	23	2063(2-2)-23	H	45	2058-2	Ms	67	2067-6	Ms
2	2063(2-1)-2	Ms	24	2063(2-2)-24	H	46	2061(G)-1	ms	68	2067-7	Ms
3	2063(2-1)-3	Ms	25	2063(2-2)-25	H	47	2061(G)-2	ms	69	2067-8	Ms
4	2063(2-1)-4	Ms	26	2063(2-2)-26	H	48	2061(P)-101	H	70	2067-9	Ms
5	2063(2-1)-5	H	27	2063(2-2)-27	H	49	2061(P)-102	H	71	2067-10	H
6	2063(2-1)-6	H	28	2063(2-2)-28	H	50	2066-1	H	72	2067-11	Ms
7	2063(2-1)-7	H	29	2063(2-2)-29	H	51	2066-2	H	73	2067-12	Ms

8	2063(2-1)-8	H	30	2063(2-2)-30	Ms	52	2066-3	H	74	510-1	H
9	2063(2-1)-9	H	31	2063(2-2)-31	Ms	53	2066-4	H	75	510-2	H
10	2063(2-1)-10	ms	32	2063(2-2)-32	H	54	2066-5	Ms	76	510-3	H
11	2063(2-1)-11	H	33	2063(2-2)-33	H	55	2066-6	Ms	77	512-1	H
12	2063(2-1)-12	Ms	34	2063(2-2)-34	Ms	56	2066-7	H	78	512-2	H
13	2063(2-1)-13	H	35	2063(2-2)-35	H	57	2066-8	H	79	512-3	H
14	2063(2-1)-14	H	36	2063(2-2)-36	Ms	58	2066-9	H	80	526-1	Ms
15	2063(2-1)-15	H	37	2063(2-2)-37	H	59	2066-10	H	81	526-2	Ms
16	2063(2-1)-16	Ms	38	2063(2-2)-38	H	60	2066-11	H	82	526-3	Ms
17	2063(2-1)-17	H	39	2063(2-2)-39	Ms	61	2066-12	Ms	83	529-1	Ms
18	2063(2-1)-18	H	40	2063(2-2)-40	H	62	2067-1	Ms	84	529-2	Ms
19	2063(2-1)-19	H	41	2063(2-2)-41	H	63	2067-2	Ms	85	529-3	Ms
20	2063(2-1)-20	Ms	42	2057-1	Ms	64	2067-3	H			
21	2063(2-1)-21	Ms	43	2057-2	Ms	65	2067-4	Ms			
22	2063(2-1)-22	H	44	2058-1	Ms	66	2067-5	Ms			

1-5) 5차년도 토마토 분자마커 서비스 결과

5차년도에 토마토 분자마커 서비스는 순천대학교, 토마토연구소, 국립농업과학원, 씨드이플랫폼으로 총 4곳에서 의뢰를 받아 실시하였다.

① 순천대학교

순천대학교로부터 총 6,574점의 시료를 받아 21번의 서비스를 진행하였다. 처음 11점의 시료에 대하여, 병 관련 17종의 마커로 서비스를 진행하였다(표 1). 2번째로는 17점의 시료에 대하여, 병 관련 17종의 마커로 서비스를 진행하였다(표 2). 3번째로는 96점의 시료에 대하여, 계통 고정도/치환율 관련 96개의 마커로 서비스를 진행하였다(표 3). 4번째로는 219점의 시료에 대하여, 원예형질 관련 1종의 마커로 서비스를 진행하였다(표 4). 5번째로는 27점의 시료에 대하여, 병 관련 17종의 마커로 서비스를 진행하였다(표 5). 6번째로는 2점의 시료에 대하여, 병 관련 16종의 마커로 서비스를 진행하였다(표 6). 7번째로는 576점의 시료에 대하여, 병 관련 마커 1종을 가지고 순도검정에 이용하였다.(표 7). 8번째로는 27점의 시료에 대하여, 병 관련 16종의 마커를 이용하여 서비스를 진행하였다(표 8). 9번째로는 173점의 시료에 대하여, 원예형질 관련 1종의 마커를 이용하여 서비스를 진행하였다(표 9). 10번째로는 2점의 시료에 대하여, 병 관련 15종 마커를 이용하여 서비스를 진행하였다(표 10). 11번째로는 2,013점의 시료에 대하여, 병 관련 1종의 마커를 이용하여 순도검정 서비스를 진행하였다(표 11). 12번째로는 4점의 시료에 대하여, 병 관련 16종의 마커를 이용하여 서비스를 진행하였다(표 12). 13번째로는 1,536점의 시료에 대하여, 병 관련 1종의 마커를 이용하여 순도검정 서비스를 진행하였다(표 13). 14번째로는 51점의 시료에 대하여, 병 관련 16종 마커 및 원예형질 관련 2종의 마커를 이용하여 서비스를 진행하였다(표 14). 15번째로는 48점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용하여 서비스를 진행하였다(표 15). 16번째로는 29점의 시료에 대하여, 병 관련 15종의 마커를 이용하여 서비스를 진행하였다(표 16). 17번째로는 24점의 시료에 대하여, 병 관련 5종의 마커를 이용하여 서비스를 진행하였다(표 17). 18번째로는 96점의 시료에 대하여, 병 관련 15종의 마커를 이용하여 서비스를 진행하였다(표 18). 19번째로는 104점의 시료에 대하여, 병 관련 15종의 마커를 이용하여 서비스를 진행하였다(표 19). 20번째로는 826점의 시료에 대하여, 병 관련 1종의 마커를 이용하여 순도검정 서비스를 진행하였다(표 20). 21번째로는 693점의 시료에 대하여, 병 관련 15종의 마커를 이용하여 서비스를 진행하였다(표 21). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 1~21).

표 1. 순천대학교 11점의 시료에 대하여, 병 관련 17종의 마커를 이용한 서비스 결과

No.	Sw5	Tm2a	Ty1	Ty2	Ty4	ty5	Ph3	Sm-565	I2	I3	Ve2
1	S	R	S	S	S	S	H	S	S	S	R

No.	Sw5	Tm2a	Ty1	Ty2	Ty4	ty5	Ph3	Sm-565	I2	I3	Ve2
2	S	R	S	S	S	S	R	S	R	S	R
3	S	H	S	S	S	S	R	S	S	S	R
4	S	S	S	S	S	S	R	S	S	S	R
5	S	R	S	S	S	S	R	S	S	S	R
6	S	R	S	S	S	S	R	S	S	S	R
7	S	S	S	S	S	S	R	S	H	S	S
8	S	S	S	S	S	S	R	S	R	S	R
9	S	H	S	S	S	S	R	S	S	S	R
10	S	H	S	S	S	S	R	S	S	S	R
11	S	H	S	S	S	S	R	S	S	S	R

표 2. 순천대학교 17점의 시료에 대하여, 병 관련 17종의 마커를 이용한 서비스 결과

No.	Sw5	Tm2a	Ty1	Ty2	Ty4	ty5	Ph3	Sm-565	I2	I3	Ve2	J3	py1	Bw6	Bw12	Mi23	Cf9
1	S	R	S	S	S	S	S	R	S	S	S	R	S	R	S	S	S
2	S	R	S	S	S	S	S	R	S	S	S	H	S	R	S	S	S
3	S	R	S	S	S	S	S	R	S	S	S	R	S	R	S	S	S
4	S	R	S	S	S	S	R	H	S	S	S	S	S	S	S	S	S
5	S	R	S	R	S	S	R	R	S	S	S	S	S	R	S	S	S
6	S	R	S	R	S	S	R	R	S	S	S	S	S	R	S	S	S
7	S	R	S	S	S	S	R	R	S	S	S	R	S	R	S	S	S
8	S	R	S	S	S	S	R	R	S	S	S	R	S	R	S	S	S
9	S	R	S	R	S	S	R	R	S	S	S	S	S	R	S	S	S
10	S	R	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S
11	S	R	S	S	S	S	S	H	S	S	S	R	S	S	S	S	S
12	S	R	S	R	S	S	R	S	S	S	S	S	S	S	S	S	S
13	S	R	S	R	S	S	R	R	S	S	S	S	S	H	S	S	S
14	S	R	S	R	S	S	R	S	S	S	S	S	S	R	S	S	S
15	S	R	S	R	S	S	R	R	S	S	S	S	S	S	S	S	S
16	S	R	S	R	S	S	R	R	S	S	S	S	S	S	S	S	S
17	S	R	S	R	S	S	R	H	S	S	S	S	S	R	S	S	S

표 3. 순천대학교 96점의 시료에 대하여, 계통 고정도/치환율 관련 96개의 마커를 이용한 서비스 결과

No.	TR01	TR02	TR03	TR04	TR05	TR06	TR07	TR08	TR09	TR10	TR11	TR12	TR13	TR14	TR15	TR16	TR17	TR18	TR19	TR20	TR21	TR22	TR23	TR24
1	XX	XX	YY	XX	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
2	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	YY	YY	YY	YY	YY
3	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	YY	YY	YY	YY	YY
4	XX	XY	YY	XY	XY	YY	YY	YY	YY	XY	XY	IV	XY	YY	YY	IV	YY	YY	XY	XX	XY	XY	XY	YY
5	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
6	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
7	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
8	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
9	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
10	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
11	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
12	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
13	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
14	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
15	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
16	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
17	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
18	XX	XX	YY	XX	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
19	XX	XX	YY	XX	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
20	XX	XX	YY	XX	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
21	XX	XX	YY	XX	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
22	XX	XX	YY	XX	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
23	XX	XX	YY	XX	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
24	XY	XY	YY	XY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
25	XY	XY	YY	XY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
26	XX	XX	YY	XX	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
27	XX	XX	YY	XX	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
28	XX	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
29	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
30	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY
31	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	IV	YY	YY	YY	IV	YY	YY	YY	XX	YY	YY	YY	YY

54	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
55	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
56	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
57	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
58	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
59	YY	YY	YY	YY	YY	YY	XX	YY	YY	XY	XY	XY	XY	XY	XY	YY	YY	YY	YY	YY	YY	YY	YY
60	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	XY	XY	XY	YY	YY	YY	YY	YY	YY	YY	YY
61	YY	YY	YY	YY	YY	YY	XX	YY	XY	XY	XY	XY	XY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
62	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
63	YY	YY	YY	YY	YY	YY	XX	YY	YY	XY	XY	XY	XY	XY	YY	YY	YY	YY	YY	YY	YY	YY	YY
64	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
65	XY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	XY	XY	YY	YY	YY	YY	YY	YY	YY	YY
66	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
67	YY	YY	YY	XY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
68	YY	YY	YY	XY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
69	YY	XY	XY	XY	XY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
70	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	XY	XY	XY	XY	YY
71	XX	YY	YY	YY	YY	YY	XX	YY	YY	XX	XX	XX	XX	XX	XY	XY	YY	YY	YY	YY	YY	YY	YY
72	YY	YY	YY	YY	YY	YY	XX	YY	YY	XY	XY	XY	XX	XX	XX	XX	XX	YY	YY	YY	YY	YY	YY
73	XY	YY	YY	YY	YY	YY	XY	YY	YY	XY	XY	XY	XY	XY	YY	YY	YY	YY	YY	YY	YY	YY	YY
74	XY	YY	YY	YY	YY	YY	XX	YY	YY	XY	XY	XY	XY	XY	XY	XY	YY	YY	YY	YY	YY	YY	YY
75	YY	YY	YY	XX	XX	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	XY	XY	XY	XY	XY	XY	YY
76	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	NC	YY	YY	YY	YY
77	XY	YY	YY	YY	YY	YY	XX	YY	XX	YY	YY	YY	YY	YY	YY	XY	XY	YY	YY	YY	YY	YY	XY
78	XY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	XY	XY	YY	YY	YY	YY	XY
79	XX	YY	YY	YY	YY	YY	XX	YY	XY	XY	XY	XX	XX	XX	XX	XX	XY	XY	YY	YY	YY	YY	XY
80	XY	YY	YY	YY	YY	YY	XX	YY	XY	XY	XY	XY	XY	XY	XY	YY	YY	YY	YY	YY	YY	YY	YY
81	YY	XY	XY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
82	XY	XY	XY	YY	YY	YY	XX	YY	YY	XY	YY	YY	YY	YY	YY	XY	XY	XY	XY	YY	YY	YY	YY
83	YY	YY	XX	XX	XX	XY	XY	XY	YY	XY	XY	XY	XX	XX	XX	XX	XY	XY	YY	YY	YY	YY	XY
84	YY	XY	XX	XX	XX	YY	YY	YY	YY	XY	XY	XY	XX	XX	XX	XX	YY	YY	YY	YY	YY	YY	YY
85	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	XY	XY	XY	XY	XY	XY	YY
86	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	XY	XY	XY	XY	XY	XY	YY
87	XY	XY	XY	XY	XY	XY	XX	XY	XY	XX	XX	XX	XX	XX	XY	XY	XY	XY	YY	YY	YY	YY	YY
88	XY	YY	XY	XY	XY	XY	XX	XY	XY	XX	XX	XX	XX	XX	XX	XY	XY	YY	YY	YY	YY	YY	YY
89	XX	YY	YY	YY	YY	YY	XX	YY	XY	XY	XY	XY	XY	XY	XY	XY	YY	YY	YY	YY	YY	YY	YY
90	XX	YY	YY	YY	YY	YY	XX	YY	YY	XY	XY	XY	XY	XY	XY	YY	YY	YY	IV	YY	YY	YY	YY
91	YY	YY	YY	YY	XY	XY	XX	YY	YY	XY	XY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
92	XY	YY	XY	XY	XY	YY	XX	YY	YY	XY	XY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY	YY
93	XX	YY	YY	YY	YY	YY	XX	YY	XY	XX	YY	YY	YY	YY	YY	YY	YY	YY	XX	YY	YY	YY	XY
94	YY	YY	YY	YY	YY	YY	XX	YY	XY	YY	XX	YY	YY	YY	YY	YY	YY	YY	XX	XY	XY	XY	YY
95	XY	XY	XY	XY	XY	XY	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY
96	XY	XY	XY	XY	XY	XY	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY

표 4. 순천대학교 219점의 시료에 대하여, 원예형질 관련 1종의 마커를 이용한 서비스 결과

No.	MS	No.	MS	No.	MS	No.	MS	No.	MS	No.	MS	No.	MS	No.	MS	No.	MS
1	H	29	Ms	57	Ms	85	n/a	113	Ms	141	Ms	169	Ms	197	H		
2	Ms	30	Ms	58	n/a	86	H	114	H	142	H	170	Ms	198	Ms		
3	H	31	H	59	n/a	87	H	115	Ms	143	Ms	171	Ms	199	H		
4	Ms	32	Ms	60	n/a	88	H	116	H	144	H	172	Ms	200	H		
5	H	33	H	61	n/a	89	H	117	H	145	H	173	Ms	201	Ms		
6	H	34	H	62	n/a	90	Ms	118	Ms	146	H	174	Ms	202	H		
7	Ms	35	H	63	n/a	91	n/a	119	Ms	147	Ms	175	Ms	203	H		
8	H	36	H	64	n/a	92	H	120	Ms	148	Ms	176	Ms	204	Ms		
9	H	37	Ms	65	Ms	93	Ms	121	Ms	149	H	177	Ms	205	H		
10	Ms	38	Ms	66	Ms	94	Ms	122	H	150	Ms	178	Ms	206	H		
11	H	39	H	67	Ms	95	Ms	123	Ms	151	H	179	Ms	207	H		
12	H	40	H	68	Ms	96	Ms	124	Ms	152	Ms	180	H	208	Ms		
13	n/a	41	Ms	69	H	97	n/a	125	H	153	Ms	181	Ms	209	Ms		
14	Ms	42	H	70	H	98	Ms	126	Ms	154	H	182	Ms	210	Ms		
15	Ms	43	H	71	Ms	99	Ms	127	Ms	155	H	183	H	211	Ms		
16	H	44	H	72	Ms	100	n/a	128	n/a	156	H	184	Ms	212	Ms		
17	H	45	n/a	73	Ms	101	Ms	129	Ms	157	H	185	H	213	Ms		
18	H	46	H	74	H	102	Ms	130	H	158	H	186	Ms	214	Ms		
19	H	47	H	75	Ms	103	Ms	131	Ms	159	Ms	187	H	215	Ms		
20	Ms	48	H	76	H	104	H	132	Ms	160	Ms	188	H	216	Ms		
21	H	49	Ms	77	Ms	105	H	133	Ms	161	H	189	Ms	217	Ms		
22	Ms	50	Ms	78	Ms	106	Ms	134	Ms	162	Ms	190	Ms	218	Ms		
23	H	51	H	79	H	107	Ms	135	Ms	163	H	191	Ms	219	Ms		
24	Ms	52	H	80	H	108	Ms	136	Ms	164	H	192	H				
25	Ms	53	Ms	81	H	109	H	137	Ms	165	Ms	193	Ms				

26	Ms	54	n/a	82	H	110	H	138	Ms	166	Ms	194	Ms
27	Ms	55	H	83	Ms	111	Ms	139	Ms	167	H	195	H
28	H	56	Ms	84	H	112	Ms	140	Ms	168	Ms	196	Ms

표 5. 순천대학교 27점의 시료에 대하여, 병 관련 17종의 마커를 이용한 서비스 결과

No.	Sw5	Tm2a	Mi23	Ty1	Ty2	Ty4	ty5	Bw12	Bw6	py1-4	J3	I2	I3	Ve2	Ph3	Sm-565	Cf9
1	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S
2	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S
3	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S
4	S	H	S	S	H	S	S	H	S	S	S	H	S	H	S	H	S
5	S	H	S	S	H	S	S	H	S	S	S	H	S	H	S	H	S
6	S	H	S	S	H	S	S	H	S	S	S	H	S	H	S	H	S
7	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S	S	S
8	S	H	S	S	S	S	S	H	S	S	S	S	S	H	S	S	S
9	S	H	S	S	S	S	S	H	S	S	S	S	S	H	S	S	S
10	S	S	S	S	H	S	H	H	S	S	S	S	S	H	H	R	S
11	S	S	S	S	S	S	R	S	S	S	S	S	S	R	S	R	S
12	S	S	S	S	n/a	S	H	H	S	S	S	S	S	H	H	R	S
13	S	S	H	H	S	S	S	S	S	S	S	R	S	H	R	S	H
14	S	H	H	R	S	S	S	S	S	S	S	R	S	S	R	S	S
15	S	S	H	H	S	S	S	S	S	S	S	R	S	H	R	H	S
16	S	R	H	H	S	S	S	S	S	S	S	R	S	S	R	H	S
17	S	S	H	H	S	S	S	S	S	S	S	R	S	R	R	R	S
18	S	S	R	S	S	S	S	S	S	S	S	R	S	H	R	n/a	H
19	S	H	S	R	S	S	S	S	S	S	S	R	S	S	R	R	S
20	S	R	R	S	S	S	S	S	S	S	S	R	S	S	R	S	H
21	S	H	S	R	S	S	S	S	S	S	S	R	S	R	R	H	S
22	S	H	R	S	S	S	S	S	S	S	S	R	S	R	R	R	S
23	S	S	H	H	n/a	S	S	S	S	n/a	S	n/a	n/a	n/a	R	n/a	n/a
24	S	H	H	H	S	S	S	S	S	S	S	R	S	R	R	H	S
25	S	R	R	S	S	S	S	S	S	S	S	R	S	H	R	H	H
26	S	S	S	R	S	S	S	S	S	S	S	R	S	R	R	H	S
27	S	H	H	H	S	S	S	S	S	S	S	R	S	R	R	R	H

표 6. 순천대학교 2점의 시료에 대하여, 병 관련 16종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Ph3	Sm-565	Bw6	Bw12	py1-4	Cf9
1	R	S	S	H	R	S	H	R	S	R	H	S	S	S	S	S
2	R	S	S	H	R	S	H	R	S	R	H	S	S	S	S	S

표 7. 순천대학교 576점의 시료에 대하여, 병 관련 마커 1종의 마커를 이용한 순도검정 서비스 결과

No.	선발마커	샘플수	혼입샘플수	순도(%)
1	Sw5	576	0	100

표 8. 순천대학교 27점의 시료에 대하여, 병 관련 16종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Ph3	Sm-565	Bw6	Bw12	py1-4	Cf9
1	S	S	S	S	R	S	S	S	S	S	S	S	S	R	S	S
2	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
3	S	S	S	S	R	R	R	H	S	R	S	S	S	S	S	S
4	S	S	S	S	R	R	R	H	S	R	S	S	S	S	S	S
5	S	S	S	S	R	R	R	S	S	R	S	S	S	S	S	S
6	S	S	S	S	R	R	R	S	S	R	S	S	S	S	S	S
7	S	S	S	S	R	R	R	S	S	R	S	S	S	S	S	S
8	S	S	S	S	R	R	R	R	S	R	S	S	S	S	S	S

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Ph3	Sm-565	Bw6	Bw12	py1-4	Cf9
9	S	S	S	S	R	H	S	H	S	S	R	S	S	S	S	S
10	S	S	S	S	R	H	S	R	S	S	R	S	H	S	S	S
11	S	S	S	S	R	S	S	H	S	R	H	S	R	S	S	R
12	S	S	S	S	R	S	R	R	S	R	S	S	S	S	S	R
13	S	S	S	S	R	S	R	R	S	R	S	S	S	S	S	R
14	S	S	S	S	R	S	R	R	S	S	R	S	H	S	S	S
15	S	S	S	S	R	S	R	S	S	R	R	S	R	S	S	S
16	S	S	S	S	R	S	H	S	S	R	R	S	S	S	S	S
17	S	S	S	S	R	S	R	R	S	H	R	S	R	S	S	S
18	S	S	S	H	R	R	S	R	S	R	R	S	R	S	S	R
19	S	S	S	S	R	S	R	R	S	S	S	S	S	S	S	S
20	S	S	S	S	R	S	S	S	S	S	R	S	S	S	S	S
21	S	S	S	S	R	R	R	H	S	S	R	S	R	S	S	S
22	S	S	S	S	R	R	R	H	S	S	R	S	R	S	S	S
23	S	S	S	S	R	H	H	S	S	S	S	S	H	S	S	S
24	S	S	S	S	R	S	H	H	S	S	S	S	R	S	S	S
25	S	S	S	S	R	R	R	S	S	S	R	S	R	S	S	S
26	S	S	S	S	R	S	R	S	S	R	R	S	R	S	S	S
27	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

표 9. 순천대학교 173점의 시료에 대하여, 원예형질 관련 1종의 마커를 이용한 서비스 결과

No.	MS	No.	MS	No.	MS	No.	MS	No.	MS	No.	MS	No.	MS	No.	MS	No.	MS
1	Ms	23	Ms	45	H	67	Ms	89	H	111	H	133	Ms	155	Ms		
2	Ms	24	H	46	H	68	Ms	90	Ms	112	H	134	H	156	Ms		
3	Ms	25	Ms	47	H	69	Ms	91	Ms	113	Ms	135	Ms	157	Ms		
4	Ms	26	H	48	Ms	70	Ms	92	H	114	H	136	Ms	158	Ms		
5	H	27	Ms	49	H	71	Ms	93	H	115	Ms	137	Ms	159	Ms		
6	Ms	28	H	50	Ms	72	Ms	94	H	116	H	138	H	160	Ms		
7	H	29	H	51	H	73	Ms	95	H	117	Ms	139	H	161	Ms		
8	Ms	30	H	52	H	74	Ms	96	H	118	H	140	Ms	162	Ms		
9	H	31	Ms	53	H	75	H	97	Ms	119	Ms	141	H	163	Ms		
10	H	32	Ms	54	Ms	76	H	98	Ms	120	Ms	142	Ms	164	Ms		
11	H	33	Ms	55	H	77	H	99	H	121	H	143	H	165	Ms		
12	Ms	34	H	56	H	78	Ms	100	H	122	Ms	144	H	166	Ms		
13	Ms	35	Ms	57	Ms	79	Ms	101	H	123	Ms	145	Ms	167	Ms		
14	Ms	36	H	58	Ms	80	Ms	102	Ms	124	H	146	Ms	168	Ms		
15	Ms	37	H	59	H	81	Ms	103	H	125	H	147	Ms	169	Ms		
16	H	38	Ms	60	H	82	H	104	H	126	H	148	Ms	170	Ms		
17	H	39	H	61	Ms	83	H	105	H	127	Ms	149	H	171	Ms		
18	H	40	Ms	62	H	84	H	106	H	128	Ms	150	Ms	172	Ms		
19	H	41	H	63	Ms	85	H	107	H	129	Ms	151	Ms	173	Ms		
20	H	42	Ms	64	Ms	86	H	108	H	130	H	152	Ms				
21	H	43	H	65	Ms	87	Ms	109	H	131	H	153	Ms				
22	H	44	Ms	66	H	88	Ms	110	Ms	132	Ms	154	Ms				

표 10. 순천대학교 2점의 시료에 대하여, 병 관련 15종의 마커를 이용한 서비스 결과

No.	I2	I3	Ve2	J3	py1	Mi23	Bw6	Bw12	Sw5	Tm2a	Ty1	Ty2	Ph3	Sm-565	Cf9
1	R	H	H	R	R	R	H	R	H	H	S	H	H	S	R
2	S	S	H	R	S	R	H	R	H	H	S	H	H	H	S

표 11. 순천대학교 2,013점의 시료에 대하여, 병 관련 1종의 마커를 이용한 순도검정 서비스 결과

No.	선발마커	샘플수	혼입샘플수	순도(%)
1	Tm2a	1,017	1	99.9
2	Tm2a	996	0	100.0
합계		2,013		

표 12. 순천대학교 4점의 시료에 대하여, 병 관련 16종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Ph3	Sm-565	Bw6	Bw12	py1-4	Cf9
1	S	S	S	S	H	S	H	S	S	S	R	H	R	H	S	S
2	S	S	S	S	H	S	H	S	S	S	R	H	R	H	S	S
3	H	S	S	H	H	H	H	R	S	S	R	H	H	S	S	S
4	H	S	S	H	H	H	H	R	S	S	R	H	H	S	S	S

표 13. 순천대학교 1,536점의 시료에 대하여, 병 관련 1종의 마커를 이용한 순도검정 서비스 결과

No.	선발마커	샘플수	혼입샘플수	순도(%)
1	Tm2a	1,536	0	100

표 14. 순천대학교 51점의 시료에 대하여, 병 관련 16종 마커 및 원예형질 관련 2종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Ph3	Sm-565	Bw6	Bw12	py1-4	Cf9	J2	EJ2
1	S	S	S	S	R	S	R	S	S	R	R	S	S	S	S	R	j2	ej2
2	S	S	S	S	R	S	R	H	S	H	R	S	S	S	S	R	j2	ej2
3	S	S	S	S	R	S	R	H	S	H	R	S	S	S	S	R	j2	ej2
4	S	S	S	S	R	S	R	R	S	H	R	S	S	S	S	R	j2	ej2
5	S	S	S	S	R	S	R	H	S	H	R	S	S	S	S	R	j2	ej2
6	S	S	S	S	R	S	R	R	S	H	R	S	S	S	S	R	j2	ej2
7	S	S	S	S	R	S	R	H	S	H	R	S	S	S	S	R	j2	ej2
8	S	S	S	S	R	S	R	H	S	S	R	S	S	S	S	R	j2	ej2
9	S	S	S	S	R	S	R	H	S	H	R	S	S	S	S	R	j2	ej2
10	S	S	S	S	R	S	R	H	S	H	R	S	S	S	S	R	j2	ej2
11	S	S	S	S	R	S	R	H	S	R	R	S	S	S	S	R	j2	ej2
12	S	S	S	S	R	S	R	R	S	H	R	S	S	S	S	R	j2	ej2
13	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S	R	j2	ej2
14	S	S	S	S	R	S	R	R	S	S	R	S	S	S	S	R	j2	ej2
15	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S	R	j2	ej2
16	S	S	S	S	R	S	R	R	S	R	R	S	S	S	S	R	j2	ej2
17	S	S	S	S	R	S	R	H	S	H	R	S	S	S	S	R	j2	ej2
18	S	S	S	S	R	S	R	H	S	H	R	S	S	S	S	R	j2	ej2
19	S	S	S	S	R	S	R	H	S	H	R	S	S	S	S	R	j2	ej2
20	S	S	S	S	R	S	R	S	S	R	R	S	S	S	S	R	j2	ej2
21	S	S	S	S	R	S	R	H	S	S	R	S	S	S	S	R	j2	ej2
22	S	S	S	S	R	S	R	H	S	H	R	S	S	S	S	R	j2	ej2
23	S	S	S	S	R	S	R	H	S	R	R	S	S	S	S	R	j2	ej2
24	S	S	S	S	R	S	R	R	S	H	R	S	S	S	S	R	j2	ej2
25	S	S	S	S	R	S	R	H	S	R	R	S	S	S	S	R	j2	ej2
26	S	S	S	S	R	S	R	R	S	R	R	S	S	S	S	R	j2	ej2
27	S	S	S	S	R	S	R	H	S	H	R	S	S	S	S	R	j2	ej2
28	S	S	S	S	R	S	R	H	S	S	R	S	S	S	S	R	j2	ej2
29	S	S	S	S	R	S	R	R	S	R	R	S	S	S	S	R	j2	ej2
30	S	S	S	S	R	S	R	R	S	H	R	S	S	S	S	R	j2	ej2
31	S	S	S	S	R	S	R	S	S	H	R	S	S	S	S	R	j2	ej2
32	S	S	S	S	R	S	R	S	S	H	R	S	S	S	S	R	j2	ej2
33	S	S	S	S	R	S	R	H	S	H	R	S	S	S	S	R	j2	ej2
34	S	S	S	S	R	S	R	S	S	H	R	S	S	S	S	R	j2	ej2
35	S	S	S	S	R	S	R	H	S	H	R	S	S	S	S	R	j2	ej2
36	S	S	S	S	R	S	R	R	S	H	R	S	S	S	S	R	j2	ej2
37	S	S	S	S	R	S	R	R	S	S	R	S	S	S	S	R	j2	ej2
38	S	S	S	S	R	S	R	H	S	H	R	S	S	S	S	R	j2	ej2
39	S	S	S	S	R	S	R	n/a	S	R	R	S	S	S	S	R	j2	ej2
40	S	S	S	S	R	S	R	R	S	H	R	S	S	S	S	R	j2	ej2
41	S	S	S	S	R	S	R	n/a	S	R	R	S	S	S	n/a	R	j2	ej2

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Ph3	Sm-565	Bw6	Bw12	py1-4	Cf9	J2	EJ2
42	S	S	S	S	R	S	R	n/a	S	H	R	S	S	S	S	R	j2	ej2
43	S	S	S	S	R	S	R	R	S	R	R	S	S	S	S	R	j2	ej2
44	S	S	S	S	R	S	R	H	S	S	R	S	S	S	S	R	j2	ej2
45	S	S	S	S	R	S	R	H	S	R	R	S	S	S	S	R	j2	ej2
46	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S	R	j2	ej2
47	S	S	S	S	R	S	R	H	S	H	R	S	S	S	S	R	j2	ej2
48	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S	R	j2	ej2
49	S	S	S	S	R	S	R	R	S	R	R	S	S	S	S	R	j2	ej2
50	S	S	S	S	R	S	R	S	S	H	R	S	S	S	S	R	j2	ej2
51	S	S	S	S	R	R	R	R	R	R	S	S	R	R	R	R	J2	EJ2

표 15. 순천대학교 48점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

No.	J2	EJ2	No.	J2	EJ2	No.	J2	EJ2	No.	J2	EJ2	No.	J2	EJ2
1	j2	ej2	11	J2	EJ2	21	J2	ej2	31	j2	ej2	41	j2	ej2
2	j2	ej2	12	J2	ej2	22	J2	ej2	32	j2	ej2	42	j2	H
3	J2	EJ2	13	J2	ej2	23	J2	ej2	33	j2	ej2	43	j2	ej2
4	j2	EJ2	14	J2	H	24	J2	ej2	34	j2	ej2	44	H	H
5	j2	EJ2	15	J2	EJ2	25	j2	H	35	j2	ej2	45	j2	ej2
6	H	EJ2	16	J2	H	26	J2	EJ2	36	j2	ej2	46	J2	ej2
7	J2	EJ2	17	J2	EJ2	27	j2	ej2	37	j2	EJ2	47	J2	ej2
8	J2	EJ2	18	J2	EJ2	28	j2	ej2	38	H	H	48	J2	ej2
9	J2	EJ2	19	J2	H	29	j2	ej2	39	H	EJ2			
10	J2	H	20	J2	ej2	30	j2	ej2	40	J2	H			

표 16. 순천대학교 29점의 시료에 대하여, 병 관련 15종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Ph3	Sm-565	Bw6	Bw12	py1-4
1	S	H	S	R	S	S	S	S	S	H	R	R	H	S	S
2	S	H	S	R	S	S	S	S	S	H	R	R	S	S	S
3	S	H	S	R	S	S	S	S	S	H	R	R	H	S	S
4	S	H	S	R	S	S	S	S	S	H	R	R	H	S	S
5	S	H	S	R	S	S	S	S	S	H	H	R	S	S	S
6	S	H	S	R	S	S	S	S	S	H	R	R	H	S	S
7	S	H	S	R	S	S	S	S	S	H	R	R	H	S	S
8	H	S	S	R	S	S	S	S	S	H	H	H	S	S	S
9	H	S	S	R	S	S	S	S	S	H	H	H	S	S	S
10	H	S	S	R	S	S	S	S	S	H	H	H	S	S	S
11	H	S	S	R	S	S	S	S	S	H	H	H	S	S	S
12	H	S	S	R	S	S	H	S	S	H	H	H	S	S	S
13	H	S	S	R	S	S	H	S	S	H	H	H	S	S	S
14	S	R	S	R	S	S	S	S	S	R	H	R	S	S	S
15	S	R	S	R	S	S	S	S	S	R	H	R	R	S	S
16	S	H	S	R	S	S	S	S	S	H	R	R	S	S	S
17	S	R	S	R	S	S	S	S	S	R	S	R	H	S	S
18	S	H	S	R	S	S	S	S	S	H	R	R	H	S	S
19	S	H	S	R	S	S	S	S	S	H	H	R	S	S	S
20	H	S	S	R	S	S	S	S	S	H	H	H	S	S	S
21	H	S	S	R	S	S	S	S	S	H	H	H	S	S	S
22	H	S	S	R	S	S	S	S	S	H	H	H	S	S	S
23	H	S	S	R	S	S	H	S	S	H	H	H	S	S	S
24	S	S	S	R	S	S	S	S	S	S	R	R	S	S	S
25	S	S	S	R	S	S	S	S	S	S	R	R	S	S	S
26	R	S	S	R	S	S	S	S	S	R	S	S	S	S	S
27	R	S	S	R	S	S	S	S	S	R	S	S	S	S	S
28	S	R	S	R	S	S	S	S	S	R	S	R	R	S	S
29	S	R	S	R	S	S	S	S	S	R	S	R	S	S	S

표 17. 순천대학교 24점의 시료에 대하여, 병 관련 5종의 마커를 이용한 서비스 결과

No.	Ty2	I2	Sm-565	Bw6	Bw12
1	S	S	R	R	S
2	S	S	R	R	S
3	S	S	R	R	S
4	S	S	R	R	S
5	S	S	R	R	S
6	R	S	S	R	R
7	R	S	S	R	S
8	R	S	S	R	S
9	R	S	S	R	H
10	R	S	S	R	S
11	R	S	S	R	R
12	R	S	S	R	R

No.	Ty2	I2	Sm-565	Bw6	Bw12
13	R	S	S	R	H
14	R	S	S	R	H
15	R	S	S	S	S
16	R	S	S	S	S
17	R	S	S	S	S
18	R	S	S	S	S
19	R	S	S	S	S
20	R	S	S	S	S
21	R	S	S	S	S
22	R	S	S	S	S
23	R	S	S	S	S
24	R	S	S	S	S

표 18. 순천대학교 96점의 시료에 대하여, 병 관련 15종의 마커를 이용한 서비스 결과

No.	I2	I3	Ve2	J3	Py1	Mi23	Bw6	Bw12	Sw5	Tm2a	Ty1	Ty2	Ph3	Sm-565	Cf9
1	S	S	S	R	S	R	S	S	R	S	S	R	R	R	R
2	H	S	S	R	S	S	S	S	R	S	S	R	R	R	n/a
3	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
4	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
5	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
6	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
7	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
8	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
9	H	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
10	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
11	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
12	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
13	S	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
14	S	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
15	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
16	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	S
17	S	S	S	R	S	n/a	S	S	R	S	S	R	R	R	H
18	S	S	S	R	S	n/a	S	S	R	S	S	R	R	R	H
19	S	S	S	R	S	n/a	S	S	R	S	S	R	R	R	S
20	S	S	S	R	S	n/a	S	S	R	S	S	R	R	R	H
21	S	S	S	R	S	n/a	S	S	R	S	S	R	R	R	S
22	S	S	S	R	S	n/a	S	S	R	S	S	R	R	R	H
23	S	S	S	R	S	n/a	S	S	R	S	S	R	R	R	S
24	S	S	S	R	S	n/a	S	S	R	S	S	R	R	R	H
25	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	S
26	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
27	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
28	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
29	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
30	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
31	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
32	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
33	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
34	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
35	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
36	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
37	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
38	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
39	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
40	H	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a

No.	I2	I3	Ve2	J3	Py1	Mi23	Bw6	Bw12	Sw5	Tm2a	Ty1	Ty2	Ph3	Sm-565	Cf9
41	S	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
42	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
43	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
44	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
45	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
46	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
47	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
48	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
49	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
50	R	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
51	S	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
52	S	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
53	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
54	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
55	n/a	S	S	R	S	n/a	S	S	R	H	S	R	R	R	n/a
56	R	S	S	R	S	R	S	S	R	S	H	R	R	R	n/a
57	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
58	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
59	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
60	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
61	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
62	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
63	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
64	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
65	n/a	S	R	R	S	n/a	S	S	S	S	S	R	R	S	n/a
66	n/a	S	S	R	S	R	S	S	H	R	H	R	S	R	n/a
67	S	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
68	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
69	H	S	S	R	S	n/a	S	S	H	S	S	R	R	R	n/a
70	H	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
71	H	S	R	R	S	n/a	S	S	S	S	S	S	R	S	n/a
72	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
73	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
74	H	S	S	R	S	R	S	S	R	S	S	H	R	R	n/a
75	H	S	H	R	S	n/a	S	S	R	S	S	H	R	R	R
76	H	S	S	R	S	n/a	S	S	R	H	S	S	R	R	n/a
77	H	S	R	R	S	n/a	S	S	S	R	S	H	R	H	R
78	n/a	S	S	R	S	n/a	S	S	S	S	S	R	R	S	n/a
79	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
80	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
81	S	S	H	R	S	R	R	R	S	H	S	H	S	R	S
82	n/a	S	R	R	S	n/a	S	S	R	S	S	R	R	H	n/a
83	n/a	S	H	R	S	n/a	S	S	R	H	S	R	R	R	R
84	n/a	S	H	R	S	n/a	S	S	R	S	S	R	R	R	n/a
85	S	S	S	R	S	n/a	S	S	R	S	S	R	R	R	n/a
86	n/a	S	S	R	S	n/a	S	S	S	S	S	R	R	R	n/a
87	n/a	S	R	R	S	n/a	S	S	R	S	S	R	R	R	n/a
88	n/a	S	H	R	S	n/a	S	S	R	S	S	R	R	R	R
89	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
90	n/a	S	H	R	S	n/a	S	S	R	S	S	R	R	R	R
91	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
92	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	H	R
93	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
94	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
95	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R
96	n/a	S	S	R	S	n/a	S	S	R	S	S	R	R	R	R

표 19. 순천대학교 104점의 시료에 대하여, 병 관련 15종의 마커를 이용한 서비스 결과

No.	I2	I3	Ve2	J3	Py1	Mi23	Bw6	Bw12	Sw5	Tm2a	Ty1	Ty2	Ph3	Sm-565	Cf9
1	R	R	R	R	S	H	R	R	S	R	S	S	S	R	S
2	R	R	R	R	S	R	H	R	S	R	S	S	S	R	S
3	S	S	R	R	S	R	R	R	S	R	S	S	S	S	S
4	S	S	R	R	S	R	R	R	S	R	S	S	S	S	S
5	S	S	R	R	S	R	R	R	S	R	S	S	S	S	S
6	S	S	H	R	S	R	R	R	S	R	S	S	S	R	S
7	R	S	R	R	S	R	R	R	S	R	S	S	S	R	S
8	R	H	R	R	S	R	R	R	S	R	S	S	S	R	S
9	R	R	R	R	S	R	R	R	S	R	S	S	S	R	S
10	R	R	R	H	S	R	S	R	S	R	S	S	S	R	S
11	R	R	R	H	S	R	S	R	S	R	S	S	S	R	S
12	R	S	R	R	S	R	R	R	S	R	S	S	S	R	S
13	R	S	R	R	S	H	H	R	S	R	S	S	S	R	S
14	R	S	R	R	S	R	S	R	S	R	S	S	S	R	S
15	R	H	R	R	S	R	R	R	S	R	S	S	S	R	S
16	R	S	R	R	S	R	S	R	S	R	S	S	R	S	S
17	R	R	H	R	R	R	R	R	S	R	S	S	S	R	R
18	R	R	R	R	R	R	R	R	S	R	S	S	S	R	R
19	R	R	R	R	R	R	R	R	S	R	S	S	S	R	R
20	R	R	R	R	R	R	R	R	S	R	S	S	R	S	S
21	R	R	R	R	R	R	R	R	S	R	S	S	R	S	S
22	R	R	R	R	R	R	R	R	S	R	S	S	R	S	S
23	R	S	R	R	R	R	R	R	S	R	S	S	R	S	S
24	R	S	R	R	R	R	R	R	S	R	S	S	R	S	S
25	R	H	S	R	R	R	R	R	S	R	S	S	S	R	S
26	R	R	S	R	R	R	R	R	S	R	S	S	S	R	S
27	R	R	S	R	R	R	R	R	S	R	S	S	S	R	S
28	S	S	R	R	R	R	R	R	S	R	S	S	S	R	S
29	S	S	R	R	R	R	R	R	S	R	S	S	S	R	S
30	R	R	R	R	R	R	R	R	S	R	S	S	S	S	S
31	R	R	R	R	R	R	R	R	S	R	S	S	S	S	S
32	R	R	R	R	R	R	R	R	S	R	S	S	S	S	S
33	R	R	H	R	R	R	R	R	S	R	S	S	S	S	S
34	R	R	R	R	R	R	R	R	S	R	S	S	S	S	S
35	R	R	R	R	R	R	R	R	S	R	S	S	S	S	S
36	S	S	R	R	S	R	R	R	S	R	S	S	S	S	S
37	R	S	S	H	S	R	R	R	S	R	S	S	S	R	S
38	R	S	R	H	S	R	R	R	S	R	S	S	S	R	S
39	R	S	R	S	S	H	R	R	S	S	S	S	S	R	S
40	R	S	R	S	S	H	R	R	S	S	S	S	S	R	S
41	R	S	S	H	S	R	R	R	S	R	S	S	S	S	S
42	R	S	R	H	S	R	R	R	S	R	S	S	S	R	S
43	S	S	S	H	S	R	R	R	S	R	S	S	S	S	S
44	S	S	S	H	S	R	R	R	S	R	S	S	S	S	S
45	S	S	S	H	S	R	R	R	S	R	S	S	S	S	S
46	R	S	R	H	S	R	R	R	S	H	S	S	S	S	S
47	R	S	R	H	S	R	R	R	S	H	S	S	H	S	S
48	R	R	R	R	S	R	R	R	S	R	S	S	S	R	S
49	R	S	R	R	S	R	S	R	S	R	S	S	S	R	S
50	R	S	R	R	S	R	R	R	S	R	S	S	S	S	S
51	R	S	R	R	S	R	R	R	S	R	S	S	S	R	S
52	R	S	R	R	S	R	H	R	S	R	S	S	S	S	S
53	R	S	R	R	S	R	R	R	S	R	S	S	R	S	R
54	R	S	R	R	S	R	S	H	S	R	S	S	R	S	R
55	S	S	R	R	R	R	R	R	S	R	S	S	H	S	R
56	R	R	S	H	R	R	S	R	S	R	S	S	S	R	S

No.	I2	I3	Ve2	J3	Py1	Mi23	Bw6	Bw12	Sw5	Tm2a	Ty1	Ty2	Ph3	Sm-565	Cf9
57	R	R	R	H	R	R	S	R	S	R	S	S	S	R	S
58	R	R	R	R	S	R	S	R	S	R	S	S	S	S	S
59	S	S	R	R	S	R	R	R	S	R	S	S	S	S	S
60	R	S	R	R	S	R	R	R	S	R	S	S	S	S	S
61	R	S	S	S	S	R	R	H	S	S	S	S	S	R	S
62	R	S	R	R	S	R	S	R	S	R	S	S	S	R	S
63	R	S	R	R	S	R	S	R	S	R	S	S	S	R	S
64	R	S	R	R	S	H	R	R	S	R	S	S	S	R	S
65	R	S	R	S	S	R	S	R	S	R	S	S	S	R	S
66	S	S	R	S	S	R	S	R	S	R	S	S	S	R	S
67	R	S	R	S	S	R	R	R	S	S	S	S	S	R	S
68	R	S	R	S	S	R	S	R	S	S	S	S	S	R	S
69	R	S	R	S	S	R	H	R	S	S	S	S	S	R	S
70	S	S	S	R	S	R	R	R	S	R	S	S	S	S	S
71	R	S	R	R	S	R	R	R	S	R	S	S	S	R	S
72	S	S	S	R	S	R	R	R	S	R	S	S	S	R	S
73	S	S	R	R	S	R	R	R	S	R	S	S	S	R	S
74	S	S	S	S	S	R	S	R	S	S	S	S	S	R	R
75	S	S	S	H	S	H	R	R	S	H	S	S	S	R	R
76	R	S	R	H	S	R	R	R	S	R	S	S	S	R	S
77	R	S	R	S	S	S	S	R	S	S	S	S	S	R	S
78	R	S	S	H	S	H	H	R	S	H	S	S	S	R	S
79	S	S	S	R	S	R	R	R	S	R	S	S	S	R	S
80	R	S	R	R	R	R	R	R	S	S	S	S	S	S	S
81	R	S	R	R	R	R	R	R	S	S	S	S	S	S	S
82	R	S	R	H	S	R	S	R	S	R	S	S	S	S	S
83	R	S	R	S	S	R	S	R	S	S	S	S	S	R	S
84	R	S	R	S	S	R	S	S	S	S	S	S	S	R	S
85	R	S	R	H	S	R	H	R	S	H	S	S	S	R	S
86	S	S	R	H	S	R	S	R	S	H	S	S	S	S	S
87	R	S	R	R	S	R	S	R	S	R	S	S	S	R	R
88	S	S	S	R	S	R	R	R	S	R	S	S	S	R	S
89	R	S	R	S	S	R	S	R	S	R	S	S	S	R	R
90	R	S	S	R	S	R	R	R	S	R	S	S	R	S	S
91	R	S	R	R	R	R	R	R	S	R	S	S	R	S	S
92	S	S	S	R	R	R	R	R	S	R	S	S	S	S	S
93	S	S	S	S	S	R	S	R	S	R	S	S	S	S	S
94	S	S	S	R	S	S	R	R	S	R	S	S	S	R	S
95	R	S	R	R	R	R	R	R	S	R	S	S	S	S	S
96	R	R	R	R	S	R	R	R	S	R	S	S	S	R	S
97	R	R	S	R	R	R	R	R	S	R	S	S	S	R	S
98	R	R	S	H	R	R	S	R	S	R	S	S	S	R	S
99	R	S	S	R	R	R	R	R	S	R	S	S	S	R	S
100	R	S	S	R	R	R	R	R	S	R	S	S	S	R	S
101	S	S	R	R	R	S	R	R	S	R	S	S	S	R	S
102	R	R	R	R	R	R	R	R	S	R	S	S	S	S	R
103	R	R	R	R	R	R	R	R	S	R	S	S	S	S	R
104	R	S	R	R	R	R	R	R	S	S	S	S	S	S	S

표 20. 순천대학교 826점의 시료에 대하여, 병 관련 1종의 마커를 이용한 순도검정 서비스 결과

No.	선발마커	샘플수	혼입샘플수	순도(%)
1	Sw5	826	1	99.9

표 21. 순천대학교 693점의 시료에 대하여, 병 관련 15종의 마커를 이용한 서비스 결과

No.	Sw5	I2	I3	J3	Mi23	Tm2a	Ty1	Ty2	Ph3	Ve2	Sm-565	Bw12	Bw6	Cf9	py1
1	S	R	S	R	H	R	S	S	S	S	R	S	S	R	S

No.	Sw5	I2	I3	J3	Mi23	Tm2a	Ty1	Ty2	Ph3	Ve2	Sm-565	Bw12	Bw6	Cf9	py1
2	S	R	S	S	H	R	S	S	S	S	R	S	S	R	S
3	S	R	S	R	H	R	S	S	S	S	R	S	S	R	S
4	S	R	S	S	H	R	S	S	S	S	R	S	S	R	S
5	S	R	S	S	H	R	S	S	H	S	S	S	S	R	S
6	S	R	S	H	R	R	S	S	S	S	R	S	S	R	S
7	S	R	S	H	H	R	S	S	S	S	R	S	S	R	S
8	S	R	S	S	R	R	S	S	S	S	R	S	S	R	S
9	S	R	S	H	S	R	S	S	S	S	R	S	S	R	S
10	S	S	S	S	R	S	S	S	S	S	H	S	S	S	S
11	S	S	S	S	H	S	H	S	S	S	R	S	H	S	S
12	S	S	S	S	S	S	R	S	S	S	R	S	R	S	S
13	S	S	S	S	H	S	H	S	S	S	H	S	H	S	S
14	S	S	S	S	H	S	H	S	S	S	R	S	H	S	S
15	S	S	S	S	S	S	R	S	S	S	R	S	R	S	S
16	S	S	S	S	S	S	R	S	S	S	S	S	R	S	S
17	S	S	S	S	H	S	H	S	S	S	S	S	H	S	S
18	S	S	S	S	H	S	H	S	S	S	S	S	H	S	S
19	S	S	S	S	S	S	R	S	S	S	H	S	R	S	S
20	S	S	S	H	S	R	R	S	S	R	S	S	R	R	S
21	S	S	S	S	R	R	S	S	S	R	S	S	R	R	S
22	S	H	S	H	H	R	H	S	S	R	S	S	H	R	S
23	S	S	S	S	S	R	R	S	S	R	S	S	H	R	S
24	S	R	S	H	R	R	S	S	S	R	S	S	S	R	S
25	S	H	S	H	H	R	H	S	S	R	S	S	H	R	S
26	S	H	S	R	R	R	S	S	S	R	S	S	S	R	S
27	S	R	S	S	R	H	S	S	R	S	S	S	S	S	S
28	S	R	S	S	R	R	S	S	R	S	S	S	S	S	S
29	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S
30	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S
31	S	R	S	S	R	R	S	S	R	S	S	S	S	S	S
32	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S
33	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S
34	S	R	S	S	R	H	S	S	R	S	S	S	S	S	S
35	S	R	S	S	R	S	S	S	R	S	S	S	S	S	S
36	S	R	S	S	R	H	S	S	R	S	S	S	S	S	S
37	S	H	S	S	H	R	S	S	S	H	S	S	H	R	S
38	S	H	S	S	H	R	S	S	S	H	S	S	H	R	S
39	S	R	S	S	H	R	S	S	H	H	S	S	H	R	S
40	S	H	S	S	H	R	S	S	S	H	S	S	H	R	S
41	S	H	S	S	S	R	S	S	R	H	S	S	H	R	S
42	S	R	S	S	H	R	S	S	S	H	S	S	S	R	S
43	S	R	S	S	R	R	S	S	H	H	S	S	H	R	S
44	S	S	S	S	H	R	S	S	H	H	S	S	H	R	S
45	S	S	S	S	H	R	S	S	H	S	S	S	H	R	S
46	S	R	S	S	H	R	S	S	H	H	S	S	H	R	S
47	R	R	S	S	S	R	S	S	S	R	S	S	S	S	S
48	R	R	S	S	S	R	S	S	S	R	S	S	S	S	S
49	H	R	S	S	H	R	H	S	S	R	S	S	S	S	S
50	H	R	S	S	S	R	S	S	S	R	S	S	S	S	S
51	S	R	S	S	H	R	H	S	S	R	S	S	S	S	S
52	S	R	S	S	H	R	H	S	S	R	S	S	S	S	S
53	H	S	S	S	S	R	R	S	S	R	S	S	S	S	S
54	H	S	S	S	R	H	S	S	S	R	S	S	S	S	S
55	H	S	S	S	S	S	R	S	S	R	S	S	S	S	S
56	H	S	S	S	R	H	S	S	S	R	S	S	S	S	S
57	H	S	S	S	S	H	R	S	S	R	S	S	S	S	S
58	S	S	S	S	S	H	R	S	S	R	S	S	S	S	S

No.	Sw5	I2	I3	J3	Mi23	Tm2a	Ty1	Ty2	Ph3	Ve2	Sm-565	Bw12	Bw6	Cf9	py1
59	H	S	S	S	H	S	H	S	S	R	S	S	S	S	S
60	H	S	S	S	H	H	H	S	S	R	S	S	S	S	S
61	S	S	S	S	S	R	R	S	S	R	S	S	S	S	S
62	S	H	S	S	H	R	S	S	R	H	S	S	H	R	S
63	S	S	S	S	R	R	S	S	S	H	S	S	S	R	S
64	S	S	S	S	H	R	S	S	H	H	S	S	H	R	S
65	S	R	S	S	R	R	S	S	H	S	S	S	S	R	S
66	S	S	S	S	R	R	S	S	S	S	S	S	S	R	S
67	S	R	S	S	H	R	S	S	S	H	S	S	H	R	S
68	S	H	S	S	R	R	S	S	H	S	S	S	S	R	S
69	S	S	S	S	H	R	S	S	H	H	S	S	H	R	S
70	S	H	S	S	H	R	S	S	S	S	S	S	H	R	S
71	S	H	S	S	S	R	S	S	H	H	S	S	R	R	S
72	R	S	S	S	S	R	H	S	R	R	R	S	S	S	S
73	R	S	S	S	S	H	H	S	R	R	R	S	S	S	S
74	H	S	S	S	S	H	H	S	H	R	R	S	S	S	S
75	H	S	S	S	S	H	H	S	H	R	R	S	S	S	S
76	H	S	S	S	S	H	H	S	H	R	R	S	S	S	S
77	H	S	S	S	S	H	H	S	H	R	R	S	S	S	S
78	S	S	S	S	S	R	R	S	S	R	R	S	S	S	S
79	H	S	S	S	S	S	R	S	H	R	R	S	S	S	S
80	H	S	S	S	S	S	H	S	H	R	R	S	S	S	S
81	S	S	S	S	S	H	S	S	S	R	R	S	S	S	S
82	H	R	H	S	H	H	H	S	S	S	S	S	S	R	S
83	H	R	H	S	H	H	H	S	S	H	S	S	S	R	S
84	H	R	H	S	S	R	R	S	S	H	S	S	S	R	S
85	H	R	R	S	H	S	H	S	S	S	S	S	S	R	S
86	H	R	H	S	H	R	H	S	S	S	S	S	S	R	S
87	R	R	R	S	S	S	R	S	S	R	S	S	S	R	S
88	R	R	H	S	S	R	R	S	S	H	S	S	S	R	S
89	S	R	S	S	H	R	H	S	S	H	S	S	S	R	S
90	H	R	H	S	S	R	R	S	S	S	S	S	S	R	S
91	H	R	R	S	S	R	R	S	S	H	S	S	S	R	S
92	S	S	S	S	R	R	H	S	S	S	S	S	S	R	S
93	S	S	S	S	R	R	R	S	S	S	S	S	S	R	S
94	S	S	S	S	R	R	H	S	S	S	S	S	S	R	S
95	S	S	S	S	R	R	H	S	S	S	S	S	S	R	S
96	S	S	S	S	R	R	H	S	S	S	S	S	S	R	S
97	S	S	S	S	R	R	H	S	S	S	S	S	S	R	S
98	S	S	S	S	R	R	H	S	S	S	S	S	S	R	S
99	S	S	S	S	R	R	H	S	S	S	S	S	S	R	S
100	S	S	S	S	R	R	R	S	S	S	S	S	S	R	S
101	S	S	S	S	R	R	H	S	S	S	S	S	S	R	S
102	S	S	S	S	R	S	S	S	R	S	S	S	R	R	S
103	S	S	S	S	R	S	S	S	R	S	S	S	R	R	S
104	S	S	S	S	R	H	S	S	R	S	S	S	R	R	S
105	S	S	S	S	H	R	H	S	R	S	S	S	R	R	S
106	S	S	S	S	S	S	R	S	R	S	S	S	R	R	S
107	S	S	S	S	H	H	H	S	R	S	S	S	R	R	S
108	S	S	S	S	H	H	S	S	R	S	S	S	R	R	S
109	S	S	S	S	H	H	H	S	R	S	S	S	R	R	S
110	S	S	S	S	R	S	S	S	R	S	S	S	R	R	S
111	S	S	S	S	R	H	S	S	R	S	S	S	R	R	S
112	S	S	S	S	S	R	R	S	S	H	S	S	S	S	S
113	S	S	S	S	S	R	R	S	S	H	S	S	S	S	S
114	S	S	S	S	S	R	R	S	S	R	S	S	S	S	S
115	S	S	S	S	S	R	R	S	S	R	S	S	S	S	S
116	S	S	S	S	S	R	R	S	S	R	S	S	S	S	S
117	S	S	S	S	S	R	R	S	S	R	S	S	S	S	S
118	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S
119	S	S	S	S	S	R	R	S	S	H	S	S	S	S	S

No.	Sw5	I2	I3	J3	Mi23	Tm2a	Ty1	Ty2	Ph3	Ve2	Sm-565	Bw12	Bw6	Cf9	py1
120	S	S	S	S	S	R	R	S	S	H	S	S	S	S	S
121	S	S	S	S	S	R	R	S	S	R	S	S	S	S	S
122	S	R	R	R	S	R	H	S	R	R	S	S	H	S	S
123	S	R	H	R	S	R	S	S	R	R	S	S	S	S	S
124	S	R	H	R	S	R	S	S	R	R	S	S	S	S	S
125	S	R	R	R	S	R	R	S	R	R	S	S	R	S	S
126	S	R	H	R	S	R	H	S	R	R	S	S	H	S	S
127	S	R	H	R	S	R	H	S	R	R	S	S	S	S	S
128	S	R	S	R	S	R	S	S	R	R	S	S	R	S	S
129	S	R	R	R	S	R	S	S	R	R	S	S	S	S	S
130	S	R	R	R	S	R	S	S	R	R	S	S	H	S	S
131	S	R	R	R	S	R	S	S	R	R	S	S	H	S	S
132	S	R	S	S	S	R	H	S	S	R	S	S	H	S	S
133	S	R	S	R	S	R	H	S	H	H	S	S	R	S	S
134	S	R	S	R	S	R	H	S	H	S	S	S	H	S	S
135	S	R	S	S	S	R	H	S	H	R	S	S	H	S	S
136	S	R	S	S	S	R	R	S	H	R	S	S	H	S	S
137	S	R	S	R	S	R	R	S	S	S	S	S	H	S	S
138	S	R	S	S	S	R	R	S	H	R	S	S	R	S	S
139	S	R	S	H	S	R	H	S	H	S	S	S	H	S	S
140	S	R	S	H	S	R	H	S	H	H	S	S	R	S	S
141	S	R	S	H	S	R	H	S	H	S	S	S	H	S	S
142	H	R	S	S	S	S	S	S	H	S	S	S	S	S	S
143	H	R	S	S	S	H	H	S	H	R	S	S	S	S	S
144	H	R	S	S	S	H	H	S	H	R	S	S	S	S	S
145	H	R	S	S	S	R	H	S	H	H	S	S	S	S	S
146	R	R	S	S	S	H	H	S	R	R	S	S	S	S	S
147	S	R	S	S	S	S	S	S	S	H	S	S	S	S	S
148	H	R	S	S	S	H	R	S	H	H	S	S	S	S	S
149	H	R	S	S	S	H	S	S	H	H	S	S	S	S	S
150	S	R	S	S	S	H	R	S	S	H	S	S	S	S	S
151	H	R	S	S	S	R	H	S	H	R	S	S	S	S	S
152	S	S	S	R	S	R	S	S	R	R	S	S	S	S	S
153	S	S	S	H	S	R	S	S	R	H	S	S	S	S	S
154	S	S	S	R	S	R	S	S	R	S	S	S	S	S	S
155	S	R	S	R	S	R	S	S	S	S	S	H	R	S	S
156	S	R	S	R	S	R	S	S	R	S	S	H	H	S	S
157	S	R	S	R	S	S	S	S	H	S	S	H	R	S	S
158	S	R	S	R	S	H	H	S	H	S	S	R	H	S	S
159	S	R	S	R	S	H	S	S	H	S	S	H	R	S	S
160	S	R	S	R	S	S	H	S	H	S	S	R	H	S	S
161	S	R	S	R	S	H	R	S	H	S	S	H	S	S	S
162	S	R	S	R	S	R	R	S	H	S	S	S	S	S	S
163	S	R	S	R	S	H	H	S	H	S	S	S	H	S	S
164	S	R	S	R	S	S	H	S	R	S	S	S	H	S	S
165	S	S	S	S	S	R	R	S	H	H	R	S	S	S	S
166	S	S	S	S	S	H	R	S	S	R	R	S	S	S	S
167	S	S	S	S	S	R	R	S	H	H	H	S	S	S	S
168	S	S	S	S	S	H	H	S	H	H	H	S	S	S	S
169	S	S	S	S	S	H	R	S	R	R	R	S	S	S	S
170	S	S	S	S	S	S	H	S	S	R	R	S	S	S	S
171	S	S	S	S	S	R	R	S	S	R	H	S	S	S	S
172	S	S	S	S	S	R	H	S	S	S	R	S	S	S	S
173	S	S	S	S	S	R	S	S	R	H	H	S	S	S	S
174	S	S	S	S	S	H	S	S	H	H	H	S	S	S	S
175	S	H	S	S	S	R	H	S	R	H	S	S	S	S	S
176	S	S	S	S	S	R	H	S	R	H	S	S	S	S	S
177	S	H	S	S	S	R	S	S	R	H	S	S	S	S	S
178	S	H	S	S	S	R	H	S	R	H	S	S	S	S	S
179	S	R	S	S	S	R	H	S	R	R	S	S	S	S	S
180	S	R	S	S	S	R	S	S	R	S	S	S	S	S	S
181	S	R	S	S	S	R	H	S	R	H	S	S	S	S	S
182	S	R	S	S	S	R	H	S	R	H	S	S	S	S	S
183	S	H	S	S	S	R	S	S	R	H	S	S	S	S	S
184	S	H	S	S	S	R	H	S	R	H	S	S	S	S	S
185	S	R	S	S	S	H	H	S	S	H	S	S	S	S	S
186	H	R	S	S	S	R	H	S	H	H	S	S	S	S	S
187	R	R	S	S	S	S	S	S	R	H	S	S	S	S	S
188	R	R	S	S	S	H	S	S	R	H	S	S	S	S	S
189	S	R	S	S	S	H	H	S	S	H	S	S	S	S	S
190	H	R	S	S	S	S	H	S	H	S	S	S	S	S	S
191	R	R	S	S	S	R	S	S	R	H	S	S	S	S	S
192	H	R	S	S	S	S	S	S	H	R	S	S	S	S	S
193	H	R	S	S	S	H	S	S	S	H	S	S	S	S	S
194	S	R	S	S	S	H	H	S	S	R	S	S	S	S	S

No.	Sw5	I2	I3	J3	Mi23	Tm2a	Ty1	Ty2	Ph3	Ve2	Sm-565	Bw12	Bw6	Cf9	py1
195	S	S	S	S	H	R	S	S	S	H	H	S	S	S	S
196	S	S	S	S	H	H	S	S	S	H	R	S	H	S	S
197	S	S	S	S	S	H	S	S	S	H	R	S	R	S	S
198	S	S	S	S	S	R	S	S	S	R	H	S	H	S	S
199	S	S	S	S	H	H	S	S	S	R	R	S	H	S	S
200	S	S	S	S	H	H	S	S	S	H	R	S	H	S	S
201	S	S	S	S	H	R	S	S	S	R	H	S	S	S	S
202	S	S	S	S	S	R	S	S	S	H	H	S	H	S	S
203	S	S	S	S	H	H	S	S	S	S	R	S	H	S	S
204	S	S	S	S	H	H	S	S	S	H	H	S	H	S	S
205	S	R	S	S	S	S	S	H	R	S	S	S	R	S	S
206	S	R	S	S	S	S	S	H	R	S	S	S	R	S	S
207	S	R	S	S	S	S	S	R	R	S	S	S	R	S	S
208	S	R	S	S	S	S	S	S	R	S	S	S	R	S	S
209	S	R	S	S	S	S	S	H	R	S	S	S	R	S	S
210	S	R	S	S	S	S	S	H	R	S	S	S	R	S	S
211	S	R	S	S	S	S	S	H	R	S	S	S	R	S	S
212	S	R	S	S	S	S	S	H	R	S	S	S	R	S	S
213	S	R	S	S	S	S	S	R	R	S	S	S	R	S	S
214	S	R	R	S	H	R	H	S	S	R	H	S	S	S	S
215	S	R	S	S	H	R	H	S	S	H	S	S	S	S	S
216	S	R	H	S	H	R	H	S	S	H	S	S	S	S	S
217	S	R	S	S	H	R	H	S	S	H	R	S	S	S	S
218	S	R	R	S	R	R	S	S	S	S	R	S	S	S	S
219	S	R	H	S	H	R	H	S	S	S	S	S	S	S	S
220	S	R	S	S	H	R	H	S	S	H	H	S	S	S	S
221	S	H	S	R	H	H	S	S	S	H	S	S	S	S	S
222	S	H	S	R	R	S	S	S	S	H	S	S	S	S	S
223	S	H	S	R	H	H	S	S	S	H	S	S	S	S	S
224	S	H	S	R	S	H	S	S	S	R	S	S	S	S	S
225	S	S	S	R	R	S	S	S	S	R	S	S	S	S	S
226	S	S	S	R	R	S	S	S	S	R	S	S	S	S	S
227	S	R	S	S	S	H	S	S	R	S	S	S	R	S	S
228	S	R	S	S	S	R	S	S	R	S	S	S	R	S	S
229	S	R	S	S	H	H	S	S	R	S	S	S	R	S	S
230	S	R	S	S	R	S	S	S	R	S	S	S	R	S	S
231	S	R	S	S	H	H	S	S	R	S	S	S	R	S	S
232	S	R	S	S	H	H	S	S	R	S	S	S	R	S	S
233	S	R	S	S	R	H	S	S	R	S	S	S	R	S	S
234	H	S	S	S	H	H	H	S	H	R	S	S	S	R	S
235	H	S	S	S	S	H	R	S	H	R	S	S	S	R	S
236	R	S	S	S	H	H	H	S	R	R	S	S	S	R	S
237	S	S	S	S	H	S	H	S	S	R	S	S	S	R	S
238	H	S	S	S	H	R	H	S	H	R	S	S	S	R	S
239	H	S	S	S	H	H	H	S	S	R	S	S	S	R	S
240	R	S	S	S	S	S	R	S	H	R	S	S	S	R	S
241	H	S	S	S	R	H	S	S	H	R	S	S	S	R	S
242	H	S	S	S	H	H	H	S	H	R	S	S	S	R	S
243	S	S	S	S	S	R	H	H	H	S	S	R	S	S	S
244	S	S	S	S	S	R	R	S	H	S	H	H	S	S	S
245	S	S	S	S	S	R	S	S	H	S	R	R	S	S	S
246	S	S	S	S	S	R	H	S	S	S	R	H	S	S	S
247	S	S	S	S	S	R	H	H	H	S	H	S	S	S	S
248	S	S	S	S	S	R	H	H	H	S	R	H	S	S	S
249	S	S	S	S	S	R	H	H	S	S	H	R	S	S	S
250	S	S	S	S	S	R	H	H	S	S	S	R	S	S	S
251	S	R	S	H	H	H	H	S	S	R	S	S	S	R	S
252	S	R	S	H	H	H	H	S	S	R	S	S	S	R	S
253	S	R	S	H	S	H	H	S	S	R	S	S	S	R	S
254	S	R	S	H	S	H	S	S	S	R	S	S	S	R	S
255	S	R	S	H	S	H	S	S	S	R	S	S	S	R	S
256	S	R	S	H	R	H	H	S	S	R	S	S	S	R	S
257	S	R	S	S	S	R	S	H	R	S	H	S	S	S	S
258	S	R	S	S	S	R	S	H	S	S	H	S	H	S	S
259	S	R	S	S	S	R	S	R	R	S	S	S	H	S	S
260	S	R	S	R	S	R	S	H	H	S	S	S	H	S	S
261	S	R	S	H	S	R	S	H	S	S	R	S	H	S	S
262	S	R	S	R	S	R	S	H	S	S	R	S	H	S	S
263	S	R	S	R	S	R	S	H	R	S	H	S	R	S	S
264	S	R	S	H	S	R	S	R	S	S	R	S	R	S	S
265	S	R	S	R	S	R	S	H	H	S	R	S	R	S	S
266	S	R	S	S	S	R	S	H	H	S	H	S	H	S	S
267	S	R	S	S	S	S	S	H	R	S	S	S	R	S	S
268	S	R	S	S	S	S	S	R	R	S	S	S	R	S	S
269	S	R	S	S	S	S	S	S	R	S	S	S	R	S	S

No.	Sw5	I2	I3	J3	Mi23	Tm2a	Ty1	Ty2	Ph3	Ve2	Sm-565	Bw12	Bw6	Cf9	py1
270	S	R	S	S	S	S	S	R	R	S	S	S	R	S	S
271	S	R	S	S	S	S	S	R	R	S	S	S	R	S	S
272	S	R	S	S	S	S	S	H	R	S	S	S	R	S	S
273	S	R	S	S	S	S	S	S	R	S	S	S	R	S	S
274	S	R	S	S	S	S	S	H	R	S	S	S	R	S	S
275	S	R	S	S	S	S	S	H	R	S	S	S	R	S	S
276	S	R	S	S	S	S	S	S	R	S	S	S	R	S	S
277	S	R	S	S	H	R	H	S	S	R	S	S	H	S	S
278	S	S	S	S	S	R	R	S	S	R	S	S	R	S	S
279	S	H	S	S	H	R	H	S	S	R	S	S	H	S	S
280	S	S	S	H	H	R	H	S	S	R	S	S	H	S	S
281	S	S	S	H	H	R	H	S	S	R	S	S	H	S	S
282	S	R	S	H	H	R	H	S	S	R	S	S	H	S	S
283	S	H	S	H	R	R	S	S	S	R	S	S	S	S	S
284	S	H	S	H	H	R	H	S	S	R	S	S	H	S	S
285	S	H	S	S	H	R	H	S	S	R	S	S	H	S	S
286	S	S	S	S	S	S	S	S	S	H	S	S	R	S	S
287	S	S	S	S	H	S	S	S	S	H	S	S	H	S	S
288	S	S	S	S	H	S	S	S	S	S	H	S	H	S	S
289	S	S	S	S	R	S	S	S	S	H	H	S	S	S	S
290	S	S	S	S	H	S	S	S	S	S	H	S	H	S	S
291	S	S	S	S	S	S	S	S	S	H	R	S	R	S	S
292	S	S	S	S	H	S	S	S	S	H	S	S	S	S	S
293	S	S	S	S	S	S	S	S	S	H	H	S	R	S	S
294	S	S	S	S	H	S	S	S	S	S	H	S	H	S	S
295	H	S	S	S	S	H	S	S	R	S	S	S	R	S	S
296	H	S	S	S	R	H	S	S	R	S	S	S	R	S	S
297	H	S	S	S	H	S	S	S	R	S	S	S	R	S	S
298	H	S	S	S	H	H	S	S	R	S	S	H	R	S	S
299	R	S	S	S	S	R	S	S	R	S	S	H	R	S	S
300	S	S	S	S	H	H	S	S	R	S	S	H	R	S	S
301	H	S	S	S	H	R	S	S	R	S	S	S	R	S	S
302	R	S	S	S	S	H	S	S	R	S	S	R	R	S	S
303	H	S	S	S	R	H	S	S	R	S	S	S	R	S	S
304	H	S	S	S	H	H	S	S	R	S	S	R	R	S	S
305	S	R	S	S	S	H	R	S	R	S	S	S	S	S	S
306	S	R	S	S	S	R	H	S	R	S	S	R	H	S	S
307	S	R	S	S	S	H	S	S	H	S	S	H	H	S	S
308	S	R	S	S	S	H	H	S	R	S	S	H	S	S	S
309	S	R	S	S	S	H	R	S	R	S	S	H	H	S	S
310	S	R	S	S	S	R	R	S	R	S	S	H	S	S	S
311	S	R	S	S	S	R	S	S	H	S	S	H	H	S	S
312	S	R	S	S	S	H	S	S	R	S	S	S	R	S	S
313	S	R	S	S	S	H	R	S	R	S	S	S	H	S	S
314	S	R	S	S	S	R	R	S	H	R	S	S	S	R	S
315	S	R	S	S	S	R	H	S	R	H	S	S	S	R	S
316	S	R	S	S	S	R	H	S	H	S	S	S	S	R	S
317	S	R	S	S	S	R	R	S	R	S	S	S	S	R	S
318	S	R	S	S	S	R	R	S	S	S	S	S	S	R	S
319	S	R	S	S	S	R	H	S	S	H	S	S	S	R	S
320	S	R	S	S	S	R	H	S	H	R	S	S	S	R	S
321	S	R	S	S	S	R	R	S	H	R	S	S	S	R	S
322	S	R	S	S	S	R	H	S	R	R	S	S	S	R	S
323	S	S	S	S	S	H	S	S	S	R	R	S	S	S	S
324	S	S	S	S	S	S	R	S	S	H	R	S	S	S	S
325	S	S	S	S	S	S	H	S	S	R	R	S	S	S	S
326	S	S	S	S	S	S	H	S	S	H	R	S	S	S	S
327	S	S	S	S	S	H	R	S	S	H	R	S	S	S	S
328	S	S	S	S	S	H	H	S	S	S	R	S	S	S	S
329	S	S	S	S	S	R	R	S	S	S	R	S	S	S	S
330	S	S	S	S	S	H	R	S	S	R	R	S	S	S	S
331	S	S	S	S	S	H	H	S	S	H	R	S	S	S	S
332	S	S	S	S	S	R	R	S	S	H	R	S	S	S	S
333	S	R	S	S	S	R	R	S	S	R	S	S	S	S	S
334	S	R	S	S	R	H	S	S	H	R	S	S	S	S	S
335	S	R	S	S	R	H	S	S	S	R	S	S	S	S	S
336	S	R	S	S	R	S	S	S	H	R	S	S	S	S	S
337	S	R	S	S	R	S	S	S	H	R	S	S	S	S	S
338	S	R	S	S	S	R	H	S	R	R	S	S	S	S	S
339	S	R	S	S	S	R	H	S	R	H	S	S	S	S	S
340	S	S	S	S	S	R	H	S	R	H	S	S	S	S	S
341	S	H	S	S	S	R	H	S	R	S	S	S	S	S	S
342	S	H	S	S	S	R	S	S	R	H	S	S	S	S	S
343	S	S	S	S	S	R	H	S	R	R	S	S	S	S	S
344	S	H	S	S	S	R	S	S	R	R	S	S	S	S	S

No.	Sw5	I2	I3	J3	Mi23	Tm2a	Ty1	Ty2	Ph3	Ve2	Sm-565	Bw12	Bw6	Cf9	py1
345	S	R	S	S	S	R	S	S	R	R	S	S	S	S	S
346	S	S	S	S	S	R	R	S	R	H	S	S	S	S	S
347	S	R	S	S	S	R	S	S	R	S	S	S	S	S	S
348	R	R	S	S	H	R	S	S	R	S	S	S	H	R	S
349	H	R	S	S	R	R	S	S	R	S	S	S	R	R	S
350	S	R	S	S	H	R	S	S	R	S	S	S	H	R	S
351	R	R	S	S	H	R	S	S	R	S	S	S	H	R	S
352	S	R	S	S	S	R	S	S	R	S	S	S	S	R	S
353	H	R	S	S	H	R	S	S	R	S	S	S	S	R	S
354	H	R	S	S	R	R	S	S	R	S	S	S	S	R	S
355	H	R	S	S	H	R	S	S	R	S	S	S	S	R	S
356	S	R	S	S	S	R	S	S	R	S	S	S	S	R	S
357	S	R	S	S	S	R	S	S	R	S	S	S	S	R	S
358	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S
359	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S
360	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S
361	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S
362	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S
363	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S
364	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S
365	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S
366	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S
367	S	S	S	S	S	R	R	S	S	S	S	S	S	S	S
368	R	R	S	H	R	H	S	S	S	S	S	S	S	S	S
369	H	R	S	H	H	H	H	S	S	H	S	S	S	S	S
370	H	R	S	S	H	S	H	S	S	R	S	S	S	S	S
371	H	R	S	H	R	H	S	S	S	S	S	S	S	S	S
372	H	R	S	S	S	S	R	S	S	R	S	S	S	S	S
373	H	R	S	S	H	S	H	S	S	R	S	S	S	S	S
374	H	R	S	R	H	R	H	S	S	S	S	S	S	S	S
375	H	R	S	R	H	R	H	S	S	S	S	S	S	S	S
376	S	R	S	H	H	H	H	S	S	H	S	S	S	S	S
377	S	R	S	S	H	S	H	S	S	R	S	S	S	S	S
378	S	S	S	S	S	R	R	S	H	R	S	S	S	R	S
379	S	S	S	S	S	R	S	S	R	R	S	S	S	R	S
380	S	S	S	S	S	H	S	S	S	R	S	S	S	R	S
381	S	S	S	S	S	R	R	S	H	H	S	S	S	R	S
382	S	S	S	S	S	R	H	S	R	H	S	S	S	R	S
383	S	S	S	S	S	H	S	S	H	H	S	S	S	R	S
384	S	S	S	S	S	H	R	S	S	R	S	S	S	R	S
385	S	S	S	S	S	H	R	S	H	H	S	S	S	R	S
386	S	S	S	S	S	H	S	S	R	S	S	S	S	R	S
387	S	S	S	S	S	S	S	S	R	H	S	S	S	R	S
388	S	S	S	S	S	R	R	S	S	S	R	S	S	R	S
389	S	S	S	S	S	R	H	S	S	S	R	S	S	R	S
390	S	S	S	S	S	R	S	S	S	H	H	S	S	R	S
391	S	S	S	S	S	R	H	S	S	H	H	S	S	R	S
392	S	S	S	S	S	R	R	S	S	H	R	S	S	R	S
393	S	S	S	S	S	R	H	S	S	H	H	S	S	R	S
394	S	S	S	S	S	R	H	S	S	R	H	S	S	R	S
395	S	S	S	S	S	R	H	S	S	H	H	S	S	R	S
396	S	S	S	S	S	R	R	S	S	H	H	S	S	R	S
397	S	S	S	S	S	R	H	S	S	S	H	S	S	R	S
398	S	R	S	S	H	R	H	S	S	R	S	S	H	S	S
399	S	R	S	S	R	R	S	S	S	R	S	S	S	S	S
400	S	R	S	S	H	R	H	S	S	R	S	S	H	S	S
401	S	R	S	S	S	R	R	S	S	R	S	S	R	S	S
402	S	R	S	S	S	R	R	S	S	R	S	S	R	S	S
403	S	R	S	S	S	R	R	S	S	R	S	S	R	S	S
404	S	R	S	S	H	R	H	S	S	R	S	S	H	S	S
405	S	R	S	S	R	R	S	S	S	R	S	S	S	S	S
406	S	R	S	S	R	R	S	S	S	R	S	S	S	S	S
407	S	H	S	R	S	R	S	S	R	R	S	S	S	S	S
408	S	H	S	R	S	H	S	S	R	R	S	S	S	S	S
409	S	S	S	R	S	H	S	S	R	R	S	S	S	S	S
410	S	S	S	R	S	H	S	S	R	R	S	S	S	S	S
411	S	S	S	S	S	H	H	S	S	R	S	S	S	R	S
412	S	S	S	S	S	H	H	S	S	R	S	S	S	R	S
413	S	S	S	S	S	R	S	S	S	R	S	S	S	R	S
414	S	S	S	S	S	H	S	S	S	R	S	S	S	R	S
415	S	S	S	S	S	R	H	S	S	R	S	S	S	R	S
416	S	S	S	S	S	H	S	S	S	R	S	S	S	R	S
417	S	S	S	S	S	H	H	S	S	R	S	S	S	R	S
418	S	S	S	S	S	R	H	S	S	R	S	S	S	R	S
419	S	S	S	S	S	H	R	S	S	R	S	S	S	R	S

No.	Sw5	I2	I3	J3	Mi23	Tm2a	Ty1	Ty2	Ph3	Ve2	Sm-565	Bw12	Bw6	Cf9	py1
420	S	S	S	S	S	S	H	S	S	R	S	S	S	R	S
421	S	R	S	S	S	R	H	S	S	R	R	S	S	R	S
422	S	R	S	S	S	H	H	S	S	R	R	S	S	R	S
423	S	R	S	S	S	H	R	S	S	H	R	S	S	R	S
424	S	R	S	S	S	S	S	S	S	R	R	S	S	R	S
425	S	R	S	S	S	S	R	S	S	R	R	S	S	R	S
426	S	R	S	S	S	H	H	S	S	S	R	S	S	R	S
427	S	R	S	S	S	H	R	S	S	R	R	S	S	R	S
428	S	R	S	S	S	R	H	S	S	H	R	S	S	R	S
429	S	R	S	S	S	S	S	H	R	S	R	H	S	S	S
430	S	R	S	S	S	H	S	H	R	S	H	R	S	S	S
431	S	R	S	S	S	S	S	H	R	S	H	R	S	S	S
432	S	R	S	S	S	H	S	S	R	S	R	R	S	S	S
433	S	R	S	S	S	H	S	H	R	S	H	R	S	S	S
434	S	R	S	S	S	H	S	H	R	S	S	R	S	S	S
435	S	R	S	S	S	H	S	H	R	S	S	R	S	S	S
436	S	R	S	S	S	S	S	H	R	S	H	R	S	S	S
437	S	R	S	S	S	H	S	H	R	S	H	H	S	S	S
438	S	R	S	S	S	H	S	H	R	S	H	H	S	S	S
439	S	R	S	S	S	S	S	S	H	H	S	S	R	S	S
440	S	R	S	S	S	R	S	S	H	H	S	S	R	S	S
441	S	R	S	S	S	S	S	S	S	S	S	S	R	S	S
442	S	R	S	S	S	R	S	S	S	S	S	S	R	S	S
443	S	R	S	S	S	H	S	S	R	H	S	S	R	S	S
444	S	R	S	S	S	H	S	S	R	R	S	S	R	S	S
445	S	R	S	S	S	H	S	S	S	H	S	S	R	S	S
446	S	R	S	S	S	S	S	S	H	R	S	S	R	S	S
447	S	R	S	S	S	H	S	S	H	H	S	S	R	S	S
448	S	R	S	S	S	H	S	S	S	H	S	S	R	S	S
449	S	R	S	S	H	H	H	S	H	S	R	S	S	S	S
450	S	R	S	S	R	H	S	S	H	R	H	S	S	S	S
451	S	R	S	S	R	S	S	S	S	H	S	S	S	S	S
452	S	R	S	S	S	S	R	S	R	H	H	S	S	S	S
453	S	R	S	S	H	H	H	S	R	H	S	S	S	S	S
454	S	R	S	S	R	S	S	S	S	H	H	S	S	S	S
455	S	R	S	S	H	R	H	S	R	H	H	S	S	S	S
456	S	R	S	S	R	R	S	S	S	S	H	S	S	S	S
457	S	R	S	S	H	H	H	S	R	H	S	S	S	S	S
458	S	R	S	S	H	S	H	S	H	R	H	S	S	S	S
459	S	S	S	R	S	R	H	S	H	S	S	S	S	S	S
460	S	S	S	R	S	R	R	S	H	H	H	S	S	S	S
461	S	S	S	R	S	R	H	S	H	S	R	S	S	S	S
462	S	S	S	R	S	R	H	S	H	R	H	S	S	S	S
463	S	S	S	R	S	R	H	S	H	H	R	S	S	S	S
464	S	S	S	R	S	R	H	S	S	H	H	S	S	S	S
465	S	S	S	R	S	R	H	S	S	R	H	S	S	S	S
466	S	S	S	R	S	R	R	S	H	S	R	S	S	S	S
467	S	S	S	R	S	R	H	S	H	R	H	S	S	S	S
468	S	H	S	R	S	H	H	S	H	R	H	S	S	S	S
469	S	S	S	S	S	S	S	S	S	H	R	S	S	S	S
470	S	S	S	S	S	H	R	S	S	H	R	S	S	S	S
471	S	S	S	S	S	H	H	S	S	S	R	S	S	S	S
472	S	S	S	S	S	H	H	S	S	S	R	S	S	S	S
473	S	S	S	S	S	S	H	S	S	R	R	S	S	S	S
474	S	S	S	S	S	S	H	S	S	S	R	S	S	S	S
475	S	S	S	S	S	H	R	S	S	H	R	S	S	S	S
476	S	S	S	S	S	H	R	S	S	R	R	S	S	S	S
477	S	S	S	S	S	H	S	S	S	H	R	S	S	S	S
478	S	S	S	S	S	R	R	S	S	H	R	S	S	S	S
479	S	R	S	R	S	R	S	S	S	S	S	S	S	S	S
480	S	R	S	R	S	R	S	S	S	S	S	S	S	S	S
481	S	R	S	R	S	R	S	S	S	S	S	S	S	S	S
482	S	R	S	R	S	R	S	S	S	S	S	S	S	S	S
483	S	R	S	R	S	R	S	S	S	S	S	S	S	S	S
484	S	R	S	R	S	R	S	S	S	S	S	S	S	S	S
485	S	R	S	R	S	R	S	S	S	S	S	S	S	S	S
486	S	R	S	R	S	R	S	S	S	S	S	S	S	S	S
487	S	R	S	R	S	R	S	S	S	S	S	S	S	S	S
488	S	R	S	R	S	R	S	S	S	S	S	S	S	S	S
489	S	R	S	S	S	S	H	S	S	R	H	S	S	R	S
490	S	R	S	S	S	R	R	S	S	R	R	S	S	R	S
491	S	R	S	S	S	H	R	S	S	R	R	S	S	R	S
492	S	R	S	S	S	S	H	S	S	R	H	S	S	R	S
493	S	R	S	S	S	S	H	S	S	R	H	S	S	R	S
494	S	R	S	S	S	H	S	S	S	R	S	S	S	R	S

No.	Sw5	I2	I3	J3	Mi23	Tm2a	Ty1	Ty2	Ph3	Ve2	Sm-565	Bw12	Bw6	Cf9	py1
495	S	R	S	S	S	H	S	S	S	R	H	S	S	R	S
496	S	R	S	S	S	H	H	S	S	R	H	S	S	R	S
497	S	R	S	S	S	H	R	S	S	R	H	S	S	R	S
498	S	S	S	S	S	S	S	H	R	S	S	S	R	S	S
499	S	S	S	S	S	S	S	S	R	S	S	S	R	S	S
500	S	S	S	S	S	S	S	S	R	S	S	S	R	S	S
501	S	S	S	S	S	S	S	H	R	S	S	S	R	S	S
502	S	S	S	S	S	S	S	H	R	S	S	S	R	S	S
503	S	S	S	S	S	S	S	R	R	S	S	S	R	S	S
504	S	S	S	S	S	S	S	H	R	S	S	S	R	S	S
505	S	S	S	S	S	S	S	H	R	S	S	S	R	S	S
506	S	S	S	S	S	S	S	R	R	S	S	S	R	S	S
507	S	S	S	S	S	S	S	R	R	S	S	S	R	S	S
508	H	S	S	S	H	H	H	S	H	R	S	S	S	R	S
509	R	S	S	S	R	H	S	S	R	R	S	S	S	R	S
510	S	S	S	S	H	H	S	S	S	R	S	S	S	R	S
511	H	S	S	S	R	H	S	S	H	R	S	S	S	R	S
512	H	S	S	S	S	S	R	S	H	R	S	S	S	R	S
513	H	S	S	S	R	S	S	S	H	R	S	S	S	R	S
514	H	S	S	S	H	H?	H	S	S	R	S	S	S	R	S
515	S	R	S	R	R	R	S	S	S	R	R	S	S	S	S
516	S	R	S	H	R	R	S	S	S	R	R	S	S	S	S
517	S	R	S	S	H	R	H	S	S	R	R	S	S	S	S
518	S	R	S	H	H	R	H	S	S	R	R	S	S	S	S
519	S	R	S	H	H	R	H	S	S	R	R	S	S	S	S
520	S	R	S	H	H	R	H	S	S	R	R	S	S	S	S
521	S	R	S	S	H	R	H	S	S	R	R	S	S	S	S
522	S	R	S	H	S	R	R	S	S	R	R	S	S	S	S
523	S	R	S	H	R	R	S	S	S	R	R	S	S	S	S
524	S	S	S	S	S	S	S	S	R	R	S	S	S	R	S
525	S	S	S	S	H	S	S	S	R	R	S	S	S	R	S
526	S	S	S	S	R	H	S	S	R	R	S	S	S	R	S
527	S	S	S	S	H	R	S	S	R	R	S	S	S	R	S
528	S	S	S	S	S	H	S	S	R	R	S	S	S	R	S
529	S	S	S	S	H	H	S	S	R	R	S	S	S	R	S
530	S	S	S	S	S	S	S	S	S	R	S	S	R	R	S
531	S	S	S	S	S	S	S	S	S	H	S	S	R	R	S
532	S	S	S	S	S	R	S	S	S	R	S	S	R	R	S
533	S	S	S	S	S	H	S	S	S	S	S	S	S	R	S
534	S	S	S	S	S	S	S	S	S	H	S	S	H	R	S
535	S	S	S	S	S	H	S	S	S	H	S	S	H	R	S
536	S	S	S	S	S	H	S	S	S	H	S	S	H	R	S
537	S	S	S	S	S	R	S	S	S	H	S	S	H	R	S
538	S	S	S	S	S	R	S	S	S	R	S	S	R	R	S
539	S	S	S	S	S	H	S	S	S	S	S	S	H	R	S
540	S	R	S	S	S	R	S	S	R	S	R	H	S	S	S
541	S	R	S	S	S	R	S	S	R	S	R	R	S	S	S
542	S	R	S	S	S	R	H	S	R	S	H	S	S	S	S
543	S	R	S	S	S	R	R	S	R	S	R	R	S	S	S
544	S	R	S	S	S	R	R	S	R	S	S	H	S	S	S
545	S	R	S	S	S	R	R	S	R	S	S	S	S	S	S
546	S	R	S	S	S	R	H	S	R	S	R	S	S	S	S
547	S	R	S	S	S	R	H	S	R	S	R	R	S	S	S
548	S	R	S	S	S	R	S	S	R	S	R	H	S	S	S
549	S	R	S	S	S	R	H	S	R	S	H	H	S	S	S
550	H	R	S	H	H	H	H	S	S	H	S	S	S	S	S
551	H	R	S	H	H	H	H	S	S	H	S	S	S	S	S
552	H	R	S	H	R	H	S	S	S	H	S	S	S	S	S
553	S	R	S	R	R	S	S	S	S	H	S	S	S	S	S
554	R	R	S	S	S	R	R	S	S	S	S	S	S	S	S
555	R	R	S	R	H	S	H	S	S	R	S	S	S	S	S
556	R	R	S	S	H	R	H	S	S	H	S	S	S	S	S
557	R	R	S	H	S	H	R	S	S	H	S	S	S	S	S
558	S	R	S	S	S	R	R	S	S	S	S	S	S	S	S
559	S	R	S	S	S	S	R	S	H	R	S	S	S	S	S
560	S	R	S	S	S	H	R	S	H	R	S	S	S	S	S
561	S	R	S	S	S	R	H	S	H	H	S	S	S	S	S
562	S	R	S	S	S	H	H	S	R	H	S	S	S	S	S
563	S	R	S	S	S	H	S	S	S	R	S	S	S	S	S
564	S	R	S	S	S	H	H	S	S	H	S	S	S	S	S
565	S	R	S	S	S	H	R	S	H	H	S	S	S	S	S
566	S	R	S	S	S	S	R	S	H	S	S	S	S	S	S
567	S	R	S	S	S	H	H	S	H	H	S	S	S	S	S
568	S	R	S	S	S	R	R	S	R	R	S	S	S	S	S
569	S	R	S	S	S	H	R	S	S	H	S	S	S	S	S

No.	Sw5	I2	I3	J3	Mi23	Tm2a	Ty1	Ty2	Ph3	Ve2	Sm-565	Bw12	Bw6	Cf9	py1
570	R	S	S	S	S	S	H	S	R	R	S	S	S	S	S
571	H	S	S	S	S	S	R	S	H	R	S	S	S	S	S
572	S	S	S	H	S	H	R	S	S	R	S	S	S	S	S
573	H	S	S	H	R	H	S	S	S	R	S	S	S	S	S
574	H	S	S	H	H	H	H	S	S	R	S	S	S	S	S
575	H	S	S	S	S	S	H	S	H	R	S	S	S	S	S
576	R	S	S	H	S	H	H	S	H	R	S	S	S	S	S
577	H	S	S	S	S	S	S	S	H	R	S	S	S	S	S
578	S	S	S	S	R	R	S	S	S	R	R	S	S	S	S
579	S	S	S	S	H	R	H	S	S	R	S	S	S	S	S
580	S	S	S	S	H	R	H	S	S	R	S	S	S	S	S
581	S	S	S	S	H	R	H	S	S	R	H	S	S	S	S
582	S	S	S	S	H	R	H	S	S	R	R	S	S	S	S
583	S	S	S	S	S	R	R	S	S	R	S	S	S	S	S
584	S	S	S	S	H	R	H	S	S	R	H	S	S	S	S
585	S	S	S	S	S	R	R	S	S	R	H	S	S	S	S
586	S	S	S	S	H	R	H	S	S	R	H	S	S	S	S
587	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S
588	S	S	S	S	S	S	S	S	R	R	S	S	S	S	S
589	S	S	S	S	S	H	S	S	R	R	S	S	S	S	S
590	S	S	S	S	S	R	S	S	R	R	S	S	S	S	S
591	S	R	S	S	H	R	H	S	R	H	S	S	H	R	S
592	S	R	S	S	H	R	H	S	S	R	S	S	H	R	S
593	S	R	S	S	S	R	R	S	R	S	S	S	R	R	S
594	S	R	S	S	S	R	R	S	R	H	S	S	R	R	S
595	S	R	S	S	H	R	H	S	S	H	S	S	H	R	S
596	S	R	S	S	H	R	H	S	R	R	S	S	H	R	S
597	S	R	S	S	R	R	S	S	S	H	S	S	S	R	S
598	S	R	S	S	S	R	R	S	S	R	S	S	R	R	S
599	S	R	S	S	H	R	H	S	S	R	S	S	H	R	S
600	S	R	S	S	H	R	H	S	S	R	S	S	H	R	S
601	S	R	S	S	S	R	S	S	R	H	S	H	S	R	S
602	S	R	S	S	S	R	H	S	H	S	S	H	S	R	S
603	S	R	S	S	S	R	R	S	H	S	S	H	S	R	S
604	S	H	S	S	S	R	H	S	H	H	S	H	S	R	S
605	S	H	S	S	S	R	R	S	H	H	S	H	S	R	S
606	S	R	S	S	S	R	H	S	H	S	S	H	S	R	S
607	S	H	S	S	S	R	H	S	H	R	S	H	S	R	S
608	S	R	S	S	S	R	R	S	S	S	S	S	S	R	S
609	S	H	S	S	S	R	H	S	R	R	S	S	S	R	S
610	S	S	S	S	S	R	H	S	H	H	S	S	S	R	S
611	S	S	S	S	R	R	S	S	R	S	H	S	R	S	S
612	S	S	S	S	R	H	S	S	R	S	H	S	R	S	S
613	S	S	S	S	R	R	S	S	R	S	H	S	R	S	S
614	S	S	S	S	H	S	S	S	R	S	S	S	R	S	S
615	S	S	S	S	R	S	S	S	R	S	S	S	R	S	S
616	S	S	S	S	H	H	S	S	R	S	H	S	R	S	S
617	S	S	S	S	H	H	S	S	R	S	H	S	R	S	S
618	S	S	S	S	H	H	S	S	R	S	R	S	R	S	S
619	S	S	S	S	H	H	S	S	R	S	H	S	R	S	S
620	S	S	S	H	S	H	S	H	R	S	S	S	R	S	S
621	S	S	S	H	S	H	S	H	R	S	S	S	R	S	S
622	S	S	S	R	S	R	S	H	R	S	S	S	R	S	S
623	S	S	S	S	S	S	S	H	R	S	S	S	R	S	S
624	S	S	S	H	S	H	S	H	R	S	S	S	R	S	S
625	S	S	S	H	S	H	S	H	R	S	S	S	R	S	S
626	S	S	S	H	S	H	S	H	R	S	S	S	R	S	S
627	S	S	S	H	S	H	S	S	R	S	S	S	R	S	S
628	S	S	S	R	S	R	S	H	R	S	S	S	R	S	S
629	H	R	S	R	S	H	H	S	S	R	S	S	S	S	S
630	R	R	S	H	S	H	R	S	S	H	S	S	S	S	S
631	S	R	S	H	S	H	S	S	S	H	S	S	S	S	S
632	H	R	S	R	S	R	S	S	S	R	S	S	S	S	S
633	R	R	S	R	S	R	R	S	S	R	S	S	S	S	S
634	R	R	S	H	S	H	H	S	S	R	S	S	S	S	S
635	S	R	S	R	S	R	S	S	S	R	S	S	S	S	S
636	R	R	S	R	S	R	H	S	S	R	S	S	S	S	S
637	S	R	S	H	S	H	S	S	S	H	S	S	S	S	S
638	S	R	S	S	S	S	H	S	S	S	S	S	S	S	S
639	R	S	S	S	H	S	H	S	R	R	S	S	S	R	S
640	R	S	S	S	H	S	H	S	R	R	S	S	S	R	S
641	H	S	S	S	H	R	H	S	H	R	S	S	S	R	S
642	S	S	S	S	S	R	R	S	S	R	S	S	S	R	S
643	H	S	S	S	H	R	H	S	H	R	S	S	S	R	S
644	H	S	S	S	H	R	H	S	H	R	S	S	S	R	S

No.	Sw5	I2	I3	J3	Mi23	Tm2a	Ty1	Ty2	Ph3	Ve2	Sm-565	Bw12	Bw6	Cf9	py1
645	S	S	S	S	S	R	R	S	S	R	S	S	S	R	S
646	R	S	S	S	H	H	H	S	R	R	S	S	S	R	S
647	R	S	S	S	S	H	R	S	R	R	S	S	S	R	S
648	S	R	S	S	H	R	S	S	R	H	H	S	S	R	S
649	S	R	S	S	H	H	S	S	R	H	R	S	S	R	S
650	S	R	S	S	H	R	S	S	R	H	S	S	S	R	S
651	S	R	S	S	S	H	S	S	S	R	S	S	S	R	S
652	S	R	S	S	S	H	S	S	R	S	R	S	S	R	S
653	S	R	S	S	R	R	S	S	R	H	R	S	S	R	S
654	S	R	S	S	R	H	S	S	R	H	H	S	S	R	S
655	S	R	S	S	S	H	S	S	R	R	R	S	S	R	S
656	S	R	S	S	R	H	S	S	R	S	R	S	S	R	S
657	S	R	S	S	H	R	S	S	R	R	S	S	S	R	S
658	H	R	S	H	S	H	R	S	S	R	S	S	S	S	S
659	R	R	S	H	H	H	H	S	S	R	S	S	S	S	S
660	R	R	S	H	H	H	H	S	S	R	S	S	S	S	S
661	H	R	S	R	S	R	R	S	S	R	S	S	S	S	S
662	R	R	S	S	R	S	S	S	S	R	S	S	S	S	S
663	S	R	S	R	H	R	H	S	S	R	S	S	S	S	S
664	H	R	S	H	H	H	H	S	S	R	S	S	S	S	S
665	H	R	S	H	R	H	S	S	S	R	S	S	S	S	S
666	H	R	S	S	H	H	H	S	S	S	S	S	S	S	S
667	H	R	S	S	H	H	H	S	S	H	S	S	S	S	S
668	R	R	S	S	S	S	R	S	S	S	S	S	S	S	S
669	S	R	S	S	H	H	H	S	S	H	S	S	S	S	S
670	H	R	S	S	H	S	H	S	S	S	S	S	S	S	S
671	S	R	S	S	H	S	H	S	S	S	S	S	S	S	S
672	H	R	S	S	H	H	H	S	S	S	S	S	S	S	S
673	H	R	S	S	H	H	H	S	S	S	S	S	S	S	S
674	R	R	S	S	H	S	H	S	S	H	S	S	S	S	S
675	R	R	S	S	R	H	S	S	S	H	S	S	S	S	S
676	S	R	S	S	S	R	H	S	S	R	S	S	H	S	S
677	S	R	S	S	S	R	S	S	S	H	S	S	H	S	S
678	S	R	S	S	S	R	R	S	S	H	S	S	H	S	S
679	S	R	S	S	S	R	R	S	S	R	S	S	S	S	S
680	S	R	S	S	S	R	H	S	S	H	S	S	H	S	S
681	S	R	S	S	S	R	S	S	H	H	S	S	R	S	S
682	S	R	S	S	S	R	H	S	S	H	S	S	R	S	S
683	S	R	S	S	S	R	S	S	R	R	S	S	H	S	S
684	S	R	S	S	S	R	R	S	S	H	S	S	S	S	S
685	S	R	S	S	S	R	H	S	S	R	H	S	S	S	S
686	S	R	S	S	S	R	H	S	S	R	H	S	S	S	S
687	S	R	S	S	S	R	H	S	S	R	H	S	S	S	S
688	S	R	S	S	S	R	H	S	S	R	H	S	S	S	S
689	S	R	S	S	S	R	R	S	S	R	R	S	S	S	S
690	S	R	S	S	S	R	H	S	S	R	R	S	S	S	S
691	S	R	S	S	S	R	H	S	S	R	S	S	S	S	S
692	S	R	S	S	S	R	H	S	S	R	H	S	S	S	S
693	S	R	S	S	S	R	H	S	S	R	H	S	S	S	S

② 토마토연구소

토마토연구소로부터 총 355점의 시료를 받아 5번의 서비스를 진행하였다. 처음 52점의 시료에 대하여, 병 관련 19종의 마커로 서비스를 진행하였다(표 22). 2번째로는 144점의 시료에 대하여, 병 관련 18종의 마커로 서비스를 진행하였다(표 23). 3번째로는 48점의 시료에 대하여, 병 관련 17종의 마커로 서비스를 진행하였다(표 24). 4번째로는 53점의 시료에 대하여, 병 관련 18종의 마커로 서비스를 진행하였다(표 25). 5번째로는 58점의 시료에 대하여, 병 관련 18종의 마커로 서비스를 진행하였다(표 26). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 22~26).

표 22. 토마토연구소 52점의 시료에 대하여, 병 관련 19종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Py1-2	Py1-4	Cf9	Ph3	Sm-565	ol2	Bw6	Bw12	Pto
1	S	S	S	S	R	R	S	R	S	R	S	S	S	S	R	S	S	S	S
2	H	S	S	S	R	H	S	S	S	R	S	S	S	S	R	S	S	S	S
3	H	S	S	S	R	H	S	H	S	R	S	S	S	S	R	S	S	S	S

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Py1-2	Py1-4	Cf9	Ph3	Sm-565	ol2	Bw6	Bw12	Pto
4	R	S	S	R	R	S	R	R	S	R	S	S	S	R	S	S	S	S	S
5	H	S	S	R	S	H	S	R	S	R	S	S	H	R	S	S	S	S	S
6	H	S	S	H	S	S	R	R	S	R	S	S	S	R	R	S	S	S	S
7	R	S	S	R	R	S	S	R	S	R	S	S	R	R	S	S	S	S	S
8	R	S	S	S	R	S	R	H	S	S	S	S	S	R	S	S	S	S	S
9	S	S	S	S	S	S	R	R	S	S	S	S	S	S	R	S	S	S	S
10	R	S	S	S	H	S	H	R	S	R	S	S	H	S	R	S	S	S	S
11	R	S	S	S	H	S	H	R	S	R	S	S	R	S	R	S	S	S	S
12	R	S	S	S	R	S	S	R	S	R	S	S	S	S	H	S	S	S	S
13	H	S	S	S	R	H	S	R	S	R	S	S	S	S	R	S	S	S	S
14	R	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S	S
15	R	S	S	R	R	S	S	R	S	S	S	S	R	S	R	S	S	S	S
16	R	S	S	R	R	S	S	R	S	S	S	S	R	S	R	S	S	S	S
17	S	S	S	S	R	R	R	S	S	S	S	S	S	S	R	S	S	S	S
18	R	S	S	S	S	S	S	R	S	R	S	S	S	S	R	S	S	S	S
19	R	S	S	S	R	S	R	R	S	R	S	S	S	S	S	S	S	S	S
20	S	S	S	S	R	S	S	S	S	R	S	S	S	S	R	S	S	S	S
21	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
22	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
23	H	S	S	S	R	S	R	S	S	R	S	S	S	S	S	S	S	S	S
24	H	S	S	S	R	S	R	S	S	R	S	S	S	S	S	S	S	S	S
25	S	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S	S	S
26	R	H	S	S	S	S	R	H	S	R	S	S	R	S	S	S	S	R	S
27	S	R	S	S	S	S	R	R	S	H	S	S	R	S	S	S	S	R	S
28	H	S	S	S	R	S	S	R	S	H	S	S	S	S	R	S	S	S	S
29	R	S	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S	S
30	S	S	S	S	R	R	S	S	S	R	S	S	S	S	R	S	S	S	S
31	S	S	S	H	H	H	S	R	R	S	S	S	H	S	S	S	S	S	S
32	H	S	S	S	R	S	S	R	S	R	S	S	S	S	R	S	S	S	S
33	H	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S	S	S
34	H	S	S	S	H	H	S	R	S	R	S	S	S	R	R	S	S	S	S
35	S	S	S	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S	S
36	S	S	S	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S	S
37	H	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S	S	S
38	R	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S	S	S
39	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S
40	R	S	S	S	S	S	S	R	S	R	S	S	S	S	R	S	S	S	S
41	S	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S	S
42	R	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S	S
43	S	S	S	S	R	R	S	R	S	S	S	S	S	S	S	S	S	S	S
44	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S	S	S	S
45	R	S	S	R	R	S	S	S	S	S	H	S	R	S	S	S	S	S	S
46	R	S	S	R	R	S	S	S	S	S	H	S	R	S	S	S	S	S	S
47	S	R	S	S	R	S	S	S	S	S	H	S	S	R	R	S	S	S	S
48	S	R	S	S	R	S	S	S	S	S	H	S	S	R	H	S	S	S	S
49	S	S	S	S	R	S	S	S	S	S	H	S	S	R	S	S	S	S	S
50	S	S	S	S	H	R	S	S	S	S	H	S	S	R	S	S	R	S	S
51	H	S	S	H	R	S	S	S	S	S	H	S	H	H	S	S	S	S	S
52	H	H	S	S	R	S	S	S	S	S	H	S	H	R	S	S	S	S	S

표 23. 토마토연구소 144점의 시료에 대하여, 병 관련 18종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	py1-4	Cf9	Ph3	Sm-565	ol2	Bw6	Bw12	Pto	
1	R	S	S	S	R	S	S	H	S	R	S	S	S	S	S	S	S	S	S
2	H	S	S	H	H	H	S	R	S	R	S	H	H	H	S	S	S	S	S
3	H	S	S	H	H	H	S	R	S	R	S	R	H	H	S	S	H	S	S

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	py1-4	Cf9	Ph3	Sm-565	ol2	Bw6	Bw12	Pto
4	H	S	S	H	S	S	S	H	S	R	S	H	S	H	S	S	H	S
5	H	S	S	S	H	S	S	H	S	R	S	S	S	S	S	S	S	S
6	H	S	S	S	S	S	H	R	S	R	S	R	S	H	S	S	H	S
7	R	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S
8	H	S	S	S	H	S	S	R	S	H	S	S	S	H	S	S	S	S
9	H	S	S	S	R	S	S	R	S	R	S	S	S	H	S	S	S	S
10	S	S	S	S	H	S	S	R	S	S	S	S	S	H	S	S	S	S
11	H	S	S	S	R	H	S	S	S	R	S	S	S	H	S	S	S	S
12	H	S	S	S	H	S	H	S	S	H	S	S	S	S	S	S	H	S
13	H	S	S	S	R	S	H	H	S	H	S	S	S	H	S	S	H	S
14	H	S	S	S	R	S	H	R	S	R	S	S	S	H	S	S	S	S
15	R	S	S	S	R	S	S	R	S	H	S	H	S	H	S	S	S	S
16	R	S	S	H	R	S	S	R	S	H	S	H	S	H	S	S	S	S
17	S	H	S	S	R	S	H	S	S	S	S	S	H	H	S	H	S	S
18	H	S	S	S	H	S	S	H	S	S	S	H	R	S	S	R	S	S
19	H	S	S	S	H	S	S	H	S	S	S	H	R	S	S	R	S	S
20	R	S	S	H	H	S	S	S	S	H	S	S	H	S	S	H	S	S
21	R	S	S	H	H	S	S	S	S	H	S	S	H	S	S	H	S	S
22	H	S	S	H	H	S	S	S	S	H	S	S	R	S	S	S	S	S
23	S	S	S	H	R	H	S	S	S	H	S	S	H	S	S	R	S	S
24	R	S	S	H	H	S	S	S	S	S	S	S	S	S	S	R	S	S
25	H	S	S	H	R	S	S	S	S	S	S	H	S	H	S	S	S	S
26	H	S	S	S	R	S	S	S	S	S	S	H	R	H	S	S	S	S
27	H	H	S	S	R	S	S	S	S	S	S	H	R	S	S	S	S	S
28	R	S	S	H	H	S	S	S	S	R	S	H	R	S	S	S	S	S
29	S	S	S	S	H	S	R	S	S	H	S	S	H	H	S	S	S	S
30	H	S	S	H	H	H	S	R	S	S	S	S	S	S	S	S	S	S
31	H	S	S	S	S	S	S	S	S	S	S	S	H	S	S	H	S	S
32	H	S	S	S	H	H	S	R	S	H	S	S	S	S	S	S	S	S
33	S	S	S	S	R	H	R	H	H	R	S	S	S	H	S	H	R	S
34	S	S	S	S	R	S	S	S	S	S	S	S	R	H	S	S	S	S
35	S	S	S	S	R	S	S	S	S	S	S	S	R	S	S	S	S	S
36	R	S	S	R	S	S	S	S	S	R	S	S	R	S	S	S	S	S
37	R	S	S	R	S	S	S	S	S	R	S	S	R	S	S	S	S	S
38	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S
39	R	S	S	R	S	S	S	S	S	R	S	S	R	S	S	S	S	S
40	R	S	S	R	S	S	S	S	S	R	S	S	R	S	S	S	S	S
41	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S	S
42	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
43	H	S	S	S	S	H	S	S	S	S	S	S	S	S	S	H	S	S
44	H	S	S	S	S	H	S	S	S	H	S	S	S	S	S	R	S	S
45	S	S	S	S	H	S	S	S	S	H	S	S	R	S	S	S	S	S
46	H	S	S	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S
47	H	S	S	H	R	S	S	S	S	S	S	S	H	S	S	H	S	S
48	S	S	S	S	R	S	S	S	S	S	S	R	R	S	S	S	S	S
49	H	S	S	S	R	S	S	S	S	S	S	R	R	S	S	H	S	S
50	R	S	S	S	R	S	S	S	S	S	S	S	R	S	S	S	S	S
51	R	S	S	R	R	S	S	S	S	S	S	R	S	S	S	S	S	S
52	R	S	S	H	R	S	S	S	S	S	S	R	H	S	S	S	S	S
53	S	S	S	S	R	S	S	S	S	S	S	S	H	S	S	S	S	S
54	S	S	S	S	R	S	S	S	S	S	S	S	R	S	S	S	S	S
55	R	S	S	S	R	S	S	S	S	S	S	R	R	S	S	S	S	S
56	R	S	S	H	R	S	S	S	S	S	S	R	H	S	S	S	S	S
57	R	S	S	S	R	S	S	S	S	S	S	R	R	S	S	S	S	S
58	R	S	S	H	R	S	S	S	S	S	S	R	H	S	S	R	S	S
59	R	S	S	S	R	S	S	S	S	S	S	R	R	S	S	R	S	S
60	R	S	S	R	R	S	S	S	S	S	S	H	S	S	S	R	S	S

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	py1-4	Cf9	Ph3	Sm-565	ol2	Bw6	Bw12	Pto
61	R	S	S	R	R	S	S	S	S	S	S	R	S	S	S	R	S	S
62	R	S	S	H	R	S	S	S	S	S	S	H	H	S	S	R	S	S
63	R	S	S	S	R	S	S	S	S	S	S	S	R	S	S	R	S	S
64	R	S	S	S	R	S	S	S	S	S	S	S	R	S	S	R	S	S
65	R	S	S	S	S	S	S	R	S	S	S	S	R	S	S	R	S	S
66	R	S	S	R	R	S	S	S	S	S	S	R	S	S	S	R	S	S
67	R	S	S	S	H	S	S	R	S	S	S	S	R	R	S	R	S	S
68	H	S	S	S	S	S	S	R	S	S	S	S	R	R	S	S	S	S
69	S	S	S	S	H	S	S	R	S	S	S	S	R	S	S	R	S	S
70	R	S	S	S	H	S	S	R	S	S	S	S	R	H	S	R	S	S
71	H	S	S	S	H	S	S	R	S	S	S	S	R	S	S	R	S	S
72	S	S	S	S	S	S	S	R	S	S	S	S	R	H	S	R	S	S
73	R	S	S	S	H	S	S	R	S	S	S	S	R	R	S	R	S	S
74	R	S	S	S	R	S	S	R	S	S	S	S	R	R	S	R	S	S
75	H	S	S	S	H	S	S	S	S	S	S	S	R	S	S	H	S	S
76	R	S	S	S	H	S	S	S	S	S	S	S	R	S	S	R	S	S
77	S	S	S	S	H	S	S	S	S	S	S	S	R	S	S	S	S	S
78	H	S	S	S	H	S	S	S	S	S	S	S	R	S	S	H	S	S
79	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S
80	H	S	S	S	R	S	S	S	S	S	S	S	S	S	S	H	S	S
81	H	S	S	S	R	S	S	S	S	S	S	S	S	S	S	H	S	S
82	R	S	S	S	R	S	S	S	S	S	S	S	S	S	S	R	S	S
83	R	S	S	S	R	S	S	S	S	S	S	R	R	S	S	S	S	S
84	S	S	S	S	S	S	S	S	S	S	S	S	H	S	S	R	S	S
85	S	S	S	S	H	S	S	S	S	S	S	S	H	S	S	R	S	S
86	S	S	S	S	R	R	R	S	S	S	S	S	R	S	S	R	S	S
87	S	S	S	S	R	R	H	S	S	S	S	S	R	S	S	R	S	S
88	S	S	S	S	R	S	S	S	S	S	S	S	R	S	S	R	S	S
89	S	S	S	S	R	H	R	S	S	S	S	S	R	S	S	R	S	S
90	R	S	S	S	R	S	S	S	S	S	S	S	H	S	S	R	S	S
91	H	S	S	S	R	S	S	S	S	S	S	S	S	S	S	H	S	S
92	R	S	S	S	R	S	S	S	S	S	S	S	H	S	S	R	S	S
93	S	R	S	S	R	S	H	S	S	S	S	S	R	S	S	H	S	S
94	S	R	S	S	R	S	H	S	S	S	S	S	S	R	S	R	S	S
95	S	R	S	S	R	S	H	S	S	S	S	S	S	R	S	R	S	S
96	S	S	S	S	R	S	S	S	S	S	S	S	R	S	S	S	S	S
97	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S	S	S	S
98	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
99	R	S	S	R	R	S	S	S	S	S	S	S	S	S	S	R	S	S
100	H	S	S	R	R	S	S	S	S	S	S	H	S	S	S	R	S	S
101	S	H	S	S	R	S	S	S	S	S	S	S	R	R	S	S	S	S
102	S	R	S	S	R	S	H	S	S	S	S	S	R	H	S	S	S	S
103	S	R	S	S	R	S	S	S	S	S	S	S	R	S	S	R	S	S
104	S	S	S	S	R	S	S	S	S	S	S	S	S	R	S	H	S	S
105	S	S	S	R	R	S	S	S	S	S	S	H	S	S	S	S	S	S
106	R	S	S	S	H	S	S	H	S	S	S	S	R	H	S	S	S	S
107	R	S	S	S	S	S	S	S	S	S	S	R	R	S	S	H	S	S
108	R	H	S	S	R	S	S	S	S	S	S	R	S	H	S	S	S	S
109	R	S	S	S	R	S	S	S	S	R	S	S	R	S	S	S	S	S
110	R	S	S	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S
111	S	S	S	S	R	R	S	S	S	R	S	S	S	S	S	R	S	S
112	R	S	S	S	R	S	S	S	S	R	S	S	H	S	S	S	S	S
113	H	S	S	S	R	H	S	S	S	S	S	S	R	H	S	S	S	S
114	S	S	S	R	H	R	S	S	S	S	S	S	R	H	S	S	S	S
115	R	S	S	R	H	S	S	S	S	R	S	H	R	S	S	S	S	S
116	R	S	S	H	R	S	S	S	S	S	S	R	R	S	S	S	S	S
117	R	S	S	S	R	S	S	S	S	S	S	R	R	S	S	S	S	S

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	py1-4	Cf9	Ph3	Sm-565	ol2	Bw6	Bw12	Pto
118	S	H	S	S	R	S	R	S	S	S	S	S	R	S	S	R	S	S
119	S	H	S	S	S	S	S	S	S	S	S	S	R	S	S	R	S	S
120	R	H	S	S	H	R	H	H	S	H	S	H	S	R	S	H	H	S
121	H	S	S	H	R	S	S	S	S	S	S	R	H	S	S	S	S	S
122	R	S	S	H	R	S	S	S	S	S	S	R	H	S	S	S	S	S
123	S	S	S	S	S	S	S	S	S	R	S	S	H	R	S	R	S	S
124	S	S	S	S	S	S	S	S	S	S	S	S	H	R	S	R	S	S
125	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
126	S	S	S	S	H	S	S	S	S	S	S	R	S	S	S	S	S	S
127	S	S	S	S	H	S	H	S	S	S	S	R	H	S	S	S	S	S
128	S	S	S	S	R	S	S	S	S	S	S	S	H	S	S	R	S	S
129	S	H	S	S	S	S	S	S	S	H	S	H	H	S	S	R	S	S
130	S	S	S	S	R	S	R	S	S	R	S	H	H	R	S	R	S	S
131	H	S	S	R	R	H	S	R	S	R	S	R	S	S	S	S	S	S
132	H	S	S	R	R	H	S	R	S	R	S	R	S	R	S	S	S	S
133	H	S	S	R	R	H	S	R	S	R	S	R	S	R	S	S	S	S
134	R	S	S	R	S	S	R	R	S	R	S	R	S	S	S	S	S	S
135	R	S	S	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S
136	S	S	S	S	S	R	R	R	S	S	S	R	S	R	S	S	S	S
137	H	S	S	S	S	H	R	R	S	S	S	R	S	R	S	S	S	S
138	H	S	S	R	H	S	S	R	R	R	S	S	R	R	S	S	S	S
139	S	S	S	H	H	H	H	H	S	H	S	R	S	H	S	S	S	S
140	S	S	S	S	R	S	R	S	S	S	S	S	R	S	S	R	R	S
141	S	S	S	S	R	S	R	R	S	S	S	R	S	R	S	S	S	S
142	S	S	S	S	S	H	S	S	S	R	S	S	S	S	S	S	S	S
143	S	S	S	S	R	S	R	S	S	S	S	H	H	H	S	H	H	S
144	R	S	S	S	S	S	S	S	S	R	S	S	S	R	S	S	S	S

표 24. 토마토연구소 48점의 시료에 대하여, 병 관련 17종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	py1-4	Cf9	Ph3	Sm-565	ol2	Bw6	Bw12	Pto
1	H	H	S	R	S	S	S	S	S	S	H	R	S	S	S	S	S
2	H	H	H	R	S	H	S	S	S	S	H	S	S	S	S	S	S
3	H	S	H	H	S	S	S	S	H	S	S	R	H	S	S	S	S
4	H	H	H	R	S	S	S	S	S	S	S	H	S	S	H	S	S
5	H	S	H	R	H	S	S	S	H	S	S	S	S	S	R	S	S
6	H	S	R	H	S	S	S	S	S	S	S	H	S	S	R	S	S
7	H	S	R	H	S	S	S	S	S	S	S	H	S	S	R	S	S
8	H	S	H	H	S	S	S	S	H	S	S	R	S	S	S	S	S
9	H	S	S	H	S	S	S	S	H	S	S	H	S	S	S	S	S
10	H	S	S	H	S	R	S	S	H	S	S	H	H	S	H	S	S
11	S	H	S	R	S	H	S	S	S	S	S	H	H	S	H	S	S
12	H	S	S	H	S	S	H	S	S	S	H	R	S	S	R	S	S
13	S	S	S	R	H	R	H	H	R	S	S	S	H	S	H	R	S
14	H	S	H	R	H	S	R	S	H	S	H	S	H	S	S	S	S
15	R	S	H	R	S	S	R	S	R	S	H	S	R	S	S	S	S
16	S	H	S	H	S	H	H	S	H	S	S	H	R	S	S	H	S
17	H	S	S	H	S	H	S	S	R	S	H	S	S	S	S	H	S
18	H	S	S	H	H	S	R	S	H	S	S	S	S	S	S	S	S
19	S	H	S	R	S	S	S	S	S	S	S	R	R	S	S	S	S
20	S	S	S	R	S	S	S	S	S	S	S	R	H	S	S	S	S
21	S	H	S	R	S	S	S	S	S	S	S	R	S	S	S	S	S
22	R	S	R	R	S	S	S	S	S	S	R	S	S	S	S	S	S
23	R	S	H	R	S	S	S	S	S	S	R	H	S	S	S	S	S
24	R	S	R	R	S	S	S	S	S	S	R	S	S	S	S	S	S
25	R	S	R	R	S	S	S	S	S	S	R	S	S	S	S	S	S
26	R	S	H	R	S	S	S	S	S	S	R	H	S	S	S	S	S

No.	Ty1	Ty2	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	py1-4	Cf9	Ph3	Sm-565	ol2	Bw6	Bw12	Pto
27	R	S	S	R	S	S	S	S	S	S	R	R	S	S	S	S	S
28	R	S	H	R	S	S	S	S	S	S	R	H	S	S	S	S	S
29	R	S	S	R	S	S	S	S	S	S	R	R	S	S	S	S	S
30	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S
31	S	S	S	R	S	S	S	S	S	S	S	H	S	S	S	S	S
32	R	S	H	R	S	S	S	S	S	S	S	H	S	S	R	S	S
33	R	S	H	R	S	S	S	S	S	S	R	H	S	S	R	S	S
34	R	S	S	R	S	S	S	S	S	S	S	R	S	S	R	S	S
35	R	S	S	R	S	S	S	S	S	S	S	R	S	S	R	S	S
36	R	S	H	R	S	S	S	S	S	S	R	H	S	S	R	S	S
37	R	S	R	R	S	S	S	S	S	S	R	S	S	S	R	S	S
38	H	S	S	R	S	S	S	S	S	S	S	H	S	S	H	S	S
39	S	R	S	R	S	H	S	S	S	S	S	R	S	S	H	S	S
40	S	R	S	R	S	H	S	S	S	S	S	S	R	S	R	S	S
41	S	R	S	R	S	R	S	S	S	S	S	S	R	S	R	S	S
42	S	S	S	R	S	S	S	S	S	S	S	R	S	S	S	S	S
43	S	S	R	H	S	S	S	S	S	S	S	S	S	S	S	S	S
44	R	S	R	R	S	S	S	S	S	S	S	S	S	S	R	S	S
45	S	S	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S
46	S	S	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S
47	S	S	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S
48	H	S	S	R	H	S	R	S	R	S	S	S	S	S	S	S	S

표 25. 토마토연구소 53점의 시료에 대하여, 병 관련 18종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Py1-4	Cf9	Ph3	Sm-565	ol2	Bw6	Bw12	Pto
1	H	S	S	H	R	S	S	S	S	S	S	S	H	H	S	H	S	S
2	H	S	S	H	R	S	S	S	S	S	S	S	H	S	S	H	S	S
3	H	H	S	H	R	S	S	S	S	S	S	H	H	H	S	S	S	S
4	H	H	S	H	R	S	S	S	S	S	S	H	H	H	S	S	S	S
5	H	H	S	S	R	S	S	S	S	S	S	S	H	H	S	H	S	S
6	H	H	S	S	R	S	S	S	S	S	S	S	H	H	S	H	S	S
7	H	S	S	H	R	H	S	S	S	H	S	H	H	S	S	H	S	S
8	H	S	S	H	R	H	S	S	S	H	S	H	H	S	S	H	S	S
9	R	S	S	H	H	S	S	S	S	R	S	H	R	S	S	S	S	S
10	H	S	S	H	H	H	H	R	S	S	S	S	R	H	S	H	S	S
11	H	S	S	H	H	S	S	S	S	S	S	H	H	S	S	H	S	S
12	H	H	S	S	R	S	H	H	S	H	S	S	H	R	S	S	H	S
13	S	H	S	S	R	S	H	H	S	H	S	S	H	R	S	S	H	S
14	S	R	S	S	R	S	S	S	S	S	S	S	S	R	S	R	S	S
15	S	R	S	S	R	S	H	S	S	S	S	S	S	R	S	R	S	S
16	R	S	S	R	R	S	S	S	S	S	S	R	S	S	S	S	S	S
17	H	S	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S
18	R	S	S	S	S	S	S	S	S	S	S	S	R	S	S	R	S	S
19	R	S	S	S	R	S	S	S	S	S	S	S	R	S	S	R	S	S
20	R	S	S	R	S	S	S	S	S	R	S	S	R	S	S	S	S	S
21	S	S	S	S	S	S	S	S	S	S	S	R	H	S	S	S	S	S
22	R	S	S	R	S	S	S	S	S	R	S	S	R	S	S	S	S	S
23	R	S	S	S	S	S	S	S	S	R	S	S	S	S	S	S	S	S
24	R	S	S	S	S	S	S	R	S	S	S	S	R	R	S	R	S	S
25	H	S	S	R	H	H	S	S	S	S	S	S	R	S	S	S	S	S
26	S	S	S	R	H	R	S	S	S	S	S	R	S	S	S	S	S	S
27	R	S	S	R	R	S	S	S	S	S	S	S	S	S	S	R	S	S
28	R	S	S	R	R	S	S	S	S	S	R	S	S	S	S	R	S	S
29	R	S	S	R	R	S	S	S	S	S	S	R	S	S	S	R	S	S
30	S	S	S	S	R	S	S	S	S	S	S	S	S	S	S	R	S	S

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Py1-4	Cf9	Ph3	Sm-565	ol2	Bw6	Bw12	Pto
31	S	S	S	S	R	S	S	S	S	S	S	R	R	S	S	S	S	S
32	S	S	S	S	R	S	S	S	S	S	S	H	S	S	S	S	S	S
33	S	S	S	S	R	S	S	S	S	S	S	S	H	S	S	R	S	S
34	S	S	S	S	H	S	S	S	S	S	S	R	S	S	S	S	S	S
35	H	S	S	S	S	S	S	S	S	R	S	R	R	R	S	S	S	S
36	H	S	S	S	S	S	S	S	S	R	S	R	R	R	S	S	S	S
37	R	S	S	S	S	S	S	S	S	R	S	S	S	R	S	S	S	S
38	R	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S
39	S	S	S	S	R	R	S	S	S	R	S	S	S	R	S	S	S	S
40	R	S	S	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S
41	S	S	S	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S
42	S	S	S	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S
43	R	S	S	S	R	S	R	R	S	R	S	S	S	S	S	S	S	S
44	S	S	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S
45	S	S	S	S	H	S	S	R	S	S	S	S	S	S	S	S	S	S
46	H	S	S	R	R	S	S	R	S	R	S	R	S	R	S	S	R	S
47	R	S	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S
48	R	S	S	R	R	S	S	R	S	R	S	R	R	S	S	S	S	S
49	S	S	S	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S
50	S	S	S	S	S	S	R	R	S	R	S	S	R	S	S	S	R	S
51	S	S	S	S	R	S	H	R	R	R	S	R	S	R	S	S	R	S
52	S	S	S	S	R	H	H	R	S	R	S	S	S	R	S	S	R	S
53	R	S	S	S	R	S	S	R	S	S	S	S	S	R	S	S	R	S

표 26. 토마토연구소 58점의 시료에 대하여, 병 관련 18종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	py1-4	Cf9	Ph3	Sm-565	ol2	Bw6	Bw12	Pto
1	R	S	S	S	H	S	S	S	S	S	S	S	S	S	S	H	S	S
2	R	S	S	S	H	S	S	S	S	S	S	S	S	S	S	H	S	S
3	H	S	S	S	H	H	S	S	S	S	S	S	S	S	S	R	S	S
4	R	S	S	S	H	S	S	S	S	S	S	S	S	S	S	H	S	S
5	H	H	S	H	R	S	S	S	S	S	S	H	H	H	S	S	S	S
6	H	H	S	S	R	S	S	S	S	S	S	S	H	H	S	H	S	S
7	R	S	S	R	H	S	S	S	S	S	S	S	H	S	S	R	S	S
8	R	S	S	H	H	S	S	S	S	S	S	H	R	S	S	H	S	S
9	H	S	S	S	S	S	S	S	S	S	S	S	H	S	S	H	S	S
10	H	S	S	S	H	H	S	S	S	S	S	H	H	S	S	H	S	S
11	H	S	S	S	H	S	S	H	S	H	S	S	S	S	S	S	S	S
12	H	S	S	H	H	H	S	R	S	H	S	S	S	S	S	S	S	S
13	S	R	S	S	R	S	S	S	S	S	S	S	R	S	S	H	S	S
14	S	R	S	S	R	S	S	S	S	S	S	S	R	S	S	H	S	S
15	S	R	S	S	R	S	S	S	S	S	S	S	S	R	S	R	S	S
16	S	R	S	S	R	S	S	S	S	S	S	S	S	R	S	R	S	S
17	S	R	S	S	R	S	S	S	S	S	S	S	S	R	S	R	S	S
18	S	R	S	S	R	S	H	S	S	S	S	S	S	R	S	R	S	S
19	S	R	S	S	R	S	H	S	S	S	S	S	S	R	S	R	S	S
20	S	R	S	S	R	S	S	S	S	S	S	S	S	R	S	R	S	S
21	R	S	S	R	R	S	S	S	S	S	S	R	S	S	S	S	S	S
22	H	S	S	S	R	S	S	S	S	S	S	S	S	S	S	H	S	S
23	H	S	S	S	S	H	S	S	S	S	S	S	S	S	S	H	S	S
24	H	S	S	S	S	H	S	S	S	S	S	S	S	S	S	H	S	S
25	R	S	S	S	R	S	S	S	S	S	S	S	R	S	S	R	S	S
26	R	S	S	R	R	S	S	S	S	S	S	R	S	S	S	R	S	S
27	S	S	S	R	H	R	S	S	S	S	S	S	R	H	S	S	S	S
28	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	R	S	S
29	S	S	S	S	R	R	S	R	S	S	S	R	S	S	S	S	S	S
30	S	S	S	S	R	S	S	S	S	S	S	R	R	S	S	S	S	S

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	py1-4	Cf9	Ph3	Sm-565	ol2	Bw6	Bw12	Pto
31	R	S	S	S	R	S	S	R	S	R	S	S	S	S	S	S	S	S
32	R	S	S	S	H	S	H	R	S	R	S	R	S	R	S	S	S	S
33	R	S	S	S	R	S	H	R	S	R	S	S	S	S	S	S	S	S
34	S	S	S	S	R	R	S	R	S	R	S	S	S	R	S	S	S	S
35	R	S	S	S	S	S	S	R	S	R	S	R	S	R	S	S	R	S
36	R	S	S	R	S	S	S	R	S	R	S	R	S	R	S	S	R	S
37	S	S	S	R	R	S	S	R	S	R	S	R	S	R	S	S	R	S
38	H	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S	S
39	H	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S	S
40	H	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S	S
41	H	S	S	S	R	S	S	S	S	R	S	S	S	S	S	S	S	S
42	H	S	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S
43	R	S	S	S	S	S	S	R	S	R	S	S	S	S	S	S	S	S
44	H	S	S	S	H	S	S	S	S	R	S	S	S	S	S	S	S	S
45	R	S	S	S	H	S	S	S	S	R	S	S	S	S	S	S	S	S
46	R	S	S	S	H	S	H	R	S	R	S	S	S	S	S	S	S	S
47	S	S	S	S	R	S	H	R	R	R	S	S	S	R	S	S	R	S
48	S	S	S	S	R	S	H	R	H	R	S	S	S	R	S	S	R	S
49	S	S	S	S	R	H	H	R	H	R	S	S	S	R	S	S	R	S
50	S	S	S	S	R	H	H	R	S	R	S	S	S	R	S	S	R	S
51	S	S	S	S	S	S	S	R	S	R	S	S	S	R	S	S	S	S
52	S	S	S	S	R	S	H	R	H	R	S	S	S	R	S	S	R	S
53	S	S	S	S	R	H	H	R	S	R	S	S	S	R	S	S	R	S
54	S	S	S	S	R	R	S	R	H	R	S	S	H	H	S	S	R	S
55	S	S	S	S	R	H	R	H	S	R	R	S	S	H	S	S	S	S
56	S	S	S	S	H	S	R	H	S	R	R	S	S	H	S	S	S	S
57	R	S	S	S	R	S	S	R	S	H	S	H	S	H	S	S	S	S
58	R	S	S	H	R	S	S	R	S	H	S	H	S	R	S	S	S	S

③ 국립농업과학원

국립농업과학원로부터 총 36점의 시료를 받아 3번의 서비스를 진행하였다. 처음 16점의 시료에 대하여, 병 관련 7종의 마커로 서비스를 진행하였다(표 27). 2번째로는 16점의 시료에 대하여, 병 관련 7종의 마커로 서비스를 진행하였다(표 28). 3번째로는 4점의 시료에 대하여, 병 관련 7종의 마커로 서비스를 진행하였다(표 29). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 27~29).

표 27. 국립농업과학원 16점의 시료에 대하여, 병 관련 7종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	Ty4	ty5	Ty6	Bw6	Bw12
1	R	R	S	S	R	S	R
2	R	R	S	S	R	S	S
3	R	R	S	S	R	S	R
4	S	S	S	S	S	S	R
5	S	S	S	S	R	R	R
6	S	R	S	S	R	S	R
7	S	R	S	S	S	S	R
8	S	R	S	S	R	S	R

No.	Ty1	Ty2	Ty4	ty5	Ty6	Bw6	Bw12
9	R	S	S	S	R	S	S
10	S	S	S	S	R	R	H
11	S	S	S	S	R	H	R
12	S	S	S	S	H	H	R
13	S	S	S	S	H	R	H
14	S	S	S	S	H	R	R
15	R	S	S	S	R	S	R
16	S	S	S	S	S	S	S

표 28. 국립농업과학원 16점의 시료에 대하여, 병 관련 7종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	Ty4	ty5	Ty6	Bw6	Bw12
1	S	S	S	S	R	S	R
2	S	S	S	S	R	S	S
3	S	S	S	S	S	S	S
4	S	S	S	S	R	S	S
5	S	S	S	S	S	S	S

No.	Ty1	Ty2	Ty4	ty5	Ty6	Bw6	Bw12
9	S	S	S	S	S	S	S
10	S	S	S	S	S	S	R
11	S	S	S	S	S	S	R
12	S	S	S	S	S	S	R
13	S	S	S	S	R	R	R

No.	Ty1	Ty2	Ty4	ty5	Ty6	Bw6	Bw12
6	S	S	S	S	S	S	S
7	S	S	S	S	S	S	S
8	S	S	S	S	S	S	S

No.	Ty1	Ty2	Ty4	ty5	Ty6	Bw6	Bw12
14	S	S	S	S	H	R	R
15	S	S	S	S	R	S	S
16	S	S	S	S	S	R	S

표 29. 국립농업과학원 4점의 시료에 대하여, 병 관련 7종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	Ty4	ty5	Ty6	Bw6	Bw12
1	S	R	S	R	S	S	R
2	R	S	S	S	R	S	R

No.	Ty1	Ty2	Ty4	ty5	Ty6	Bw6	Bw12
3	S	S	S	S	S	R	R
4	S	S	S	R	R	S	R

④ 씨드이플랫폼

씨드이플랫폼로부터 총 4점의 시료를 받아 1번의 서비스를 진행하였다. 4점의 시료에 대하여, 병 관련 16종의 마커로 서비스를 진행하였으며, 서비스 결과는 아래 표와 같다(표 30).

표 30. 씨드이플랫폼 4점의 시료에 대하여, 병 관련 16종의 마커를 이용한 서비스 결과

No.	Ty1	Ty2	ty5	Sw5	Tm2a	Mi23	J3	I2	I3	Ve2	Ph3	Sm-565	Bw6	Bw12	py1-4	Cf9
1	H	S	S	H	R	S	S	S	S	H	H	S	H	S	S	S
2	H	S	S	S	R	S	S	S	S	H	H	S	S	S	S	H
3	H	S	S	S	R	S	S	S	S	S	H	S	S	S	S	H
4	H	H	S	S	R	S	S	S	S	S	R	S	S	S	S	H

1-6) 1차년도 ~ 5차년도 토마토 분자마커 서비스 종합

기관별로 분자마커 서비스 점수는 아래 표와 같으며, 1차년도, 2차년도, 3차년도, 4차년도, 5차년도의 토마토 분자마커 서비스의 총 점수는 각각 78,966점, 64,350점, 52,051점, 85,636점, 37,729점이다.

또한 1차년도에는 아래 그림과 같이 마커 유형별 혹은 분석방법에 따른 토마토 분자마커 서비스 중 가장 많은 비율을 차지한 마커로는 HRM마커로 전체 마커 중 50.5%가 사용되었으며, 그 다음으로는 35%인 EP1 system을 이용한 마커를 많이 사용하였고, 마지막으로 14.5%가 simple PCR마커가 이용되었다. 2차년도에는 마커 유형별 혹은 분석방법에 따라 1차년도와 똑같이 HRM마커가 많았는데, 더 비중이 높아져 76.4%를 차지하였고, 그 다음으로 12.9%가 simple PCR마커였으며, 마지막으로 10.7%가 EP1 system마커가 이용되었다. 3차년도에는 아래 그림과 같이 마커 유형별 혹은 분석방법에 따른 토마토 분자마커 서비스 중 가장 많은 비율을 차지한 마커유형으로는 HRM마커로 전체 마커 중 65.7%가 사용되었으며, 그 다음으로는 26.6%인 EP1 system마커가 많이 사용하였고, 마지막으로 7.7%가 Simple PCR마커가 이용되었다. 4차년도에는 HRM마커가 78.9%로 가장 많이 사용되었으며, EP1 system마커와 Simple PCR마커는 각각 10.8%, 10.3%로 비슷하게 이용되었다. 5차년도에는 HRM마커가 66.3%로 가장 많이 사용되었으며, EP1 system마커와 Simple PCR마커는 각각 24.4%, 9.3%로 이용되었다.

1차년도에 병, 원예형질 및 순도/고정도에 따른 토마토 분자마커 서비스로는 병 마커가 63.6%로 가장 많았으며, 그 다음으로 순도/고정도 마커가 35%, 원예형질 마커가 1.4%를 차지하였다. 2차년도에 병, 원예형질 및 고정도/MABC에 따른 토마토 분자마커 서비스로는 여전히 병 마커가 88.1%가 가장 큰 비중을 차지하였으며, 그 다음으로 고정도/MABC마커가 10.7%를 차지하였으며, 원예형질 마커가 1.2%를 차지하였다. 3차년도에 병, 원예형질에 따른 토마토 분자마커 서비스로는 병 마커가 72.5%이었으며, 그 다음으로 원예형질 마커가 27.5%를 차지하였다. 4차년도에는 병 마커가 88.2%로 가장 많이 차지하고 있었으며, 그 다음으로 순도/고정도마커가 10.8%, 원예형질마커가 1.1%를 차지하였다. 5차년도에는 병 마커가 60.9%이었으며, 그 다음으로 순도/고정도 마커가 37.6%, 원예형질마커가 1.6%를 차지하였다.

본 연구팀에서는 토마토에서 다수의 병 및 원예형질 마커를 보유하고 있으며, 토마토는 예전부터

다양한 마커를 유용하게 사용되어 왔던 작물로 여전히 분자마커를 잘 활용하고 있어, 분자마커 서비스 의뢰 역시 많이 들어왔다. 특히 본 과제에서 다수의 simple PCR, PCR-CAPS 등의 gel base를 기초로 한 기존 마커들을 gel을 이용하지 않아, 더욱더 쉽고 빠른 방법인 HRM마커로 다수 전환함으로써 짧은 시간에 정확한 결과를 내는 분자마커 서비스를 수행할 수 있도록 하였다.

<1차년도 기관별 토마토 서비스 의뢰 건수 및 분자마커 서비스 접수>

기관명	시료수	마커수	분자마커 서비스 접수	기관별 분자마커 서비스 접수
가나종묘	28	1	28	23,315
	480	48	23,040	
	19	13	247	
아시아종묘	1,344	1	1,344	16,494
	539	9	4,851	
	576	9	5,184	
	537	9	4,833	
	141	2	282	
토마토연구소	170	23	3,910	9,910
	159	26	4,134	
	20	2	40	
	83	22	1,826	
부농종묘	480	11	5,280	5,352
	24	3	72	
농우바이오	11	9	99	4,901
	97	2	194	
	48	96	4,608	
대연육종연구소	457	5	2,285	4,877
	432	6	2,592	
순천대	384	1	384	4,605
	382	1	382	
	367	1	367	
	379	1	379	
	381	1	381	
	96	1	96	
	384	1	384	
	96	1	96	
	365	1	365	
	362	1	362	
	144	1	144	
	144	1	144	
	384	1	384	
	384	1	384	
353	1	353		
한경대	5	2	10	192
	48	1	48	
	134	1	134	
유전자원센터	991	5	4,955	4,955
씨드이플랫폼	18	7	126	1,946
	88	5	440	
	88	5	440	
	82	4	328	
	68	3	204	
	72	2	144	

	88	3	264	
바이오통	16	15	240	1,859
	201	3	603	
	146	1	146	
	234	1	234	
	318	2	636	
해피바이오텍	40	5	200	560
	40	9	360	
소계		-		78,966

<2차년도 기관별 토마토 서비스 의뢰 건수 및 분자마커 서비스 접수>

기관명	시료수	마커수	분자마커 서비스 접수	기관별 분자마커 서비스 접수
순천대학교	1,344	10	13,440	27,202
	727	10	7,270	
	5	10	50	
	6,001	1	6,001	
	441	1	441	
아시아종묘	39	2	78	19,418
	42	2	84	
	120	6	720	
	48	6	288	
	70	1	70	
	60	1	60	
	50	1	50	
	30	1	30	
	10	1	10	
	122	2	244	
	120	4	480	
	483	10	4,830	
1,134	11	12,474		
토마토연구소	98	23	2,254	9,402
	154	23	3,542	
	66	23	1,518	
	52	24	1,248	
	60	14	840	
가나종묘	42	12	504	5,088
	191	24	4,584	
한경대학교	48	48	2,304	2,976
	48	14	672	
부농종묘	96	2	192	192
바이오통	6	12	72	72
소계		-		64,350

<3차년도 기관별 토마토 서비스 의뢰 건수 및 분자마커 서비스 접수>

업체명	시료수	마커수	분자마커 서비스 접수	기관별 분자마커 서비스 접수
순천대학교	47	10	470	34,475
	277	14	3,878	
	519	3	1,557	
	96	6	576	

	6,785	1	6,785	
	96	96	9,216	
	561	1	561	
	3,043	1	3,043	
	594	1	594	
	4	17	68	
	24	5	120	
	48	48	2,304	
	6	13	78	
	48	48	2,304	
	86	15	1,290	
	20	4	80	
	343	1	343	
	1,208	1	1,208	
토마토연구소	37	21	777	13,193
	37	2	74	
	95	21	1,995	
	81	21	1,701	
	132	21	2,772	
	33	1	33	
	209	17	3,553	
	117	16	1,872	
대연육종연구소	26	16	416	1,964
	307	6	1,842	
가나종묘	122	1	122	1,608
	64	12	768	
제농	70	12	840	510
	34	15	510	
아시아종묘	8	12	96	231
	15	9	135	
더기반	35	2	70	70
소계		-		52,051

<4차년도 기관별 토마토 서비스 의뢰 건수 및 분자마커 서비스 접수>

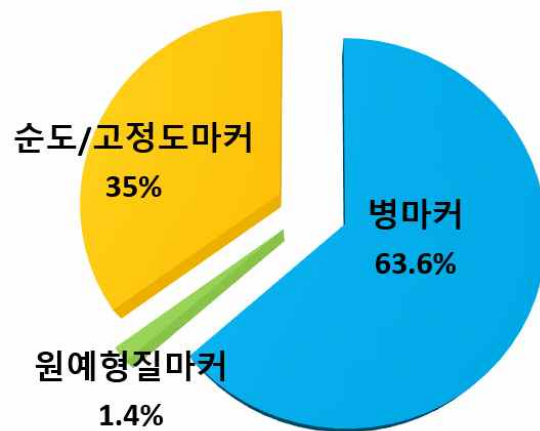
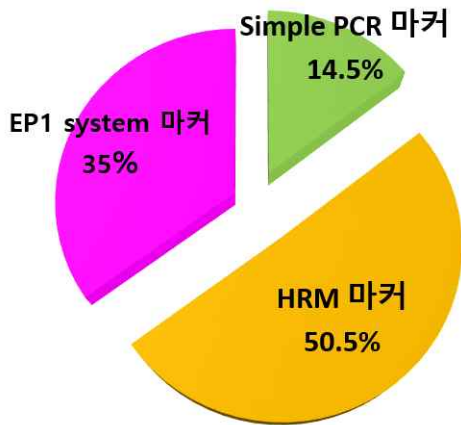
기관명	시료수	마커수	분자마커 서비스 접수	기관별 분자마커 서비스 접수
순천대학교	69	6	414	61,710
	290	15	4,350	
	71	5	355	
	5	8	40	
	1	10	10	
	57	6	342	
	11	15	165	
	765	10	7,650	
	86	1	86	
	1,030	8	8,240	
	8	15	120	
	8	9	72	
	283	15	4,245	
	33	15	495	
	154	1	154	
	46	3	138	

	12	9	108	
	10	15	150	
	7	15	105	
	2	15	30	
	96	1	96	
	2,481	9	22,329	
	66	5	330	
	65	8	520	
	9	14	126	
	321	1	321	
	98	1	98	
	26	1	26	
	645	11	7,095	
	2	2	4	
	321	2	642	
	44	2	88	
	365	7	2,555	
	115	1	115	
	6	16	96	
가나종묘	96	12	1,152	10,368
	192	12	2,304	
	576	12	6,912	
현대종묘	96	96	9,216	9,216
토마토연구소	98	18	1,764	3,755
	61	18	1,098	
	47	19	893	
한경대학교	47	1	47	502
	135	1	135	
	18	14	252	
	11	1	11	
	57	1	57	
더기반	85	1	85	85
소 계		-		85,636

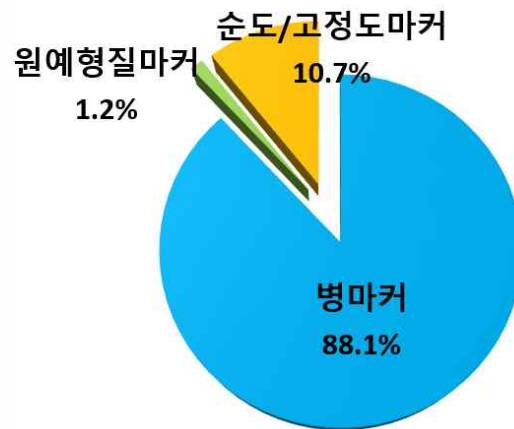
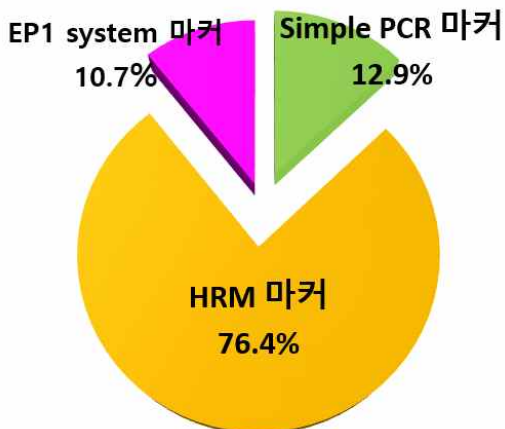
<5차년도 기관별 토마토 서비스 의뢰 건수 및 분자마커 서비스 접수>

기관명	시료수	마커수	분자마커 서비스 접수	기관별 분자마커 서비스 접수
순천대학교	11	17	187	31,016
	17	17	289	
	96	96	9,216	
	219	1	219	
	27	17	459	
	2	16	32	
	576	1	576	
	27	16	432	
	173	1	173	
	2	15	30	
	2,013	1	2,013	
	4	16	64	
	1,536	1	1,536	
	51	18	918	
	48	2	96	

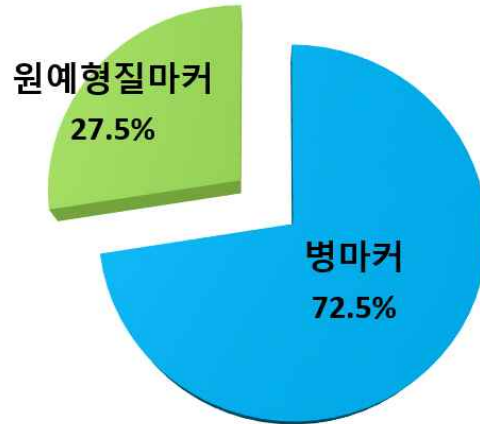
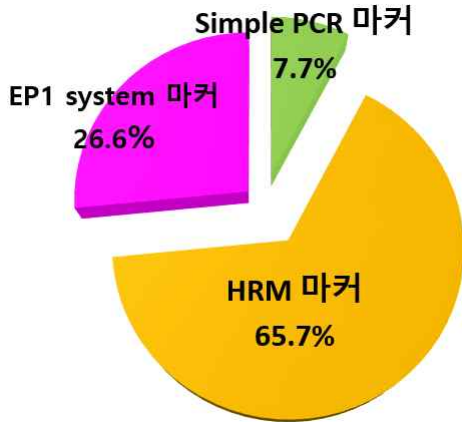
	29	15	435	
	24	5	120	
	96	15	1,440	
	104	15	1,560	
	826	1	826	
	693	15	10,395	
토마토연구소	52	19	988	6,394
	144	18	2,592	
	48	17	816	
	53	18	954	
	58	18	1,044	
국립농업과학연구원	16	7	112	252
	16	7	112	
	4	7	28	
씨드이플랫폼	4	16	64	64
소 계		-		37,726



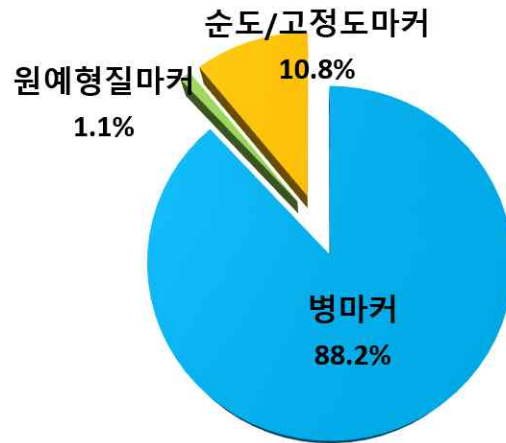
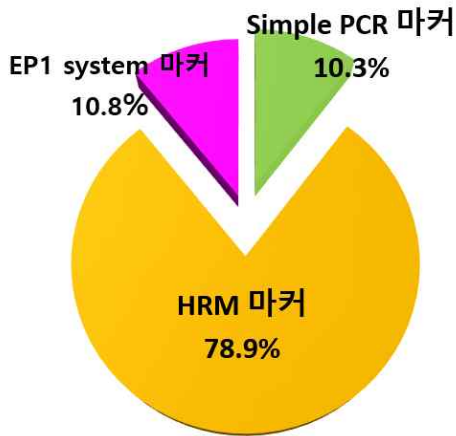
<1차년도 마커 유형별(분석방법)에 따른 토마토 분자마커 서비스(좌) 및 병, 원예형질 및 순도/고정도에 따른 토마토 분자마커 서비스(우)>



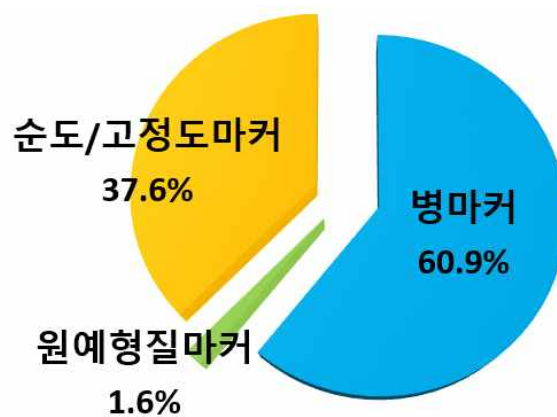
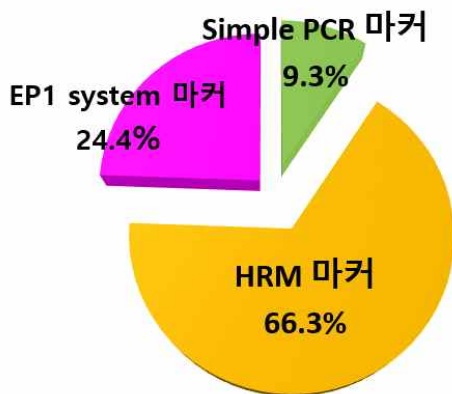
<2차년도 마커 유형별(분석방법)에 따른 토마토 분자마커 서비스(좌) 및 병, 원예형질 및 고정도/MABC에 따른 토마토 분자마커 서비스(우)>



<3차년도 마커 유형별(분석방법)에 따른 토마토 분자마커 서비스(좌) 및 병, 원예형질에 따른 토마토 분자마커 서비스(우)>



<4차년도 마커 유형별(분석방법)에 따른 토마토 분자마커 서비스(좌) 및 병, 원예형질 및 순도/고정도에 따른 토마토 분자마커 서비스(우)>



<5차년도 마커 유형별(분석방법)에 따른 토마토 분자마커 서비스(좌) 및 병, 원예형질 및 순도/고정도에 따른 토마토 분자마커 서비스(우)>

2) 양배추 분자마커 서비스

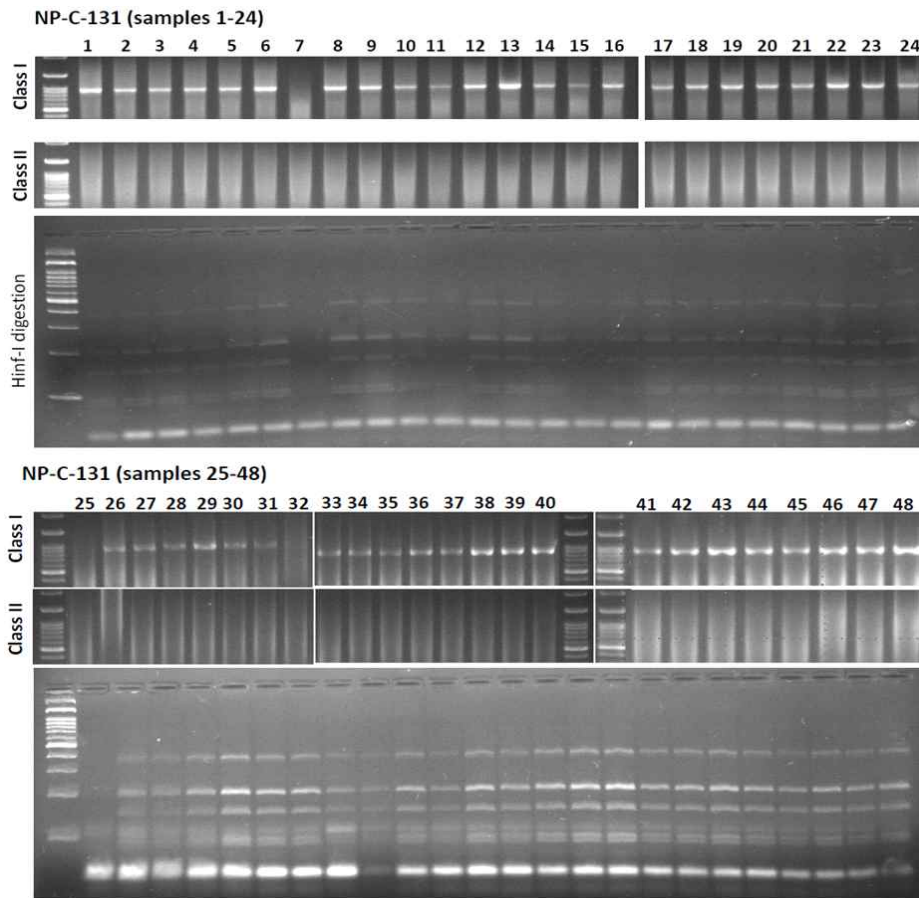
2-1) 1차년도 양배추 분자마커 서비스

1차년도에 양배추 분자마커 서비스는 순천대학교, 아시아종묘, 조은종묘 등으로 총 3곳에서 의뢰를 받아 실시하였다.

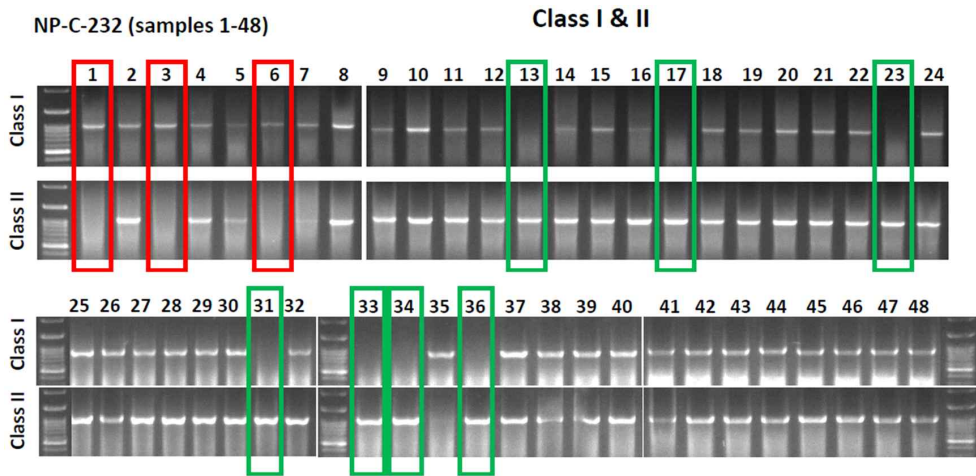
① 순천대학교

순천대학교로부터 총 509점의 시료를 받아 9번의 서비스를 진행하였다. 9번 모두 자가불화합성 유전자형에 대한 분자마커 서비스를 수행하였으며, 각각 48점, 48점, 50점, 64점, 48점, 48점, 48점, 48점 및 107점을 수행하였다. 의뢰받은 시료들에 대한 서비스 결과는 아래의 그림과 같다.

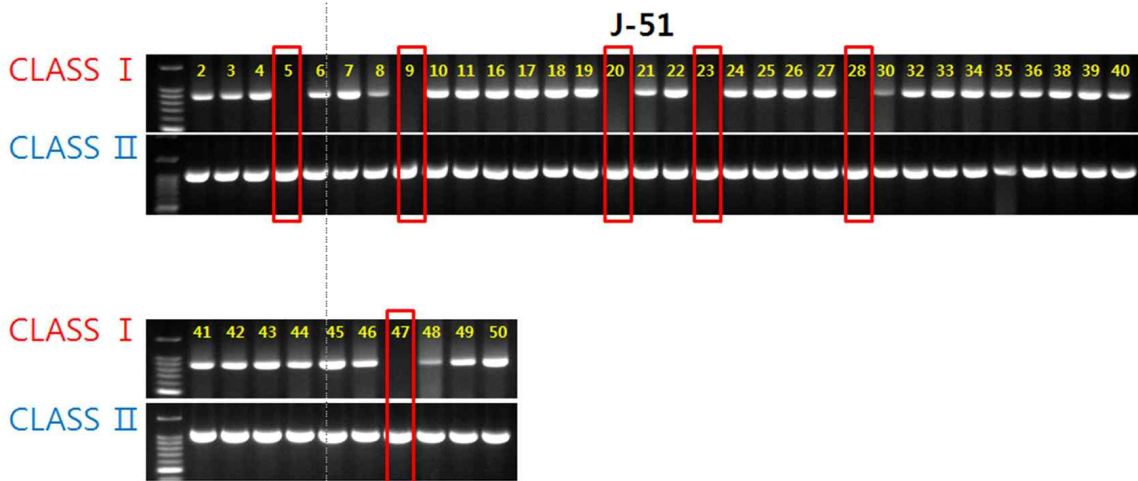
- 순천대학교 총 509점의 시료에 대한 자가불화합성 유전자형에 대한 분자마커 서비스 결과



<48샘플에 대한 Class I, Class II 및 Class I-CAPS 마커 3종의 결과>

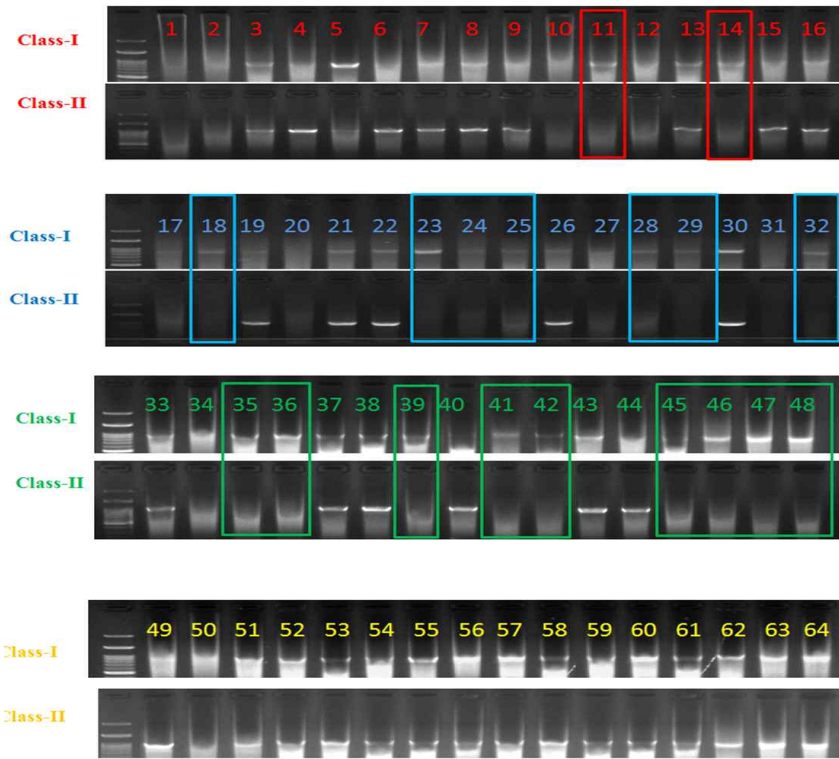


<48샘플에 대한 Class I 및 Class II 마커 2종의 결과>



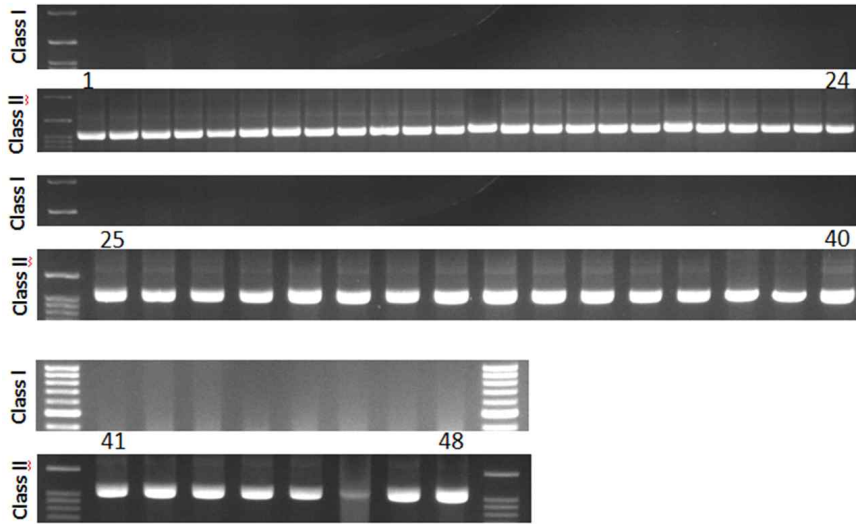
<50샘플에 대한 Class I 및 Class II 마커 2종의 결과>

NP-C-118

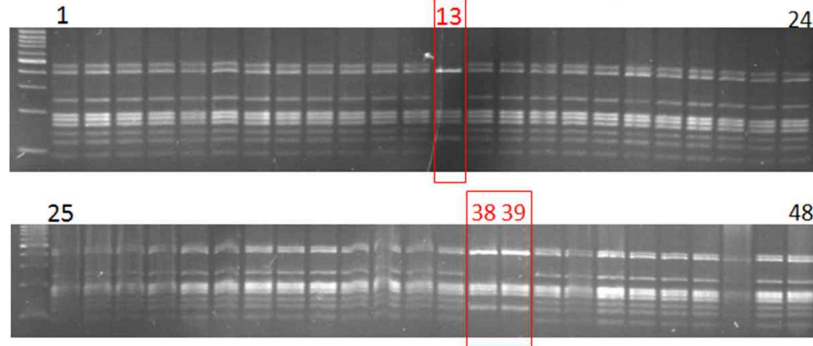


<64샘플에 대한 Class I 및 Class II 마커 2종의 결과>

NPJ-100 (ClassII/II combination)

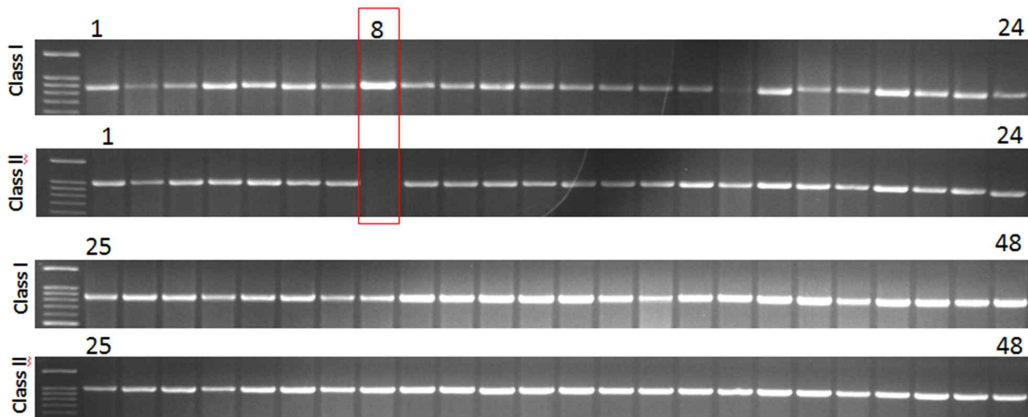


NPJ-100(A/u1treatment)



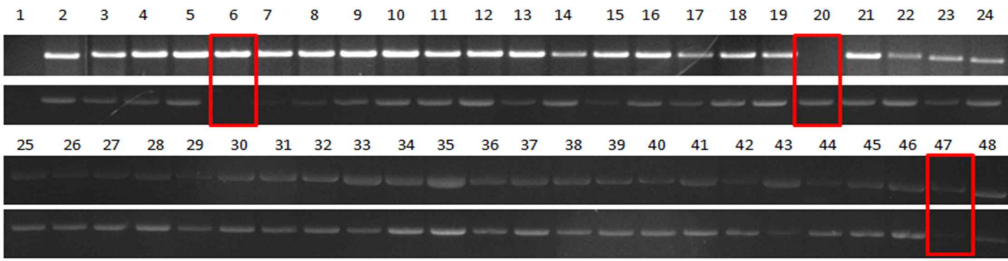
<48샘플에 대한 Class I, Class II 및 Class I-CAPS 마커 3종의 결과>

NPJ-231 (ClassI/II combination)



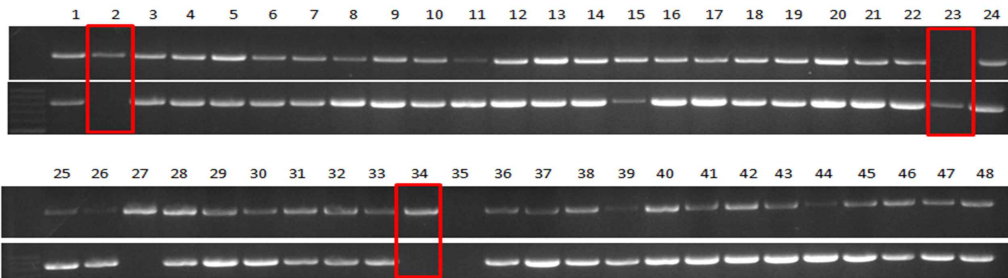
<48샘플에 대한 Class I 및 Class II 마커 2종의 결과>

NP-J-140



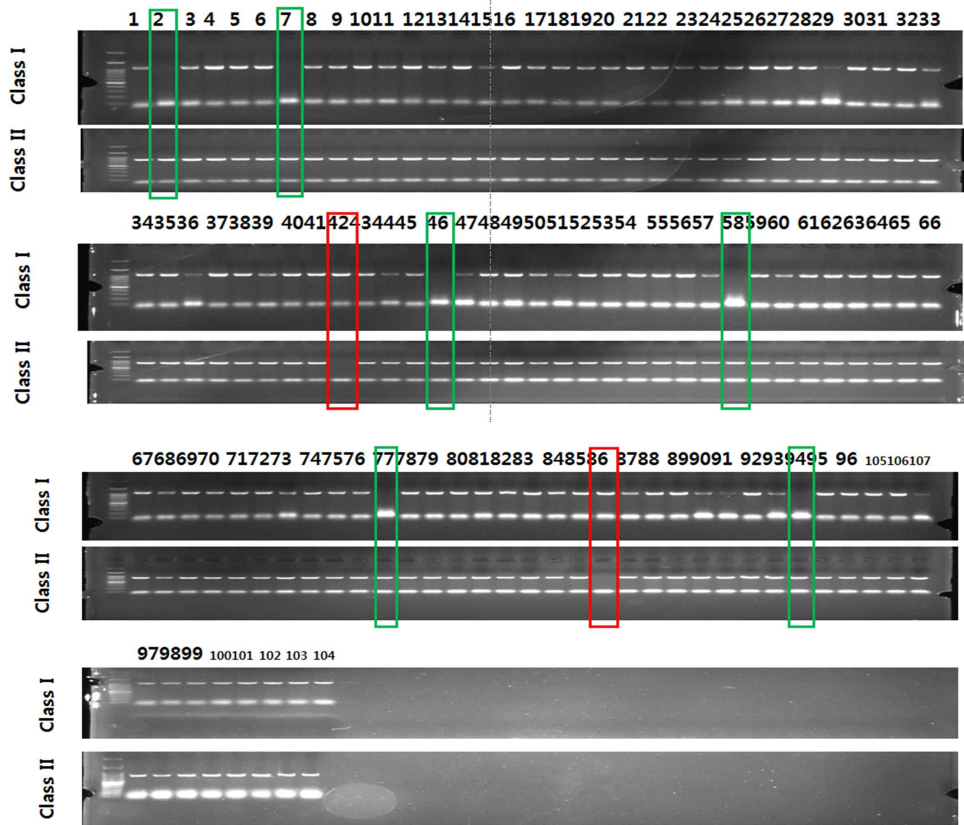
<48샘플에 대한 Class I 및 Class II 마커 2종의 결과>

NP-J-170



<48샘플에 대한 Class I 및 Class II 마커 2종의 결과>

NPJ-93 (samples 1-107)



<107샘플에 대한 Class I 및 Class II 마커 2종의 결과>

② 아시아종묘

아시아종묘로부터 총 274점의 시료를 받아 1번의 서비스를 진행하였다. 274점의 시료에 대하여, 병 관련 3종의 마커로 서비스를 진행하였다(표 1). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 1).

표 1. 아시아종묘 274점의 시료에 대하여, 병 관련 3종의 마커를 이용한 서비스 결과

No.	'A' adding	3'-Del	10bp Del	No.	'A' adding	3'-Del	10bp Del	No.	'A' adding	3'-Del	10bp Del	No.	'A' adding	3'-Del	10bp Del
1	R	R	R	70	H	H	R	139	S	S	R	208	H	H	H
2	R	R	R	71	R	R	H	140	S	S	R	209	R	R	R
3	R	R	R	72	H	H	H	141	S	S	R	210	S	S	R
4	R	R	R	73	R	R	H	142	S	S	R	211	S	S	R
5	R	R	R	74	R	R	H	143	S	S	R	212	S	S	R
6	R	R	R	75	H	H	R	144	S	S	R	213	R	R	H
7	R	R	R	76	R	R	H	145	S	S	R	214	n/a	n/a	n/a
8	R	R	R	77	R	R	R	146	S	S	R	215	R	R	H
9	R	R	R	78	H	H	R	147	S	S	R	216	R	S	R
10	R	R	R	79	H	H	R	148	H	H	R	217	R	R	H
11	R	R	R	80	H	H	H	149	H	H	R	218	R	R	S
12	R	R	R	81	H	H	H	150	H	H	R	219	S	S	R
13	R	R	R	82	R	R	H	151	S	S	R	220	R	R	S
14	R	R	R	83	R	R	H	152	S	S	R	221	H	H	R
15	R	R	R	84	R	R	H	153	S	S	R	222	R	R	R
16	R	R	R	85	H	S	R	154	S	S	R	223	H	H	H
17	R	R	R	86	n/a	n/a	n/a	155	H	H	R	224	R	R	S
18	R	R	R	87	R	R	R	156	S	S	R	225	R	R	R
19	R	R	R	88	H	H	R	157	S	S	R	226	R	R	R
20	R	R	R	89	n/a	n/a	n/a	158	S	S	R	227	R	R	R
21	R	R	R	90	H	R	H	159	H	H	R	228	H	S	R
22	R	R	R	91	H	H	H	160	S	S	R	229	R	R	S
23	R	R	R	92	R	R	S	161	S	S	R	230	R	R	H
24	R	R	R	93	S	H	R	162	S	S	R	231	n/a	n/a	n/a
25	R	R	R	94	n/a	n/a	n/a	163	S	S	R	232	H	H	R
26	R	R	R	95	H	H	H	164	S	S	R	233	R	R	H
27	R	R	R	96	S	S	R	165	R	R	H	234	H	H	R
28	R	R	R	97	R	R	H	166	R	R	R	235	R	R	H
29	R	R	R	98	H	H	R	167	R	R	R	236	R	R	H
30	R	R	R	99	R	R	R	168	R	R	R	237	H	S	R
31	R	R	R	100	R	H	H	169	S	S	R	238	R	R	R
32	R	R	R	101	R	R	S	170	S	S	R	239	S	S	R
33	R	R	R	102	R	R	H	171	R	R	R	240	H	H	H
34	R	R	R	103	R	R	H	172	H	H	R	241	S	S	R
35	R	R	R	104	R	R	H	173	S	S	R	242	S	S	R
36	S	S	R	105	R	R	H	174	R	R	R	243	R	R	R
37	R	R	R	106	R	R	R	175	H	H	R	244	S	S	R
38	R	R	H	107	R	R	H	176	H	H	R	245	S	S	R
39	R	R	R	108	n/a	n/a	n/a	177	R	R	R	246	S	S	R
40	R	R	R	109	R	R	R	178	S	S	R	247	S	S	R
41	S	S	R	110	R	R	H	179	R	R	R	248	H	H	R
42	R	R	R	111	H	H	H	180	H	H	H	249	S	S	R
43	R	R	R	112	R	R	S	181	R	R	R	250	R	R	R
44	R	R	R	113	R	R	H	182	S	S	R	251	S	S	R
45	R	R	S	114	R	H	S	183	R	R	R	252	S	S	R
46	R	R	R	115	H	H	R	184	R	R	R	253	R	R	H
47	R	R	S	116	H	H	R	185	R	R	R	254	R	H	S
48	R	R	R	117	S	S	R	186	R	R	R	255	H	H	R
49	R	R	R	118	S	S	R	187	R	R	R	256	R	R	H
50	R	R	R	119	S	S	R	188	R	R	R	257	S	S	R
51	R	R	R	120	H	S	H	189	S	S	R	258	H	H	R

No.	'A' adding	3'-Del	10bp Del	No.	'A' adding	3'-Del	10bp Del	No.	'A' adding	3'-Del	10bp Del	No.	'A' adding	3'-Del	10bp Del
52	R	R	R	121	H	H	H	190	R	R	R	259	R	R	H
53	R	R	R	122	n/a	n/a	n/a	191	R	R	R	260	H	H	R
54	R	R	R	123	H	H	R	192	R	R	R	261	R	R	H
55	R	S	R	124	R	R	H	193	S	S	R	262	S	S	R
56	R	S	R	125	H	H	H	194	S	S	R	263	S	S	R
57	R	S	R	126	H	H	H	195	R	R	R	264	H	H	R
58	R	S	R	127	H	H	R	196	R	R	S	265	R	R	H
59	R	R	R	128	R	R	H	197	R	R	R	266	R	R	H
60	H	H	R	129	H	H	R	198	R	R	R	267	R	R	H
61	R	R	R	130	n/a	n/a	n/a	199	R	R	S	268	H	H	R
62	R	R	H	131	S	S	R	200	R	R	R	269	R	R	R
63	R	R	H	132	n/a	n/a	n/a	201	R	R	R	270	S	S	R
64	R	H	S	133	R	R	R	202	R	R	R	271	H	H	R
65	H	H	H	134	R	R	R	203	R	R	R	272	H	H	R
66	R	R	R	135	H	H	H	204	R	R	S	273	S	S	R
67	S	S	R	136	S	S	R	205	R	R	H	274	S	S	R
68	H	R	R	137	R	R	H	206	R	R	H				
69	R	R	S	138	S	S	R	207	R	H	S				

③ 조은종묘

조은종묘로부터 총 58점의 시료를 받아 2번의 서비스를 진행하였다. 처음 10점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 2). 두 번째로는 48점의 시료에 대하여, 병 관련 4종의 마커로 서비스를 진행하였다(표 3). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 2, 3).

표 2. 조은종묘 10점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

No.	Orf138	Orf154	No.	Orf138	Orf154
1	non-ogura CMS	non-ogura CMS	6	CMS	CMS
2	non-ogura CMS	non-ogura CMS	7	CMS	CMS
3	non-ogura CMS	non-ogura CMS	8	non-ogura CMS	non-ogura CMS
4	non-ogura CMS	non-ogura CMS	9	non-ogura CMS	non-ogura CMS
5	CMS	CMS	10	non-ogura CMS	non-ogura CMS

표 3. 조은종묘 48점의 시료에 대하여, 병 관련 4종의 마커를 이용한 서비스 결과

No.	F3+R1	F4+R1	HRM	QIAxcel	No.	F3+R1	F4+R1	HRM	QIAxcel	No.	F3+R1	F4+R1	HRM	QIAxcel
1	R	S	S	H	17	R	R	R	R	33	S	S	S	R
2	S	S	S	R	18	R	R	R	R	34	R	S	H	R
3	S	S	S	R	19	R	R	R	R	35	R	S	S	R
4	R	S	H	R	20	R	S	H	R	36	R	S	H	R
5	R	R	R	S	21	R	R	R	R	37	R	R	R	R
6	R	S	H	R	22	R	R	R	R	38	R	R	R	R
7	R	S	H	R	23	S	S	S	R	39	R	S	H	R
8	R	R	H	R	24	S	S	S	R	40	R	S	H	R
9	S	S	S	S	25	R	S	H	R	41	R	S	H	R
10	S	S	S	R	26	R	S	H	R	42	S	S	S	R
11	S	S	S	R	27	R	S	H	R	43	S	S	S	R
12	R	S	H	R	28	R	S	H	R	44	S	S	S	R
13	R	S	H	R	29	R	S	H	R	45	R	S	H	R
14	S	S	S	R	30	S	S	S	R	46	R	S	H	R
15	R	S	H	R	31	R	S	H	R	47	R	R	H	R
16	R	R	R	R	32	R	S	H	R	48	R	S	R	R

2-2) 2차년도 양배추 분자마커 서비스

2차년도에 양배추 분자마커 서비스는 조은종묘, 아시아종묘, 한국종묘 등으로 총 3곳에서 의뢰를 받아 실시하였다.

① 조은종묘

조은종묘로부터 총 356점의 시료를 받아 4번의 서비스를 진행하였다. 처음 96점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 1). 두 번째로는 32점의 시료에 대하여, 병 관련 3종의 마커로 서비스를 진행하였다(표 2). 세 번째로는 24점의 시료에 대하여, 병 관련 3종의 마커로 서비스를 진행하였다(표 3). 네 번째로는 204점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 4). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 1, 2, 3, 4).

표 1. 조은종묘 96점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

No.	Class I	Class II	Type	No.	Class I	Class II	Type	No.	Class I	Class II	Type
1	O	X	class I	33	O	X	class I	65	X	O	class II
2	X	O	class II	34	X	O	class II	66	O	X	class I
3	O	X	class I	35	X	O	class II	67	X	O	class II
4	O	X	class I	36	O	X	class I	68	O	X	class I
5	X	O	class II	37	X	O	class II	69	O	X	class I
6	O	X	class I	38	X	O	class II	70	O	X	class I
7	O	X	class I	39	X	O	class II	71	O	O	heterozygous
8	O	X	class I	40	X	O	class II	72	O	X	class I
9	O	X	class I	41	O	X	class I	73	O	X	class I
10	X	O	class II	42	O	X	class I	74	O	X	class I
11	O	X	class I	43	O	X	class I	75	O	X	class I
12	O	X	class I	44	X	O	class II	76	O	X	class I
13	O	X	class I	45	X	O	class II	77	O	X	class I
14	X	O	class II	46	X	O	class II	78	O	X	class I
15	O	X	class I	47	X	O	class II	79	O	O	heterozygous
16	X	O	class II	48	X	O	class II	80	O	O	heterozygous
17	X	O	class II	49	X	O	class II	81	n/a	n/a	n/a
18	O	X	class I	50	O	X	class I	82	O	X	class I
19	O	X	class I	51	O	X	class I	83	O	X	class I
20	O	X	class I	52	O	X	class I	84	O	X	class I
21	O	X	class I	53	X	O	class II	85	O	O	heterozygous
22	O	X	class I	54	O	X	class I	86	X	O	class II
23	X	O	class II	55	O	X	class I	87	O	X	class I
24	O	X	class I	56	O	X	class I	88	O	X	class I
25	X	O	class II	57	X	O	class II	89	X	O	class II
26	X	O	class II	58	O	X	class I	90	X	O	class II
27	X	O	class II	59	O	X	class I	91	O	X	class I
28	X	O	class II	60	O	X	class I	92	O	O	heterozygous
29	X	O	class II	61	O	X	class I	93	X	O	class II
30	O	X	class I	62	X	O	class II	94	n/a	n/a	n/a
31	X	O	class II	63	X	O	class II	95	X	O	class II
32	O	X	class I	64	X	O	class II	96	O	O	heterozygous

표 2. 조은종묘 32점의 시료에 대하여, 병 관련 3종의 마커를 이용한 서비스 결과

No.	시들음병-1	시들음병-2	시들음병-3	종합 결과	No.	시들음병-1	시들음병-2	시들음병-3	종합 결과
1	R	R	R	R	17	S	S	R	S

No.	시들음병-1	시들음병-2	시들음병-3	종합 결과
2	R	R	R	R
3	S	S	R	S
4	R	R	R	R
5	R	R	S	S
6	S	S	R	S
7	H	H	R	H
8	H	H	H	S
9	R	R	R	R
10	S	S	R	S
11	H	S	R	S
12	H	S	R	S
13	H	H	R	H
14	H	H	R	H
15	R	R	H	H
16	R	R	H	H

No.	시들음병-1	시들음병-2	시들음병-3	종합 결과
18	H	H	R	H
19	H	H	R	H
20	H	H	R	H
21	R	R	R	R
22	R	R	S	S
23	R	R	R	R
24	R	R	R	R
25	R	R	S	S
26	R	S	R	S
27	R	R	S	S
28	R	R	R	R
29	R	R	S	S
30	R	R	R	R
31	R	R	R	R
32	R	R	R	R

표 3. 조은종묘 24점의 시료에 대하여, 병 관련 3종의 마커를 이용한 서비스 결과

No.	시들음병-1	시들음병-2	시들음병-3	종합 결과
1	H	R	H	H
2	H	R	H	H
3	R	R	R	R
4	H	R	H	H
5	H	R	H	H
6	R	S	S	S
7	R	S	S	S
8	R	H	H	S
9	R	H	H	S
10	n/a	n/a	n/a	n/a
11	R	H	H	S
12	R	S	S	S

No.	시들음병-1	시들음병-2	시들음병-3	종합 결과
13	H	H	S	S
14	H	H	S	S
15	R	R	R	R
16	R	R	R	R
17	R	R	R	R
18	S	R	S	S
19	S	R	S	S
20	H	R	H	H
21	S	R	S	S
22	S	R	S	S
23	H	R	H	H
24	H	R	H	H

표 4. 조은종묘 204점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

No.	Class I	Class II	Type
1	O	O	Heterozygous
2	O	O	Heterozygous
3	O	O	Heterozygous
4	O	O	Heterozygous
5	O	O	Heterozygous
6	O	O	Heterozygous
7	O	O	Heterozygous
8	O	O	Heterozygous
9	O	O	Heterozygous
10	O	O	Heterozygous
11	O	O	Heterozygous
12	O	O	Heterozygous
13	O	O	Heterozygous
14	O	O	Heterozygous
15	O	O	Heterozygous
16	O	O	Heterozygous
17	O	O	Heterozygous
18	O	O	Heterozygous
19	O	O	Heterozygous
20	O	O	Heterozygous

No.	Class I	Class II	Type
69	O	X	class I
70	O	O	Heterozygous
71	O	O	Heterozygous
72	O	O	Heterozygous
73	O	O	Heterozygous
74	O	O	Heterozygous
75	O	O	Heterozygous
76	O	O	Heterozygous
77	O	X	class I
78	O	X	class I
79	O	O	Heterozygous
80	O	O	Heterozygous
81	O	O	Heterozygous
82	O	O	Heterozygous
83	O	O	Heterozygous
84	O	O	Heterozygous
85	O	O	Heterozygous
86	O	O	Heterozygous
87	O	O	Heterozygous
88	O	O	Heterozygous

No.	Class I	Class II	Type
137	O	O	Heterozygous
138	O	O	Heterozygous
139	O	O	Heterozygous
140	O	O	Heterozygous
141	O	O	Heterozygous
142	O	O	Heterozygous
143	O	O	Heterozygous
144	O	O	Heterozygous
145	O	O	Heterozygous
146	O	O	Heterozygous
147	O	O	Heterozygous
148	O	O	Heterozygous
149	O	O	Heterozygous
150	O	O	Heterozygous
151	O	O	Heterozygous
152	O	O	Heterozygous
153	O	O	Heterozygous
154	O	O	Heterozygous
155	O	O	Heterozygous
156	O	O	Heterozygous

No.	Class I	Class II	Type
21	O	O	Heterozygous
22	O	O	Heterozygous
23	O	O	Heterozygous
24	O	O	Heterozygous
25	O	O	Heterozygous
26	O	O	Heterozygous
27	O	O	Heterozygous
28	O	O	Heterozygous
29	O	O	Heterozygous
30	O	O	Heterozygous
31	O	O	Heterozygous
32	O	O	Heterozygous
33	O	X	class I
34	O	O	Heterozygous
35	O	O	Heterozygous
36	O	O	Heterozygous
37	O	O	Heterozygous
38	O	O	Heterozygous
39	O	O	Heterozygous
40	O	O	Heterozygous
41	O	O	Heterozygous
42	O	O	Heterozygous
43	O	O	Heterozygous
44	O	O	Heterozygous
45	O	O	Heterozygous
46	O	O	Heterozygous
47	O	O	Heterozygous
48	O	O	Heterozygous
49	O	O	Heterozygous
50	O	O	Heterozygous
51	O	O	Heterozygous
52	O	O	Heterozygous
53	O	O	Heterozygous
54	O	O	Heterozygous
55	O	O	Heterozygous
56	O	O	Heterozygous
57	O	O	Heterozygous
58	O	O	Heterozygous
59	O	O	Heterozygous
60	O	O	Heterozygous
61	O	O	Heterozygous
62	O	O	Heterozygous
63	O	O	Heterozygous
64	O	O	Heterozygous
65	O	O	Heterozygous
66	O	O	Heterozygous
67	O	O	Heterozygous
68	O	O	Heterozygous

No.	Class I	Class II	Type
89	O	O	Heterozygous
90	O	O	Heterozygous
91	O	O	Heterozygous
92	O	O	Heterozygous
93	O	O	Heterozygous
94	O	O	Heterozygous
95	O	O	Heterozygous
96	O	O	Heterozygous
97	O	X	class I
98	O	O	Heterozygous
99	O	O	Heterozygous
100	O	O	Heterozygous
101	O	O	Heterozygous
102	O	O	Heterozygous
103	O	O	Heterozygous
104	O	O	Heterozygous
105	O	O	Heterozygous
106	O	O	Heterozygous
107	O	O	Heterozygous
108	O	O	Heterozygous
109	O	O	Heterozygous
110	O	O	Heterozygous
111	O	O	Heterozygous
112	O	O	Heterozygous
113	O	O	Heterozygous
114	O	O	Heterozygous
115	O	O	Heterozygous
116	O	O	Heterozygous
117	O	O	Heterozygous
118	O	O	Heterozygous
119	O	O	Heterozygous
120	O	X	class I
121	O	O	Heterozygous
122	O	O	Heterozygous
123	O	O	Heterozygous
124	O	O	Heterozygous
125	O	O	Heterozygous
126	O	O	Heterozygous
127	O	O	Heterozygous
128	O	O	Heterozygous
129	O	O	Heterozygous
130	O	O	Heterozygous
131	O	O	Heterozygous
132	O	O	Heterozygous
133	O	O	Heterozygous
134	O	O	Heterozygous
135	O	O	Heterozygous
136	O	O	Heterozygous

No.	Class I	Class II	Type
157	O	O	Heterozygous
158	O	O	Heterozygous
159	O	O	Heterozygous
160	O	O	Heterozygous
161	O	O	Heterozygous
162	O	O	Heterozygous
163	O	O	Heterozygous
164	O	O	Heterozygous
165	O	O	Heterozygous
166	O	X	class I
167	O	O	Heterozygous
168	O	X	class I
169	O	O	Heterozygous
170	O	O	Heterozygous
171	O	O	Heterozygous
172	O	O	Heterozygous
173	O	X	class I
174	O	O	Heterozygous
175	O	O	Heterozygous
176	O	O	Heterozygous
177	O	O	Heterozygous
178	O	O	Heterozygous
179	O	O	Heterozygous
180	O	O	Heterozygous
181	O	O	Heterozygous
182	n/a	n/a	n/a
183	O	O	Heterozygous
184	O	O	Heterozygous
185	O	O	Heterozygous
186	O	O	Heterozygous
187	O	O	Heterozygous
188	O	O	Heterozygous
189	n/a	n/a	n/a
190	O	O	Heterozygous
191	O	O	Heterozygous
192	O	O	Heterozygous
193	O	O	Heterozygous
194	O	O	Heterozygous
195	O	O	Heterozygous
196	O	X	class I
197	X	O	class II
198	O	O	Heterozygous
199	O	O	Heterozygous
200	O	X	class I
201	O	X	class I
202	O	X	class I
203	O	O	Heterozygous
204	O	O	Heterozygous

② 아시아종묘

아시아종묘로부터 총 163점의 시료를 받아 1번의 서비스를 진행하였다. 163점의 시료에 대하여, 형질 관련 2종의 마커로 서비스를 진행하였다(표 5). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 5).

표 5. 아시아종묘 163점의 시료에 대하여, 형질 관련 2종의 마커를 이용한 서비스 결과

No.	Class I	Class II	Type
1	X	O	class II
2	X	O	class II
3	X	O	class II
4	O	X	class I
5	O	X	class I
6	O	X	class I
7	X	O	class II
8	X	O	class II
9	X	O	class II
10	O	X	class I
11	O	X	class I
12	O	X	class I
13	O	X	class I
14	O	X	class I
15	O	X	class I
16	O	X	class I
17	O	X	class I
18	O	X	class I
19	O	X	class I
20	O	X	class I
21	O	X	class I
22	X	O	class II
23	X	O	class II
24	O	X	class I
25	X	O	class II
26	X	O	class II
27	O	X	class I
28	X	O	class II
29	O	X	class I
30	O	X	class I
31	X	O	class II
32	O	X	class I
33	X	O	class II
34	O	X	class I
35	O	O	heterozygous
36	O	X	class I
37	X	O	class II
38	O	X	class I
39	O	X	class I
40	O	X	class I
41	X	O	class II
42	X	O	class II
43	O	X	class I
44	O	X	class I
45	O	X	class I
46	X	O	class II
47	X	O	class II
48	X	O	class II
49	X	O	class II
50	X	O	class II
51	X	O	class II
52	O	O	heterozygous
53	O	X	class I
54	O	X	class I
55	O	X	class I

No.	Class I	Class II	Type
56	X	O	class II
57	n/a	n/a	n/a
58	X	O	class II
59	X	O	class II
60	O	X	class I
61	O	X	class I
62	X	O	class II
63	O	X	class I
64	X	O	class II
65	O	X	class I
66	X	O	class II
67	O	X	class I
68	O	X	class I
69	O	X	class I
70	X	O	class II
71	X	O	class II
72	X	O	class II
73	O	X	class I
74	O	O	heterozygous
75	X	O	class II
76	O	X	class I
77	O	X	class I
78	O	X	class I
79	O	X	class I
80	O	X	class I
81	X	O	class II
82	X	O	class II
83	X	O	class II
84	X	O	class II
85	O	X	class I
86	X	O	class II
87	X	O	class II
88	X	O	class II
89	X	O	class II
90	X	O	class II
91	O	X	class I
92	X	O	class II
93	O	X	class I
94	O	X	class I
95	O	X	class I
96	O	X	class I
97	O	X	class I
98	X	O	class II
99	X	O	class II
100	O	X	class I
101	O	X	class I
102	X	O	class II
103	O	X	class I
104	O	X	class I
105	O	X	class I
106	O	X	class I
107	X	O	class II
108	X	O	class II
109	X	O	class II
110	X	O	class II

No.	Class I	Class II	Type
111	O	X	class I
112	O	X	class I
113	X	O	class II
114	X	O	class II
115	O	X	class I
116	O	X	class I
117	O	X	class I
118	O	X	class I
119	O	O	heterozygous
120	O	X	class I
121	O	X	class I
122	O	X	class I
123	n/a	n/a	n/a
124	O	X	class I
125	O	X	class I
126	O	X	class I
127	O	X	class I
128	O	X	class I
129	O	X	class I
130	O	X	class I
131	O	X	class I
132	X	O	class II
133	X	O	class II
134	X	O	class II
135	X	O	class II
136	X	O	class II
137	O	X	class I
138	O	O	heterozygous
139	X	O	class II
140	n/a	n/a	n/a
141	O	X	class I
142	O	X	class I
143	O	X	class I
144	X	O	class II
145	n/a	n/a	n/a
146	X	O	class II
147	n/a	n/a	n/a
148	O	X	class I
149	O	X	class I
150	n/a	n/a	n/a
151	X	O	class II
152	X	O	class II
153	O	X	class I
154	X	O	class II
155	O	X	class I
156	O	X	class I
157	n/a	n/a	n/a
158	O	X	class I
159	n/a	n/a	n/a
160	n/a	n/a	n/a
161	X	O	class II
162	X	O	class II
163	n/a	n/a	n/a

③ 한국종묘

한국종묘로부터 총 89점의 시료를 받아 1번의 서비스를 진행하였다. 89점의 시료에 대하여, 형질 관련 2종의 마커로 서비스를 진행하였다(표 6). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 6).

표 6. 한국종묘 89점의 시료에 대하여, 형질 관련 2종의 마커를 이용한 서비스 결과

No.	Class I	Class II	Type
1	O	X	class I
2	O	X	class I
3	O	X	class I
4	O	X	class I
5	O	X	class I
6	O	X	class I
7	X	O	class II
8	X	O	class II
9	X	O	class II
10	X	O	class II
11	O	X	class I
12	X	O	class II
13	O	X	class I
14	O	X	class I
15	O	X	class I
16	O	O	heterozygous
17	O	X	class I
18	O	O	heterozygous
19	X	O	class II
20	O	O	heterozygous
21	X	O	class II
22	X	O	class II
23	O	O	heterozygous
24	X	O	class II
25	X	O	class II
26	O	X	class I
27	O	X	class I
28	O	X	class I
29	O	X	class I
30	O	X	class I

No.	Class I	Class II	Type
31	O	X	class I
32	O	X	class I
33	X	O	class II
34	O	X	class I
35	O	X	class I
36	O	X	class I
37	X	O	class II
38	O	X	class I
39	X	O	class II
40	O	X	class I
41	X	O	class II
42	O	X	class I
43	n/a	n/a	n/a
44	X	O	class II
45	X	O	class II
46	O	X	class I
47	X	O	class II
48	X	O	class II
49	O	X	class I
50	O	X	class I
51	X	O	class II
52	X	O	class II
53	O	X	class I
54	O	X	class I
55	O	X	class I
56	O	X	class I
57	O	O	heterozygous
58	X	O	class II
59	O	X	class I
60	X	O	class II

No.	Class I	Class II	Type
61	O	X	class I
62	O	X	class I
63	O	X	class I
64	O	X	class I
65	X	O	class II
66	O	X	class I
67	O	X	class I
68	n/a	n/a	n/a
69	O	X	class I
70	O	X	class I
71	O	X	class I
72	X	O	class II
73	X	O	class II
74	X	O	class II
75	X	O	class II
76	O	X	class I
77	O	X	class I
78	O	X	class I
79	O	X	class I
80	O	X	class I
81	X	O	class II
82	O	O	heterozygous
83	O	O	heterozygous
84	X	O	class II
85	O	O	heterozygous
86	X	O	class II
87	O	X	class I
88	O	X	class I
89	n/a	n/a	n/a

2-3) 3차년도 양배추 분자마커 서비스 결과

3차년도에 양배추 분자마커 서비스는 순천대학교, 조은종묘, 한국종묘 등으로 총 3곳에서 의뢰를 받아 실시하였다.

① 순천대학교

순천대학교로부터 총 12,230점의 시료를 받아 7번의 서비스를 진행하였다. 처음 28점의 시료에 대하여, 병 관련 5종의 마커 및 원예형질 관련 4종의 마커로 서비스를 진행하였다(표 1). 2번째로는 34점의 시료에 대하여, CMS마커로 서비스를 진행하였다(표 2). 3번째로는 14품종에 대하여 각각 192점의 시료에 대하여, 자가불화합성(Class I, Class II 및, Class II 특이적 마커) 마커를 이용하여 순도검정 서비

스를 진행하였다(표 3). 4번째로는 4품종에 대하여 각각 192점의 시료에 대하여, 자가불화합성(Class I-CAPS)의 마커를 이용하여 순도검정 서비스를 진행하였다(표 4). 5번째로는 72점의 시료에 대하여, CMS마커로 서비스를 진행하였다(표 5). 6번째로는 28품종에 대하여 각각 192점의 시료에 대하여, 자가 불화합성(Class I, Class II 및, Class II 특이적 마커) 마커를 이용하여 순도검정 서비스를 진행하였다(표 6). 7번째로는 17품종에 대하여 각각 192점의 시료에 대하여, 자가불화합성(Class I-CAPS)의 마커를 이용하여 순도검정 서비스를 진행하였다(표 7). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다 (표 1~7).

표 1. 순천대학교 28점의 시료에 대하여, 병 관련 5종의 마커 및 원예형질 관련 4종의 마커를 이용한 서비스 결과

순번	시들음병-1 (R종폭마커)	시들음병-2 (S종폭마커)	시들음병-3 (296bp)	시들음병-4 (10bp)	노균병	오구라CMS (orf138)	오구라CMS (orf154)	SI (ClassI)	SI (ClassII)
1	R	R	R	H	S	CMS	CMS	Amp	Amp
2	R	R	R	H	S	CMS	CMS	Amp	Amp
3	R	R	R	H	S	non-CMS	non-CMS	Not-amp	Amp
4	R	R	R	H	S	non-CMS	non-CMS	Not-amp	Amp
5	R	R	R	H	S	CMS	CMS	Not-amp	Amp
6	R	R	R	H	S	CMS	CMS	Not-amp	Amp
7	R	S	H	H	S	CMS	CMS	Not-amp	Amp
8	R	S	H	H	S	CMS	CMS	Not-amp	Amp
9	R	R	R	H	S	non-CMS	non-CMS	Amp	Not-amp
10	R	R	R	H	S	non-CMS	non-CMS	Amp	Not-amp
11	R	R	R	H	S	non-CMS	non-CMS	Amp	Amp
12	R	R	R	H	S	non-CMS	non-CMS	Amp	Amp
13	R	R	R	H	S	non-CMS	non-CMS	Amp	Amp
14	R	R	R	S	S	non-CMS	non-CMS	Amp	Amp
15	R	R	R	R	S	non-CMS	non-CMS	Amp	Amp
16	R	R	R	R	S	non-CMS	non-CMS	Amp	Amp
17	S	S	S	R	H	CMS	CMS	Amp	Not-amp
18	S	S	S	R	H	CMS	CMS	Amp	Not-amp
19	S	S	S	R	S	CMS	CMS	Amp	Amp
20	S	S	S	R	S	CMS	CMS	Amp	Amp
21	S	S	S	R	S	non-CMS	non-CMS	Amp	Amp
22	S	S	S	R	S	non-CMS	non-CMS	Amp	Amp
23	S	S	S	R	H	CMS	CMS	Amp	Amp
24	S	S	S	R	H	CMS	CMS	Amp	Amp
25	S	S	S	R	S	CMS	CMS	Amp	Not-amp
26	S	S	S	R	S	CMS	CMS	Amp	Not-amp
27	S	S	S	R	S	non-CMS	non-CMS	Amp	Amp
28	S	S	S	R	S	non-CMS	non-CMS	Amp	Amp

표 2. 순천대학교 34점의 시료에 대하여, CMS형질 마커를 이용한 서비스 결과

순번	품종명	orf138	순번	품종명	orf138	순번	품종명	orf138
1	NP-J-332	CMS	12	NP-J-343	CMS	23	NP-J-354	None CMS
2	NP-J-333	CMS	13	NP-J-344	None CMS	24	NP-J-355	None CMS
3	NP-J-334	None CMS	14	NP-J-345	CMS	25	NP-J-356	CMS
4	NP-J-335	None CMS	15	NP-J-346	CMS	26	NP-J-357	None CMS
5	NP-J-336	CMS	16	NP-J-347	CMS	27	NP-J-358	CMS
6	NP-J-337	CMS	17	NP-J-348	None CMS	28	NP-J-359	None CMS
7	NP-J-338	CMS	18	NP-J-349	CMS	29	NP-J-360	CMS
8	NP-J-339	None CMS	19	NP-J-350	None CMS	30	NP-J-361	None CMS
9	NP-J-340	CMS	20	NP-J-351	CMS	31	ROCKY	None CMS
10	NP-J-341	None CMS	21	NP-J-352	None CMS	32	GRAND KK CROSS	CMS
11	NP-J-342	None CMS	22	NP-J-353	None CMS	33	Green Helmet	None CMS

표 3. 순천대학교 14품종에 대하여 각각 192점의 시료에 대하여, 자가불화합성(Class I, Class II 및, Class II 특이적 마커) 마커를 이용한 순도검정 서비스 결과

순번	품종명	Class I	Class II	샘플수	마커	서비스수	혼합샘플	순도(%)
1	NP-J-334	I	II	192	2	384	0	100.0
2	NP-J-339	I	II	192	2	384	2	99.0
3	NP-J-342	I	II	192	2	384	0	100.0
4	NP-J-350	I	II	192	2	384	2	99.0
5	NP-J-353	I	II	192	2	384	14	92.7
6	NP-J-354	I	II	192	2	384	2	99.0
7	NP-J-355	I	II	192	2	384	5	97.4
8	NP-J-357	I	II	192	2	384	3	98.4
9	NP-J-361	I	II	192	2	384	1	99.5
10	ROCKY	I	II	192	2	384	2	99.0
11	Green Helmet	not I	II	192	2	384	3	98.4
12	NP-J-341	not I	II	192	2	384	0	100.0
13	NP-J-352	not I	II	192	2	384	0	100.0
14	PAKSE 387	not I	II	192	2	384	8	95.8
합계						5,376		

표 4. 순천대학교 4품종에 대하여 각각 192점의 시료에 대하여, 자가불화합성(Class I-CAPS)의 마커를 이용한 서비스 결과

순번	품종명	Class I	Class II	샘플수	마커	서비스수	혼합샘플	순도(%)
1	NP-J-335	I	not II	192	1	192	0	100.0
2	NP-J-344	I	not II	192	1	192	2	99.0
3	NP-J-348	I	not II	192	1	192	0	100.0
4	NP-J-359	I	not II	192	1	192	4	97.9
합계						768		

표 5. 순천대학교 72점의 시료에 대하여, CMS형질 마커를 이용한 서비스 결과

순번	샘플명	orf138	순번	샘플명	orf138	순번	샘플명	orf138
1	PAN1181	CMS	25	NPJ104	CMS	49	INDU SEMINIS	non CMS
2	Texas F1	CMS	26	NPJ101	CMS	50	Mountainlion	non CMS
3	FARAO F1	CMS	27	NPJ83	CMS	51	INDAM KRISHNA	non CMS
4	SYNERGY F1	CMS	28	NPJ15	CMS	52	NPJ219	non CMS
5	NPJ154	CMS	29	NPJ14	CMS	53	NPJ148	non CMS
6	NPJ172	CMS	30	YR 후유도리	non CMS	54	NPJ142	non CMS
7	NPJ178	CMS	31	GOLDEN ACRE	non CMS	55	NPJ72	non CMS
8	NPJ187	CMS	32	NPJ160	non CMS	56	NPJ150	non CMS
9	NPJ189	CMS	33	NPJ162	non CMS	57	NPJ161	non CMS
10	NPJ191	CMS	34	NPJ163	non CMS	58	NPJ165	non CMS
11	NPJ202	CMS	35	NPJ164	non CMS	59	NPJ166	non CMS
12	NPJ205	CMS	36	NPJ168	non CMS	60	NPJ179	non CMS
13	NPJ206	CMS	37	NPJ185	non CMS	61	NPJ180	non CMS
14	NPJ207	CMS	38	NPJ188	non CMS	62	NPJ184	non CMS
15	NPJ139	CMS	39	NPJ211	non CMS	63	NPJ201	non CMS
16	NPJ120	CMS	40	NPJ220	non CMS	64	NPJ217	non CMS
17	NPJ115	CMS	41	NPJ221	non CMS	65	NPJ149	non CMS
18	NPJ116	CMS	42	NPJ143	non CMS	66	NPJ147	non CMS
19	NPJ111	CMS	43	NPJ134	non CMS	67	NPJ125	non CMS
20	NPJ109	CMS	44	NPJ121	non CMS	68	NPJ114	non CMS
21	NPJ110	CMS	45	NPJ74	non CMS	69	NPJ57	non CMS
22	NPJ105	CMS	46	NPJ81	non CMS	70	ANKURMANAS 인도	non CMS
23	NPJ108	CMS	47	NPJ47	non CMS	71	ENZA ZADEN	non CMS

순번	샘플명	orf138	순번	샘플명	orf138	순번	샘플명	orf138
24	NPJ103	CMS	48	NPJ21	non CMS	72	Sks-204 somaniseeds	non CMS

표 6. 순천대학교 28품종에 대하여 각각 192점의 시료에 대하여, 자가불화합성(Class I, Class II 및, Class II 특이적 마커) 마커를 이용한 순도검정 서비스 결과

순번	샘플명	Class I	Class II	샘플수	마커수	서비스수	혼합샘플	순도(%)
1	YR 후유도리	I	II	192	2	384	10	89.6
2	GOLDEN ACRE	I	II	192	2	384	13	86.5
3	NPJ160	I	II	192	2	384	1	99.0
4	NPJ162	I	II	192	2	384	6	93.8
5	NPJ163	I	II	192	2	384	0	100.0
6	NPJ164	I	II	192	2	384	3	96.9
7	NPJ168	I	II	192	2	384	0	100.0
8	NPJ185	I	II	192	2	384	0	100.0
9	NPJ188	I	II	192	2	384	11	88.5
10	NPJ211	I	II	192	2	384	0	100.0
11	NPJ220	I	II	192	2	384	2	97.9
12	NPJ221	I	II	192	2	384	3	96.9
13	NPJ143	I	II	192	2	384	1	99.0
14	NPJ134	I	II	192	2	384	4	95.8
15	NPJ121	I	II	192	2	384	0	100.0
16	NPJ74	I	II	192	2	384	2	97.9
17	NPJ81	I	II	192	2	384	13	86.5
18	NPJ47	I	II	192	2	384	6	93.8
19	NPJ21	I	II	192	2	384	5	94.8
20	INDU SEMINIS	I	II	192	2	384	11	88.5
21	Mountainlion	I	II	192	2	384	1	99.0
22	YB-6	I	II	192	2	384	3	96.9
23	YB-7	I	II	192	2	384	2	97.9
24	INDAM KRISHNA	not I	II	192	2	384	2	97.9
25	NPJ219	not I	II	192	2	384	1	99.0
26	NPJ148	not I	II	192	2	384	0	100.0
27	NPJ142	not I	II	192	2	384	1	99.0
28	NPJ72	not I	II	192	2	384	0	100.0
합계						10,752		

표 7. 순천대학교 17품종에 대하여 각각 192점의 시료에 대하여, 자가불화합성(Class I-CAPS)의 마커를 이용한 서비스 결과

순번	샘플명	Class I	Class II	샘플수	마커수	서비스수	혼합샘플	순도(%)
1	NPJ150	I	not II	192	1	192	0	100.0
2	NPJ161	I	not II	192	1	192	0	100.0
3	NPJ165	I	not II	192	1	192	0	100.0
4	NPJ166	I	not II	192	1	192	5	94.8
5	NPJ179	I	not II	192	1	192	0	100.0
6	NPJ180	I	not II	192	1	192	0	100.0
7	NPJ184	I	not II	192	1	192	0	100.0
8	NPJ201	I	not II	192	1	192	0	100.0
9	NPJ217	I	not II	192	1	192	1	99.0
10	NPJ149	I	not II	192	1	192	0	100.0
11	NPJ147	I	not II	192	1	192	0	100.0
12	NPJ125	I	not II	192	1	192	0	100.0
13	NPJ114	I	not II	192	1	192	0	100.0
14	NPJ57	I	not II	192	1	192	3	96.9
15	ANKURMANAS 인도	I	not II	192	1	192	0	100.0
16	ENZA ZADEN	I	not II	192	1	192	0	100.0
17	Sks-204 somaniseeds	I	not II	192	1	192	2	97.9

합계	3,264		
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② 한국종묘

한국종묘로부터 총 279점의 시료를 받아 1번의 서비스를 진행하였다. 279점의 시료에 대하여, 병 관련 1종의 마커로 서비스를 진행하였으며, 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 8).

표 8. 한국종묘 279점의 시료에 대하여, 병 관련 1종의 마커를 이용한 서비스 결과

순번	시들병-3	순번	시들병-3	순번	시들병-3	순번	시들병-3	순번	시들병-3	순번	시들병-3	순번	시들병-3	순번	시들병-3
1	H	36	H	71	H	106	H	141	H	176	H	211	H	246	H
2	H	37	H	72	H	107	H	142	H	177	H	212	H	247	H
3	H	38	H	73	H	108	H	143	H	178	H	213	H	248	H
4	H	39	H	74	H	109	H	144	H	179	H	214	H	249	S
5	H	40	H	75	H	110	H	145	H	180	H	215	H	250	H
6	H	41	H	76	H	111	H	146	H	181	H	216	H	251	H
7	H	42	H	77	H	112	H	147	H	182	H	217	H	252	H
8	H	43	H	78	H	113	H	148	H	183	H	218	H	253	H
9	H	44	H	79	H	114	H	149	H	184	H	219	H	254	H
10	H	45	H	80	H	115	H	150	H	185	H	220	H	255	H
11	H	46	H	81	H	116	H	151	H	186	H	221	H	256	H
12	H	47	H	82	H	117	H	152	H	187	H	222	H	257	H
13	H	48	H	83	H	118	H	153	H	188	H	223	H	258	H
14	H	49	H	84	H	119	H	154	H	189	H	224	H	259	H
15	H	50	H	85	H	120	H	155	H	190	H	225	H	260	H
16	H	51	H	86	H	121	S	156	H	191	H	226	H	261	H
17	H	52	H	87	H	122	H	157	H	192	H	227	H	262	H
18	H	53	H	88	H	123	H	158	H	193	H	228	H	263	H
19	H	54	H	89	H	124	H	159	H	194	H	229	H	264	H
20	H	55	H	90	H	125	H	160	H	195	H	230	H	265	H
21	H	56	H	91	H	126	H	161	H	196	H	231	H	266	H
22	H	57	H	92	H	127	H	162	H	197	H	232	H	267	H
23	H	58	H	93	H	128	H	163	H	198	H	233	H	268	H
24	H	59	H	94	H	129	H	164	H	199	H	234	H	269	H
25	H	60	H	95	H	130	H	165	S	200	H	235	H	270	H
26	H	61	H	96	H	131	H	166	H	201	H	236	H	271	H
27	H	62	H	97	H	132	H	167	H	202	H	237	H	272	H
28	H	63	H	98	H	133	H	168	H	203	H	238	H	273	H
29	H	64	H	99	H	134	H	169	H	204	H	239	H	274	S
30	H	65	H	100	H	135	H	170	H	205	H	240	H	275	H
31	H	66	H	101	H	136	n/a	171	H	206	H	241	H	276	H
32	H	67	H	102	H	137	H	172	H	207	H	242	H	277	H
33	H	68	H	103	H	138	H	173	H	208	H	243	H	278	H
34	H	69	H	104	H	139	H	174	H	209	H	244	H	279	H
35	H	70	H	105	H	140	H	175	H	210	H	245	H		

③ 조은종묘

조은종묘로부터 총 37점의 시료를 받아 1번의 서비스를 진행하였다. 37점의 시료에 대하여, 병 관련 4종의 마커 및 원예형질 관련 1종의 마커로 서비스를 진행하였으며, 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 9).

표 9. 조은종묘 37점의 시료에 대하여, 병 관련 4종 및 원예형질 관련 1종의 마커를 이용한 서비스 결과

순번	시들 음병-1	시들 음병-2	시들 음병-3	시들 음병-4	orf138
1	R	R	R	R	non-CMS
2	R	S	H	R	CMS
3	R	S	H	H	non-CMS
4	R	S	H	R	non-CMS
5	R	S	H	R	CMS
6	R	S	H	R	non-CMS
7	S	S	S	R	CMS
8	S	S	S	R	CMS
9	R	S	H	R	CMS
10	R	S	H	H	non-CMS
11	R	R	R	R	non-CMS
12	S	S	S	R	CMS
13	R	S	H	R	CMS
14	R	S	H	H	CMS
15	R	R	R	R	CMS
16	R	R	R	R	non-CMS
17	S	S	S	R	CMS
18	R	R	R	H	non-CMS
19	R	R	R	R	non-CMS

순번	시들 음병-1	시들 음병-2	시들 음병-3	시들 음병-4	orf138
20	S	S	S	H	non-CMS
21	R	R	R	H	non-CMS
22	R	R	R	H	non-CMS
23	R	R	R	H	non-CMS
24	R	S	H	R	non-CMS
25	R	S	H	H	non-CMS
26	R	S	H	H	non-CMS
27	R	S	H	H	non-CMS
28	R	R	R	H	non-CMS
29	R	R	R	H	non-CMS
30	R	S	H	H	non-CMS
31	R	S	H	H	non-CMS
32	R	R	R	H	non-CMS
33	R	R	R	R	non-CMS
34	R	R	R	R	non-CMS
35	R	S	H	R	non-CMS
36	R	S	H	R	non-CMS
37	S	S	S	R	CMS

2-4) 4차년도 양배추 분자마커 서비스 결과

4차년도에 양배추 분자마커 서비스는 순천대학교, 조은종묘로 총 2곳에서 의뢰를 받아 실시하였다.

① 순천대학교

순천대학교로부터 총 695점의 시료를 받아 1번의 서비스를 진행하였다. 695점의 시료에 대하여, 원예 형질 관련 34종의 마커로 서비스를 진행하였으며, 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 1).

표 1. 순천대학교 695점의 시료에 대하여, 원예 형질 관련 34개의 마커를 이용한 서비스 결과

순번	샘플명	BoS-1	BoS-3	BoS-4	BoS-6	BoS-7	BoS-8	BoS-1	BoS-2	BoS-3	BoS-4	BoS-6	BoS-7	BoS-8	BoS-0	BoS-4	BoS-5	BoS-8	BoS-9	BoS-1	BoS-2	BoS-3	BoS-9	BoS-6	BoS-1	BoS-2	BoS-7	BoS-8	BoS-1	BoS-2	BoS-4	BoS-8	BoS-2	BoS-5	BoS-5				
1	A001	n/a	n/a	n/a	n/a	S-07	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a				
2	A002	n/a	n/a	n/a	n/a	S-07	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a				
3	A003	n/a	n/a	n/a	n/a	S-07	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a				
4	A004	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a				
5	A005	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a				
6	A006	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a				
7	A007	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a				
8	A008	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	S-02	n/a	n/a			
9	A009	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	S-02	n/a	n/a		
10	A010	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	S-02	n/a	n/a		
11	A011	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	S-02	n/a	n/a		
12	A012	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	S-05	n/a	n/a		
13	A013	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	S-05	n/a	n/a	
14	A014	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	S-05	n/a	n/a	
15	A015	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	S-05	n/a	n/a
16	A016	n/a	n/a	n/a	S-06	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
17	A017	n/a	n/a	n/a	S-06	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
18	A018	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
19	A019	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
20	A020	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
21	A021	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
22	A022	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
23	A023	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
24	A024	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
25	A025	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
26	A026	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
27	A027	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
28	A028	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	S-02	n/a	n/a

순번	샘플명	BoS-1	BoS-3	BoS-4	BoS-6	BoS-7	BoS-8	BoS-1	BoS-2	BoS-3	BoS-4	BoS-6	BoS-7	BoS-8	BoS-0	BoS-4	BoS-5	BoS-8	BoS-9	BoS-1	BoS-2	BoS-3	BoS-9	BoS-6	BoS-1	BoS-2	BoS-7	BoS-8	BoS-1	BoS-2	BoS-4	BoS-8	BoS-2	BoS-5	BoS-5
686	N120	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
687	N121	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
688	N122	n/a	n/a	n/a	n/a	S-07	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
689	N123	n/a	n/a	n/a	S-06	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
690	N125	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
691	N126	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
692	N127	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
693	N128	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
694	N129	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
695	N130	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S-allele별 검출 샘플수		2	0	0	31	55	9	2	0	2	32	0	0	9	1	0	0	13	1	0	1	19	4	1	4	0	27	0	3	0	3	48	143	47	99

② 조은종묘

조은종묘로부터 총 366점의 시료를 받아 7번의 서비스를 진행하였다. 처음 94점의 시료에 대하여, 병 및 원에 형질 관련 5종의 마커로 서비스를 진행하였다(표 2). 2번째로는 58점의 시료에 대하여, 병 관련 4종의 마커로 서비스를 진행하였다(표 3). 3번째로는 33점의 시료에 대하여, 병 관련 4종의 마커로 서비스를 진행하였다(표 4). 4번째로는 96점의 시료에 대하여, 병 및 원에 형질 관련 5종의 마커로 서비스를 진행하였다(표 5). 5번째로는 43점의 시료에 대하여, 병 관련 4종의 마커로 서비스를 진행하였다(표 6). 6번째로는 38점의 시료에 대하여, 병 및 원에 형질 관련 5종의 마커로 서비스를 진행하였다(표 7). 7번째로는 4점의 시료에 대하여, 병 및 원에 형질 관련 5종의 마커로 서비스를 진행하였다(표 8). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 2~8).

표 2. 조은종묘 94점의 시료에 대하여, 병 및 원에 형질 관련 5개의 마커를 이용한 서비스 결과

순번	샘플명	시들 음병-1	시들 음병-2	시들 음병-3	시들 음병-4	Ogrua CMS
1	19F_YR_01	R	S	H	R	Normal
2	19F_YR_02	R	n/a	R	H	CMS
3	19F_YR_03	R	n/a	R	S	Normal
4	19F_YR_04	R	n/a	R	H	Normal
5	19F_YR_05	R	S	H	R	Normal
6	19F_YR_06	R	n/a	R	R	Normal
7	19F_YR_07	n/a	S	S	R	CMS
8	19F_YR_08	n/a	S	S	R	CMS
9	19F_YR_09	R	n/a	R	H	Normal
10	19F_YR_10	R	S	H	H	Normal
11	19F_YR_11	R	S	H	H	Normal
12	19F_YR_12	R	n/a	R	R	Normal
13	19F_YR_13	R	n/a	R	R	Normal
14	19F_YR_14	R	n/a	R	R	Normal
15	19F_YR_15	R	n/a	R	H	Normal
16	19F_YR_16	R	n/a	R	H	Normal
17	19F_YR_17	R	n/a	R	H	CMS
18	19F_YR_18	R	n/a	R	H	Normal
19	19F_YR_19	R	S	H	R	Normal
20	19F_YR_20	n/a	S	S	R	CMS
21	19F_YR_21	n/a	S	S	R	CMS
22	19F_YR_22	R	S	H	R	CMS
23	19F_YR_23	R	S	H	R	CMS
24	19F_YR_24	R	S	H	R	CMS
25	19F_YR_25	R	S	H	H	CMS
26	19F_YR_26	R	S	H	H	CMS
27	19F_YR_27	R	S	H	H	CMS
48	19F_YR_48	R	n/a	R	R	Normal
49	19F_YR_49	R	S	H	R	Normal
50	19F_YR_50	R	n/a	R	H	Normal
51	19F_YR_51	R	n/a	R	H	Normal
52	19F_YR_52	R	n/a	R	H	Normal
53	19F_YR_53	R	n/a	R	H	Normal
54	19F_YR_54	R	n/a	R	R	Normal
55	19F_YR_55	R	S	H	R	Normal
56	19F_YR_56	R	S	H	R	Normal
57	19F_YR_57	R	S	H	R	Normal
58	19F_YR_58	n/a	S	S	R	Normal
59	19F_YR_59	R	S	H	R	CMS
60	19F_YR_60	n/a	S	H	R	CMS
61	19F_YR_61	R	S	H	R	CMS
62	19F_YR_62	n/a	S	S	R	CMS
63	19F_YR_63	n/a	S	S	R	CMS
64	19F_YR_64	R	S	H	R	CMS
65	19F_YR_65	R	S	H	R	CMS
66	19F_YR_66	R	S	H	R	CMS
67	19F_YR_67	R	S	H	R	CMS
68	19F_YR_68	R	S	H	R	CMS
69	19F_YR_69	R	S	H	R	CMS
70	19F_YR_70	R	S	H	R	CMS
71	19F_YR_71	R	S	H	R	CMS
72	19F_YR_72	R	S	H	R	CMS
73	19F_YR_73	R	S	H	R	CMS
74	19F_YR_74	R	S	H	H	CMS

28	19F_YR_28	n/a	S	S	R	CMS
29	19F_YR_29	R	S	H	R	CMS
30	19F_YR_30	R	n/a	R	S	CMS
31	19F_YR_31	R	n/a	R	S	CMS
32	19F_YR_32	R	n/a	R	S	CMS
33	19F_YR_33	R	n/a	R	S	CMS
34	19F_YR_34	R	S	H	n/a	CMS
35	19F_YR_35	R	S	H	R	CMS
36	19F_YR_36	R	S	H	H	CMS
37	19F_YR_37	n/a	S	H	R	CMS
38	19F_YR_38	n/a	S	H	R	CMS
39	19F_YR_39	R	n/a	R	R	CMS
40	19F_YR_40	R	n/a	R	R	CMS
41	19F_YR_41	R	n/a	R	R	CMS
42	19F_YR_42	R	n/a	R	R	CMS
43	19F_YR_43	R	n/a	R	R	Normal
44	19F_YR_44	R	n/a	R	H	Normal
45	19F_YR_45	R	n/a	R	S	Normal
46	19F_YR_46	R	n/a	R	S	CMS
47	19F_YR_47	R	S	H	R	Normal

75	19F_YR_75	n/a	S	S	R	CMS
76	19F_YR_76	R	S	H	R	CMS
77	19F_YR_77	R	S	H	R	CMS
78	19F_YR_78	R	S	H	H	CMS
79	19F_YR_79	R	S	H	R	CMS
80	19F_YR_80	n/a	S	S	R	CMS
81	19F_YR_81	R	n/a	R	R	CMS
82	19F_YR_82	R	n/a	R	H	Normal
83	19F_YR_83	R	n/a	R	R	Normal
84	19F_YR_84	R	n/a	R	S	Normal
85	19F_YR_85	n/a	S	S	R	Normal
86	19F_YR_86	n/a	n/a	n/a	n/a	CMS
87	19F_YR_87	n/a	S	S	R	CMS
88	19F_YR_88	n/a	S	S	R	CMS
89	19F_YR_89	n/a	S	S	R	CMS
90	19F_YR_90	n/a	S	S	R	CMS
91	19F_YR_91	n/a	S	S	R	CMS
92	19F_YR_92	n/a	S	S	R	Normal
93	19F_YR_93	n/a	S	S	R	Normal
94	19F_YR_94	n/a	n/a	S	R	Normal

표 3. 조은종묘 58점의 시료에 대하여, 병 관련 4개의 마커를 이용한 서비스 결과

순번	샘플명	시들 음병-1	시들 음병-2	시들 음병-3	시들 음병-4
1	19F-YR-095	n/a	S	S	R
2	19F-YR-096	R	n/a	R	H
3	19F-YR-097	R	S	H	R
4	19F-YR-098	n/a	S	S	R
5	19F-YR-099	R	S	H	R
6	19F-YR-100	R	n/a	R	R
7	19F-YR-101	R	n/a	R	S
8	19F-YR-102	R	n/a	R	H
9	19F-YR-103	R	S	H	R
10	19F-YR-104	R	n/a	R	R
11	19F-YR-105	R	S	H	R
12	19F-YR-106	R	S	H	R
13	19F-YR-107	R	S	H	R
14	19F-YR-108	R	S	H	R
15	19F-YR-109	n/a	S	S	R
16	19F-YR-110	n/a	S	S	R
17	19F-YR-111	n/a	S	S	R
18	19F-YR-112	R	n/a	R	R
19	19F-YR-113	R	n/a	R	R
20	19F-YR-114	R	S	H	R
21	19F-YR-115	R	n/a	R	R
22	19F-YR-116	R	n/a	R	R
23	19F-YR-117	R	n/a	R	R
24	19F-YR-118	R	n/a	R	R
25	19F-YR-119	n/a	S	S	R
26	19F-YR-120	R	n/a	R	S
27	19F-YR-121	R	n/a	R	R
28	19F-YR-122	n/a	S	S	R
29	19F-YR-123	R	S	H	R

순번	샘플명	시들 음병-1	시들 음병-2	시들 음병-3	시들 음병-4
30	19F-YR-124	R	n/a	R	R
31	19F-YR-125	R	n/a	R	R
32	19F-YR-126	R	S	H	R
33	19F-YR-127	n/a	S	S	R
34	19F-YR-128	R	S	H	R
35	19F-YR-129	R	S	H	R
36	19F-YR-130	R	S	H	R
37	19F-YR-131	R	n/a	R	R
38	19F-YR-132	n/a	S	S	R
39	19F-YR-133	R	n/a	R	S
40	19F-YR-134	R	n/a	R	H
41	19F-YR-135	R	S	H	R
42	19F-YR-136	n/a	S	S	R
43	19F-YR-137	n/a	S	S	R
44	19F-YR-138	R	n/a	R	R
45	19F-YR-139	n/a	S	S	R
46	19F-YR-140	n/a	S	S	R
47	19F-YR-141	R	S	H	R
48	19F-YR-142	R	n/a	R	H
49	19F-YR-143	R	n/a	R	H
50	19F-YR-144	R	n/a	R	H
51	19F-YR-145	R	S	H	R
52	19F-YR-146	R	S	H	R
53	19F-YR-147	n/a	S	S	R
54	19F-YR-148	n/a	S	S	R
55	19F-YR-149	n/a	S	S	R
56	19F-YR-150	R	n/a	R	R
57	19F-YR-151	R	n/a	R	R
58	19F-YR-152	R	n/a	R	R

표 4. 조은종묘 33점의 시료에 대하여, 병 관련 4개의 마커를 이용한 서비스 결과

순번	샘플명	시들 음병-1	시들 음병-2	시들 음병-3	시들 음병-4
1	19F_YR-153	R	n/a	R	R

순번	샘플명	시들 음병-1	시들 음병-2	시들 음병-3	시들 음병-4
18	19F_YR-170	n/a	S	S	R

2	19F_YR-154	R	n/a	R	S
3	19F_YR-155	R	n/a	R	R
4	19F_YR-156	n/a	S	S	R
5	19F_YR-157	n/a	S	S	R
6	19F_YR-158	n/a	S	S	R
7	19F_YR-159	R	S	H	R
8	19F_YR-160	R	n/a	R	R
9	19F_YR-161	n/a	S	S	R
10	19F_YR-162	R	n/a	R	R
11	19F_YR-163	R	n/a	R	R
12	19F_YR-164	R	n/a	R	R
13	19F_YR-165	R	n/a	R	R
14	19F_YR-166	R	n/a	R	R
15	19F_YR-167	n/a	S	S	R
16	19F_YR-168	n/a	S	S	R
17	19F_YR-169	R	S	H	R

19	19F_YR-171	n/a	S	S	R
20	19F_YR-172	n/a	S	S	R
21	19F_YR-173	n/a	S	S	R
22	19F_YR-174	n/a	S	S	R
23	19F_YR-175	R	n/a	R	R
24	19F_YR-176	n/a	S	S	R
25	19F_YR-177	n/a	S	S	R
26	19F_YR-178	R	n/a	R	R
27	19F_YR-179	R	n/a	R	R
28	19F_YR-180	R	n/a	R	R
29	19F_YR-181	R	n/a	R	H
30	19F_YR-182	R	n/a	R	H
31	19F_YR-183	R	n/a	R	H
32	19F_YR-184	R	n/a	R	H
33	19F_YR-185	R	n/a	R	H

표 5. 조은종묘 96점의 시료에 대하여, 병 및 원예 형질 관련 5개의 마커를 이용한 서비스 결과

No.	샘플명	시들 음병-1	시들 음병-2	시들 음병-3	시들 음병-4	Ogura CMS
1	20S-YR-1	R	S	H	R	Normal
2	20S-YR-2	R	S	H	R	CMS
3	20S-YR-3	R	n/a	R	R	Normal
4	20S-YR-4	R	n/a	R	H	CMS
5	20S-YR-5	R	n/a	R	R	Normal
6	20S-YR-6	R	n/a	R	R	CMS
7	20S-YR-7	R	S	H	R	CMS
8	20S-YR-8	R	n/a	R	H	CMS
9	20S-YR-9	R	n/a	H	R	CMS
10	20S-YR-10	R	S	H	R	Normal
11	20S-YR-11	R	n/a	R	H	CMS
12	20S-YR-12	n/a	S	S	R	CMS
13	20S-YR-13	n/a	S	H	R	CMS
14	20S-YR-14	R	n/a	R	H	CMS
15	20S-YR-15	R	n/a	R	R	Normal
16	20S-YR-16	n/a	S	S	R	Normal
17	20S-YR-17	R	S	H	R	Normal
18	20S-YR-18	R	n/a	R	H	Normal
19	20S-YR-19	R	S	H	R	Normal
20	20S-YR-20	R	S	H	R	Normal
21	20S-YR-21	R	S	H	R	CMS
22	20S-YR-22	R	S	H	R	CMS
23	20S-YR-23	R	n/a	R	H	CMS
24	20S-YR-24	R	S	H	R	Normal
25	20S-YR-25	R	n/a	R	H	CMS
26	20S-YR-26	R	n/a	R	R	Normal
27	20S-YR-27	R	n/a	R	H	CMS
28	20S-YR-28	R	S	H	R	CMS
29	20S-YR-29	R	n/a	R	H	CMS
30	20S-YR-30	R	n/a	R	R	Normal
31	20S-YR-31	R	n/a	R	R	Normal
32	20S-YR-32	n/a	S	H	H	Normal
33	20S-YR-33	R	n/a	R	H	Normal
34	20S-YR-34	n/a	S	H	R	Normal
35	20S-YR-35	R	n/a	R	R	Normal
36	20S-YR-36	R	n/a	R	H	Normal
37	20S-YR-37	R	S	S	R	Normal
38	20S-YR-38	R	S	H	R	Normal

No.	샘플명	시들 음병-1	시들 음병-2	시들 음병-3	시들 음병-4	Ogura CMS
49	20S-YR-49	R	n/a	R	R	Normal
50	20S-YR-50	R	S	H	R	CMS
51	20S-YR-51	R	n/a	R	H	Normal
52	20S-YR-52	R	S	H	R	CMS
53	20S-YR-53	n/a	S	S	R	Normal
54	20S-YR-54	R	n/a	R	R	Normal
55	20S-YR-55	R	n/a	R	H	CMS
56	20S-YR-56	R	S	H	H	Normal
57	20S-YR-57	R	S	H	H	Normal
58	20S-YR-58	R	S	H	H	Normal
59	20S-YR-59	n/a	S	S	R	CMS
60	20S-YR-60	R	n/a	R	H	Normal
61	20S-YR-61	R	S	H	R	CMS
62	20S-YR-62	R	S	H	R	CMS
63	20S-YR-63	R	S	H	R	CMS
64	20S-YR-64	R	S	H	R	CMS
65	20S-YR-65	R	S	H	R	CMS
66	20S-YR-66	R	S	H	R	CMS
67	20S-YR-67	n/a	S	S	R	Normal
68	20S-YR-68	n/a	S	S	R	CMS
69	20S-YR-69	n/a	S	S	R	CMS
70	20S-YR-70	R	S	H	R	Normal
71	20S-YR-71	n/a	S	S	R	CMS
72	20S-YR-72	n/a	S	S	R	CMS
73	20S-YR-73	n/a	S	S	R	Normal
74	20S-YR-74	n/a	S	S	R	Normal
75	20S-YR-75	n/a	S	S	R	Normal
76	20S-YR-76	n/a	S	S	R	CMS
77	20S-YR-77	R	S	H	R	Normal
78	20S-YR-78	n/a	S	S	R	CMS
79	20S-YR-79	n/a	S	S	R	CMS
80	20S-YR-80	n/a	S	S	R	Normal
81	20S-YR-81	n/a	S	S	R	Normal
82	20S-YR-82	n/a	S	S	R	CMS
83	20S-YR-83	R	S	H	R	Normal
84	20S-YR-84	R	S	H	R	Normal
85	20S-YR-85	R	S	H	R	Normal
86	20S-YR-86	R	S	H	R	Normal

39	20S-YR-39	R	S	H	R	Normal
40	20S-YR-40	R	n/a	R	H	Normal
41	20S-YR-41	R	S	H	R	CMS
42	20S-YR-42	R	S	H	R	CMS
43	20S-YR-43	R	S	H	R	Normal
44	20S-YR-44	R	S	H	R	Normal
45	20S-YR-45	R	S	H	R	Normal
46	20S-YR-46	R	S	H	R	CMS
47	20S-YR-47	n/a	S	H	R	CMS
48	20S-YR-48	R	n/a	R	R	Normal

87	20S-YR-87	n/a	S	S	R	CMS
88	20S-YR-88	n/a	S	S	R	Normal
89	20S-YR-89	n/a	S	S	R	CMS
90	20S-YR-90	n/a	S	S	R	CMS
91	20S-YR-91	n/a	S	S	R	CMS
92	20S-YR-92	n/a	S	S	R	Normal
93	20S-YR-93	n/a	S	S	R	CMS
94	20S-YR-94	n/a	S	S	R	Normal
95	20S-YR-95	n/a	S	S	R	CMS
96	20S-YR-96	n/a	S	S	R	CMS

표 6. 조은종묘 43점의 시료에 대하여, 병 관련 4개의 마커를 이용한 서비스 결과

No.	샘플명	시들 음병-1	시들 음병-2	시들 음병-3	시들 음병-4
1	20S-YR-101	R	n/a	R	H
2	20S-YR-102	R	n/a	R	S
3	20S-YR-103	R	n/a	R	H
4	20S-YR-104	R	n/a	R	H
5	20S-YR-105	R	n/a	R	H
6	20S-YR-106	R	n/a	R	H
7	20S-YR-107	R	n/a	R	S
8	20S-YR-108	R	n/a	R	H
9	20S-YR-109	R	n/a	R	R
10	20S-YR-110	R	n/a	R	R
11	20S-YR-111	R	S	H	R
12	20S-YR-112	R	S	H	R
13	20S-YR-113	R	S	H	R
14	20S-YR-114	R	S	H	R
15	20S-YR-115	R	S	H	R
16	20S-YR-116	R	S	H	R
17	20S-YR-117	R	S	H	R
18	20S-YR-118	R	S	H	R
19	20S-YR-119	R	S	H	R
20	20S-YR-120	n/a	S	S	R
21	20S-YR-121	R	S	H	R
22	20S-YR-122	R	S	H	R

No.	샘플명	시들 음병-1	시들 음병-2	시들 음병-3	시들 음병-4
23	20S-YR-123	R	S	H	R
24	20S-YR-124	R	S	H	R
25	20S-YR-125	R	n/a	R	R
26	20S-YR-126	R	n/a	R	R
27	20S-YR-127	R	n/a	R	R
28	20S-YR-128	R	n/a	R	H
29	20S-YR-129	R	n/a	R	H
30	20S-YR-130	R	n/a	R	H
31	20S-YR-131	R	n/a	R	H
32	20S-YR-132	R	n/a	R	H
33	20S-YR-133	R	n/a	R	H
34	20S-YR-134	R	n/a	R	H
35	20S-YR-135	R	S	H	H
36	20S-YR-136	R	S	H	H
37	20S-YR-137	R	S	H	H
38	20S-YR-138	R	n/a	R	H
39	20S-YR-139	R	n/a	R	R
40	20S-YR-140	R	n/a	R	R
41	20S-YR-141	n/a	S	S	R
42	20S-YR-142	R	S	H	H
43	20S-YR-143	R	S	H	H

표 7. 조은종묘 38점의 시료에 대하여, 병 및 원예 형질 관련 5개의 마커를 이용한 서비스 결과

No.	샘플명	시들 음병-1	시들 음병-2	시들 음병-3	시들 음병-4	Ogrua CMS
1	20S-YR-144	R	n/a	R	H	Normal
2	20S-YR-145	R	n/a	R	H	Normal
3	20S-YR-146	R	n/a	R	H	Normal
4	20S-YR-147	R	n/a	R	H	CMS
5	20S-YR-148	R	n/a	R	S	CMS
6	20S-YR-149	R	S	H	R	CMS
7	20S-YR-150	R	S	H	H	CMS
8	20S-YR-151	R	S	H	H	CMS
9	20S-YR-152	n/a	S	S	R	CMS
10	20S-YR-153	R	n/a	R	H	Normal
11	20S-YR-154	R	n/a	R	H	Normal
12	20S-YR-155	R	S	H	R	Normal
13	20S-YR-156	R	S	H	R	Normal
14	20S-YR-157	R	n/a	R	H	Normal
15	20S-YR-158	R	n/a	R	R	Normal

No.	샘플명	시들 음병-1	시들 음병-2	시들 음병-3	시들 음병-4	Ogrua CMS
20	20S-YR-163	R	S	H	R	Normal
21	20S-YR-164	R	S	H	R	Normal
22	20S-YR-165	R	S	H	R	Normal
23	20S-YR-166	R	S	H	R	Normal
24	20S-YR-167	R	S	H	R	CMS
25	20S-YR-168	n/a	S	S	R	CMS
26	20S-YR-169	R	S	H	R	CMS
27	20S-YR-170	R	S	H	R	CMS
28	20S-YR-171	R	S	H	R	CMS
29	20S-YR-172	n/a	S	S	R	CMS
30	20S-YR-173	R	S	H	R	Normal
31	20S-YR-174	n/a	S	S	R	CMS
32	20S-YR-175	n/a	S	S	R	CMS
33	20S-YR-176	R	S	H	R	Normal
34	20S-YR-177	n/a	n/a	n/a	R	CMS

16	20S-YR-159	n/a	S	S	R	Normal	35	20S-YR-178	n/a	n/a	n/a	R	CMS
17	20S-YR-160	R	S	H	R	Normal	36	20S-YR-179	R	S	H	R	Normal
18	20S-YR-161	R	S	H	R	Normal	37	20S-YR-180	R	S	H	R	Normal
19	20S-YR-162	R	S	H	R	Normal	38	20S-YR-181	R	S	H	R	Normal

표 8. 조은종묘 4점의 시료에 대하여, 병 및 원예 형질 관련 5개의 마커를 이용한 서비스 결과

No.	샘플명	시들음병-1	시들음병-2	시들음병-3	시들음병-4	Ogrua CMS
1	20S-YR-182	R	n/a	R	H	Normal
2	20S-YR-183	R	S	H	R	CMS
3	20S-YR-184	R	S	H	R	Normal
4	20S-YR-185	R	S	H	R	Normal

2-5) 5차년도 양배추 분자마커 서비스 결과

5차년도에 양배추 분자마커 서비스는 조은종묘, 순천대학교로 총 2곳에서 의뢰를 받아 실시하였다.

① 조은종묘

조은종묘로부터 총 310점의 시료를 받아 7번의 서비스를 진행하였다. 처음 33점의 시료에 대하여, 병 관련 4종의 마커로 서비스를 진행하였다(표 1). 2번째로는 34점의 시료에 대하여, 병 관련 4종의 마커로 서비스를 진행하였다(표 2). 3번째로는 77점의 시료에 대하여, 병 관련 4종의 마커로 서비스를 진행하였다(표 3). 4번째로는 10점의 시료에 대하여, 원예형질 관련 1종의 마커로 서비스를 진행하였다(표 4). 5번째로는 70점의 시료에 대하여, 병 관련 4종 및 원예형질 관련 1종의 마커로 서비스를 진행하였다(표 5). 6번째로는 24점의 시료에 대하여, 병 관련 4종의 마커로 서비스를 진행하였다(표 6). 7번째로는 62점의 시료에 대하여, 병 관련 마커 4종 및 원예형질 관련 1종의 마커로 서비스를 진행하였다.(표 7). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 1~7).

표 1. 조은종묘 33점의 시료에 대하여, 병 관련 4종의 마커를 이용한 서비스 결과

No.	시들음병-1	시들음병-2	시들음병-3	시들음병-4	시들음병 마커 결과	No.	시들음병-1	시들음병-2	시들음병-3	시들음병-4	시들음병 마커 결과
1	R	S	H	R	H	18	R	S	H	H	S
2	R	S	H	R	H	19	R	n/a	R	R	R
3	R	S	H	R	H	20	R	n/a	R	H	H
4	R	n/a	R	H	H	21	R	n/a	R	H	H
5	R	n/a	R	H	H	22	R	n/a	R	H	H
6	R	n/a	R	H	H	23	R	n/a	R	H	H
7	R	n/a	R	H	H	24	R	n/a	R	H	H
8	R	S	H	R	H	25	R	n/a	R	H	H
9	R	S	H	R	H	26	R	n/a	R	H	H
10	R	S	H	R	H	27	R	n/a	R	H	H
11	R	S	H	R	H	28	R	n/a	R	H	H
12	R	S	H	R	H	29	R	n/a	R	H	H
13	R	n/a	R	H	H	30	R	n/a	R	H	H
14	R	n/a	R	H	H	31	R	n/a	R	H	H
15	R	S	H	R	H	32	R	n/a	R	H	H
16	R	S	H	R	H	33	R	n/a	R	H	H
17	R	n/a	R	R	R						

표 2. 조은종묘 34점의 시료에 대하여, 병 관련 4종의 마커를 이용한 서비스 결과

No.	시들음병-1	시들음병-2	시들음병-3	시들음병-4	시들음병 마커 결과	No.	시들음병-1	시들음병-2	시들음병-3	시들음병-4	시들음병 마커 결과
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No.	시들음병 1	시들음병 2	시들음병 3	시들음병 4	시들음병 마커 결과
1	R	n/a	R	H	H
2	R	n/a	R	H	H
3	R	n/a	R	H	H
4	R	n/a	R	H	H
5	R	n/a	R	H	H
6	R	n/a	R	H	H
7	R	n/a	R	H	H
8	R	n/a	R	H	H
9	R	n/a	R	H	H
10	R	n/a	R	H	H
11	R	n/a	R	H	H
12	R	n/a	R	H	H
13	R	n/a	R	H	H
14	R	n/a	R	H	H
15	R	n/a	R	H	H
16	R	n/a	R	H	H
17	R	n/a	R	H	H

No.	시들음병 1	시들음병 2	시들음병 3	시들음병 4	시들음병 마커 결과
18	R	n/a	R	H	H
19	R	n/a	R	H	H
20	R	n/a	R	H	H
21	R	n/a	R	H	H
22	R	n/a	R	H	H
23	R	n/a	R	H	H
24	R	n/a	R	H	H
25	R	n/a	R	H	H
26	R	n/a	R	H	H
27	R	n/a	R	H	H
28	R	n/a	R	H	H
29	R	n/a	R	H	H
30	R	n/a	R	H	H
31	R	n/a	R	H	H
32	R	n/a	R	H	H
33	R	n/a	R	H	H
34	R	n/a	R	H	H

표 3. 조은종묘 77점의 시료에 대하여, 병 관련 4종의 마커를 이용한 서비스 결과

No.	시들음병 1	시들음병 2	시들음병 3	시들음병 4	시들음병 마커 결과
1	R	n/a	R	S	S
2	n/a	S	S	R	S
3	n/a	S	S	R	S
4	n/a	S	S	R	S
5	R	n/a	R	H	H
6	R	n/a	R	H	H
7	R	n/a	R	H	H
8	n/a	S	S	R	S
9	R	S	H	R	H
10	R	S	H	R	H
11	n/a	S	S	R	S
12	n/a	S	S	R	S
13	n/a	S	S	R	S
14	R	S	H	R	H
15	R	n/a	R	S	S
16	n/a	S	S	R	S
17	n/a	S	S	R	S
18	n/a	S	S	R	S
19	R	n/a	R	R	R
20	R	S	H	R	H
21	R	S	H	R	H
22	R	n/a	R	R	R
23	n/a	S	S	R	S
24	R	n/a	R	R	R
25	n/a	S	S	R	S
26	n/a	S	S	R	S
27	R	n/a	R	H	H
28	R	S	H	R	H
29	R	S	H	R	H
30	n/a	S	S	R	S
31	R	n/a	R	S	S
32	n/a	S	S	R	S
33	n/a	S	S	R	S
34	n/a	S	S	R	S

No.	시들음병 1	시들음병 2	시들음병 3	시들음병 4	시들음병 마커 결과
40	R	n/a	R	S	S
41	R	S	H	R	H
42	R	n/a	R	R	R
43	R	n/a	R	R	R
44	R	n/a	R	R	R
45	R	S	H	R	H
46	R	S	H	R	H
47	R	n/a	R	S	S
48	R	n/a	R	R	R
49	R	n/a	R	R	R
50	R	n/a	R	R	R
51	n/a	n/a	R	R	S
52	n/a	S	S	R	S
53	n/a	S	S	R	S
54	R	n/a	R	R	R
55	n/a	n/a	R	R	S
56	R	n/a	R	S	S
57	R	n/a	R	H	H
58	R	n/a	R	S	S
59	n/a	S	S	R	S
60	n/a	S	S	R	S
61	R	n/a	R	R	R
62	n/a	S	S	R	S
63	n/a	S	S	R	S
64	R	n/a	R	S	S
65	R	n/a	R	H	H
66	R	n/a	R	H	H
67	R	n/a	R	H	H
68	R	n/a	R	H	H
69	R	n/a	R	H	H
70	R	n/a	R	R	R
71	R	n/a	R	S	S
72	R	n/a	R	H	H
73	R	n/a	R	R	R

No.	시들음병 1	시들음병 2	시들음병 3	시들음병 4	시들음병 마커 결과
35	R	n/a	R	R	R
36	n/a	S	S	R	S
37	n/a	S	S	R	S
38	n/a	S	S	R	S
39	n/a	S	S	R	S

No.	시들음병 1	시들음병 2	시들음병 3	시들음병 4	시들음병 마커 결과
74	R	n/a	R	R	R
75	R	n/a	R	R	R
76	R	S	H	R	H
77	R	S	H	R	H

표 4. 조은종묘 10점의 시료에 대하여, 원예형질 관련 1종의 마커를 이용한 서비스 결과

No.	SI결과	No.	SI결과	No.	SI결과	No.	SI결과	No.	SI결과
1	S-5	3	Classl-a	5	S-7	7	S-2	9	Classl-b
2	S-2	4	S-5	6	S-4	8	Classl-b	10	S-15

표 5. 조은종묘 70점의 시료에 대하여, 병 관련 4종 및 원예형질 관련 1종의 마커를 이용한 서비스 결과

No.	시들음병 1	시들음병 2	시들음병 3	시들음병 4	CMS마커 결과
1	R	S	H	H	Normal
2	R	R	R	H	Normal
3	R	R	R	H	Normal
4	R	S	H	R	Normal
5	S	S	S	R	Normal
6	R	R	R	H	CMS
7	R	R	R	H	CMS
8	R	R	R	S	CMS
9	R	R	R	R	CMS
10	S	S	S	R	CMS
11	S	S	S	R	CMS
12	S	S	S	R	Normal
13	S	S	S	R	CMS
14	R	S	H	R	Normal
15	R	S	H	R	CMS
16	R	S	H	R	Normal
17	R	S	H	R	Normal
18	R	S	H	R	Normal
19	R	S	H	R	Normal
20	R	S	H	R	Normal
21	R	S	H	R	Normal
22	S	S	S	R	Normal
23	S	S	S	R	Normal
24	R	S	H	R	Normal
25	S	S	S	R	Normal
26	R	S	H	R	Normal
27	S	S	S	R	Normal
28	R	S	H	R	Normal
29	R	S	H	R	Normal
30	R	S	H	R	Normal
31	R	S	H	R	Normal
32	R	S	H	R	Normal
33	R	S	H	R	Normal
34	R	R	R	R	Normal
35	R	S	H	R	Normal

No.	시들음병 1	시들음병 2	시들음병 3	시들음병 4	CMS마커 결과
36	R	R	R	H	Normal
37	R	R	R	H	Normal
38	R	R	R	H	Normal
39	R	R	R	H	Normal
40	R	R	R	H	Normal
41	R	R	R	H	Normal
42	R	R	R	H	Normal
43	R	R	R	H	Normal
44	R	R	R	H	Normal
45	R	R	R	H	Normal
46	R	R	R	H	Normal
47	R	R	R	H	Normal
48	R	R	R	R	Normal
49	R	R	R	H	Normal
50	R	R	R	H	Normal
51	S	S	S	R	CMS
52	R	S	H	R	Normal
53	S	S	S	R	Normal
54	S	S	S	R	Normal
55	R	S	H	R	Normal
56	S	S	S	R	CMS
57	R	S	H	R	Normal
58	R	S	H	R	Normal
59	R	S	H	R	CMS
60	S	S	S	R	CMS
61	S	S	S	R	CMS
62	S	S	S	R	CMS
63	R	S	H	R	Normal
64	R	S	H	R	Normal
65	R	S	H	R	CMS
66	R	R	R	R	CMS
67	R	R	R	R	CMS
68	R	S	H	R	CMS
69	R	S	H	R	Normal
70	S	S	S	R	Normal

표 6. 조은종묘 24점의 시료에 대하여, 병 관련 4종의 마커를 이용한 서비스 결과

No.	시들음병 1	시들음병 2	시들음병 3	시들음병 4	시들음병 마커 결과
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No.	시들음병 1	시들음병 2	시들음병 3	시들음병 4	시들음병 마커 결과
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No.	시들음병 1	시들음병 2	시들음병 3	시들음병 4	시들음병 마커 결과
1	R	S	H	R	H
2	R	S	H	R	H
3	R	S	H	R	H
4	R	n/a	R	H	H
5	R	S	H	H	S
6	R	S	H	R	H
7	n/a	S	S	R	S
8	n/a	S	S	R	S
9	n/a	S	S	R	S
10	n/a	S	S	R	S
11	n/a	S	S	R	S
12	n/a	S	S	R	S

No.	시들음병 1	시들음병 2	시들음병 3	시들음병 4	시들음병 마커 결과
13	R	S	H	R	H
14	R	S	H	R	H
15	R	n/a	R	S	S
16	n/a	n/a	R	R	S
17	n/a	n/a	R	R	S
18	R	n/a	R	H	H
19	n/a	n/a	R	R	S
20	R	n/a	R	S	S
21	R	n/a	R	H	H
22	R	S	H	R	H
23	n/a	S	S	R	S
24	R	n/a	R	R	R

표 7. 조은종묘 62점의 시료에 대하여, 병 관련 마커 4종 및 원예형질 관련 1종의 마커를 이용한 서비스 결과

No.	시들음병 1	시들음병 2	시들음병 3	시들음병 4	CMS마커 결과
1	n/a	n/a	n/a	R	Normal
2	n/a	n/a	n/a	R	Normal
3	n/a	n/a	R	R	CMS
4	R	n/a	R	H	CMS
5	R	n/a	R	H	Normal
6	R	n/a	R	H	Normal
7	R	n/a	R	H	Normal
8	R	n/a	R	R	Normal
9	R	n/a	R	H	Normal
10	R	n/a	R	H	Normal
11	R	n/a	R	H	Normal
12	R	n/a	R	H	Normal
13	R	n/a	R	H	Normal
14	R	n/a	R	H	Normal
15	n/a	S	S	R	Normal
16	R	n/a	R	H	CMS
17	R	S	H	R	Normal
18	R	S	H	R	Normal
19	n/a	S	S	R	Normal
20	R	S	H	R	Normal
21	R	S	H	R	Normal
22	R	S	H	R	Normal
23	R	S	H	R	Normal
24	R	S	H	R	Normal
25	R	S	H	R	Normal
26	R	n/a	R	H	Normal
27	R	n/a	R	H	Normal
28	R	n/a	R	H	Normal
29	R	n/a	R	H	Normal
30	R	n/a	R	H	Normal
31	R	n/a	R	H	Normal

No.	시들음병 1	시들음병 2	시들음병 3	시들음병 4	CMS마커 결과
32	R	n/a	R	H	Normal
33	R	n/a	R	H	Normal
34	R	n/a	R	H	Normal
35	R	S	H	R	Normal
36	R	S	H	R	Normal
37	R	S	H	R	Normal
38	R	n/a	R	R	CMS
39	R	S	H	R	CMS
40	R	S	H	R	CMS
41	R	n/a	R	H	CMS
42	R	S	H	R	Normal
43	R	n/a	R	R	Normal
44	R	n/a	R	H	Normal
45	R	n/a	R	S	Normal
46	R	n/a	R	S	Normal
47	R	S	H	R	Normal
48	n/a	S	S	R	Normal
49	n/a	S	S	R	Normal
50	R	S	H	R	Normal
51	R	S	H	R	Normal
52	n/a	S	S	R	Normal
53	n/a	S	S	R	Normal
54	R	S	H	R	Normal
55	R	S	H	R	CMS
56	n/a	S	S	R	Normal
57	R	n/a	R	R	CMS
58	R	n/a	R	R	Normal
59	R	n/a	R	R	CMS
60	R	n/a	R	R	Normal
61	R	n/a	R	R	CMS
62	R	n/a	R	R	Normal

② 순천대학교

순천대학교로부터 총 48점의 시료를 받아 1번의 서비스를 진행하였다. 48점의 시료에 대하여, 계통의 고정도 및 F1품종의 순도검정 관련 48개의 마커로 서비스를 진행하였으며, 서비스 결과는 아래 표

와 같다(표 8).

표 8. 순천대학교 48점의 시료에 대하여, 계통의 고정도 및 F1품종의 순도검정 관련 48개의 마커를 이용한 서비스 결과

No.	20C-L 001	20C-L 009	20C-L 013	20C-L 020	20C-L 023	20C-L 028	20C-L 033	20C-L 041	20C-L 047	20C-L 048	20C-L 056	20C-L 063	20C-L 066	20C-L 069	20C-L 071	20C-L 073	20C-L 077	20C-L 080	20C-L 082	20C-L 085	20C-L 086	20C-L 091	20C-L 094	20C-L 097	
1	YY	YY	XX	XX	XX	XX	XX	XX	YY	XY	XX	YY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	YY
2	YY	YY	XX	XX	XX	XX	XX	XX	YY	XY	XX	YY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	YY	YY
3	XY	XY	YY	XX	YY	IN	YY	XX	YY	XY	XX	YY	XY	XY	XX	XX	XX	XY	XY	XX	XX	XX	XY	XY	
4	XY	XY	XY	XX	XY	XX	XY	XX	YY	XX	XX	YY	XX	XX	XX	XX	XX	YY	YY	XX	XX	XX	XX	IN	
5	YY	YY	XX	XX	XX	XX	XX	XX	YY	XY	XX	YY	XY	XX	XY	XX	XX	XX	XY	YY	XX	XX	XX	XX	
6	YY	XX	YY	XX	YY	IN	YY	XX	YY	XX	XX	YY	XX	XX	XX	XX	XX	YY	YY	XX	XX	XX	XX	XX	
7	YY	XY	YY	XX	YY	IN	YY	XX	YY	XX	XX	YY	XX	XX	XX	XX	XX	YY	YY	XX	XX	XX	XX	XX	
8	YY	XY	XY	XX	XY	XX	XY	XX	YY	XX	XX	YY	XY	XX	XY	XX	XX	XY	XY	XX	XX	XX	XX	IN	
9	YY	YY	YY	XX	YY	IN	YY	XX	YY	XY	XX	YY	XY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	
10	YY	YY	YY	XX	XX	XX	XX	XX	YY	YY	XX	YY	XY	XY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	
11	YY	YY	XX	XX	XX	XX	XX	XX	YY	XX	XX	YY	YY	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	IN	
12	YY	YY	XX	XX	XX	XX	XX	XX	YY	XX	XX	YY	YY	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	IN	
13	YY	YY	XX	XX	XX	XX	XX	XX	YY	XX	XX	YY	YY	XX	YY	XX	XX	XX	XX	XX	XX	XX	XX	IN	
14	YY	YY	XY	XX	YY	IN	YY	XX	YY	YY	XX	YY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XY	
15	YY	YY	XX	XX	XY	XX	XY	XX	YY	XY	XX	YY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	
16	YY	YY	YY	XX	YY	IN	YY	XX	YY	XY	XX	YY	XX	XX	XX	XX	XX	XY	XY	XX	XX	XX	XX	XX	
17	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XX	XX	
18	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
19	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
20	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
21	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
22	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
23	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
24	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
25	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
26	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
27	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
28	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
29	YY	YY	XX	XX	XX	XX	XX	XX	YY	XX	XX	YY	XX	XX	XX	XX	XX	YY	YY	XX	XX	XX	XX	XX	
30	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
31	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
32	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
33	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
34	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
35	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
36	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
37	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
38	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
39	XY	YY	XX	XY	XX	XX	XY	XY	YY	XX	XX	XY	XY	XY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XX	
40	YY	YY	XX	XX	XX	XX	XX	XX	YY	XY	XX	YY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	YY	YY	
41	YY	YY	XX	XX	XX	XX	XX	XX	YY	XY	XX	YY	YY	YY	XX	XX	XX	XX	XX	XX	XX	XX	YY	YY	
42	XY	XY	YY	XX	YY	IN	YY	XX	YY	XY	XX	YY	XY	XY	XX	XX	XX	XY	XY	XX	XX	XX	XY	XY	
43	XY	XY	XY	XX	YY	XX	XY	XX	YY	XX	XX	YY	XX	XX	XX	XX	XX	YY	YY	XX	XX	XX	XY	IN	
44	YY	YY	XX	XX	XX	XX	XX	XX	YY	XY	XX	YY	XY	XX	XY	XX	XX	XY	YY	XX	XX	XX	XX	XX	
45	YY	XX	YY	XX	YY	IN	YY	XX	YY	XX	XX	YY	XX	XX	XX	XX	XX	YY	YY	XX	XX	XX	XX	XX	
46	YY	XY	YY	XX	YY	IN	YY	XX	YY	XX	XX	YY	XX	XX	XX	XX	XX	YY	YY	XX	XX	XX	XX	XX	
47	YY	XY	XY	XX	XY	XX	YY	XX	YY	XX	XX	YY	XY	XX	XY	XX	XX	XY	YY	XX	XX	XX	XX	IN	
48	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
No.	20C-L 103	20C-L 106	20C-L 110	20C-L 112	20C-L 114	20C-L 118	20C-L 122	20C-L 125	20C-L 128	20C-L 129	20C-L 133	20C-L 137	20C-L 142	20C-L 144	20C-L 147	20C-L 151	20C-L 153	20C-L 155	20C-L 158	20C-L 160	20C-L 164	20C-L 165	20C-L 170	20C-L 174	
1	YY	YY	YY	YY	XX	XX	YY	XX	XX	XY	XY	XX	XY	YY	XX	YY	XX	XY	YY	XY	XX	XY	YY	YY	
2	YY	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	YY	XX	YY	XX	XY	YY	XY	XX	XX	YY	YY	
3	XY	YY	XY	YY	XX	XX	YY	XX	XX	XY	XX	XX	YY	YY	XX	YY	XX	XX	YY	YY	YY	XX	YY	YY	
4	YY	YY	XY	YY	XX	XY	YY	XX	XX	XY	XX	XX	YY	YY	XX	YY	XX	YY	YY	XY	XX	YY	YY	YY	
5	XY	YY	XY	YY	XX	YY	YY	XX	XX	XY	XY	XX	XY	YY	XX	YY	XX	XY	YY	YY	XX	XX	YY	YY	
6	XY	YY	XY	YY	XX	XY	YY	XX	XX	XX	YY	XX	XY	YY	XX	YY	XX	XY	YY	XY	XX	XX	YY	YY	
7	YY	YY	YY	YY	XX	XY	YY	XX	XX	XY	XY	XX	YY	YY	XX	YY	XX	YY	YY	XX	XX	XX	YY	YY	
8	YY	YY	XY	YY	XX	XY	YY	XX	XX	YY	XX	XX	YY	YY	XX	YY	XX	XY	YY	XY	XX	XY	YY	YY	
9	XY	YY	XX	YY	XX	XX	YY	XX	XX	XY	XY	XX	XY	YY	XX	YY	XX	XY	YY	YY	XX	YY	YY	YY	
10	XX	YY	XX	YY	XX	XX	YY	XX	XX	XY	XX	XX	YY	YY	XX	YY	XX	YY	YY	YY	XX	YY	YY	YY	
11	YY	YY	XX	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	YY	XX	YY	XX	YY	YY	YY	XX	XX	YY	YY	
12	YY	YY	XY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	YY	XX	YY	XX	XY	YY	YY	XX	XX	YY	YY	
13	YY	YY	XY	YY	XX	XY	YY	XX	XX	XX	YY	XX	XX	YY	XX	YY	XX	YY	YY	YY	XX	XX	YY	YY	
14	XX	YY	XX	YY	XX	XX	YY	XX	XX	XY	XY	XX	XY	YY	XX	YY	XX	XY	YY	YY	XX	YY	YY	YY	
15	XY	YY	XX	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	YY	XX	YY	XX	XY	YY	YY	XX	YY	YY	YY	
16	XX	YY	YY	YY	XX	XY	YY	XX	XX	XY	XY	XX	XY	YY	XX	YY	XX	XY	YY	XX	XX	XY	YY	YY	
17	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY	
18	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY	
19	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY	
20	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY	

21	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
22	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
23	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
24	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
25	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
26	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
27	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
28	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
29	XX	YY	XX	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	YY	XX	YY	YY	XX	XX	XX	YY	YY	
30	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
31	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
32	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
33	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
34	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
35	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
36	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
37	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
38	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
39	XX	YY	XX	YY	XY	XY	YY	XX	XX	YY	XY	XX	YY	XY	XY	XY	YY	XY	XY	XX	XX	XY	XY
40	YY	YY	YY	YY	XX	XX	YY	XX	XX	XY	XY	XX	XY	YY	XX	YY	XX	XY	YY	XX	XY	YY	YY
41	YY	YY	YY	YY	XX	XX	YY	XX	XX	XX	YY	XX	XX	YY	XX	YY	XX	XY	YY	XX	XX	YY	YY
42	XY	YY	XY	YY	XX	XX	YY	XX	XX	XY	XX	XX	YY	YY	XX	XX	YY	YY	XX	XX	YY	YY	YY
43	YY	YY	XY	YY	XX	XY	YY	XX	XX	XY	XY	XX	YY	YY	XX	YY	XX	YY	YY	XY	XX	YY	YY
44	XY	YY	XY	YY	XX	YY	YY	XX	XX	XY	XY	XX	XY	YY	XX	YY	XX	XY	YY	YY	XX	YY	YY
45	XY	YY	XY	YY	XX	XY	YY	XX	XX	XY	YY	XX	XY	YY	XX	YY	XX	XY	YY	XX	XX	YY	YY
46	YY	YY	YY	YY	XX	XY	YY	XX	XX	XY	XY	XX	YY	YY	XX	YY	XX	YY	YY	XX	XX	YY	YY
47	YY	YY	XY	YY	XX	XY	YY	XX	XX	YY	XX	XX	YY	YY	XX	YY	XX	XY	YY	XY	XX	XY	YY
48	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

2-6) 1차년도 ~ 5차년도 양배추 분자마커 서비스 종합

기관별로 분자마커 서비스 점수는 아래 표와 같으며, 1차년도, 2차년도, 3차년도, 4차년도, 5차년도의 양배추 분자마커 서비스의 총 점수는 각각 2,148점, 1,272점, 20,982점, 25,326점, 3,646점이다.

또한 1차년도에는 아래 그림과 같이 마커 유형별 혹은 분석방법에 따른 양배추 분자마커 서비스 중 가장 많은 비율을 차지한 마커로는 simple PCR마커로 전체 마커 중 67.8%가 사용되었으며, 그 다음으로는 27.7%인 HRM마커가 많이 사용하였고, 마지막으로 4.5%가 PCR-CAPS마커가 이용되었다. 2차년도에는 거의 대부분인 simple PCR마커로 91.2%를 차지하였고, HRM마커가 나머지 8.8%가 이용되었다. 3차년도에는 아래 그림과 같이 마커 유형별 혹은 분석방법에 따른 양배추 분자마커 서비스 중 가장 많은 비율을 차지한 마커유형으로는 Simple PCR마커로 전체 마커 중 78.7%가 사용되었으며, 그 다음으로는 19.2%인 PCR-CAPS마커가 많이 사용하였고, 마지막으로 2.1%가 HRM마커로 이용되었다. 4차년도에는 HRM마커가 96.2%로 많이 이용되었으며, 나머지는 Simple PCR마커가 3.8%로 이용되었다. 5차년도에는 EP1마커가 63.2%로 가장 많이 이용되었으며, 그다음으로 Simple PCR마커가 20.4%, HRM마커가 16.5%로 이용되었다.

1차년도에 병, 원예형질에 따른 양배추 분자마커 서비스로는 원예형질 마커가 52.8%이었으며, 그 다음으로 병 마커가 47.2%를 차지하였다. 2차년도에는 원예형질 마커가 86.8%로 가장 높았으며, 나머지 13.2%가 병 마커를 차지하였다. 3차년도에 병, 원예형질에 따른 양배추 분자마커 서비스로는 병 마커가 2.7%이었으며, 원예형질 마커로는 97.3%로 대부분이 원예형질 마커에 대한 요구도가 많았다. 4차년도에도 3차년도와 비슷하게 원예형질 마커가 94.2%, 병마커가 5.8%로 원예형질 마커의 비중이 더 많았다. 5차년도에는 순도/고정도마커가 63.2%로 가장 많이 사용되었으며, 그 다음으로 병마커가 32.9%, 원예형질마커가 3.9%가 사용되었다.

양배추 분자마커의 경우는 현재 병 마커로는 시들음병에 대해서만 분자마커 서비스가 이루어지고 있으며, 원예형질 마커의 경우도 자가불화합성이나 CMS 등에 한정적이다. 양배추에서는 아직까지 다양한 마커의 개발이 부재한 상황이며, 분자마커의 이용도 한정인 편임으로, 실용적인 분자마커의 개발 및 현장 적용이 시급하다.

<1차년도 기관별 양배추 서비스 의뢰 건수 및 분자마커 서비스 접수>

기관명	시료수	마커수	분자마커 서비스 접수	기관별 분자마커 서비스 접수
순천대학교	48	3	144	1,114
	48	2	96	
	50	2	100	
	64	2	128	
	48	3	144	
	48	2	96	
	48	2	96	
	48	2	96	
아시아종묘	107	2	214	822
274	3	822		
조은종묘	10	2	20	212
	48	4	192	
소계	-			2,148

<2차년도 기관별 양배추 서비스 의뢰 건수 및 분자마커 서비스 접수>

기관명	시료수	마커수	분자마커 서비스 접수	기관별 분자마커 서비스 접수
조은종묘	96	2	192	768
	32	3	96	
	24	3	72	
	204	2	408	
아시아종묘	163	2	326	326
한국종묘	89	2	178	178
소계	-			1,272

<3차년도 기관별 양배추 서비스 의뢰 건수 및 분자마커 서비스 접수>

업체명	시료수	마커수	분자마커 서비스 접수	기관별 분자마커 서비스 접수
순천대학교	28	9	252	20,518
	34	1	34	
	2,688	2	5,376	
	768	1	768	
	72	1	72	
	5,376	2	10,752	
	3,264	1	3,264	
한국종묘	279	1	279	279
조은종묘	37	5	185	185
소계	-			20,982

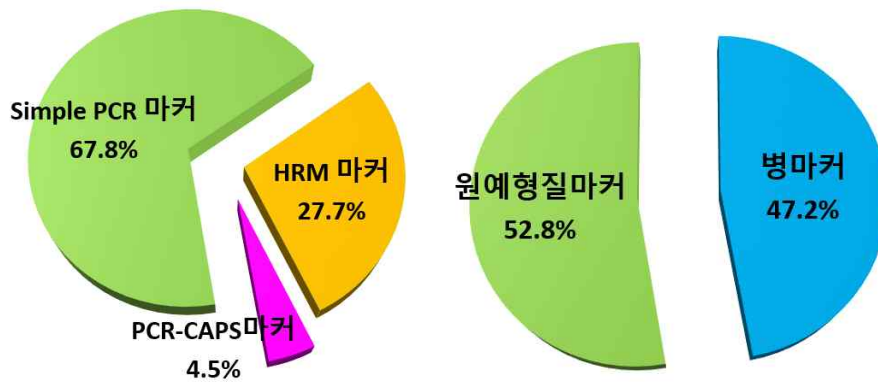
<4차년도 기관별 양배추 서비스 의뢰 건수 및 분자마커 서비스 접수>

기관명	시료수	마커수	분자마커 서비스 접수	기관별 분자마커 서비스 접수
순천대학교	695	34	23,630	23,630
조은종묘	94	5	470	1,696
	58	4	232	
	33	4	132	

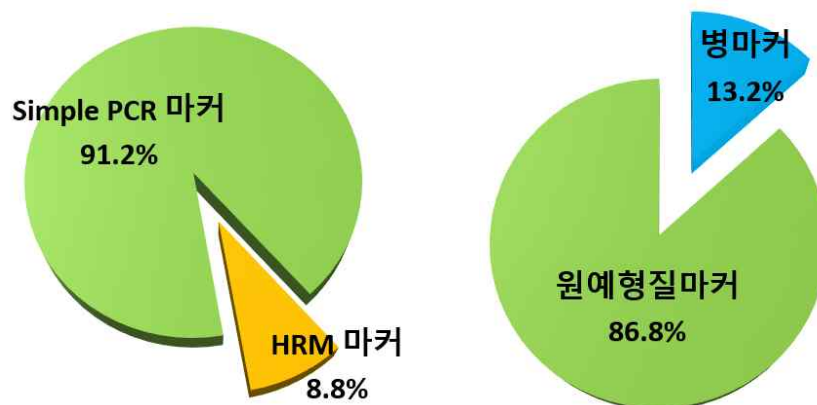
	96	5	480	
	43	4	172	
	38	5	190	
	4	5	20	
소 계		-		25,326

<5차년도 기관별 양배추 서비스 의뢰 건수 및 분자마커 서비스 접수>

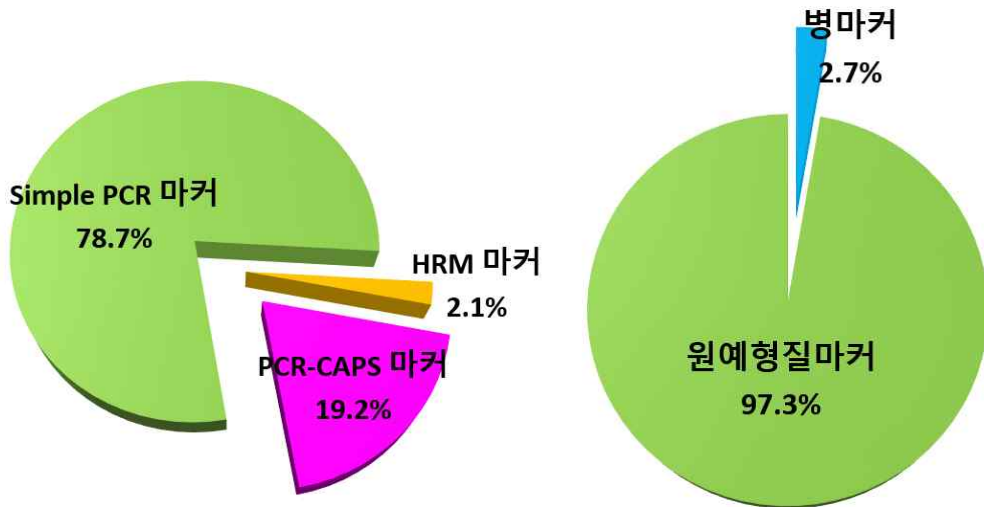
업체명	시료수	마커수	분자마커 서비스 접수	기관별 분자마커 서비스 접수
순천대학교	33	4	132	1,342
	34	4	136	
	77	4	308	
	10	1	10	
	70	5	350	
	24	4	96	
	62	5	310	
한국중요	48	48	2,304	2,304
소 계		-		3,646



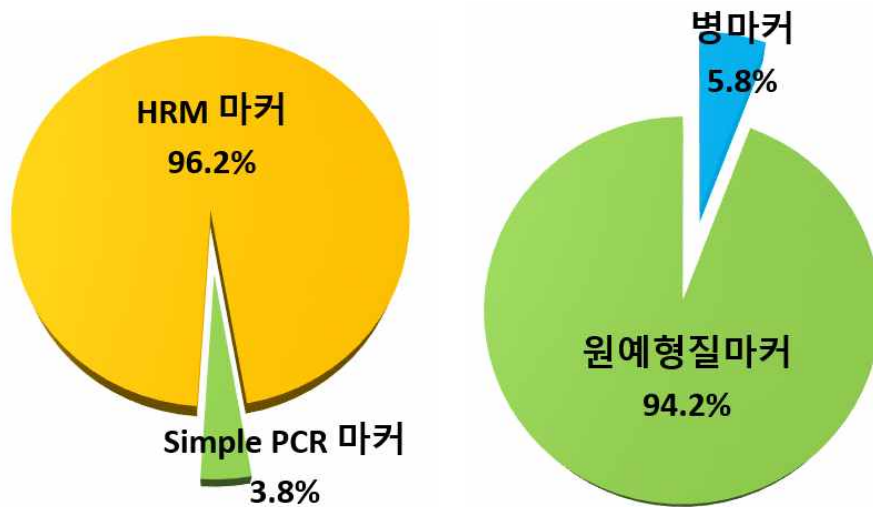
<1차년도 마커 유형별(분석방법)에 따른 양배추 분자마커 서비스(좌) 및 병, 원예형질에 따른 양배추 분자마커 서비스(우)>



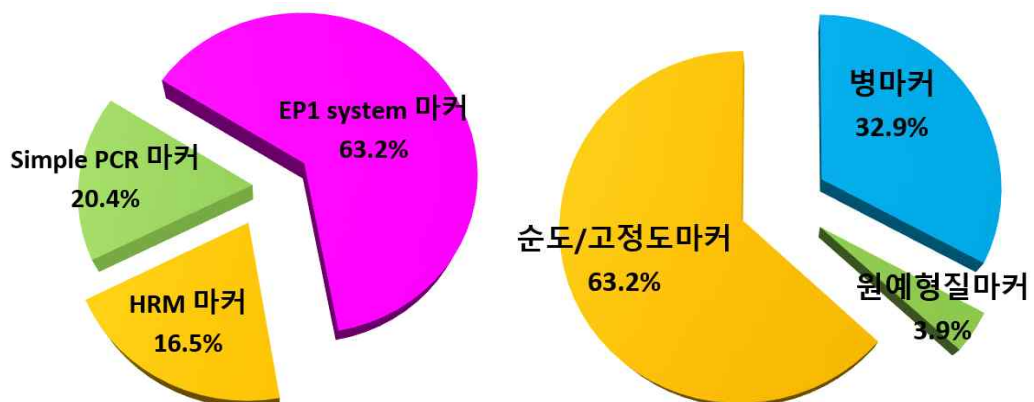
<2차년도 마커 유형별(분석방법)에 따른 양배추 분자마커 서비스(좌) 및 병, 원예형질에 따른 양배추 분자마커 서비스(우)>



<3차년도 마커 유형별(분석방법)에 따른 양배추 분자마커 서비스(좌) 및 병, 원예형질에 따른 토마토 분자마커 서비스(우)>



<4차년도 마커 유형별(분석방법)에 따른 양배추 분자마커 서비스(좌) 및 원예형질 및 순도/고정도에 따른 양파 분자마커 서비스(우)>



<5차년도 마커 유형별(분석방법)에 따른 양배추 분자마커 서비스(좌) 및 원예형질 및 순도/고정도에 따른 양파 분자마커 서비스(우)>

3) 양파 분자마커 서비스

3-1) 1차년도 양파 분자마커 서비스

1차년도에 양파 분자마커 서비스는 아시아종묘와 씨앗과사람들의 총 2곳에서 의뢰를 받아 실시하였다.

① 아시아종묘

아시아종묘로부터 총 48점의 시료를 받아 1번의 서비스를 진행하였다. 48개의 시료에 대하여 48개의 마커를 이용하여 EP1 system으로 양파의 순도검정 분자마커 서비스를 진행하였다(표 1). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 1).

표 1. 아시아종묘 48점의 시료에 대하여, 48개의 마커로 EP1 system을 이용한 서비스 결과

sample	OA-0 1	OA-0 2	OA-0 3	OA-0 4	OA-0 5	OA-0 6	OA-0 7	OA-0 8	OA-0 9	OA-1 0	OA-1 1	OA-1 2	OA-1 3	OA-1 4	OA-1 5	OA-1 6	OA-1 7	OA-1 8	OA-1 9	OA-2 0	OA-2 1	OA-2 2	OA-2 3	OA-2 4
3-01	XX	YY	NC	YY	XX	XY	XX	YY	YY	XX	XX	XX	YY	YY	XX	NC	XX	XY	YY	YY	XX	XX	YY	XX
3-02	YY	YY	NC	XY	XX	YY	XX	YY	YY	XX	XY	YY	XX	XY	XY	NC	XX	YY	XX	YY	YY	YY	XX	XX
3-03	YY	YY	NC	YY	XY	XY	YY	XX	YY	XY	YY	XX	XY	XY	XX	NC	XX	YY	XY	YY	YY	YY	XY	XX
3-04	XY	XY	NC	YY	YY	XY	XY	YY	XY	XY	YY	XY	XX	XX	XY	NC	XY	YY	XY	YY	XY	XX	YY	XX
3-05	YY	YY	NC	YY	YY	XY	XY	YY	XX	XX	XY	XY	XX	XX	XY	XY	XX	YY	XY	YY	YY	YY	XY	XX
3-06	YY	YY	NC	XX	XX	YY	XX	YY	YY	XX	YY	YY	YY	XX	XX	NC	XX	YY	YY	YY	XX	YY	YY	XX
3-07	XY	YY	NC	XY	YY	XY	XX	YY	XX	XX	XY	XX	XY	XX	XX	XY	XX	YY	XY	XY	XY	XY	YY	XX
3-08	YY	YY	NC	YY	XX	XY	YY	YY	YY	YY	YY	YY	XX	XY	YY	NC	XX	YY	XX	YY	YY	YY	YY	XX
3-09	YY	YY	NC	XY	YY	XY	XX	YY	XY	XY	YY	XX	XY	XX	XX	XY	XX	YY	XY	XY	YY	XY	XY	XX
3-10	XY	YY	NC	XY	XX	XY	XY	YY	XY	XY	YY	XX	XX	XY	XY	NC	XX	YY	XY	YY	YY	XY	XY	XX
3-11	YY	YY	NC	XY	XX	XY	XX	YY	YY	XY	YY	YY	XY	XX	XX	NC	XX	YY	XY	XY	XY	YY	XY	XX
3-12	XY	YY	NC	YY	XY	XX	YY	YY	XX	XX	YY	XX	XX	YY	XY	XY	XX	YY	XY	YY	YY	YY	XY	YY
3-13	YY	XX	XY	XX	YY	YY	XX	YY	XX	XX	XY	XY	XX	XX	XY	NC	XY	XY	YY	YY	YY	YY	YY	XX
3-14	YY	YY	NC	XX	XX	XY	XX	YY	XX	XY	YY	YY	XY	YY	XY	NC	XX	YY	YY	YY	XY	YY	XY	XY
3-15	YY	YY	XY	YY	XX	XX	XX	XX	YY	XX	YY	XX	XY	YY	XX	NC	XX	YY	XY	YY	YY	YY	YY	XX
3-16	XY	YY	XY	YY	XX	XY	XX	XX	YY	XX	YY	XY	XX	XX	XY	NC	XX	YY	XY	XY	YY	XY	YY	XX
4-01	XY	YY	XY	XY	XY	XY	XX	YY	YY	XY	YY	XX	XY	XX	XX	NC	XX	YY	YY	XY	YY	YY	YY	XX
4-02	XY	YY	NC	YY	XY	XX	YY	YY	YY	XX	XX	XX	XX	XY	XX	NC	XX	YY	YY	XY	YY	XY	YY	XX
4-03	YY	YY	NC	YY	YY	XY	YY	YY	XX	XY	YY	XY	XY	YY	XX	NC	XX	YY	XY	XY	YY	YY	YY	XX
4-04	YY	YY	XY	YY	XX	XY	XY	YY	XY	XX	YY	XX	XY	XY	XX	NC	XX	XY	XY	XY	YY	YY	YY	XY
4-05	XY	YY	NC	YY	XX	XY	YY	YY	XY	XX	YY	XY	XX	XX	XX	XY	XX	YY	XY	XX	YY	YY	XY	XY
4-06	YY	YY	NC	XY	XY	XY	XY	YY	XY	XX	YY	XX	XX	XY	XX	NC	XX	YY	XY	XY	YY	YY	XY	XY
4-07	YY	XY	XY	XY	XY	XX	XY	YY	XY	XY	YY	XX	XY	XX	XY	NC	XX	YY	YY	XY	YY	YY	YY	XY
4-08	YY	YY	XY	YY	XX	XY	XY	YY	XY	XY	YY	XX	XX	XY	XX	NC	XX	XY	XX	XX	XY	XY	XY	XY
4-09	YY	YY	XY	YY	XY	XX	YY	YY	XY	XX	XY	XX	XX	XX	XX	NC	XX	XY	XY	YY	XY	YY	XY	XY
4-10	XY	YY	NC	YY	XX	XY	XY	YY	XY	XX	YY	XY	XX	YY	XX	NC	XX	YY	YY	YY	YY	YY	YY	XX
4-11	YY	XY	NC	YY	XY	XY	XY	YY	XY	XY	YY	XY	XY	YY	XX	NC	XY	XX	XY	YY	YY	YY	YY	XX
4-12	YY	YY	NC	YY	XY	XY	XX	YY	XX	XX	YY	XX	XX	XX	XX	NC	XX	YY	XX	YY	YY	YY	XY	XX
4-13	XY	YY	NC	XY	XX	XX	YY	YY	XY	XY	YY	XX	XX	XY	XX	XY	XX	XY	YY	XY	YY	YY	YY	XY
4-14	YY	YY	NC	YY	XY	XY	XX	YY	XX	XX	YY	XY	XX	XY	XY	NC	XX	YY	XY	YY	YY	YY	YY	XY
4-15	YY	YY	NC	YY	XX	XY	XX	YY	XY	XY	YY	XX	XY	YY	XY	NC	XX	YY	XY	YY	YY	YY	YY	XX
4-16	YY	YY	XY	YY	XX	XY	XY	YY	YY	XX	XY	XX	XX	XY	XX	XY	XX	XY	XY	XY	YY	YY	XY	XX
G-01	XX	XY	XY	YY	XX	XY	YY	YY	XY	XX	YY	XX	XX	YY	XX	NC	XX	YY	XY	YY	YY	YY	YY	XX
G-02	XX	YY	NC	XY	XX	XY	XY	YY	YY	XY	YY	XX	XX	XY	XX	NC	XY	YY	YY	XY	XX	YY	YY	XX
G-03	XX	YY	NC	YY	XY	XY	YY	YY	YY	XY	XX	XX	XX	YY	XX	XY	XX	YY	XX	YY	YY	YY	YY	XY
G-04	YY	YY	NC	XY	XX	XX	XY	YY	YY	XX	YY	XX	XX	XY	XX	XY	XX	YY	YY	YY	YY	YY	XY	XY
G-05	XY	YY	NC	YY	XX	XY	YY	YY	YY	XX	XX	XX	XX	YY	XX	NC	XX	YY	XY	YY	YY	YY	XX	YY
G-06	XX	YY	NC	XY	XX	XY	XY	YY	XX	XX	YY	XX	XX	XY	XX	NC	XX	YY	XY	YY	YY	YY	XX	XY
G-07	XY	YY	XY	XY	XY	XY	XY	YY	YY	XX	XX	XX	XX	YY	XX	NC	XX	YY	YY	XY	YY	YY	XY	YY
G-08	XX	YY	XY	XY	XX	XY	XX	YY	XX	XX	YY	XX	XX	YY	XX	XY	XX	YY	YY	XY	XY	YY	YY	XY
G-09	XY	YY	XY	YY	XX	XY	XY	YY	XY	XX	YY	XX	XX	XY	XX	XY	XX	YY	YY	YY	YY	YY	XX	XY
G-10	YY	YY	NC	XX	XX	XY	YY	YY	XX	XX	YY	XX	XX	YY	XX	NC	XX	YY	XY	XY	YY	YY	YY	YY
G-11	YY	XY	XY	YY	XX	XY	XY	XX	YY	YY	XY	XY	XX	YY	XX	XY	XX	XY	YY	XX	YY	XY	YY	XY
G-12	YY	YY	XY	XX	XX	XY	YY	YY	XY	XX	XY	XX	XX	YY	XX	XY	XX	YY	YY	YY	YY	YY	XY	XY
G-13	YY	YY	NC	YY	XY	XY	XY	YY	XY	XX	YY	XX	XX	YY	XX	NC	XX	YY	YY	YY	YY	XY	YY	XX
G-14	YY	XY	XY	YY	XX	XY	XY	YY	YY	YY	YY	XX	XX	YY	XX	XY	XX	YY	XY	XY	XY	YY	YY	XX
G-15	YY	YY	NC	YY	XX	XX	YY	YY	XY	XX	YY	XY	XX	XY	XX	NC	XX	YY	YY	XY	XY	YY	XY	XY
G-16	YY	YY	NC	XY	XX	XY	YY	YY	XY	XX	XY	XY	XX	YY	XX	XY	XX	YY	XY	XY	YY	YY	YY	XY

sample	OA-2 5	OA-2 6	OA-2 7	OA-2 8	OA-2 9	OA-3 0	OA-3 1	OA-3 2	OA-3 3	OA-3 4	OA-3 5	OA-3 6	OA-3 7	OA-3 8	OA-3 9	OA-4 0	OA-4 1	OA-4 2	OA-4 3	OA-4 4	OA-4 5	OA-4 6	OA-4 7	OA-4 8
3-01	YY	XY	NC	XX	XX	XX	XX	XX	XX	YY	XX	XX	XX	XX	XX	XY	YY	XX	XY	YY	YY	XY	YY	XX
3-02	XX	XX	XY	YY	YY	XX	XX	YY	XX	XY	YY	YY	XX	XX	YY	XX	XX	XX	YY	YY	YY	XX	YY	XX
3-03	XX	XY	NC	YY	YY	XX	XY	YY	XY	YY	XX	YY	XX	XX	YY	XX	XY	XX	NC	YY	YY	XY	YY	NC

3-04	XY	XY	XY	XX	XX	XX	XY	XY	XY	YY	XY	XY	XX	XX	YY	XY	XX	YY	YY	YY	XX	YY	NC	
3-05	XX	XX	NC	XX	XY	XX	XY	YY	XY	XY	YY	YY	XX	XX	YY	XX	YY	XX	NC	YY	YY	XY	YY	XY
3-06	XY	YY	NC	XX	XY	XX	XX	XY	XX	YY	XX	YY	XX	XX	XY	XX	YY	XX	YY	YY	YY	XX	YY	NC
3-07	XX	XY	NC	XY	XY	XX	XY	YY	XX	XY	XX	XY	XY	XX	YY	XY	XY	XY	NC	XY	YY	XY	YY	XX
3-08	XX	XX	XY	XY	YY	XX	XY	YY	XX	XY	YY	YY	XX	XX	YY	XY	XY	XX	YY	YY	YY	XY	YY	XX
3-09	XY	XX	NC	XX	XX	XX	XX	YY	XX	XY	YY	XY	XX	XX	XX	XY	YY	YY	YY	YY	XY	YY	NC	
3-10	XX	XY	XY	XY	XY	XX	XX	YY	XX	YY	YY	YY	XY	XX	YY	XY	XX	XY	YY	YY	XY	XX	YY	NC
3-11	XX	XY	XY	XX	YY	XX	YY	YY	XX	YY	YY	YY	XX	XX	XY	XX	XY	XX	NC	YY	YY	XX	YY	XY
3-12	XX	XX	XY	XX	XX	XX	XY	XX	XY	YY	YY	XY	XX	XX	YY	XX	XY	XX	XY	YY	YY	XX	XY	NC
3-13	XY	XX	XY	XX	XY	XX	XX	XY	XX	XY	XX	XY	XX	XX	YY	XX	XY	XX	XY	XY	XY	XY	YY	XY
3-14	XX	YY	XY	XY	XY	XX	XY	XY	XX	YY	YY	YY	XX	XX	XY	XY	YY	XX	NC	YY	YY	XX	YY	XX
3-15	XX	XX	XY	XY	XY	XY	XX	YY	XX	XX	XX	YY	XY	XX	YY	XX	YY	XX	NC	YY	YY	XX	YY	XY
3-16	XX	XX	NC	XX	XY	XX	XY	XY	XX	XY	XY	XY	XX	XX	YY	XY	XY	NC	YY	YY	XY	YY	XY	
4-01	XY	XY	NC	XX	XY	XX	YY	XY	XX	XY	YY	YY	XX	XY	XY	XX	XX	XY	NC	YY	YY	XX	XY	NC
4-02	XY	XY	XY	XY	XY	XX	YY	XY	YY	XY	XY	XX	XX	YY	YY	XX	YY	XX	XY	YY	XY	XX	YY	XX
4-03	XY	XX	NC	XX	YY	XY	XY	YY	XY	XX	YY	XY	XY	XX	YY	XX	YY	YY	NC	YY	YY	XX	YY	XY
4-04	XX	XX	XY	XY	XY	XY	XY	XY	XY	YY	YY	YY	XX	XX	XY	XX	YY	XX	XY	YY	YY	XX	YY	XY
4-05	XY	YY	NC	XX	XY	XX	XY	XY	XX	XY	YY	XY	XX	XX	XY	XX	YY	XX	XY	YY	YY	XX	YY	NC
4-06	XY	XX	NC	XY	XX	XX	YY	XY	XY	YY	XY	XY	XX	XX	YY	XX	XY	XX	NC	YY	YY	XX	YY	XX
4-07	XY	XY	XY	XX	XY	XY	YY	YY	XY	XY	XY	XY	XX	XX	YY	XX	XY	XY	XY	YY	XY	XY	XX	XY
4-08	XY	XY	NC	XY	XY	XX	XY	XX	XY	YY	XY	XY	XX	XX	YY	XX	YY	XX	XY	YY	YY	XX	YY	NC
4-09	XY	XY	NC	XY	XX	XY	YY	XX	YY	YY	XY	XX	XY	XX	XY	XX	XY	XX	XY	YY	YY	XX	XY	XY
4-10	XX	XY	XY	YY	XY	XX	XX	XY	XX	XY	XX	XX	XX	XX	XY	XX	YY	XX	YY	YY	XY	XX	YY	XY
4-11	XY	XY	NC	YY	XY	XX	XY	XX	XY	XY	XY	YY	XX	XY	YY	XX	YY	XX	NC	YY	YY	XX	YY	NC
4-12	XY	XX	XY	XX	XY	XX	YY	XY	XX	YY	XY	XY	XX	XX	YY	XX	YY	XX	NC	YY	XY	XX	XY	XX
4-13	XX	XY	XY	YY	XY	XX	XX	XX	XY	XY	XX	YY	XX	XX	XY	XX	YY	XX	XY	YY	YY	XX	XY	NC
4-14	XY	XY	NC	YY	XY	XY	XY	XY	XX	YY	XY	XY	XX	XX	YY	XX	YY	XX	XY	YY	YY	XX	YY	NC
4-15	XX	XY	XY	XY	YY	XX	XX	XY	XX	YY	YY	XY	XX	XX	YY	XX	YY	XY	XY	YY	XY	XX	XY	XY
4-16	XY	XX	NC	XY	XY	XX	YY	XX	XY	XY	XY	XX	XX	XX	YY	XY	XY	XX	NC	YY	YY	XX	YY	XY
G-01	YY	XX	XY	YY	XX	XX	XX	YY	XY	XX	XY	YY	XX	XX	XX	XX	YY	XX	NC	YY	YY	XX	XY	XY
G-02	XY	XY	XY	YY	XY	XX	YY	XY	XY	YY	XY	XY	XX	XX	XY	XX	YY	XX	NC	XY	YY	XY	YY	XY
G-03	XY	XY	XY	XY	XX	XX	YY	YY	XX	XY	YY	XX	XX	XY	XX	YY	XX	XX	XY	YY	YY	XY	XY	NC
G-04	XY	XY	NC	YY	XY	XX	XY	XY	XY	XY	XY	XY	XX	YY	XX	XY	YY	XX	XY	YY	YY	XX	XY	NC
G-05	YY	YY	NC	YY	XX	XX	YY	XY	YY	XX	XY	YY	XX	XX	XX	XY	YY	XX	XY	YY	YY	XX	XX	NC
G-06	YY	YY	XY	YY	XY	XX	YY	XY	XY	XY	XX	YY	XX	XX	XY	XX	YY	XX	NC	YY	YY	XY	XY	XY
G-07	XY	XY	NC	YY	XX	XY	XY	XY	XX	XX	XY	XY	XX	XY	XX	YY	XX	NC	YY	YY	XY	XX	YY	XX
G-08	XY	XY	XY	YY	XY	XY	XY	XY	XX	XY	XX	XX	XX	XY	XX	YY	XX	NC	YY	YY	XY	YY	XY	NC
G-09	YY	XY	XY	YY	XY	XX	XY	YY	XX	XY	XY	XY	XX	XX	XY	XX	YY	XY	XY	YY	YY	XX	XY	NC
G-10	XY	XY	NC	YY	YY	XX	XY	XY	XY	XY	XY	XX	XX	XX	XY	XX	YY	XX	NC	YY	YY	XX	YY	XY
G-11	XX	XX	NC	YY	XX	XX	XX	YY	XY	XY	YY	YY	XX	XY	YY	XY	YY	YY	YY	YY	XY	YY	XY	NC
G-12	XY	YY	NC	YY	XY	XX	YY	XX	YY	XY	YY	XY	XX	XY	YY	XX	YY	XX	NC	YY	YY	YY	YY	NC
G-13	XX	XY	NC	YY	XY	XX	XY	XY	XY	XY	XX	XY	XX	XX	XX	YY	XX	NC	YY	YY	XX	YY	XX	XX
G-14	XY	XX	XY	YY	XY	XX	YY	XY	XX	XX	YY	YY	XX	XX	XY	XX	YY	XX	NC	YY	YY	XX	XY	XY
G-15	XY	XX	NC	XY	YY	XY	XY	YY	XY	XY	XY	XY	XX	XX	XX	XY	XY	XY	YY	YY	YY	XX	YY	XY
G-16	XY	XY	XY	YY	XX	XX	XY	YY	XX	XX	XY	XY	XX	XX	XX	YY	XX	NC	YY	YY	XX	XX	NC	NC

② 씨앗과사람들

씨앗과사람들로부터 총 2,068점의 시료를 받아 2번의 서비스를 진행하였다. 처음 1,440점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 2). 두 번째로는 628점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 3). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 2, 3).

표 2. 씨앗과사람들 1,440점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

No.	Jnurf13	Orf7 25	No.	Jnurf13	Orf7 25	No.	Jnurf13	Orf7 25	No.	Jnurf13	Orf7 25	No.	Jnurf13	Orf7 25	No.	Jnurf13	Orf7 25
1	msms	T	241	msms	T	481	msms	T	721	msms	T	961	msms	T	1201	msms	T
2	Msms	T	242	msms	T	482	msms	T	722	msms	T	962	msms	T	1202	msms	T
3	Msms	T	243	msms	T	483	msms	T	723	msms	T	963	msms	T	1203	msms	T
4	msms	T	244	msms	T	484	msms	T	724	msms	T	964	msms	T	1204	msms	T
5	msms	T	245	msms	T	485	msms	T	725	msms	T	965	msms	T	1205	msms	T
6	msms	T	246	msms	T	486	msms	T	726	msms	T	966	msms	T	1206	msms	T
7	msms	T	247	msms	T	487	msms	T	727	msms	T	967	msms	T	1207	msms	T
8	msms	T	248	msms	T	488	msms	T	728	msms	T	968	msms	T	1208	msms	T
9	Msms	T	249	msms	T	489	msms	T	729	msms	T	969	msms	T	1209	msms	T
10	Msms	T	250	msms	T	490	msms	T	730	msms	T	970	msms	T	1210	msms	T
11	msms	S	251	msms	T	491	msms	T	731	msms	T	971	msms	T	1211	msms	T
12	msms	S	252	msms	T	492	msms	T	732	msms	T	972	msms	T	1212	msms	T

No.	Jnurfl3	Orf7 25	No.	Jnurfl3	Orf7 25	No.	Jnurfl3	Orf7 25	No.	Jnurfl3	Orf7 25	No.	Jnurfl3	Orf7 25	No.	Jnurfl3	Orf7 25
13	msms	T	253	msms	T	493	msms	T	733	msms	T	973	msms	T	1213	msms	T
14	msms	T	254	msms	T	494	msms	T	734	msms	T	974	msms	T	1214	msms	T
15	msms	T	255	msms	T	495	msms	T	735	msms	T	975	msms	T	1215	msms	T
16	msms	T	256	msms	T	496	msms	T	736	msms	T	976	msms	T	1216	msms	T
17	msms	T	257	msms	T	497	msms	T	737	msms	T	977	msms	T	1217	msms	T
18	msms	T	258	msms	T	498	msms	T	738	msms	T	978	msms	T	1218	msms	T
19	msms	T	259	msms	T	499	msms	T	739	msms	T	979	msms	T	1219	msms	T
20	msms	T	260	msms	T	500	msms	T	740	msms	T	980	msms	T	1220	msms	T
21	msms	T	261	msms	T	501	msms	T	741	msms	T	981	msms	T	1221	msms	T
22	msms	T	262	msms	T	502	msms	T	742	msms	T	982	msms	T	1222	msms	T
23	msms	T	263	msms	T	503	msms	T	743	msms	T	983	msms	T	1223	msms	T
24	msms	T	264	msms	T	504	msms	T	744	msms	T	984	msms	T	1224	msms	T
25	msms	T	265	msms	T	505	msms	T	745	msms	T	985	msms	T	1225	msms	T
26	msms	T	266	msms	T	506	msms	T	746	msms	T	986	msms	T	1226	msms	T
27	msms	T	267	msms	T	507	msms	T	747	msms	T	987	msms	T	1227	msms	T
28	msms	T	268	msms	T	508	msms	T	748	msms	T	988	msms	T	1228	msms	T
29	msms	T	269	msms	T	509	msms	T	749	msms	T	989	msms	T	1229	msms	T
30	msms	T	270	msms	T	510	msms	T	750	msms	T	990	msms	T	1230	msms	T
31	msms	T	271	msms	T	511	msms	T	751	msms	T	991	msms	T	1231	msms	T
32	msms	T	272	msms	T	512	msms	T	752	msms	T	992	msms	T	1232	msms	T
33	msms	T	273	msms	T	513	msms	T	753	msms	T	993	msms	T	1233	msms	T
34	msms	T	274	msms	T	514	msms	T	754	msms	T	994	msms	T	1234	msms	T
35	msms	T	275	msms	T	515	msms	T	755	msms	T	995	msms	T	1235	msms	T
36	msms	T	276	msms	T	516	msms	T	756	msms	T	996	msms	T	1236	msms	T
37	msms	T	277	msms	T	517	msms	T	757	msms	T	997	msms	T	1237	msms	T
38	msms	T	278	msms	T	518	msms	T	758	msms	T	998	msms	T	1238	msms	T
39	msms	T	279	msms	T	519	msms	T	759	msms	T	999	msms	T	1239	msms	T
40	msms	T	280	msms	T	520	msms	T	760	msms	T	1000	msms	T	1240	msms	T
41	msms	T	281	msms	T	521	msms	T	761	msms	T	1001	msms	T	1241	msms	T
42	msms	T	282	msms	T	522	msms	T	762	msms	T	1002	msms	T	1242	msms	T
43	msms	T	283	msms	T	523	msms	T	763	msms	T	1003	msms	T	1243	msms	T
44	msms	T	284	msms	T	524	msms	T	764	msms	T	1004	msms	T	1244	msms	T
45	msms	T	285	msms	T	525	msms	T	765	msms	T	1005	msms	T	1245	msms	T
46	msms	T	286	msms	T	526	msms	T	766	msms	T	1006	msms	T	1246	msms	T
47	msms	T	287	msms	T	527	msms	T	767	msms	T	1007	msms	T	1247	msms	T
48	msms	T	288	msms	T	528	msms	T	768	msms	T	1008	msms	T	1248	msms	T
49	msms	T	289	msms	T	529	msms	T	769	msms	T	1009	msms	T	1249	msms	T
50	msms	T	290	msms	T	530	msms	T	770	msms	T	1010	msms	T	1250	msms	T
51	msms	T	291	msms	T	531	msms	T	771	msms	T	1011	msms	T	1251	msms	T
52	msms	T	292	msms	T	532	msms	T	772	msms	T	1012	msms	T	1252	msms	T
53	msms	T	293	msms	T	533	msms	T	773	msms	T	1013	msms	T	1253	msms	T
54	msms	T	294	msms	T	534	msms	T	774	msms	T	1014	msms	T	1254	msms	T
55	msms	T	295	msms	T	535	msms	T	775	msms	T	1015	msms	T	1255	msms	T
56	msms	T	296	msms	T	536	msms	T	776	msms	T	1016	msms	T	1256	msms	T
57	msms	T	297	msms	T	537	msms	T	777	msms	T	1017	msms	T	1257	msms	T
58	msms	T	298	msms	T	538	msms	T	778	msms	T	1018	msms	T	1258	msms	T
59	msms	T	299	msms	T	539	msms	T	779	msms	T	1019	msms	T	1259	msms	T
60	msms	T	300	msms	T	540	msms	T	780	msms	T	1020	msms	T	1260	msms	T
61	msms	T	301	msms	T	541	msms	T	781	msms	T	1021	msms	T	1261	msms	T
62	msms	T	302	msms	T	542	msms	T	782	msms	T	1022	msms	T	1262	msms	T
63	msms	T	303	msms	T	543	msms	T	783	msms	T	1023	msms	T	1263	msms	T
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66	msms	T	306	msms	T	546	msms	T	786	msms	T	1026	msms	T	1266	msms	T
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72	msms	T	312	msms	T	552	msms	T	792	msms	T	1032	msms	T	1272	msms	T
73	msms	T	313	msms	T	553	msms	T	793	msms	T	1033	msms	T	1273	msms	T
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No.	Jnurfl3	Orf7 25	No.	Jnurfl3	Orf7 25	No.	Jnurfl3	Orf7 25	No.	Jnurfl3	Orf7 25	No.	Jnurfl3	Orf7 25	No.	Jnurfl3	Orf7 25
75	msms	T	315	msms	T	555	msms	T	795	msms	T	1035	msms	T	1275	msms	T
76	msms	T	316	msms	T	556	msms	T	796	msms	T	1036	msms	T	1276	msms	T
77	msms	T	317	msms	T	557	msms	T	797	msms	T	1037	msms	T	1277	msms	T
78	msms	T	318	msms	T	558	msms	T	798	msms	T	1038	msms	T	1278	msms	T
79	msms	T	319	msms	T	559	msms	T	799	msms	T	1039	msms	T	1279	msms	T
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84	msms	T	324	msms	T	564	msms	T	804	msms	T	1044	msms	T	1284	msms	T
85	msms	T	325	msms	T	565	msms	T	805	msms	T	1045	msms	T	1285	msms	T
86	msms	T	326	msms	T	566	msms	T	806	msms	T	1046	msms	T	1286	msms	T
87	msms	T	327	msms	T	567	msms	T	807	msms	T	1047	msms	T	1287	msms	T
88	msms	T	328	msms	T	568	msms	T	808	msms	T	1048	msms	T	1288	msms	T
89	msms	T	329	msms	T	569	msms	T	809	msms	T	1049	msms	T	1289	msms	T
90	msms	T	330	msms	T	570	msms	T	810	msms	T	1050	msms	T	1290	msms	T
91	msms	T	331	msms	T	571	msms	T	811	msms	T	1051	msms	T	1291	msms	T
92	msms	T	332	msms	T	572	msms	T	812	msms	T	1052	msms	T	1292	msms	T
93	msms	T	333	msms	T	573	msms	T	813	msms	T	1053	msms	T	1293	msms	T
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108	msms	T	348	msms	T	588	msms	T	828	msms	T	1068	msms	T	1308	msms	T
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120	msms	T	360	msms	T	600	msms	T	840	msms	T	1080	msms	T	1320	msms	T
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122	msms	T	362	msms	T	602	msms	T	842	msms	T	1082	msms	T	1322	msms	T
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125	msms	T	365	msms	T	605	msms	T	845	msms	T	1085	msms	T	1325	msms	T
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127	msms	T	367	msms	T	607	msms	T	847	msms	T	1087	msms	T	1327	msms	T
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129	msms	T	369	msms	T	609	msms	T	849	msms	T	1089	msms	T	1329	msms	T
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132	msms	T	372	msms	T	612	msms	T	852	msms	T	1092	msms	T	1332	msms	T
133	msms	T	373	msms	T	613	msms	T	853	msms	T	1093	msms	T	1333	msms	T
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135	msms	T	375	msms	T	615	msms	T	855	msms	T	1095	msms	T	1335	msms	T
136	msms	T	376	msms	T	616	msms	T	856	msms	T	1096	msms	T	1336	msms	T

No.	Jnurfl3	Orf7 25	No.	Jnurfl3	Orf7 25	No.	Jnurfl3	Orf7 25	No.	Jnurfl3	Orf7 25	No.	Jnurfl3	Orf7 25	No.	Jnurfl3	Orf7 25
137	msms	T	377	msms	T	617	msms	T	857	msms	T	1097	msms	T	1337	msms	T
138	msms	T	378	msms	T	618	msms	T	858	msms	T	1098	msms	T	1338	msms	T
139	msms	T	379	msms	T	619	msms	T	859	msms	T	1099	msms	T	1339	msms	T
140	msms	T	380	msms	T	620	msms	T	860	msms	T	1100	msms	T	1340	msms	T
141	msms	T	381	msms	T	621	msms	T	861	msms	T	1101	msms	T	1341	msms	T
142	msms	T	382	msms	T	622	msms	T	862	msms	T	1102	msms	T	1342	msms	T
143	msms	T	383	msms	T	623	msms	T	863	msms	T	1103	msms	T	1343	msms	T
144	msms	T	384	msms	T	624	msms	T	864	msms	T	1104	msms	T	1344	msms	T
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147	msms	T	387	msms	T	627	msms	T	867	msms	T	1107	msms	T	1347	msms	T
148	msms	T	388	msms	T	628	msms	T	868	msms	T	1108	msms	T	1348	msms	T
149	msms	T	389	msms	T	629	msms	T	869	msms	T	1109	msms	T	1349	msms	N
150	msms	T	390	msms	T	630	msms	T	870	msms	T	1110	msms	T	1350	msms	T
151	msms	T	391	msms	T	631	msms	T	871	msms	T	1111	msms	T	1351	msms	T
152	msms	T	392	msms	T	632	msms	T	872	msms	T	1112	msms	T	1352	msms	T
153	msms	T	393	msms	T	633	msms	T	873	msms	T	1113	msms	T	1353	msms	N
154	msms	T	394	msms	T	634	msms	T	874	msms	T	1114	msms	T	1354	msms	N
155	msms	T	395	msms	T	635	msms	T	875	msms	T	1115	msms	T	1355	msms	N
156	msms	T	396	msms	T	636	msms	T	876	msms	T	1116	msms	T	1356	msms	N
157	msms	T	397	msms	T	637	msms	T	877	msms	T	1117	msms	T	1357	msms	N
158	msms	T	398	msms	T	638	msms	T	878	msms	T	1118	msms	N	1358	msms	N
159	msms	T	399	msms	T	639	msms	T	879	msms	T	1119	msms	T	1359	msms	N
160	msms	T	400	msms	T	640	msms	T	880	msms	T	1120	msms	T	1360	msms	N
161	msms	T	401	msms	T	641	msms	T	881	msms	T	1121	msms	T	1361	msms	N
162	msms	T	402	msms	T	642	msms	T	882	msms	T	1122	msms	T	1362	msms	N
163	msms	T	403	msms	T	643	msms	T	883	msms	T	1123	msms	T	1363	msms	N
164	msms	T	404	msms	T	644	msms	T	884	msms	T	1124	msms	T	1364	msms	N
165	msms	T	405	msms	T	645	msms	T	885	msms	T	1125	msms	T	1365	msms	N
166	msms	T	406	msms	T	646	msms	T	886	msms	T	1126	msms	T	1366	msms	N
167	msms	T	407	msms	T	647	msms	T	887	msms	T	1127	msms	T	1367	msms	N
168	msms	T	408	msms	T	648	msms	T	888	msms	T	1128	msms	T	1368	msms	N
169	msms	T	409	msms	T	649	msms	T	889	msms	T	1129	msms	T	1369	msms	N
170	msms	T	410	msms	T	650	msms	T	890	msms	T	1130	msms	T	1370	msms	T
171	msms	T	411	msms	T	651	msms	T	891	msms	T	1131	msms	T	1371	msms	N
172	msms	T	412	msms	T	652	msms	T	892	msms	T	1132	msms	T	1372	msms	N
173	msms	T	413	msms	T	653	msms	T	893	msms	T	1133	msms	T	1373	msms	N
174	msms	T	414	msms	T	654	msms	T	894	msms	T	1134	msms	T	1374	msms	N
175	msms	T	415	msms	T	655	msms	T	895	msms	T	1135	msms	T	1375	msms	N
176	msms	T	416	msms	T	656	msms	T	896	msms	T	1136	msms	T	1376	msms	N
177	msms	T	417	msms	T	657	msms	T	897	msms	T	1137	msms	T	1377	msms	N
178	msms	T	418	msms	T	658	msms	T	898	msms	T	1138	msms	T	1378	msms	N
179	msms	T	419	msms	T	659	msms	T	899	msms	T	1139	msms	T	1379	msms	N
180	msms	T	420	msms	T	660	msms	T	900	msms	T	1140	msms	T	1380	msms	T
181	msms	T	421	msms	T	661	msms	T	901	msms	T	1141	msms	T	1381	msms	N
182	msms	T	422	msms	T	662	msms	T	902	msms	T	1142	msms	T	1382	msms	N
183	msms	T	423	msms	T	663	msms	T	903	msms	T	1143	msms	T	1383	msms	N
184	msms	T	424	msms	T	664	msms	T	904	msms	T	1144	msms	T	1384	msms	N
185	msms	T	425	msms	T	665	msms	T	905	msms	T	1145	msms	T	1385	msms	N
186	msms	T	426	msms	T	666	msms	T	906	msms	T	1146	msms	T	1386	msms	N
187	msms	T	427	msms	T	667	msms	T	907	msms	T	1147	msms	T	1387	msms	N
188	msms	T	428	msms	T	668	msms	T	908	msms	T	1148	msms	T	1388	msms	N
189	msms	T	429	msms	T	669	msms	T	909	msms	T	1149	msms	T	1389	msms	N
190	msms	T	430	msms	T	670	msms	T	910	msms	T	1150	msms	T	1390	msms	N
191	msms	T	431	msms	T	671	msms	T	911	msms	T	1151	msms	T	1391	msms	N
192	msms	T	432	msms	T	672	msms	T	912	msms	T	1152	msms	T	1392	msms	N
193	msms	T	433	msms	T	673	msms	T	913	msms	T	1153	msms	T	1393	msms	N
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195	msms	T	435	msms	T	675	msms	N	915	msms	T	1155	msms	T	1395	msms	N
196	msms	T	436	msms	T	676	msms	N	916	msms	T	1156	msms	T	1396	msms	N
197	msms	T	437	msms	T	677	msms	N	917	msms	T	1157	msms	T	1397	msms	N
198	msms	T	438	Msms	T	678	msms	N	918	msms	T	1158	msms	T	1398	msms	N

No.	Jnurf13	Orf7 25	No.	Jnurf13	Orf7 25	No.	Jnurf13	Orf7 25	No.	Jnurf13	Orf7 25	No.	Jnurf13	Orf7 25	No.	Jnurf13	Orf7 25
199	msms	T	439	msms	T	679	msms	N	919	msms	T	1159	msms	T	1399	msms	N
200	msms	T	440	msms	T	680	msms	N	920	msms	T	1160	msms	T	1400	msms	N
201	msms	T	441	msms	T	681	msms	N	921	msms	T	1161	msms	T	1401	msms	N
202	msms	T	442	msms	T	682	msms	N	922	msms	T	1162	msms	T	1402	msms	N
203	msms	T	443	msms	T	683	msms	N	923	msms	T	1163	msms	T	1403	msms	N
204	msms	T	444	msms	T	684	msms	N	924	msms	T	1164	msms	T	1404	msms	N
205	msms	T	445	msms	T	685	msms	N	925	msms	T	1165	msms	T	1405	msms	N
206	msms	T	446	msms	T	686	msms	N	926	msms	T	1166	msms	T	1406	msms	N
207	msms	T	447	msms	T	687	msms	N	927	msms	T	1167	msms	T	1407	msms	N
208	msms	T	448	msms	T	688	msms	N	928	msms	T	1168	msms	T	1408	msms	N
209	msms	T	449	msms	T	689	msms	N	929	msms	T	1169	msms	T	1409	msms	N
210	msms	T	450	msms	T	690	msms	N	930	msms	T	1170	msms	T	1410	msms	N
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222	msms	T	462	msms	T	702	msms	N	942	msms	T	1182	msms	T	1422	msms	S
223	msms	T	463	msms	T	703	msms	N	943	msms	T	1183	msms	T	1423	msms	S
224	msms	T	464	msms	T	704	msms	N	944	msms	T	1184	msms	T	1424	msms	S
225	msms	T	465	msms	T	705	msms	N	945	msms	T	1185	msms	T	1425	msms	S
226	msms	T	466	msms	T	706	msms	N	946	msms	T	1186	msms	T	1426	msms	S
227	msms	T	467	msms	T	707	msms	N	947	msms	T	1187	msms	T	1427	msms	S
228	msms	T	468	msms	T	708	msms	N	948	msms	T	1188	msms	T	1428	msms	S
229	msms	T	469	msms	T	709	msms	N	949	msms	T	1189	msms	T	1429	msms	S
230	msms	T	470	msms	T	710	msms	N	950	msms	T	1190	msms	T	1430	msms	S
231	msms	T	471	msms	T	711	msms	N	951	msms	T	1191	msms	T	1431	msms	S
232	msms	T	472	msms	T	712	msms	N	952	msms	T	1192	msms	T	1432	msms	N
233	msms	T	473	msms	T	713	msms	N	953	msms	T	1193	msms	T	1433	msms	N
234	msms	T	474	msms	T	714	msms	N	954	msms	T	1194	msms	T	1434	msms	N
235	msms	T	475	msms	T	715	msms	N	955	msms	T	1195	msms	T	1435	msms	N
236	msms	T	476	msms	T	716	msms	T	956	msms	T	1196	msms	T	1436	msms	N
237	msms	T	477	msms	T	717	msms	T	957	msms	T	1197	msms	T	1437	msms	N
238	msms	T	478	msms	T	718	msms	T	958	msms	T	1198	msms	T	1438	msms	N
239	msms	T	479	msms	T	719	msms	T	959	msms	T	1199	msms	T	1439	msms	N
240	msms	T	480	msms	T	720	msms	T	960	msms	T	1200	msms	T	1440	msms	N

표 3. 씨앗과사람들 628점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

No.	orf 725	Jnurf 13	No.	orf 725	Jnurf 13	No.	orf 725	Jnurf 613	No.	orf 725	Jnurf 13	No.	orf 725	Jnurf 13	No.	orf 725	Jnurf 13	No.	orf 725	Jnurf 13
1	T	msms	106	N	msms	211	T	msms	316	T	msms	421	N	msms	526	T	msms			
2	T	msms	107	N	msms	212	T	msms	317	T	msms	422	N	msms	527	T	msms			
3	T	msms	108	N	msms	213	T	N/A	318	T	msms	423	N	msms	528	T	msms			
4	T	msms	109	N	msms	214	T	N/A	319	T	msms	424	N	msms	529	T	msms			
5	T	msms	110	N	msms	215	T	msms	320	T	msms	425	N	msms	530	T	msms			
6	T	msms	111	N	N/A	216	T	msms	321	T	msms	426	N	msms	531	T	msms			
7	T	msms	112	N	msms	217	T	msms	322	T	msms	427	N	msms	532	T	msms			
8	T	msms	113	N	msms	218	T	msms	323	T	msms	428	N	msms	533	T	msms			
9	T	msms	114	N	msms	219	T	msms	324	T	msms	429	N	msms	534	T	msms			
10	T	msms	115	N	msms	220	T	msms	325	T	msms	430	N	msms	535	T	msms			
11	T	msms	116	N	msms	221	T	msms	326	T	msms	431	N	msms	536	T	msms			
12	T	msms	117	N	msms	222	T	msms	327	T	msms	432	N	msms	537	T	msms			
13	T	msms	118	N	msms	223	T	msms	328	T	msms	433	N	msms	538	T	msms			
14	T	msms	119	N	msms	224	T	msms	329	T	msms	434	N	msms	539	T	msms			
15	T	msms	120	N	msms	225	T	msms	330	T	msms	435	N	msms	540	T	msms			

No.	orf 725	Jnurf 13	No.	orf 725	Jnurf 13	No.	orf 725	Jnurf 613	No.	orf 725	Jnurf 13	No.	orf 725	Jnurf 13	No.	orf 725	Jnurf 13
16	T	msms	121	N	msms	226	T	msms	331	T	msms	436	N	msms	541	T	msms
17	T	msms	122	N	msms	227	T	msms	332	T	msms	437	T	msms	542	T	msms
18	T	msms	123	N	msms	228	T	msms	333	T	msms	438	N	msms	543	T	msms
19	T	msms	124	N	msms	229	T	msms	334	T	msms	439	N	msms	544	T	msms
20	T	msms	125	N	msms	230	T	msms	335	T	msms	440	N	msms	545	T	msms
21	T	msms	126	N	msms	231	T	msms	336	T	msms	441	N	msms	546	T	msms
22	T	msms	127	N	msms	232	T	msms	337	T	msms	442	N	msms	547	T	msms
23	T	msms	128	N	msms	233	T	msms	338	T	msms	443	N	msms	548	T	msms
24	T	msms	129	N	msms	234	T	msms	339	T	msms	444	N	msms	549	T	msms
25	T	msms	130	N	msms	235	T	msms	340	T	msms	445	N	msms	550	T	msms
26	T	msms	131	N	msms	236	T	msms	341	T	msms	446	N	msms	551	T	msms
27	T	msms	132	N	msms	237	T	msms	342	T	msms	447	N	msms	552	T	msms
28	T	msms	133	N	msms	238	T	msms	343	T	msms	448	N	msms	553	T	msms
29	T	msms	134	N	msms	239	T	msms	344	T	msms	449	N	msms	554	T	msms
30	T	msms	135	N	msms	240	T	msms	345	T	msms	450	N	msms	555	T	msms
31	T	msms	136	N	msms	241	T	msms	346	T	msms	451	N	msms	556	T	msms
32	T	msms	137	N	msms	242	T	msms	347	T	msms	452	N	msms	557	T	msms
33	T	msms	138	N	msms	243	T	msms	348	T	msms	453	N	msms	558	T	msms
34	T	msms	139	N	msms	244	T	msms	349	T	msms	454	N	msms	559	T	msms
35	T	msms	140	N	msms	245	T	msms	350	T	msms	455	N	msms	560	T	msms
36	T	msms	141	N	msms	246	T	msms	351	T	msms	456	N	msms	561	T	msms
37	T	msms	142	N	msms	247	T	msms	352	T	msms	457	N	msms	562	T	msms
38	T	msms	143	N	msms	248	T	msms	353	T	msms	458	N	msms	563	T	msms
39	T	Msms	144	N	msms	249	T	msms	354	T	msms	459	N	msms	564	T	msms
40	T	msms	145	N	msms	250	T	msms	355	T	msms	460	N	msms	565	T	msms
41	T	msms	146	N	msms	251	T	msms	356	T	msms	461	N	msms	566	T	msms
42	T	msms	147	N	msms	252	T	msms	357	T	msms	462	N	msms	567	T	msms
43	T	msms	148	N	msms	253	T	msms	358	T	msms	463	N	msms	568	T	msms
44	T	msms	149	N	msms	254	T	msms	359	T	msms	464	N	msms	569	T	msms
45	T	msms	150	N	msms	255	T	msms	360	T	msms	465	N	msms	570	T	msms
46	T	msms	151	N	msms	256	T	msms	361	T	msms	466	N	msms	571	T	msms
47	T	msms	152	N	msms	257	T	msms	362	T	msms	467	N	msms	572	T	msms
48	T	msms	153	N	msms	258	T	msms	363	T	msms	468	N	msms	573	T	msms
49	T	msms	154	N	msms	259	T	msms	364	T	msms	469	N	msms	574	T	msms
50	T	msms	155	N	msms	260	T	msms	365	T	msms	470	N	msms	575	T	msms
51	T	msms	156	N	msms	261	T	msms	366	T	msms	471	N	msms	576	T	msms
52	T	msms	157	N	msms	262	T	msms	367	T	msms	472	N	msms	577	T	msms
53	T	msms	158	N	msms	263	T	msms	368	T	msms	473	N	msms	578	T	msms
54	T	msms	159	N	msms	264	T	msms	369	T	msms	474	N	msms	579	T	msms
55	T	msms	160	N	msms	265	T	msms	370	T	msms	475	N	msms	580	T	msms
56	T	msms	161	N	msms	266	T	msms	371	T	msms	476	N	msms	581	T	msms
57	T	msms	162	N	msms	267	T	msms	372	T	msms	477	N	msms	582	T	msms
58	T	msms	163	N	msms	268	T	msms	373	T	msms	478	N	msms	583	T	msms
59	T	msms	164	N	msms	269	T	msms	374	T	msms	479	N	msms	584	N/A	N/A
60	T	msms	165	N	msms	270	T	msms	375	T	msms	480	N	msms	585	T	msms
61	T	msms	166	N	msms	271	T	msms	376	T	msms	481	N	msms	586	T	msms
62	T	msms	167	N	msms	272	T	msms	377	T	msms	482	N	msms	587	T	msms
63	T	Msms	168	N	msms	273	T	msms	378	T	msms	483	N	msms	588	T	msms
64	T	msms	169	N	msms	274	T	msms	379	T	msms	484	N	msms	589	T	msms
65	T	msms	170	N	msms	275	T	msms	380	T	msms	485	N	msms	590	T	msms
66	T	msms	171	N	msms	276	T	msms	381	T	msms	486	N	msms	591	T	msms
67	T	msms	172	N	msms	277	T	N/A	382	T	msms	487	N	msms	592	T	msms
68	T	msms	173	N	msms	278	T	msms	383	T	msms	488	N	msms	593	T	msms
69	T	msms	174	N	msms	279	T	N/A	384	T	msms	489	N	msms	594	T	msms
70	T	msms	175	N	msms	280	T	msms	385	T	msms	490	N	msms	595	T	msms
71	T	msms	176	N	msms	281	T	msms	386	T	msms	491	N	msms	596	T	msms
72	T	msms	177	N	msms	282	T	msms	387	T	msms	492	N	msms	597	T	msms
73	T	msms	178	N	msms	283	T	msms	388	T	msms	493	N	msms	598	T	msms
74	T	msms	179	N	msms	284	T	msms	389	T	msms	494	N	msms	599	T	msms
75	T	msms	180	N	msms	285	T	msms	390	T	msms	495	N	msms	600	T	msms
76	T	msms	181	N	msms	286	T	msms	391	T	msms	496	N	msms	601	T	msms
77	T	msms	182	N	msms	287	T	msms	392	T	msms	497	N	msms	602	T	msms

No.	orf 725	Jnurf 13	No.	orf 725	Jnurf 13	No.	orf 725	Jnurf 613	No.	orf 725	Jnurf 13	No.	orf 725	Jnurf 13	No.	orf 725	Jnurf 13
78	T	msms	183	N	msms	288	T	msms	393	T	msms	498	N	msms	603	T	msms
79	T	msms	184	N	msms	289	T	msms	394	T	msms	499	N	msms	604	T	msms
80	T	msms	185	N	msms	290	T	msms	395	T	msms	500	T	msms	605	T	msms
81	T	msms	186	N	msms	291	T	msms	396	T	msms	501	N	msms	606	T	msms
82	T	msms	187	N	msms	292	T	msms	397	T	msms	502	N	msms	607	T	msms
83	T	msms	188	N	msms	293	T	msms	398	T	msms	503	N	msms	608	T	msms
84	T	msms	189	N	msms	294	T	msms	399	T	msms	504	N	msms	609	T	msms
85	T	msms	190	N	msms	295	T	msms	400	T	msms	505	N	msms	610	T	msms
86	T	msms	191	N	msms	296	T	msms	401	T	msms	506	N	msms	611	T	msms
87	T	msms	192	N	msms	297	T	msms	402	T	msms	507	N	msms	612	T	msms
88	T	msms	193	N	msms	298	T	msms	403	T	msms	508	N	msms	613	T	msms
89	T	msms	194	N	msms	299	T	msms	404	T	msms	509	N	msms	614	T	msms
90	T	msms	195	N	msms	300	T	msms	405	T	msms	510	T	msms	615	T	msms
91	T	msms	196	N	msms	301	N	msms	406	T	msms	511	T	msms	616	T	msms
92	T	msms	197	N	msms	302	T	msms	407	T	msms	512	T	msms	617	T	msms
93	T	msms	198	N	msms	303	N	msms	408	T	msms	513	T	msms	618	T	msms
94	T	msms	199	N	msms	304	N	msms	409	T	msms	514	T	msms	619	T	msms
95	T	msms	200	N	msms	305	N	msms	410	N	msms	515	T	msms	620	T	msms
96	T	msms	201	T	msms	306	N	msms	411	N	msms	516	T	msms	621	T	msms
97	T	msms	202	T	msms	307	N	msms	412	N	msms	517	T	msms	622	T	msms
98	T	msms	203	T	msms	308	N	msms	413	N	msms	518	T	msms	623	T	msms
99	T	msms	204	T	msms	309	N	msms	414	N	msms	519	T	msms	624	T	msms
100	T	msms	205	T	msms	310	T	msms	415	N	msms	520	T	msms	625	T	msms
101	N	msms	206	T	msms	311	T	msms	416	N	msms	521	T	msms	626	T	msms
102	N	msms	207	T	msms	312	T	msms	417	N	msms	522	T	msms	627	T	msms
103	N	msms	208	T	msms	313	T	msms	418	N	msms	523	T	msms	628	T	msms
104	N	msms	209	T	msms	314	T	msms	419	N	msms	524	T	msms			
105	N	msms	210	T	msms	315	T	msms	420	N	msms	525	T	msms			

3-2) 2차년도 양파 분자마커 서비스

2차년도에 양파 분자마커 서비스는 전시포과제와 씨앗과사람들의 총 2곳에서 의뢰를 받아 실시하였다.

① 전시포과제

전시포과제로부터 총 4,858점의 시료를 받아 8번의 서비스를 진행하였다. 처음 662점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 1). 두 번째로는 2,016점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 2). 세 번째로는 1,152점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 3). 네 번째로는 288점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 4). 다섯 번째로는 260점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 5). 여섯 번째로는 192점의 시료에 대하여, 순도검정 관련 24종의 마커로 서비스를 진행하였다(표 6). 일곱 번째로는 192점의 시료에 대하여, 순도검정 관련 24종의 마커로 서비스를 진행하였다(표 7). 여덟 번째로는 96점의 시료에 대하여, 순도검정 관련 96종의 마커로 서비스를 진행하였다(표 8). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 1-8).

표 1. 전시포과제 662점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

No.	orf725	Jnurf13	No.	orf725	Jnurf13	No.	orf725	Jnurf13	No.	orf725	Jnurf13
1	T	Msms	167	S	Msms	333	S	Msms	499	S	Msms
2	T	Msms	168	T	Msms	334	S	Msms	500	S	Msms
3	T	Msms	169	T	MsMs	335	S	Msms	501	S	Msms
4	T	Msms	170	T	Msms	336	S	Msms	502	S	Msms
5	T	Msms	171	T	Msms	337	S	Msms	503	S	Msms

No.	orf725	Jnurf13
6	T	MsMs
7	S	Msms
8	T	msms
9	T	Msms
10	T	msms
11	T	Msms
12	T	Msms
13	T	Msms
14	T	MsMs
15	T	MsMs
16	T	Msms
17	T	Msms
18	T	Msms
19	T	Msms
20	T	msms
21	T	MsMs
22	T	Msms
23	T	Msms
24	T	Msms
25	T	MsMs
26	T	msms
27	T	MsMs
28	T	MsMs
29	T	Msms
30	T	MsMs
31	T	Msms
32	T	MsMs
33	T	Msms
34	T	MsMs
35	T	Msms
36	T	msms
37	T	Msms
38	T	msms
39	T	Msms
40	T	MsMs
41	T	msms
42	T	Msms
43	T	Msms
44	T	Msms
45	T	msms
46	T	Msms
47	S	Msms
48	T	Msms
49	T	Msms
50	T	Msms
51	T	MsMs
52	T	Msms
53	T	Msms
54	T	msms
55	T	Msms
56	T	Msms
57	S	Msms
58	T	Msms

No.	orf725	Jnurf13
172	S	MsMs
173	T	msms
174	T	MsMs
175	T	Msms
176	T	Msms
177	T	Msms
178	T	MsMs
179	T	Msms
180	T	Msms
181	T	Msms
182	T	MsMs
183	T	Msms
184	T	Msms
185	T	Msms
186	T	Msms
187	T	Msms
188	T	Msms
189	T	Msms
190	T	Msms
191	T	Msms
192	T	msms
193	T	MsMs
194	T	Msms
195	T	MsMs
196	T	msms
197	T	Msms
198	T	Msms
199	T	msms
200	T	msms
201	T	Msms
202	T	msms
203	T	msms
204	T	MsMs
205	T	Msms
206	S	MsMs
207	T	Msms
208	T	MsMs
209	T	msms
210	T	Msms
211	S	Msms
212	T	MsMs
213	T	MsMs
214	T	msms
215	T	Msms
216	T	MsMs
217	T	Msms
218	T	Msms
219	T	MsMs
220	T	MsMs
221	T	MsMs
222	T	Msms
223	T	msms
224	T	Msms

No.	orf725	Jnurf13
338	S	Msms
339	S	Msms
340	S	Msms
341	S	Msms
342	S	Msms
343	S	Msms
344	S	Msms
345	S	Msms
346	S	Msms
347	S	Msms
348	S	Msms
349	S	Msms
350	S	Msms
351	S	Msms
352	S	Msms
353	S	Msms
354	S	Msms
355	S	Msms
356	S	Msms
357	S	Msms
358	S	Msms
359	S	Msms
360	S	Msms
361	S	Msms
362	S	Msms
363	S	Msms
364	S	Msms
365	S	Msms
366	S	Msms
367	S	Msms
368	S	Msms
369	S	Msms
370	S	Msms
371	S	Msms
372	S	Msms
373	S	Msms
374	S	Msms
375	S	Msms
376	S	Msms
377	S	Msms
378	S	Msms
379	S	Msms
380	S	Msms
381	S	Msms
382	S	Msms
383	S	Msms
384	S	Msms
385	S	Msms
386	S	Msms
387	S	Msms
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390	S	Msms

No.	orf725	Jnurf13
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110	T	MsMs
111	T	MsMs

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275	S	msms
276	T	msms
277	T	msms

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660	S	Msms
661	S	Msms
662	S	Msms

No.	orf725	Jnurf13
165	T	MsMs
166	S	MsMs

No.	orf725	Jnurf13
331	S	Msms
332	S	Msms

No.	orf725	Jnurf13
497	S	Msms
498	S	Msms

No.	orf725	Jnurf13
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표 2. 전신포과제 2,016점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

No.	orf725	Jnurf13
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2	T	Msms
3	T	Msms
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5	T	Msms
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50	T	Msms
51	T	Msms

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No.	orf725	Jnurf13
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1116	T	Msms

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1620	S	Msms

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131	T	Msms
132	T	Msms
133	T	Msms
134	T	Msms
135	T	msms
136	T	Msms
137	T	msms
138	T	msms
139	T	Msms
140	T	Msms
141	T	Msms
142	T	msms
143	T	Msms
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153	T	Msms
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157	T	msms
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159	T	msms
160	T	msms
161	T	msms
162	T	msms
163	T	Msms
164	T	Msms
165	T	msms

No.	orf725	Jnurf13
613	T	Msms
614	T	msms
615	T	Msms
616	T	MsMs
617	T	msms
618	T	Msms
619	T	msms
620	T	Msms
621	S	msms
622	T	MsMs
623	T	MsMs
624	T	msms
625	T	Msms
626	T	msms
627	T	MsMs
628	T	Msms
629	T	Msms
630	T	MsMs
631	T	Msms
632	T	MsMs
633	T	msms
634	T	Msms
635	T	Msms
636	T	Msms
637	T	MsMs
638	T	msms
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642	T	Msms
643	S	msms
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645	T	Msms
646	T	MsMs
647	S	MsMs
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661	T	Msms
662	T	Msms
663	T	Msms
664	T	msms
665	T	msms
666	T	Msms
667	T	Msms
668	T	msms
669	T	Msms

No.	orf725	Jnurf13
1117	T	Msms
1118	T	Msms
1119	T	msms
1120	T	msms
1121	T	Msms
1122	T	Msms
1123	T	Msms
1124	T	Msms
1125	T	Msms
1126	T	Msms
1127	T	msms
1128	T	Msms
1129	T	MsMs
1130	T	Msms
1131	T	msms
1132	T	Msms
1133	T	msms
1134	T	Msms
1135	T	Msms
1136	T	Msms
1137	T	Msms
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1163	T	Msms
1164	T	msms
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1168	T	Msms
1169	T	Msms
1170	T	Msms
1171	T	msms
1172	T	Msms
1173	T	msms

No.	orf725	Jnurf13
1621	T	msms
1622	T	msms
1623	T	Msms
1624	T	Msms
1625	T	Msms
1626	T	msms
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1647	T	Msms
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1649	T	Msms
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1669	T	Msms
1670	T	Msms
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1672	T	msms
1673	T	Msms
1674	T	MsMs
1675	S	msms
1676	T	Msms
1677	T	msms

No.	orf725	Jnurf13
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167	T	Msms
168	T	Msms
169	T	Msms
170	T	Msms
171	T	msms
172	T	Msms
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216	T	Msms
217	T	Msms
218	T	Msms
219	T	Msms
220	T	Msms
221	T	Msms
222	T	msms

No.	orf725	Jnurf13
670	T	Msms
671	T	MsMs
672	T	MsMs
673	T	msms
674	T	Msms
675	T	MsMs
676	T	Msms
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702	T	Msms
703	T	MsMs
704	T	MsMs
705	T	Msms
706	S	Msms
707	T	Msms
708	T	Msms
709	S	MsMs
710	T	MsMs
711	T	msms
712	T	Msms
713	T	Msms
714	T	MsMs
715	T	MsMs
716	T	Msms
717	S	msms
718	T	Msms
719	T	Msms
720	T	Msms
721	T	Msms
722	T	Msms
723	T	Msms
724	T	msms
725	T	msms
726	T	Msms

No.	orf725	Jnurf13
1174	T	Msms
1175	T	msms
1176	T	msms
1177	T	msms
1178	T	msms
1179	T	Msms
1180	T	Msms
1181	T	Msms
1182	T	msms
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1225	T	msms
1226	T	msms
1227	T	msms
1228	T	MsMs
1229	T	Msms
1230	T	msms

No.	orf725	Jnurf13
1678	T	Msms
1679	T	Msms
1680	S	Msms
1681	T	Msms
1682	T	msms
1683	T	Msms
1684	S	Msms
1685	S	Msms
1686	T	Msms
1687	T	msms
1688	T	Msms
1689	T	msms
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1709	S	Msms
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1722	T	MsMs
1723	T	Msms
1724	T	Msms
1725	T	msms
1726	T	msms
1727	T	Msms
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1729	T	Msms
1730	T	Msms
1731	T	Msms
1732	T	msms
1733	T	Msms
1734	T	Msms

No.	orf725	Jnurf13
223	T	Msms
224	T	Msms
225	T	msms
226	T	Msms
227	T	Msms
228	T	Msms
229	T	Msms
230	T	MsMs
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273	T	msms
274	T	msms
275	T	msms
276	T	msms
277	T	Msms
278	T	Msms
279	T	msms

No.	orf725	Jnurf13
727	T	MsMs
728	T	MsMs
729	T	Msms
730	T	Msms
731	T	Msms
732	T	Msms
733	S	MsMs
734	T	MsMs
735	n/a	n/a
736	n/a	n/a
737	T	Msms
738	T	Msms
739	S	MsMs
740	S	msms
741	T	Msms
742	T	Msms
743	n/a	n/a
744	n/a	n/a
745	T	msms
746	S	MsMs
747	T	Msms
748	T	Msms
749	T	msms
750	T	MsMs
751	T	MsMs
752	n/a	n/a
753	T	Msms
754	T	Msms
755	T	Msms
756	T	msms
757	T	Msms
758	T	Msms
759	S	Msms
760	n/a	n/a
761	T	Msms
762	T	Msms
763	T	MsMs
764	T	MsMs
765	T	MsMs
766	S	Msms
767	n/a	n/a
768	n/a	n/a
769	T	Msms
770	T	Msms
771	T	MsMs
772	T	msms
773	T	Msms
774	S	Msms
775	T	Msms
776	T	msms
777	T	msms
778	T	MsMs
779	T	MsMs
780	T	msms
781	T	msms
782	T	msms
783	T	Msms

No.	orf725	Jnurf13
1231	T	msms
1232	n/a	n/a
1233	T	Msms
1234	T	Msms
1235	T	Msms
1236	T	Msms
1237	T	msms
1238	T	Msms
1239	T	msms
1240	T	Msms
1241	n/a	n/a
1242	T	Msms
1243	T	Msms
1244	T	Msms
1245	T	Msms
1246	T	msms
1247	n/a	n/a
1248	n/a	n/a
1249	T	msms
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1282	T	msms
1283	T	Msms
1284	T	Msms
1285	T	Msms
1286	T	msms
1287	T	Msms

No.	orf725	Jnurf13
1735	T	Msms
1736	T	Msms
1737	T	msms
1738	T	msms
1739	T	msms
1740	T	Msms
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1784	T	msms
1785	T	Msms
1786	T	Msms
1787	T	Msms
1788	T	Msms
1789	T	Msms
1790	T	Msms
1791	T	msms

No.	orf725	Jnurfl3
280	T	Msms
281	T	msms
282	T	Msms
283	T	Msms
284	T	Msms
285	T	Msms
286	T	Msms
287	T	Msms
288	T	Msms
289	S	Msms
290	S	Msms
291	S	Msms
292	S	Msms
293	S	Msms
294	S	Msms
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312	S	Msms
313	S	Msms
314	S	Msms
315	S	Msms
316	S	Msms
317	S	Msms
318	S	Msms
319	S	Msms
320	S	Msms
321	S	Msms
322	n/a	n/a
323	S	Msms
324	S	Msms
325	S	Msms
326	S	Msms
327	S	Msms
328	S	Msms
329	S	Msms
330	S	Msms
331	S	Msms
332	S	Msms
333	S	Msms
334	S	Msms
335	S	Msms
336	S	Msms

No.	orf725	Jnurfl3
784	T	Msms
785	T	MsMs
786	T	Msms
787	T	Msms
788	T	MsMs
789	T	msms
790	T	n/a
791	T	msms
792	T	MsMs
793	T	msms
794	T	Msms
795	T	msms
796	T	MsMs
797	T	msms
798	T	Msms
799	T	Msms
800	T	Msms
801	T	Msms
802	T	Msms
803	T	Msms
804	T	msms
805	T	Msms
806	T	msms
807	T	MsMs
808	T	MsMs
809	T	MsMs
810	T	msms
811	T	msms
812	T	Msms
813	T	Msms
814	T	Msms
815	T	MsMs
816	T	MsMs
817	T	Msms
818	T	msms
819	T	Msms
820	T	msms
821	T	Msms
822	T	msms
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832	T	msms
833	T	Msms
834	T	msms
835	T	msms
836	T	Msms
837	T	MsMs
838	T	Msms
839	T	Msms
840	T	Msms

No.	orf725	Jnurfl3
1288	T	Msms
1289	T	msms
1290	T	Msms
1291	T	Msms
1292	T	Msms
1293	T	Msms
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1296	T	Msms
1297	n/a	Msms
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1339	T	Msms
1340	T	Msms
1341	T	msms
1342	T	Msms
1343	T	Msms
1344	T	Msms

No.	orf725	Jnurfl3
1792	T	msms
1793	T	msms
1794	T	msms
1795	T	Msms
1796	T	msms
1797	T	Msms
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1841	T	Msms
1842	T	Msms
1843	T	Msms
1844	S	msms
1845	T	Msms
1846	T	Msms
1847	T	Msms
1848	T	msms

No.	orf725	Jnurfl3
337	S	Msms
338	S	Msms
339	S	Msms
340	S	Msms
341	S	Msms
342	S	Msms
343	S	Msms
344	S	Msms
345	S	Msms
346	S	Msms
347	S	Msms
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367	S	Msms
368	S	Msms
369	S	Msms
370	S	Msms
371	S	Msms
372	S	Msms
373	S	Msms
374	S	Msms
375	S	Msms
376	S	Msms
377	S	Msms
378	S	Msms
379	S	Msms
380	S	Msms
381	S	Msms
382	S	Msms
383	S	Msms
384	S	Msms
385	S	Msms
386	S	Msms
387	S	Msms
388	S	Msms
389	S	Msms
390	S	Msms
391	S	Msms
392	S	Msms
393	S	Msms

No.	orf725	Jnurfl3
841	T	Msms
842	T	Msms
843	T	MsMs
844	T	MsMs
845	T	Msms
846	T	msms
847	T	msms
848	T	MsMs
849	T	MsMs
850	T	MsMs
851	T	MsMs
852	T	MsMs
853	T	Msms
854	T	Msms
855	T	Msms
856	T	MsMs
857	T	Msms
858	T	Msms
859	T	MsMs
860	T	MsMs
861	T	MsMs
862	T	Msms
863	T	Msms
864	S	Msms
865	S	MsMs
866	S	MsMs
867	S	Msms
868	S	Msms
869	S	MsMs
870	S	MsMs
871	S	Msms
872	S	Msms
873	S	msms
874	S	Msms
875	S	Msms
876	S	Msms
877	S	MsMs
878	S	Msms
879	S	Msms
880	S	Msms
881	S	Msms
882	S	Msms
883	S	msms
884	S	msms
885	S	Msms
886	S	Msms
887	S	Msms
888	S	Msms
889	S	MsMs
890	S	msms
891	S	MsMs
892	S	Msms
893	S	msms
894	S	Msms
895	S	Msms
896	S	MsMs
897	S	Msms

No.	orf725	Jnurfl3
1345	T	msms
1346	T	Msms
1347	T	Msms
1348	T	Msms
1349	T	Msms
1350	T	Msms
1351	T	Msms
1352	T	Msms
1353	T	Msms
1354	T	Msms
1355	T	msms
1356	T	msms
1357	T	Msms
1358	T	Msms
1359	T	Msms
1360	T	Msms
1361	T	Msms
1362	T	Msms
1363	T	Msms
1364	T	Msms
1365	T	msms
1366	T	Msms
1367	T	Msms
1368	T	Msms
1369	T	Msms
1370	T	msms
1371	T	Msms
1372	T	msms
1373	T	Msms
1374	T	Msms
1375	T	msms
1376	T	msms
1377	T	msms
1378	T	Msms
1379	T	MsMs
1380	T	Msms
1381	T	Msms
1382	T	Msms
1383	T	Msms
1384	T	Msms
1385	T	Msms
1386	T	Msms
1387	T	Msms
1388	T	Msms
1389	T	msms
1390	T	msms
1391	T	msms
1392	T	msms
1393	T	msms
1394	T	Msms
1395	T	Msms
1396	T	Msms
1397	T	Msms
1398	T	Msms
1399	T	msms
1400	T	msms
1401	T	msms

No.	orf725	Jnurfl3
1849	T	Msms
1850	T	msms
1851	T	MsMs
1852	T	Msms
1853	T	Msms
1854	T	msms
1855	T	Msms
1856	T	Msms
1857	T	msms
1858	T	Msms
1859	T	msms
1860	T	Msms
1861	T	Msms
1862	T	Msms
1863	T	msms
1864	T	Msms
1865	T	Msms
1866	T	Msms
1867	T	Msms
1868	T	msms
1869	T	msms
1870	T	Msms
1871	T	msms
1872	T	Msms
1873	T	msms
1874	T	msms
1875	T	Msms
1876	T	Msms
1877	T	Msms
1878	T	Msms
1879	T	msms
1880	T	Msms
1881	T	msms
1882	T	msms
1883	T	Msms
1884	T	msms
1885	T	msms
1886	T	msms
1887	T	msms
1888	T	msms
1889	T	Msms
1890	T	Msms
1891	S	msms
1892	T	Msms
1893	T	Msms
1894	T	msms
1895	T	Msms
1896	T	msms
1897	T	Msms
1898	T	Msms
1899	n/a	n/a
1900	T	Msms
1901	T	Msms
1902	T	msms
1903	T	msms
1904	n/a	n/a
1905	T	Msms

No.	orf725	Jnurf13
394	S	Msms
395	S	Msms
396	S	Msms
397	S	Msms
398	S	Msms
399	S	Msms
400	S	Msms
401	S	Msms
402	S	Msms
403	S	Msms
404	S	Msms
405	S	Msms
406	S	Msms
407	S	Msms
408	S	Msms
409	S	Msms
410	S	Msms
411	S	Msms
412	S	Msms
413	S	Msms
414	S	Msms
415	S	Msms
416	S	Msms
417	S	Msms
418	S	Msms
419	S	Msms
420	S	Msms
421	S	Msms
422	S	Msms
423	S	Msms
424	S	Msms
425	S	Msms
426	S	Msms
427	S	Msms
428	S	Msms
429	S	Msms
430	S	msms
431	S	Msms
432	S	Msms
433	S	Msms
434	S	Msms
435	S	Msms
436	S	Msms
437	S	Msms
438	S	Msms
439	S	Msms
440	S	Msms
441	S	Msms
442	S	Msms
443	S	Msms
444	S	Msms
445	S	Msms
446	S	Msms
447	S	Msms
448	S	Msms
449	S	Msms
450	S	Msms

No.	orf725	Jnurf13
898	S	MsMs
899	S	Msms
900	S	Msms
901	S	Msms
902	S	Msms
903	S	Msms
904	S	Msms
905	T	Msms
906	S	Msms
907	S	msms
908	S	Msms
909	S	Msms
910	T	Msms
911	S	msms
912	T	Msms
913	T	Msms
914	T	Msms
915	T	msms
916	T	msms
917	S	msms
918	T	Msms
919	T	msms
920	T	msms
921	T	msms
922	T	Msms
923	T	msms
924	T	Msms
925	T	Msms
926	T	msms
927	T	Msms
928	T	Msms
929	T	Msms
930	T	Msms
931	T	n/a
932	T	msms
933	T	Msms
934	T	msms
935	T	Msms
936	T	Msms
937	T	Msms
938	T	Msms
939	T	Msms
940	T	Msms
941	T	msms
942	T	msms
943	T	Msms
944	T	MsMs
945	T	Msms
946	T	Msms
947	T	Msms
948	T	msms
949	T	msms
950	T	Msms
951	S	Msms
952	T	msms
953	T	Msms
954	T	msms

No.	orf725	Jnurf13
1402	T	msms
1403	T	Msms
1404	T	Msms
1405	T	Msms
1406	T	msms
1407	T	Msms
1408	T	msms
1409	T	Msms
1410	T	msms
1411	T	msms
1412	T	Msms
1413	T	Msms
1414	T	Msms
1415	T	Msms
1416	T	Msms
1417	T	Msms
1418	T	Msms
1419	T	msms
1420	T	Msms
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1425	T	Msms
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1428	T	Msms
1429	T	msms
1430	T	Msms
1431	T	Msms
1432	T	msms
1433	T	Msms
1434	T	msms
1435	T	Msms
1436	T	Msms
1437	T	Msms
1438	T	msms
1439	T	msms
1440	T	msms
1441	S	Msms
1442	S	Msms
1443	S	Msms
1444	S	Msms
1445	S	Msms
1446	S	Msms
1447	S	Msms
1448	S	Msms
1449	S	Msms
1450	S	Msms
1451	S	Msms
1452	S	Msms
1453	S	Msms
1454	S	Msms
1455	S	Msms
1456	S	Msms
1457	S	Msms
1458	S	Msms

No.	orf725	Jnurf13
1906	T	msms
1907	T	Msms
1908	T	msms
1909	T	Msms
1910	T	msms
1911	T	msms
1912	T	Msms
1913	T	Msms
1914	T	Msms
1915	T	msms
1916	T	Msms
1917	T	msms
1918	T	msms
1919	T	Msms
1920	n/a	n/a
1921	T	Msms
1922	T	msms
1923	T	Msms
1924	T	Msms
1925	T	msms
1926	T	Msms
1927	T	Msms
1928	T	Msms
1929	T	Msms
1930	T	msms
1931	T	msms
1932	T	Msms
1933	T	Msms
1934	T	Msms
1935	T	Msms
1936	T	Msms
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1940	T	Msms
1941	T	Msms
1942	T	Msms
1943	T	msms
1944	T	Msms
1945	T	Msms
1946	T	n/a
1947	T	Msms
1948	T	msms
1949	T	msms
1950	T	msms
1951	T	Msms
1952	T	msms
1953	T	msms
1954	T	msms
1955	T	Msms
1956	T	Msms
1957	T	Msms
1958	T	Msms
1959	T	Msms
1960	T	Msms
1961	T	msms
1962	T	Msms

No.	orf725	Jnurf13
451	S	Msms
452	S	Msms
453	S	Msms
454	S	Msms
455	S	Msms
456	S	Msms
457	S	Msms
458	S	Msms
459	S	Msms
460	S	Msms
461	S	Msms
462	S	Msms
463	S	Msms
464	S	Msms
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471	S	Msms
472	S	Msms
473	S	Msms
474	S	Msms
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476	S	Msms
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491	S	Msms
492	S	Msms
493	S	Msms
494	S	Msms
495	S	Msms
496	S	Msms
497	S	Msms
498	S	Msms
499	S	Msms
500	S	Msms
501	S	Msms
502	S	Msms
503	S	Msms
504	S	Msms

No.	orf725	Jnurf13
955	T	msms
956	T	Msms
957	T	msms
958	T	msms
959	T	msms
960	T	msms
961	T	Msms
962	T	Msms
963	T	Msms
964	T	Msms
965	T	Msms
966	T	Msms
967	T	Msms
968	T	msms
969	T	Msms
970	T	msms
971	S	Msms
972	T	Msms
973	T	Msms
974	T	Msms
975	T	Msms
976	T	msms
977	T	MsMs
978	T	msms
979	T	msms
980	T	Msms
981	T	Msms
982	T	Msms
983	T	Msms
984	T	Msms
985	T	msms
986	T	Msms
987	T	Msms
988	T	msms
989	T	msms
990	T	msms
991	T	Msms
992	T	msms
993	T	Msms
994	T	Msms
995	T	Msms
996	T	Msms
997	T	Msms
998	T	Msms
999	T	Msms
1000	T	Msms
1001	T	Msms
1002	T	msms
1003	T	msms
1004	T	Msms
1005	T	Msms
1006	T	Msms
1007	T	Msms
1008	T	Msms

No.	orf725	Jnurf13
1459	S	Msms
1460	S	Msms
1461	S	Msms
1462	S	Msms
1463	S	Msms
1464	S	Msms
1465	S	Msms
1466	S	Msms
1467	S	Msms
1468	S	Msms
1469	S	Msms
1470	S	Msms
1471	S	Msms
1472	S	Msms
1473	S	Msms
1474	S	Msms
1475	S	Msms
1476	S	Msms
1477	S	Msms
1478	S	Msms
1479	S	Msms
1480	S	Msms
1481	S	Msms
1482	S	Msms
1483	S	Msms
1484	S	Msms
1485	S	Msms
1486	S	Msms
1487	S	Msms
1488	S	Msms
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1490	S	Msms
1491	S	Msms
1492	S	Msms
1493	S	Msms
1494	S	Msms
1495	S	Msms
1496	S	Msms
1497	S	Msms
1498	S	Msms
1499	S	Msms
1500	S	Msms
1501	S	Msms
1502	S	Msms
1503	S	Msms
1504	S	Msms
1505	S	Msms
1506	S	Msms
1507	S	Msms
1508	S	Msms
1509	S	Msms
1510	S	Msms
1511	S	Msms
1512	S	Msms

No.	orf725	Jnurf13
1963	T	msms
1964	T	msms
1965	T	msms
1966	T	Msms
1967	T	Msms
1968	T	Msms
1969	T	Msms
1970	T	Msms
1971	T	msms
1972	T	msms
1973	T	Msms
1974	T	Msms
1975	T	msms
1976	T	Msms
1977	T	Msms
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2002	T	MsMs
2003	T	Msms
2004	T	Msms
2005	T	msms
2006	T	msms
2007	T	Msms
2008	T	Msms
2009	T	msms
2010	T	Msms
2011	T	Msms
2012	T	Msms
2013	T	msms
2014	T	Msms
2015	T	Msms
2016	T	msms

표 3. 전스포과제 1,152점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

No.	orf725	Jnurf13	No.	orf725	Jnurf13	No.	orf725	Jnurf13	No.	orf725	Jnurf13
1	S	Msms	289	S	Msms	577	T	msms	865	S	Msms
2	S	Msms	290	S	Msms	578	T	Msms	866	S	Msms
3	S	Msms	291	S	Msms	579	T	Msms	867	S	Msms
4	S	Msms	292	S	Msms	580	T	msms	868	S	Msms
5	S	Msms	293	S	Msms	581	T	msms	869	S	Msms
6	S	Msms	294	S	Msms	582	T	Msms	870	S	Msms
7	S	Msms	295	S	Msms	583	T	msms	871	S	Msms
8	S	Msms	296	S	Msms	584	T	Msms	872	S	Msms
9	S	Msms	297	S	Msms	585	T	Msms	873	S	Msms
10	S	Msms	298	S	Msms	586	T	msms	874	S	Msms
11	S	Msms	299	S	Msms	587	T	Msms	875	S	Msms
12	S	Msms	300	S	Msms	588	T	Msms	876	S	Msms
13	S	Msms	301	S	Msms	589	T	msms	877	S	Msms
14	S	Msms	302	S	Msms	590	T	Msms	878	S	Msms
15	S	Msms	303	S	Msms	591	T	Msms	879	S	Msms
16	S	Msms	304	S	Msms	592	T	Msms	880	S	Msms
17	S	Msms	305	S	Msms	593	T	Msms	881	S	Msms
18	S	Msms	306	S	Msms	594	T	Msms	882	S	Msms
19	S	Msms	307	S	Msms	595	T	msms	883	S	Msms
20	S	Msms	308	S	Msms	596	T	msms	884	S	Msms
21	S	Msms	309	S	Msms	597	S	msms	885	S	Msms
22	S	Msms	310	S	Msms	598	T	Msms	886	S	Msms
23	S	Msms	311	S	Msms	599	T	Msms	887	S	Msms
24	S	Msms	312	S	Msms	600	T	Msms	888	S	Msms
25	S	Msms	313	n/a	Msms	601	T	Msms	889	T	Msms
26	S	Msms	314	S	Msms	602	T	Msms	890	S	Msms
27	S	Msms	315	S	Msms	603	T	msms	891	S	Msms
28	S	Msms	316	S	Msms	604	T	Msms	892	S	Msms
29	S	Msms	317	S	Msms	605	T	Msms	893	S	Msms
30	S	Msms	318	S	Msms	606	T	Msms	894	S	Msms
31	S	Msms	319	S	Msms	607	T	Msms	895	S	Msms
32	S	Msms	320	S	Msms	608	T	Msms	896	S	Msms
33	S	Msms	321	S	Msms	609	T	Msms	897	S	Msms
34	S	Msms	322	S	Msms	610	T	Msms	898	S	Msms
35	S	Msms	323	S	Msms	611	T	msms	899	S	Msms
36	S	Msms	324	S	Msms	612	T	Msms	900	S	Msms
37	S	Msms	325	S	Msms	613	T	Msms	901	S	Msms
38	S	Msms	326	S	Msms	614	T	Msms	902	S	Msms
39	S	Msms	327	S	Msms	615	T	Msms	903	S	Msms
40	S	Msms	328	S	Msms	616	T	msms	904	S	Msms
41	S	Msms	329	S	Msms	617	T	msms	905	S	Msms
42	S	Msms	330	S	Msms	618	T	MsMs	906	S	Msms
43	S	Msms	331	S	Msms	619	T	Msms	907	S	Msms
44	S	Msms	332	S	Msms	620	T	Msms	908	S	Msms
45	S	Msms	333	S	Msms	621	T	Msms	909	S	Msms
46	S	Msms	334	S	Msms	622	T	Msms	910	S	Msms
47	S	Msms	335	S	Msms	623	T	msms	911	S	Msms
48	S	Msms	336	S	Msms	624	T	Msms	912	S	Msms
49	S	Msms	337	S	Msms	625	T	msms	913	S	Msms
50	S	Msms	338	S	Msms	626	T	msms	914	S	Msms
51	S	Msms	339	S	Msms	627	T	msms	915	S	Msms
52	S	Msms	340	S	Msms	628	T	Msms	916	S	Msms
53	S	Msms	341	S	Msms	629	T	msms	917	S	Msms
54	S	Msms	342	S	Msms	630	T	Msms	918	S	Msms
55	S	Msms	343	S	Msms	631	T	Msms	919	S	Msms
56	S	Msms	344	S	Msms	632	T	msms	920	S	Msms

No.	orf725	Jnurf13
57	S	Msms
58	S	Msms
59	S	Msms
60	S	Msms
61	S	Msms
62	S	Msms
63	S	Msms
64	S	Msms
65	S	Msms
66	S	Msms
67	S	Msms
68	S	Msms
69	S	Msms
70	S	Msms
71	S	Msms
72	S	Msms
73	S	Msms
74	S	Msms
75	S	Msms
76	S	Msms
77	S	Msms
78	S	Msms
79	S	Msms
80	S	Msms
81	S	Msms
82	S	Msms
83	S	Msms
84	S	Msms
85	S	Msms
86	S	Msms
87	S	Msms
88	S	Msms
89	S	Msms
90	S	Msms
91	S	Msms
92	S	Msms
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94	S	Msms
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101	S	Msms
102	S	Msms
103	S	Msms
104	S	Msms
105	S	Msms
106	S	Msms
107	S	Msms
108	S	Msms
109	S	Msms
110	S	Msms
111	S	Msms
112	S	Msms
113	S	Msms

No.	orf725	Jnurf13
345	S	Msms
346	S	Msms
347	S	Msms
348	S	Msms
349	S	Msms
350	S	Msms
351	S	Msms
352	S	Msms
353	S	Msms
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355	S	Msms
356	S	Msms
357	S	Msms
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371	S	Msms
372	S	Msms
373	S	Msms
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375	S	Msms
376	S	Msms
377	S	Msms
378	n/a	Msms
379	S	Msms
380	S	Msms
381	S	Msms
382	S	Msms
383	S	Msms
384	S	Msms
385	S	Msms
386	S	Msms
387	S	Msms
388	S	Msms
389	S	Msms
390	S	Msms
391	S	Msms
392	S	Msms
393	S	Msms
394	S	Msms
395	S	Msms
396	S	Msms
397	S	Msms
398	S	Msms
399	S	Msms
400	S	Msms
401	S	Msms

No.	orf725	Jnurf13
633	T	Msms
634	T	msms
635	T	Msms
636	T	msms
637	T	Msms
638	T	Msms
639	T	Msms
640	T	msms
641	T	Msms
642	T	Msms
643	T	Msms
644	T	msms
645	T	Msms
646	T	n/a
647	T	Msms
648	T	Msms
649	T	Msms
650	T	Msms
651	T	Msms
652	T	Msms
653	T	msms
654	T	Msms
655	T	MsMs
656	T	Msms
657	T	Msms
658	T	Msms
659	T	msms
660	T	Msms
661	T	Msms
662	T	Msms
663	T	Msms
664	T	Msms
665	T	Msms
666	T	Msms
667	T	MsMs
668	T	msms
669	T	msms
670	T	msms
671	T	Msms
672	T	Msms
673	T	Msms
674	T	Msms
675	T	Msms
676	T	Msms
677	T	Msms
678	T	Msms
679	T	Msms
680	T	Msms
681	T	Msms
682	T	Msms
683	S	Msms
684	T	Msms
685	T	msms
686	T	Msms
687	T	Msms
688	T	n/a
689	T	n/a

No.	orf725	Jnurf13
921	S	Msms
922	S	Msms
923	S	Msms
924	S	Msms
925	S	Msms
926	S	Msms
927	S	Msms
928	S	Msms
929	S	Msms
930	S	Msms
931	S	Msms
932	S	Msms
933	S	Msms
934	S	Msms
935	S	Msms
936	S	Msms
937	S	Msms
938	S	Msms
939	S	Msms
940	S	Msms
941	S	Msms
942	S	Msms
943	S	Msms
944	S	Msms
945	S	Msms
946	S	Msms
947	S	Msms
948	S	Msms
949	S	Msms
950	S	Msms
951	S	Msms
952	S	Msms
953	S	Msms
954	S	Msms
955	S	Msms
956	S	Msms
957	S	Msms
958	S	Msms
959	S	Msms
960	S	Msms
961	S	Msms
962	S	Msms
963	S	Msms
964	S	Msms
965	S	Msms
966	S	Msms
967	S	Msms
968	S	Msms
969	S	Msms
970	S	Msms
971	S	Msms
972	S	Msms
973	S	Msms
974	S	Msms
975	S	Msms
976	S	Msms
977	S	Msms

No.	orf725	Jnurf13
114	S	Msms
115	S	Msms
116	S	Msms
117	S	Msms
118	S	Msms
119	S	Msms
120	S	Msms
121	S	Msms
122	S	Msms
123	S	Msms
124	S	Msms
125	S	Msms
126	S	Msms
127	S	Msms
128	S	Msms
129	S	Msms
130	S	Msms
131	S	Msms
132	S	Msms
133	S	Msms
134	S	Msms
135	S	Msms
136	S	Msms
137	S	Msms
138	S	Msms
139	S	Msms
140	S	Msms
141	S	Msms
142	S	Msms
143	S	Msms
144	S	Msms
145	S	Msms
146	S	Msms
147	S	Msms
148	S	Msms
149	S	Msms
150	S	Msms
151	S	Msms
152	S	Msms
153	S	Msms
154	S	Msms
155	S	Msms
156	S	Msms
157	S	Msms
158	S	Msms
159	S	Msms
160	S	Msms
161	S	Msms
162	S	Msms
163	S	Msms
164	S	Msms
165	S	Msms
166	S	Msms
167	S	Msms
168	S	Msms
169	S	Msms
170	S	Msms

No.	orf725	Jnurf13
402	S	Msms
403	S	Msms
404	S	Msms
405	T	Msms
406	S	Msms
407	S	Msms
408	S	Msms
409	S	Msms
410	S	Msms
411	S	Msms
412	S	Msms
413	S	Msms
414	S	Msms
415	S	Msms
416	S	Msms
417	S	Msms
418	S	Msms
419	S	Msms
420	S	Msms
421	S	Msms
422	S	Msms
423	S	Msms
424	S	Msms
425	S	Msms
426	S	Msms
427	S	Msms
428	S	Msms
429	S	Msms
430	S	Msms
431	S	Msms
432	S	Msms
433	S	Msms
434	S	Msms
435	S	Msms
436	S	Msms
437	S	Msms
438	S	Msms
439	S	Msms
440	S	Msms
441	S	Msms
442	S	Msms
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444	S	Msms
445	S	Msms
446	S	Msms
447	S	Msms
448	S	Msms
449	S	Msms
450	S	Msms
451	S	Msms
452	S	Msms
453	S	Msms
454	S	Msms
455	S	Msms
456	S	Msms
457	S	Msms
458	S	Msms

No.	orf725	Jnurf13
690	T	msms
691	T	Msms
692	T	Msms
693	T	Msms
694	T	Msms
695	T	Msms
696	T	Msms
697	T	Msms
698	T	msms
699	T	n/a
700	n/a	Msms
701	T	Msms
702	T	Msms
703	T	Msms
704	T	msms
705	T	msms
706	T	Msms
707	T	msms
708	T	Msms
709	T	Msms
710	T	Msms
711	T	Msms
712	T	Msms
713	T	Msms
714	T	msms
715	T	Msms
716	T	msms
717	T	msms
718	T	Msms
719	T	msms
720	T	Msms
721	T	msms
722	T	Msms
723	T	Msms
724	T	n/a
725	T	msms
726	T	Msms
727	T	Msms
728	T	Msms
729	T	Msms
730	T	msms
731	T	msms
732	T	msms
733	T	Msms
734	T	msms
735	T	msms
736	T	Msms
737	T	Msms
738	T	msms
739	T	msms
740	T	msms
741	T	msms
742	T	Msms
743	T	msms
744	T	msms
745	T	msms
746	T	Msms

No.	orf725	Jnurf13
978	S	Msms
979	S	Msms
980	S	Msms
981	S	Msms
982	S	Msms
983	S	Msms
984	S	Msms
985	S	Msms
986	S	Msms
987	T	msms
988	S	Msms
989	S	Msms
990	S	Msms
991	S	Msms
992	S	Msms
993	S	Msms
994	S	Msms
995	S	Msms
996	S	Msms
997	S	Msms
998	S	Msms
999	S	Msms
1000	S	Msms
1001	S	Msms
1002	S	Msms
1003	S	Msms
1004	S	Msms
1005	S	Msms
1006	S	Msms
1007	S	Msms
1008	S	Msms
1009	n/a	Msms
1010	S	Msms
1011	S	Msms
1012	S	Msms
1013	S	Msms
1014	S	Msms
1015	S	Msms
1016	S	Msms
1017	S	Msms
1018	S	Msms
1019	S	Msms
1020	S	Msms
1021	S	Msms
1022	S	Msms
1023	S	Msms
1024	S	Msms
1025	S	Msms
1026	S	Msms
1027	S	Msms
1028	S	Msms
1029	T	Msms
1030	S	Msms
1031	S	Msms
1032	S	Msms
1033	S	Msms
1034	S	Msms

No.	orf725	Jnurf13
171	S	Msms
172	S	Msms
173	S	Msms
174	S	Msms
175	S	Msms
176	S	Msms
177	S	Msms
178	S	Msms
179	S	Msms
180	S	Msms
181	S	Msms
182	S	Msms
183	S	Msms
184	S	Msms
185	S	Msms
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209	S	Msms
210	S	Msms
211	S	Msms
212	S	Msms
213	N	Msms
214	S	MsMs
215	S	Msms
216	S	Msms
217	S	Msms
218	S	Msms
219	S	Msms
220	S	Msms
221	S	Msms
222	S	Msms
223	S	Msms
224	S	n/a
225	S	Msms
226	S	Msms
227	S	Msms

No.	orf725	Jnurf13
459	S	Msms
460	S	Msms
461	S	Msms
462	S	Msms
463	S	Msms
464	n/a	n/a
465	S	Msms
466	S	Msms
467	S	Msms
468	S	Msms
469	S	Msms
470	S	Msms
471	S	Msms
472	S	Msms
473	S	Msms
474	S	Msms
475	S	Msms
476	S	Msms
477	S	Msms
478	S	Msms
479	S	Msms
480	S	Msms
481	S	Msms
482	S	Msms
483	S	n/a
484	S	Msms
485	S	Msms
486	S	Msms
487	S	Msms
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501	S	Msms
502	S	Msms
503	S	Msms
504	S	Msms
505	S	Msms
506	S	Msms
507	S	Msms
508	S	Msms
509	S	Msms
510	S	Msms
511	S	Msms
512	S	Msms
513	S	Msms
514	S	Msms
515	S	Msms

No.	orf725	Jnurf13
747	T	msms
748	T	msms
749	T	Msms
750	T	Msms
751	T	Msms
752	T	Msms
753	T	Msms
754	T	Msms
755	T	Msms
756	T	Msms
757	T	Msms
758	T	Msms
759	T	Msms
760	T	n/a
761	T	Msms
762	T	Msms
763	T	Msms
764	T	Msms
765	T	Msms
766	T	Msms
767	T	msms
768	T	msms
769	T	Msms
770	T	Msms
771	T	msms
772	T	Msms
773	T	Msms
774	T	Msms
775	T	Msms
776	T	msms
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778	T	Msms
779	T	Msms
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781	T	Msms
782	T	Msms
783	T	Msms
784	T	Msms
785	T	Msms
786	T	msms
787	T	Msms
788	T	Msms
789	T	msms
790	T	msms
791	T	msms
792	T	msms
793	T	Msms
794	T	Msms
795	T	Msms
796	T	Msms
797	T	Msms
798	T	Msms
799	T	Msms
800	T	msms
801	T	Msms
802	T	msms
803	T	Msms

No.	orf725	Jnurf13
1035	S	msms
1036	S	Msms
1037	S	Msms
1038	S	Msms
1039	S	Msms
1040	S	Msms
1041	S	Msms
1042	S	Msms
1043	S	Msms
1044	S	Msms
1045	S	Msms
1046	S	Msms
1047	S	Msms
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1079	S	Msms
1080	S	Msms
1081	S	Msms
1082	S	Msms
1083	S	Msms
1084	S	msms
1085	S	Msms
1086	S	Msms
1087	S	Msms
1088	S	Msms
1089	S	Msms
1090	S	Msms
1091	S	Msms

No.	orf725	Jnurf13
228	S	Msms
229	S	Msms
230	S	Msms
231	S	Msms
232	S	Msms
233	S	Msms
234	S	Msms
235	S	Msms
236	S	Msms
237	S	Msms
238	S	Msms
239	S	Msms
240	S	Msms
241	S	Msms
242	S	Msms
243	S	Msms
244	n/a	Msms
245	S	Msms
246	S	Msms
247	S	Msms
248	S	Msms
249	S	Msms
250	S	Msms
251	S	Msms
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270	S	Msms
271	S	Msms
272	S	Msms
273	S	Msms
274	S	Msms
275	S	Msms
276	S	Msms
277	S	Msms
278	S	Msms
279	S	Msms
280	S	Msms
281	S	Msms
282	S	Msms
283	S	Msms
284	S	Msms

No.	orf725	Jnurf13
516	S	Msms
517	S	Msms
518	S	Msms
519	S	Msms
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532	N	Msms
533	S	Msms
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563	S	Msms
564	S	Msms
565	S	Msms
566	S	Msms
567	S	Msms
568	S	Msms
569	S	Msms
570	S	Msms
571	S	Msms
572	S	Msms

No.	orf725	Jnurf13
804	T	Msms
805	T	Msms
806	T	Msms
807	T	msms
808	T	Msms
809	T	Msms
810	T	Msms
811	T	msms
812	T	Msms
813	T	Msms
814	T	msms
815	T	Msms
816	T	msms
817	T	Msms
818	T	msms
819	T	msms
820	T	msms
821	T	Msms
822	T	msms
823	T	Msms
824	T	Msms
825	T	msms
826	T	Msms
827	T	msms
828	T	msms
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830	T	Msms
831	T	msms
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834	T	Msms
835	T	Msms
836	T	msms
837	T	Msms
838	T	Msms
839	T	Msms
840	T	Msms
841	T	msms
842	T	Msms
843	T	Msms
844	T	Msms
845	T	msms
846	T	msms
847	T	Msms
848	T	Msms
849	T	Msms
850	T	Msms
851	T	msms
852	T	Msms
853	T	Msms
854	T	msms
855	T	msms
856	T	msms
857	T	Msms
858	T	Msms
859	T	msms
860	T	Msms

No.	orf725	Jnurf13
1092	S	Msms
1093	S	Msms
1094	S	Msms
1095	S	Msms
1096	S	Msms
1097	S	Msms
1098	S	Msms
1099	S	Msms
1100	S	Msms
1101	S	Msms
1102	S	Msms
1103	S	Msms
1104	S	Msms
1105	S	Msms
1106	S	Msms
1107	S	Msms
1108	S	Msms
1109	S	Msms
1110	S	Msms
1111	S	Msms
1112	S	Msms
1113	S	Msms
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1115	S	Msms
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1118	S	Msms
1119	S	Msms
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1122	S	Msms
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1124	S	Msms
1125	S	Msms
1126	S	Msms
1127	S	Msms
1128	S	Msms
1129	S	Msms
1130	S	Msms
1131	S	Msms
1132	S	Msms
1133	S	Msms
1134	S	Msms
1135	T	Msms
1136	S	Msms
1137	S	Msms
1138	S	Msms
1139	S	Msms
1140	S	Msms
1141	S	Msms
1142	S	Msms
1143	S	Msms
1144	S	Msms
1145	S	Msms
1146	S	Msms
1147	S	Msms
1148	S	Msms

No.	orf725	Jnurf13
285	S	Msms
286	S	Msms
287	S	Msms
288	S	Msms

No.	orf725	Jnurf13
573	S	Msms
574	S	Msms
575	S	Msms
576	S	Msms

No.	orf725	Jnurf13
861	T	Msms
862	T	Msms
863	T	Msms
864	T	Msms

No.	orf725	Jnurf13
1149	S	Msms
1150	S	Msms
1151	S	Msms
1152	S	Msms

표 4. 전신포과제 288점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

No.	orf725	Jnurf13
1	S	Msms
2	S	Msms
3	S	Msms
4	S	Msms
5	S	Msms
6	n/a	Msms
7	S	Msms
8	S	Msms
9	S	Msms
10	S	Msms
11	S	Msms
12	S	Msms
13	S	Msms
14	S	Msms
15	S	Msms
16	S	Msms
17	S	Msms
18	S	Msms
19	S	Msms
20	S	Msms
21	S	Msms
22	S	Msms
23	S	Msms
24	S	Msms
25	S	Msms
26	S	Msms
27	S	Msms
28	S	Msms
29	S	Msms
30	S	Msms
31	S	Msms
32	S	Msms
33	S	Msms
34	S	Msms
35	S	Msms
36	S	Msms
37	S	Msms
38	S	Msms
39	S	Msms
40	S	Msms
41	S	Msms
42	S	Msms
43	S	Msms
44	S	Msms
45	S	Msms
46	S	Msms
47	S	Msms

No.	orf725	Jnurf13
73	S	Msms
74	S	Msms
75	S	Msms
76	S	Msms
77	S	Msms
78	S	Msms
79	S	Msms
80	n/a	Msms
81	S	Msms
82	S	Msms
83	S	Msms
84	S	Msms
85	S	Msms
86	S	Msms
87	n/a	Msms
88	S	Msms
89	S	Msms
90	S	Msms
91	S	Msms
92	S	Msms
93	S	Msms
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106	S	Msms
107	S	Msms
108	S	Msms
109	S	Msms
110	S	Msms
111	S	Msms
112	S	Msms
113	S	Msms
114	S	Msms
115	S	Msms
116	S	Msms
117	S	Msms
118	S	Msms
119	S	Msms

No.	orf725	Jnurf13
145	S	Msms
146	S	Msms
147	S	Msms
148	S	Msms
149	n/a	Msms
150	S	Msms
151	S	Msms
152	n/a	Msms
153	S	Msms
154	S	Msms
155	S	Msms
156	S	Msms
157	S	Msms
158	S	Msms
159	S	Msms
160	S	Msms
161	S	Msms
162	S	Msms
163	S	Msms
164	S	Msms
165	S	Msms
166	S	Msms
167	S	Msms
168	S	Msms
169	S	Msms
170	S	Msms
171	S	Msms
172	S	Msms
173	S	Msms
174	S	Msms
175	S	Msms
176	S	Msms
177	S	Msms
178	S	Msms
179	S	Msms
180	S	Msms
181	S	Msms
182	S	Msms
183	S	Msms
184	S	Msms
185	S	Msms
186	S	Msms
187	S	Msms
188	S	Msms
189	S	Msms
190	S	Msms
191	S	Msms

No.	orf725	Jnurf13
217	S	Msms
218	S	Msms
219	S	Msms
220	S	Msms
221	S	Msms
222	S	Msms
223	S	Msms
224	S	Msms
225	S	Msms
226	S	Msms
227	S	Msms
228	S	Msms
229	S	Msms
230	S	Msms
231	S	Msms
232	S	Msms
233	S	Msms
234	S	Msms
235	S	Msms
236	S	Msms
237	S	Msms
238	S	Msms
239	S	Msms
240	S	Msms
241	S	Msms
242	S	Msms
243	S	Msms
244	S	Msms
245	S	Msms
246	S	Msms
247	S	Msms
248	S	Msms
249	S	Msms
250	S	Msms
251	S	Msms
252	S	Msms
253	S	Msms
254	S	Msms
255	S	Msms
256	S	Msms
257	S	Msms
258	S	Msms
259	S	Msms
260	S	Msms
261	S	Msms
262	n/a	Msms
263	S	Msms

No.	orf725	Jnurf13	No.	orf725	Jnurf13	No.	orf725	Jnurf13	No.	orf725	Jnurf13
48	S	Msms	120	S	Msms	192	S	Msms	264	S	Msms
49	S	Msms	121	S	Msms	193	S	Msms	265	S	Msms
50	S	Msms	122	S	Msms	194	S	Msms	266	S	Msms
51	S	Msms	123	S	Msms	195	S	Msms	267	S	Msms
52	S	Msms	124	S	Msms	196	S	Msms	268	S	Msms
53	S	Msms	125	S	Msms	197	S	Msms	269	S	Msms
54	S	Msms	126	S	Msms	198	S	Msms	270	S	Msms
55	S	Msms	127	S	Msms	199	S	Msms	271	S	Msms
56	S	Msms	128	S	Msms	200	S	Msms	272	S	Msms
57	T	Msms	129	S	Msms	201	S	Msms	273	S	Msms
58	S	Msms	130	S	Msms	202	S	Msms	274	S	Msms
59	S	Msms	131	S	Msms	203	S	Msms	275	S	Msms
60	S	Msms	132	S	Msms	204	S	Msms	276	S	Msms
61	S	Msms	133	S	Msms	205	S	Msms	277	S	Msms
62	S	Msms	134	S	Msms	206	S	Msms	278	S	Msms
63	S	Msms	135	S	Msms	207	S	Msms	279	S	Msms
64	S	Msms	136	S	Msms	208	S	Msms	280	S	Msms
65	S	Msms	137	S	Msms	209	S	Msms	281	S	Msms
66	S	Msms	138	S	Msms	210	S	Msms	282	S	Msms
67	S	Msms	139	S	Msms	211	S	Msms	283	S	Msms
68	S	Msms	140	S	Msms	212	S	Msms	284	S	Msms
69	S	Msms	141	S	Msms	213	S	Msms	285	S	Msms
70	S	Msms	142	S	Msms	214	S	Msms	286	S	Msms
71	S	Msms	143	S	Msms	215	S	Msms	287	S	Msms
72	T	Msms	144	n/a	Msms	216	S	Msms	288	S	Msms

표 5. 전실폐과제 260점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

No.	orf725	Jnurf13	No.	orf725	Jnurf13	No.	orf725	Jnurf13	No.	orf725	Jnurf13
1	S	Msms	66	S	Msms	131	S	Msms	196	S	Msms
2	S	Msms	67	S	Msms	132	S	Msms	197	S	Msms
3	S	Msms	68	S	Msms	133	S	Msms	198	S	Msms
4	S	Msms	69	S	Msms	134	S	Msms	199	S	Msms
5	S	Msms	70	S	Msms	135	S	Msms	200	S	Msms
6	S	Msms	71	S	Msms	136	S	Msms	201	S	Msms
7	S	Msms	72	S	Msms	137	S	Msms	202	S	Msms
8	S	Msms	73	S	Msms	138	S	Msms	203	S	Msms
9	S	Msms	74	S	Msms	139	S	Msms	204	S	Msms
10	S	Msms	75	S	Msms	140	S	n/a	205	S	Msms
11	S	Msms	76	S	Msms	141	S	Msms	206	S	Msms
12	S	Msms	77	S	Msms	142	S	Msms	207	S	Msms
13	S	Msms	78	S	Msms	143	S	Msms	208	S	Msms
14	S	Msms	79	S	Msms	144	S	Msms	209	S	Msms
15	S	Msms	80	S	Msms	145	S	n/a	210	S	Msms
16	S	Msms	81	S	Msms	146	S	n/a	211	S	Msms
17	S	Msms	82	S	Msms	147	S	n/a	212	S	Msms
18	S	Msms	83	S	Msms	148	S	n/a	213	n/a	Msms
19	S	Msms	84	S	Msms	149	S	Msms	214	S	Msms
20	S	Msms	85	S	Msms	150	S	Msms	215	S	Msms
21	S	Msms	86	S	Msms	151	S	Msms	216	S	Msms
22	S	Msms	87	S	Msms	152	S	Msms	217	S	Msms
23	S	Msms	88	S	Msms	153	S	Msms	218	S	Msms
24	S	Msms	89	S	Msms	154	S	Msms	219	S	Msms
25	S	Msms	90	S	Msms	155	S	Msms	220	S	Msms
26	S	Msms	91	S	Msms	156	S	n/a	221	S	Msms
27	S	Msms	92	S	Msms	157	S	Msms	222	S	Msms
28	S	Msms	93	S	Msms	158	S	Msms	223	S	Msms

No.	orf725	Jnurf13	No.	orf725	Jnurf13	No.	orf725	Jnurf13	No.	orf725	Jnurf13
29	S	Msms	94	S	Msms	159	S	Msms	224	S	Msms
30	S	Msms	95	S	Msms	160	n/a	n/a	225	S	Msms
31	S	Msms	96	S	Msms	161	S	Msms	226	S	Msms
32	S	Msms	97	S	Msms	162	S	Msms	227	S	Msms
33	S	Msms	98	S	Msms	163	S	Msms	228	S	Msms
34	S	Msms	99	S	Msms	164	S	Msms	229	S	Msms
35	S	Msms	100	S	Msms	165	S	Msms	230	S	Msms
36	T	Msms	101	S	Msms	166	S	Msms	231	S	Msms
37	S	Msms	102	S	Msms	167	S	Msms	232	S	Msms
38	S	Msms	103	S	Msms	168	S	n/a	233	S	Msms
39	S	Msms	104	S	Msms	169	S	Msms	234	S	Msms
40	S	Msms	105	n/a	Msms	170	S	Msms	235	S	Msms
41	S	Msms	106	S	Msms	171	S	Msms	236	S	Msms
42	S	Msms	107	S	Msms	172	S	Msms	237	S	Msms
43	S	Msms	108	S	Msms	173	S	Msms	238	S	Msms
44	T	MsMs	109	S	Msms	174	S	Msms	239	S	Msms
45	S	Msms	110	S	Msms	175	S	Msms	240	S	Msms
46	S	Msms	111	S	Msms	176	n/a	Msms	241	S	Msms
47	S	Msms	112	S	Msms	177	S	Msms	242	S	Msms
48	S	Msms	113	S	Msms	178	S	Msms	243	S	Msms
49	S	Msms	114	S	Msms	179	S	Msms	244	S	Msms
50	S	Msms	115	S	Msms	180	S	Msms	245	S	Msms
51	S	Msms	116	S	Msms	181	S	Msms	246	S	Msms
52	S	Msms	117	S	Msms	182	S	Msms	247	S	Msms
53	S	Msms	118	S	Msms	183	S	Msms	248	S	Msms
54	S	Msms	119	S	Msms	184	S	Msms	249	n/a	Msms
55	S	Msms	120	S	Msms	185	S	Msms	250	S	Msms
56	S	Msms	121	S	Msms	186	S	Msms	251	S	Msms
57	S	Msms	122	S	Msms	187	S	Msms	252	S	Msms
58	S	Msms	123	S	Msms	188	S	Msms	253	S	Msms
59	S	Msms	124	S	Msms	189	S	Msms	254	S	Msms
60	S	Msms	125	S	Msms	190	S	Msms	255	S	Msms
61	S	Msms	126	S	Msms	191	S	Msms	256	S	Msms
62	S	Msms	127	S	Msms	192	S	Msms	257	n/a	Msms
63	S	Msms	128	S	Msms	193	S	Msms	258	S	Msms
64	S	Msms	129	S	Msms	194	S	Msms	259	S	Msms
65	S	Msms	130	S	Msms	195	S	n/a	260	S	Msms

표 6. 전시포과제 192점의 시료에 대하여, 순도검정 관련 24종의 마커를 이용한 서비스 결과

No.	OBC-01	OBC-02	OBC-03	OBC-04	OBC-05	OBC-06	OBC-07	OBC-08	OBC-09	OBC-10	OBC-11	OBC-12	OBC-13	OBC-14	OBC-15	OBC-16	OBC-17	OBC-18	OBC-19	OBC-20	OBC-21	OBC-22	OBC-23	OBC-24
1	YY	XY	XY	XX	YY	XY	XX	YY	XX	XY	XX	XX	XX	YY	XY	XY	XY	XX	XY	XX	XY	XY	YY	YY
2	XY	XY	XX	XX	YY	YY	XX	XY	XY	XX	XY	XY	XY	YY	YY	XX	XY	XY	XY	XY	XY	XY	YY	XY
3	XY	XY	XX	XX	YY	XY	XX	YY	XX	XY	XY	XY	XX	YY	XY	XX	XY	XX	YY	XY	XY	YY	XY	XY
4	YY	XY	XX	XX	YY	XX	XX	YY	XY	XX	YY	XX	XX	YY	XX	XX	YY	XX	YY	XX	XY	XY	YY	XY
5	YY	XY	XY	XX	YY	XX	XX	YY	XY	XY	XX	XX	XX	YY	XX	XX	YY	XX	YY	XX	XX	YY	YY	YY
6	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY	YY	YY	XX	XY	XY	YY	XY	XY	XX	XY	XY
7	YY	YY	XY	XY	XY	XX	XY	XY	XY	YY	XY	XY	XY	YY	XY	XX	XY	XY	YY	XY	XY	XY	XY	XY
8	XY	XY	XY	XX	XY	XX	XY	XY	XX	YY	XY	XY	XY	YY	XY	XX	XY	XY	YY	XY	XY	XY	XY	XY
9	XY	YY	XX	XX	XY	XX	XY	YY	XY	XY	YY	XX	XY	XY	XY	XX	XY	XY	YY	XY	XY	XY	XY	YY
10	XY	YY	XY	XY	XY	XY	XY	XY	XY	YY	XY	XX	XY	YY	YY	XX	XY	XY	YY	XY	XY	XY	YY	XY
11	YY	XY	YY	XX	XX	XX	XY	XY	XY	XX	XX	XY	XY	YY	XY	XY	XY	XX	XY	XY	XY	XY	XY	XY
12	XX	n/a	YY	XX	XX	XX	YY	XY	XY	XY	XY	YY	YY	XX	YY	XX	XY	YY	XX	YY	YY	XX	XY	XY
13	XX	XY	XX	XY	XX	XX	YY	YY	XY	YY	YY	YY	YY	XX	YY	XX	YY	YY	XX	YY	YY	XX	YY	XY
14	XY	XX	XY	XY	YY	XY	XX	XY	YY	XY	YY	XX	XX	XY	XY	XY	XY	XY	YY	YY	YY	XY	YY	XY
15	XY	XY	XY	XX	YY	YY	XX	XY	YY	YY	XY	XY	XX	XY	YY	XX	XY	YY	XY	XY	XY	YY	YY	XY
16	XY	XY	YY	XX	YY	XX	XX	YY	XY	XX	YY	XY	XX	YY	XX	XY	XY	YY	YY	XY	XY	XX	XY	XY
17	XY	XY	XY	XX	XY	XX	XY	XY	YY	XY	XY	YY	XY	XY	XY	XY	XY	YY	XY	YY	YY	XY	XY	XX
18	XY	XY	YY	XX	XY	XX	XY	XX	YY	XY	XY	YY	XY	XY	XY	XY	XY	YY	XY	XY	YY	XY	YY	XX
19	XY	XY	YY	XY	XY	XX	XX	YY	YY	XX	YY	XY	XY	YY	XY	XX	XY	XY	XX	XY	XY	XY	XX	XX

No.	OBC-01	OBC-02	OBC-03	OBC-04	OBC-05	OBC-06	OBC-07	OBC-08	OBC-09	OBC-10	OBC-11	OBC-12	OBC-13	OBC-14	OBC-15	OBC-16	OBC-17	OBC-18	OBC-19	OBC-20	OBC-21	OBC-22	OBC-23	OBC-24
20	XY	XX	YY	XX	XY	XX	XY	YY	YY	XY	XY	XY	XY	XY	XY	XX	XY	YY	XY	YY	YY	XY	YY	XY
21	XY	n/a	YY	XY	XY	XX	XX	YY	YY	XX	XY	XY	YY	YY	XY	XX	XY	XY	YY	XY	YY	XY	XY	XX
22	XY	XY	YY	YY	YY	XX	XX	YY	YY	XX	XY	XX	YY	XY	XX	XY	XY	XY	XX	YY	YY	XX	XX	XX
23	XY	XY	YY	YY	YY	XY	XX	XY	YY	XX	XX	XX	XY	XY	XY	XX	XY	YY	XX	XX	YY	XY	XY	XX
24	XX	XY	YY	XY	YY	YY	XX	XY	YY	XX	YY	XX	XX	XY	YY	YY	XY	XX	XX	YY	YY	YY	XX	XX
25	XX	n/a	YY	YY	YY	YY	XX	YY	YY	XX	XY	YY	XX	XY	YY	XY	XX	XX	YY	YY	YY	YY	XY	XX
26	XX	n/a	YY	XY	YY	XX	XX	XX	XY	XX	XY	YY	YY	XY	XX	YY	XY	XX	XY	XX	XY	YY	XX	XY
27	XX	XY	YY	XY	XY	XY	XY	XY	YY	XX	YY	XY	XY	YY	YY	YY	XY	XY	XX	YY	YY	XY	XX	XX
28	XX	XY	YY	YY	XY	XX	XY	YY	XY	XX	YY	XY	YY	XX	XY	XX	XY	XY	XX	YY	YY	XX	XX	XX
29	XX	XY	YY	XY	XY	XY	XY	XX	XY	XX	XX	XX	YY	XY	YY	YY	XY	XX	XX	YY	YY	XX	XY	XX
30	XX	XY	YY	XX	XY	XY	XY	XY	YY	XX	XY	YY	XY	XY	YY	XY	XY	XY	XX	XY	YY	XY	XY	XX
31	XX	YY	YY	XY	XY	XX	XY	XX	XY	XX	XY	XY	YY	YY	XY	XY	XX	XX	YY	YY	XY	XX	XY	XX
32	XX	XY	YY	XY	XX	XX	YY	XX	YY	XX	XY	YY	YY	XX	YY	XY	XY	XX	YY	YY	XY	XX	XX	XX
33	XX	YY	YY	YY	XX	XX	YY	XY	XY	XX	XY	XY	YY	XY	YY	XY	XY	YY	XX	YY	YY	XX	XX	XX
34	XX	YY	YY	YY	XX	XX	YY	XX	XY	XX	XY	XX	YY	XX	YY	XX	XY	YY	XX	YY	YY	XX	XY	XX
35	XX	XY	YY	YY	XX	XX	YY	XX	XX	XX	XY	XY	YY	YY	YY	XY	XX	XX	YY	YY	XX	XX	XX	XX
36	XX	n/a	YY	YY	XX	XX	YY	YY	YY	XX	XY	XX	YY	XX	YY	XX	XY	YY	XX	YY	YY	XX	XY	XX
37	XY	n/a	YY	YY	YY	XX	XY	XX	YY	XX	XY	XY	XX	YY	XX	XY	XX	XY	YY	XX	YY	YY	XY	XX
38	XX	XX	YY	XY	YY	YY	XX	XX	XX	XX	XX	XY	XX	XY	YY	XY	XY	XX	XX	XY	YY	YY	XX	XY
39	XX	XY	YY	YY	YY	YY	XX	XX	YY	XY	XX	YY	XX	XX	YY	XX	XY	XX	XX	XX	YY	YY	XX	XX
40	XY	XY	YY	YY	YY	XY	XX	YY	YY	XY	YY	XX	YY	YY	XX	YY	XY	XX	XX	XY	YY	XX	XY	XX
41	n/a	XY	n/a	n/a	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	XY	n/a
42	n/a	n/a	n/a	n/a	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a	XY	n/a	n/a	n/a	n/a	n/a	XY	n/a	n/a	n/a	XY	n/a
43	XY	n/a	YY	XY	XY	XY	XX	XX	YY	XY	XY	YY	YY	XY	YY	XY	XX	XY	XY	XX	YY	XY	XY	XX
44	XX	XY	YY	XX	XY	XY	XY	XX	YY	YY	XY	XY	YY	XY	YY	XX	XY	YY	XY	XY	YY	XX	YY	XX
45	XY	XY	XX	XX	XY	XY	YY	XY	YY	XY	XY	YY	XY	XY	YY	XX	XY	YY	XY	XY	XY	XY	XY	XX
46	XX	XY	YY	XY	XX	XX	YY	XX	YY	XX	XX	YY	YY	XX	YY	XX	XY	YY	XX	XX	YY	XX	XY	XX
47	YY	XX	XY	XX	YY	XY	XX	XY	XY	XY	XX	XY	XX	XY	XY	XX	XY	XY	XY	XY	XY	XY	YY	YY
48	XY	XY	XX	XX	YY	XX	XX	XY	YY	XX	XX	YY	XX	XY	XX	XY	XX	XY	XX	XY	XX	XY	YY	XX
49	YY	XY	XX	XX	YY	XX	XX	XX	XY	XX	XX	XY	XX	YY	XX	XX	YY	XX	XX	XY	XY	YY	XY	YY
50	XY	YY	XY	XY	YY	XX	XX	XY	XY	XX	XY	XY	XX	YY	XX	XY	YY	XY	XY	XX	XX	YY	XX	XX
51	YY	XY	XY	XY	YY	XX	XX	XY	XY	XX	XX	XX	XX	YY	XX	XY	YY	XX	XY	XY	XY	YY	YY	XY
52	XY	YY	XX	XY	XX	XX	YY	XX	XY	XX	XY	XY	YY	XY	YY	XY	YY	YY	XY	XX	XX	XX	YY	XY
53	XY	XY	XX	XX	XX	XX	YY	XX	XY	YY	XY	YY	XY	XX	YY	XX	XY	YY	XX	YY	XX	YY	XX	XY
54	YY	XY	YY	XY	YY	YY	XX	YY	YY	XX	XY	XX	XX	YY	XX	XY	XY	YY	XX	XY	YY	XY	XY	XX
55	XX	YY	YY	YY	YY	XX	XX	XY	XY	XX	XY	YY	YY	XY	XX	XY	XY	YY	XX	YY	YY	XX	XY	XX
56	XX	XY	YY	YY	YY	XX	XX	XX	YY	XX	XY	XY	YY	XX	XX	XX	XY	XY	XX	XX	YY	XX	XX	XX
57	XY	XY	YY	YY	YY	XY	XX	YY	YY	XX	YY	XY	XY	YY	XY	YY	XY	XY	XX	YY	YY	XY	XX	XX
58	XY	XY	YY	YY	YY	YY	XX	XY	XX	XX	XX	XX	XX	XY	YY	XY	XY	XX	YY	YY	YY	YY	XX	XX
59	XX	XX	YY	XX	YY	XY	XX	XY	XY	XX	XY	XX	XY	XY	XY	XY	XY	XX	XY	YY	XX	XY	XX	XX
60	XY	n/a	YY	XY	XX	XX	YY	XY	XY	XX	XY	XY	YY	XY	YY	XX	XY	YY	XX	YY	YY	XX	XY	XX
61	XY	YY	YY	YY	XX	XX	YY	XX	XY	XX	XY	XY	YY	XX	YY	XY	XY	XY	XX	YY	YY	XX	XY	XX
62	XY	n/a	YY	XY	XX	XX	YY	XY	XX	XY	XY	XX	YY	XX	YY	XY	XY	YY	XX	YY	YY	XX	XX	XX
63	XX	XX	YY	XY	XX	XX	YY	XY	XY	XX	XY	XY	YY	XX	YY	XX	XY	YY	XX	YY	YY	XX	XX	XX
64	XX	XY	YY	YY	XX	XX	YY	XY	XY	XX	YY	XX	YY	XX	YY	XX	XY	YY	XX	XY	YY	XX	XY	XX
65	XX	YY	YY	XY	YY	YY	XX	YY	YY	XX	XY	XX	XX	XY	YY	XY	XY	XX	XX	XY	YY	YY	XY	XX
66	XY	YY	YY	YY	YY	XY	XX	XX	XX	XY	YY	XY	XY	XX	XY	XX	XY	XY	XX	XY	YY	XY	XX	XX
67	XX	XY	YY	YY	XY	XY	XY	YY	XX	XX	XX	XX	XY	XX	YY	XX	XY	XY	XX	YY	n/a	XY	YY	XX
68	YY	XX	YY	XY	XY	XY	XY	XY	YY	XX	XY	XX	XY	XX	YY	XX	XY	YY	XX	XY	YY	XY	XY	XX
69	n/a	XY	n/a	n/a	XY	n/a	n/a	n/a	n/a	XX	n/a	n/a	XY	n/a	XX	n/a	n/a	n/a	n/a	n/a	n/a	n/a	XY	n/a
70	XY	XY	YY	XX	XY	XX	XY	XX	YY	YY	XY	YY	XY	XY	XY	XX	XY	YY	XY	XY	XY	XY	XY	XX
71	XY	XY	YY	XX	XY	XX	XY	XY	YY	YY	YY	YY	XY	XY	XY	XX	XY	YY	XY	XY	XY	XY	XY	XX
72	XY	XY	YY	XY	XX	XX	YY	XY	XY	XY	YY	YY	YY	XY	YY	XY	XY	XX	XX	XX	YY	XX	XX	XX
73	n/a	XY	n/a	n/a	XY	n/a	n/a	n/a	n/a	XX	n/a	n/a	YY	n/a	n/a	n/a	n/a	YY	n/a	n/a	n/a	XY	n/a	n/a
74	XY	n/a	YY	YY	XX	XX	YY	XY	YY	XX	XX	XX	YY	XY	YY	XY	XY	YY	XX	YY	YY	XX	XX	XX
75	XX	YY	YY	XX	YY	XY	XX	XY	XY	XX	XY	XY	XY	YY	XY	XY	XY	XX	XX	YY	YY	XY	XX	XX
76	XY	XY	XY	XY	YY	XY	XX	YY	XX	XX	YY	XY	XX	XY	XY	XX	XY	XY	XY	XY	XY	XY	YY	XY
77	XY	YY	XX	XX	YY	XY	XX	XY	YY	XY	YY	XY	XX	XY	XY	XX	XY	XY	XY	XY	XY	YY	XY	XY
78	YY	XY	XX	XX	YY	XX	XX	YY	XY	XX	XY	XX	XX	YY	XX	XY	YY	XX	XY	XX	XX	YY	YY	YY
79	YY	XY	XY	XX	YY	YY	XX	YY	XX	XY	XY	XX	XX	YY	YY	XY	XY	XX	YY	XX	XX	YY	YY	XY
80	XY	XY	XY	XX	YY	XY	XX	YY	XY	YY	XY	XY	XX	XY	YY	XX	XY	XY	XY	XY	XY	YY	XY	XY
81	YY	YY	YY	XX	XX	YY	XX	YY	YY	XY	XX	YY	XX	YY	XX	XX	XY	XY	XX	XX	XX	YY	YY	XY
82	XX	XX	XX	YY	XX	XX	YY	XY	XY	YY	XY	YY	YY	YY	YY	XX	XY	YY	XY	YY	XY	XX	XX	XY
83	YY	YY	YY	XX	YY	XY	XX	XY	XY	XY	YY	XY	XX	XY	XY	XX	XY	XX	XY	XY	XY	YY	XY	XX
84	YY	XX	XX	XY	XX	XX	YY	XY	YY	YY	XX	XX	YY	YY	YY	XX	YY	YY	YY	YY	YY	XX	XX	XX
85	XX	XY	YY	XY	YY	XY	XX	YY	XY	XX	XY	XY	XY	XY	XY	XY	XY	YY	XX	YY	YY	XY	XY	XX
86	XY	XX	YY	XX	YY	XY	XX	XX	YY	XX	XY	XY	XY	XX	XY	XX	XY	XY	XX	YY	YY	XY	XX	XX
87	XX	XY	YY	YY	YY	YY	XX	XY	XY	XX	XY	YY	XX	XX	YY	XY	XY	XY	XX	YY	YY	YY	XY	XX
88	YY	XX	YY	YY	YY	XX	XX	XY	XY	XX	YY	XX	YY	XX	XX	XY	YY	XX	YY	YY	XX	XX	XX	XX

No.	OBC-01	OBC-02	OBC-03	OBC-04	OBC-05	OBC-06	OBC-07	OBC-08	OBC-09	OBC-10	OBC-11	OBC-12	OBC-13	OBC-14	OBC-15	OBC-16	OBC-17	OBC-18	OBC-19	OBC-20	OBC-21	OBC-22	OBC-23	OBC-24
89	XX	XY	YY	XY	YY	XY	XX	XY	YY	XX	XY	YY	XY	YY	XY	XY	XY	XY	XX	YY	YY	XY	XX	XY
90	XY	XY	YY	XY	XX	XY	YY	XY	YY	XX	XY	YY	XY	YY	XY	XY	XY	XY	XX	XY	XX	XY	XX	XX
91	XX	XY	YY	YY	XX	XX	YY	XY	YY	XX	XX	XX	YY	XX	YY	XX	XY	YY	XX	YY	YY	XX	XX	XX
92	XX	XY	YY	XY	XX	XX	YY	XX	XX	XX	YY	YY	YY	XX	YY	XX	XY	YY	XX	YY	YY	XX	XY	XX
93	XX	XY	YY	YY	XX	XX	YY	XX	XY	XX	XX	XY	YY	XY	YY	XY	XY	YY	XY	YY	YY	XX	XX	XX
94	XY	YY	YY	YY	XX	XX	YY	YY	YY	XX	XY	XY	YY	XX	YY	XY	XY	XY	XX	YY	YY	XX	XX	XX
95	XX	XX	YY	YY	XX	XX	YY	XY	YY	XX	XY	XY	YY	XX	YY	XY	XY	YY	XX	YY	YY	XX	XX	XX
96	YY	XX	YY	XX	YY	XY	XX	YY	XY	XX	XY	XX	YY	XY	XX	XY	XY	YY	XX	YY	YY	XX	XX	XX
97	XY	YY	YY	XY	YY	YY	XX	XY	YY	XX	XY	YY	XX	XY	YY	XY	XY	XX	XX	YY	YY	YY	XX	XX
98	XY	XX	YY	YY	YY	YY	XX	XX	YY	YY	XY	XX	YY	XX	XX	XX	XY	XX	XX	XY	YY	XX	XX	XY
99	XX	XY	YY	XX	YY	YY	XX	XX	YY	XY	XX	XX	XX	XX	XX	XY	XY	XY	XX	XX	YY	XY	XX	XX
100	XX	XY	YY	XY	XY	XY	XY	XY	YY	XX	XY	XX	XY	XX	YY	YY	XY	YY	XX	XY	YY	XY	XY	YY
101	XX	XY	YY	XY	XY	XY	XY	XY	XY	XX	XY	XX	XY	XY	YY	YY	XY	XX	XX	YY	YY	XY	YY	XX
102	YY	XX	YY	XY	XY	XY	XY	XY	XY	XX	XY	XX	YY	YY	XY	YY	XY	XY	XX	XX	YY	XX	XX	XX
103	XY	XY	YY	YY	XY	XY	XY	XY	YY	XY	XY	XY	YY	XX	XY	XX	XY	XY	XX	XY	YY	XX	XX	XX
104	XX	YY	YY	XY	XY	XX	XY	XY	YY	XY	XY	XX	YY	XX	XY	XX	XY	XY	XX	XY	YY	XX	XY	XX
105	XY	XX	YY	XY	XX	XX	YY	XX	YY	XY	YY	YY	YY	XY	YY	XY	XY	XY	XX	YY	YY	XX	XX	XX
106	XY	XX	YY	YY	XX	XX	YY	XY	YY	XY	YY	XX	YY	XX	YY	XY	XX	XY	YY	XX	YY	YY	XX	XY
107	XY	XY	YY	YY	XX	XX	YY	XX	XY	XX	XY	XY	YY	XX	YY	XX	XY	XY	XX	XY	YY	XX	XY	XX
108	XX	XX	YY	YY	XX	XX	YY	YY	XY	XX	YY	XY	YY	XX	YY	YY	XY	YY	XX	XY	YY	XX	XY	XX
109	XX	XY	YY	XY	XX	XY	YY	YY	YY	XX	XY	XY	YY	XX	YY	XX	XY	YY	XX	YY	YY	XX	XY	XX
110	XY	XY	YY	XY	YY	XX	XX	XY	XY	XY	XX	XY	XX	XY	XX	XX	YY	XY	XY	XY	XY	YY	XY	YY
111	YY	YY	XX	XX	YY	XY	XX	YY	YY	XY	XX	XX	XX	YY	XY	XX	XY	XX	XY	XX	YY	XX	YY	YY
112	YY	XY	XY	XX	YY	XX	XX	YY	XX	XY	XX	XX	XX	YY	XX	XX	XY	XX	YY	XX	XX	YY	YY	YY
113	XY	YY	XY	XY	YY	XX	XX	YY	XY	XX	XY	XY	XX	XY	XX	XX	YY	XY	XY	XY	YY	YY	XY	XY
114	XY	YY	XX	XX	YY	YY	XX	XY	YY	YY	XY	XY	XX	XY	YY	XX	XY	XX	XY	XY	XX	YY	XY	XY
115	YY	n/a	YY	XX	XX	XX	XX	YY	XX	YY	XX	XY	XX	YY	XX	XX	YY	XX	YY	XY	XX	YY	YY	YY
116	YY	XY	XY	XX	XX	XX	XX	XY	XX	XY	XX	XX	XX	YY	XX	XX	YY	XX	YY	XX	YY	XY	XY	YY
117	XY	XY	XY	XX	XX	XX	XY	XY	YY	XX	XY	XY	XX	YY	XY	XX	XY	XY	XY	XY	XY	XY	XY	YY
118	XY	YY	XY	XX	XX	XX	XX	YY	XY	XX	XX	XY	XX	YY	XX	XY	YY	XY	XX	XX	XX	XY	YY	XY
119	XY	XX	XX	XY	YY	YY	XX	XY	YY	XX	XY	XY	XY	YY	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY
120	XY	XY	XY	XX	YY	YY	XX	XY	XY	XY	XY	XY	XX	XY	YY	XX	XY	XY	XY	XY	XY	YY	XY	XX
121	YY	YY	XY	XX	YY	XY	XX	YY	XY	XY	XX	XX	XX	YY	XX	XX	XY	XX	YY	XX	YY	XX	YY	YY
122	YY	XY	XY	XX	YY	XY	XX	YY	XX	XY	XX	XX	XY	YY	XY	XX	XX	XY	XX	YY	XY	XX	XY	YY
123	YY	XY	YY	XX	YY	YY	XX	YY	XX	XY	XX	XX	XX	YY	YY	XY	XX	XX	YY	XX	XX	YY	YY	YY
124	YY	XX	XX	XY	XX	XX	XY	XY	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY	XX
125	YY	YY	YY	XX	XX	XX	XX	YY	XY	XY	XX	XX	XX	YY	XX	XX	XY	XY	YY	XX	XX	YY	YY	YY
126	n/a	n/a	n/a	n/a	XY	n/a	XX	n/a	n/a	n/a	n/a	XY	n/a	n/a	n/a	n/a	n/a	YY	n/a	n/a	n/a	XY	n/a	n/a
127	n/a	XY	XY	XY	XY	XY	XY	YY	n/a	XY	XY	YY	XY	n/a	n/a	XY	XX	YY	XY	XY	n/a	XY	XX	XY
128	XX	XY	YY	YY	YY	YY	XX	XY	YY	XX	XY	XX	XY	XX	XY	XX	XY	XY	XY	XX	XY	XY	XX	XY
129	XX	XX	YY	YY	YY	YY	XX	XX	YY	XX	XY	XY	XX	XY	XY	XX	XY	YY	XX	XX	YY	YY	XX	XX
130	n/a	XY	XX	n/a	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a	XY	XX	n/a	n/a	n/a	YY	n/a	n/a	n/a	XY	n/a	n/a
131	n/a	n/a	n/a	n/a	XY	n/a	n/a	n/a	n/a	XX	n/a	n/a	XY	n/a	n/a	n/a	n/a	n/a	XX	n/a	n/a	XY	n/a	n/a
132	XY	n/a	YY	YY	XY	XY	XY	XY	XY	XX	YY	XX	XY	XX	YY	XX	XY	YY	XX	YY	XY	XX	XX	XX
133	XY	XY	YY	YY	XY	XY	XY	XX	XY	XX	XY	XX	XY	XY	YY	XX	XY	YY	XX	XY	YY	XY	XY	XX
134	XX	XY	YY	YY	XY	XY	XY	XX	XX	XX	YY	XX	XY	YY	YY	XX	XY	YY	XX	YY	YY	XY	XX	XX
135	XY	XY	YY	YY	XY	XY	XY	XY	XY	XX	XX	XX	XY	XY	XY	XX	XY	YY	XY	XY	YY	XY	XY	XX
136	n/a	XY	n/a	n/a	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a	YY	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	XY	n/a	n/a
137	XY	XX	YY	YY	XY	XY	YY	XX	XX	XX	XY	XX	YY	XY	YY	XX	XY	YY	XX	YY	YY	XY	XX	XY
138	XX	n/a	n/a	XX	XY	n/a	n/a	YY	n/a	n/a	n/a	n/a	n/a	n/a	YY	n/a	n/a	YY	n/a	n/a	n/a	XY	n/a	n/a
139	XY	XX	n/a	XY	XX	n/a	n/a	n/a	n/a	XX	n/a	n/a	XY	YY	n/a	XX	YY	XY	n/a	YY	n/a	XY	XY	XX
140	n/a	n/a	n/a	n/a	XY	n/a	YY	XX	XY	n/a	n/a	n/a	XY	n/a	YY	n/a	n/a	YY	XX	n/a	n/a	XY	n/a	n/a
141	YY	XX	YY	XY	XX	XX	YY	XX	XY	XX	XY	XX	YY	XY	YY	XX	XY	YY	XX	XX	YY	XX	YY	XX
142	XX	YY	XY	XX	YY	YY	XX	YY	XY	YY	XX	YY	XX	XX	YY	XX	XY	XX	XX	XX	YY	YY	XX	XY
143	XY	XY	XY	XY	YY	YY	XY	XY	XY	XY	XY	XY	XX	XY	XY	XX	XY	XY	XX	XX	YY	YY	XY	XX
144	XX	XY	XY	XY	YY	YY	XX	XY	XY	XY	XY	XX	XY	XY	YY	XX	XY	XX	XY	XX	YY	YY	XX	XY
145	XY	XY	XY	XY	YY	YY	XX	XY	XY	XY	XY	XY	XX	XY	YY	XY	XY	XY	XX	XX	YY	YY	XY	XY
146	XY	XY	YY	XX	YY	YY	XX	YY	XX	YY	XX	YY	XX	XX	YY	XX	YY	XX	XX	XX	YY	YY	XX	XY
147	XY	YY	YY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY	YY	XX	XY	XY	XX	XY	YY	XY	XY	YY
148	XX	XY	YY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY	XX	XY	XY	XX	XY	YY	XY	XY	XX
149	XY	XY	XY	XY	XY	YY	YY	XY	XY	XY	XY	XY	XY	YY	XY	XY	XY	XX	XY	XY	XY	XY	XX	XX
150	XX	XX	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY	XX	XY	XY	XX	XY	YY	XY	XY	YY
151	XY	XY	YY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	XY	YY	XX	XY	XY	XX	XY	YY	XY	XX	XY
152	XX	XY	YY	XY	YY	YY	XX	XX	XY	XY	XY	XY	XY	XY	XY	XX	XY	XY	XY	YY	YY	XY	XY	XX
153	XX	YY	YY	YY	YY	YY	XX	XX	XY	XX	XX	XX	XX	XY	YY	XX	XY	YY	XX	XY	YY	YY	XX	XX
154	XY	XY	YY	YY	YY	YY	XX	XX	XX	XX	XY	XY	XX	XY	YY	XX	XY	YY	XY	XY	YY	YY	XX	XY
155	XY	XX	YY	YY	YY	YY	XX	XX	XY	XX	XY	XX	XX	XY	YY	XX	XY	YY	XY	XX	YY	YY	XX	XY
156	XX	XY	YY	YY	YY	YY	XX	XX	YY	XX	YY	XX	XX	XX	YY	XX	XY	YY	XX	YY	YY	YY	XY	XY
157	XX	XY	YY	YY	XY	XY	XY	XX	XY	XX	XY	XX	XX	XY	YY	XX	XY	YY	XX	YY	YY	YY	XX	XX

No.	OBC-01	OBC-02	OBC-03	OBC-04	OBC-05	OBC-06	OBC-07	OBC-08	OBC-09	OBC-10	OBC-11	OBC-12	OBC-13	OBC-14	OBC-15	OBC-16	OBC-17	OBC-18	OBC-19	OBC-20	OBC-21	OBC-22	OBC-23	OBC-24	
158	XX	XY	YY	XY	XY	XY	XY	XX	YY	XX	XY	XX	XY	YY	XY	XY	XY	XY	XX	XY	YY	XY	XX	XX	
159	XY	XY	YY	XY	XY	XY	XY	XX	XY	XY	YY	XX	YY	XX	XY	XX	XY	YY	XY	XX	XY	YY	XX	XY	XX
160	XX	XY	YY	XY	XY	XY	XY	XX	YY	XX	XY	XY	XY	XX	YY	XX	XY	YY	XY	XY	YY	XY	XX	XY	XY
161	XY	YY	YY	XY	XY	XY	XY	XY	XY	XX	XY	XX	XX	XY	YY	XX	XY	YY	XY	YY	YY	YY	XX	XX	XX
162	XX	XX	YY	XY	XX	XX	YY	XX	XY	XX	XY	XX	YY	YY	YY	XX	XY	YY	XX	XY	YY	XX	XY	XX	XX
163	XX	YY	YY	YY	XX	XX	YY	XX	YY	XX	XY	XX	YY	XX	YY	XX	XY	YY	XX	XX	XX	YY	XX	XX	XX
164	XY	YY	YY	XY	XX	XX	YY	XX	XX	XX	XY	XY	XY	XY	YY	XX	XY	YY	XX	XY	YY	XX	XY	XX	XX
165	XX	YY	YY	XY	XX	XX	YY	XX	YY	XX	XY	XX	YY	XY	YY	XX	XY	YY	XY	XY	YY	XX	XX	XX	XX
166	XY	XY	YY	YY	XX	XX	YY	XX	XY	XX	XY	XY	YY	XY	YY	XX	XY	YY	XX	XY	YY	XX	XX	XY	XY
167	XY	YY	YY	YY	XY	XY	XY	XX	XY	XX	XY	XX	XY	XY	YY	XX	XY	YY	XX	XY	YY	XY	XY	XY	XY
168	XX	XY	YY	YY	XY	XY	XY	XY	YY	XX	XY	XY	XY	XY	YY	XX	XY	YY	XX	XY	YY	XY	XY	XY	XX
169	XX	XY	YY	YY	XY	XY	XY	XX	YY	XX	XY	XX	XY	XY	YY	XX	XY	YY	XY	XY	YY	XY	XY	XY	XX
170	YY	XY	YY	YY	XY	XY	XY	XX	n/a	XX	n/a	XX	n/a	n/a	YY	n/a	XY	YY	YY	n/a	n/a	XY	XX	XX	XX
171	n/a	XX	n/a	n/a	XY	YY	n/a	n/a	n/a	XX	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	XX	n/a	XY	n/a	n/a	n/a
172	XY	YY	YY	XY	YY	YY	XX	XX	YY	XX	XX	XY	XX	YY	YY	XY	XY	XY	XX	XY	YY	YY	XX	YY	YY
173	XY	XY	YY	XX	YY	YY	XX	YY	YY	XX	XX	XY	XY	XY	YY	XX	XY	YY	XX	XY	XY	XY	XX	YY	YY
174	XY	XY	YY	XX	XY	XX	XY	XY	YY	XY	XY	XY	XY	XY	XX	XY	XY	XY	XX	YY	YY	XY	XY	XY	XX
175	XX	XY	YY	XY	XX	XY	XY	YY	YY	XX	XY	YY	XY	XX	XY	XX	XY	YY	XX	XY	YY	XX	XY	XY	XY
176	XY	XY	YY	YY	XY	XY	XY	XX	YY	XX	XY	XX	XY	XY	YY	XX	XY	YY	XY	XY	YY	XY	XY	XY	XX
177	XY	XY	YY	YY	XY	XY	XY	XX	XY	XX	XY	XY	XY	XY	YY	XX	XY	YY	XX	XY	YY	XY	XX	XY	XY
178	XY	XY	YY	YY	XY	XY	XY	XX	XY	XX	XY	XY	XY	XY	YY	XX	XY	YY	XX	XY	YY	XY	XX	XY	XY
179	XY	XY	YY	YY	XY	XY	XY	XX	XY	XX	XY	XX	XY	XY	YY	XX	XY	YY	XY	XY	YY	XY	XX	XY	XY
180	XX	YY	YY	YY	XY	XY	XY	XX	XY	XX	XY	XY	XY	XY	YY	XX	XY	YY	XX	XY	YY	XY	XY	XY	XX
181	XY	XX	YY	XY	XY	XY	XY	XX	YY	XX	XY	XX	XY	XY	YY	XX	XY	YY	XY	XY	YY	XY	XX	XX	XX
182	XY	XY	YY	YY	XY	XY	XY	XY	XY	XX	XY	XX	XY	XY	YY	XX	XY	YY	XY	XY	YY	XY	XY	XY	XX
183	XY	XY	YY	YY	XY	XY	XY	XX	XY	XX	XY	XY	XY	XY	YY	XX	XY	YY	XY	XY	YY	XY	XX	XX	XX
184	XX	XY	YY	XX	XY	XX	XY	XY	YY	XY	YY	YY	XY	XY	XY	XY	XY	YY	XY	XY	YY	XY	XY	XY	XX
185	n/a	XX	XY	XY	XY	XY	XY	n/a	n/a	XX	XY	XY	XY	n/a	n/a	n/a	n/a	XX	XY	XY	n/a	XX	XY	n/a	n/a
186	XY	XY	YY	XY	XY	XY	YY	XY	YY	YY	XY	YY	XY	XY	YY	XX	XY	YY	XY	XY	YY	XY	XY	XY	XX
187	XX	XX	XX	XX	XX	YY	XX	XY	XX	XX	XY	XY	XY	XY	XY	XY	YY	XY	XX	XY	YY	XY	YY	XY	XY
188	XY	YY	YY	YY	XY	XY	XY	XY	XY	XX	XY	XX	XY	XY	YY	XX	XY	YY	XY	YY	YY	YY	XY	XX	XX
189	XX	XY	YY	YY	XY	XY	XY	XX	XY	XX	XY	XX	XY	XY	XX	XY	YY	XY	YY	XY	YY	XY	XX	XY	XY
190	XX	XX	YY	XY	XY	XY	XY	XY	XY	XX	XY	XX	XX	XY	XY	XX	XY	XY	XY	XY	YY	YY	XX	XX	XX
191	XX	XY	YY	XY	XY	XY	XY	XX	XY	XY	XY	XX	XY	XX	YY	XX	XY	XY	XX	XY	XX	XY	XY	XX	XX
192	XY	n/a	YY	XX	XY	XY	XY	XX	XX	XX	YY	XX	XY	XY	YY	XX	XY	YY	XY	YY	YY	XY	XX	XX	XX

표 7. 전시포과제 192점의 시료에 대하여, 순도검정 관련 24종의 마커를 이용한 서비스 결과

No.	OBC-25	OBC-26	OBC-27	OBC-28	OBC-29	OBC-30	OBC-31	OBC-32	OBC-33	OBC-34	OBC-35	OBC-36	OBC-37	OBC-38	OBC-39	OBC-40	OBC-41	OBC-42	OBC-43	OBC-44	OBC-45	OBC-46	OBC-47	OBC-48	
1	XY	XX	XX	XX	YY	YY	YY	YY	XX	XY	YY	XY	XX	XY	YY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2	XY	XX	XY	XX	YY	XY	XY	YY	XY	XY	XY	XX	XY	XY	YY	YY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3	XY	XY	XY	XX	YY	YY	XY	YY	XX	XY	XY	XY	XY	XY	YY	YY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
4	XY	XX	XX	XX	YY	YY	XY	YY	XX	YY	XX	YY	XX	XY	XX	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
5	YY	XX	XY	XX	YY	YY	YY	YY	XX	YY	YY	YY	XY	XY	YY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
6	XY	XX	XY	XX	YY	YY	XY	YY	XX	XY	YY	XY	XY	XY	YY	YY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
7	XY	XX	XY	XX	YY	YY	XY	YY	XY	YY	YY	YY	XX	XY	YY	YY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
8	YY	XX	XY	XX	YY	YY	XY	YY	XY	XX	XY	YY	YY	XY	XY	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
9	XY	XX	XY	XX	YY	YY	XY	YY	XY	YY	XY	YY	XY	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
10	XX	XY	XY	XX	YY	YY	XX	YY	XX	XY	XY	XY	YY	XY	XY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
11	XY	XX	XY	XX	XY	XY	XY	YY	XY	YY	YY	YY	XY	XY	YY	YY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
12	XY	XX	YY	XX	YY	YY	XX	YY	XY	YY	YY	YY	YY	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
13	XX	XX	YY	XX	YY	YY	XX	YY	XY	XX	XX	YY	XY	XY	YY	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
14	XX	XY	YY	YY	YY	XY	XY	XY	XY	YY	YY	XY	YY	XY	YY	XY	XX	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
15	XY	XX	YY	XX	YY	XY	XY	YY	XY	YY	YY	XX	XY	XY	YY	YY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
16	XY	XY	XY	YY	YY	XY	XY	YY	XX	XY	XY	YY	XY	XY	YY	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
17	XY	XX	YY	XY	XY	XX	XX	YY	XY	YY	XY	YY	XX	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
18	XY	XX	YY	XY	XY	XX	XX	YY	XX	YY	XX	YY	XY	XY	YY	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
19	XX	XY	YY	XY	YY	XY	XX	YY	XY	YY	XY	XX	XY	XY	YY	XY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
20	XX	XX	XY	XY	YY	XY	XX	YY	XX	XY	XX	YY	XY	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
21	XX	XX	YY	XY	XY	YY	XX	YY	YY	YY	YY	XX	XY	XY	YY	YY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
22	XY	XY	YY	XY	YY	XX	XX	XX	XY	YY	XY	YY	XY	XY	YY	XX	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
23	XX	XY	XX	XY	YY	XY	XY	YY	YY	YY	XX	XY	YY	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
24	XY	XY	YY	XX	YY	XY	XX	XY	YY	YY	YY	XY	XX	XY	YY	XY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a	n/a
25	XY	XY	YY	XY	YY	XY	XX	YY	YY	YY	XY	XX	YY	XY	YY	XY	XX	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a
26	YY	XY	XY	XY	YY	YY	XY	YY	XY	YY	XY	YY	XY	XY	YY	YY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a	n/a
27	XY	XX	XY	YY	YY	XY	XY	n/a	YY	YY	XY	n/a	YY	YY	YY	YY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a	n/a
28	XY	XX	YY	YY	XY	XX	XX	YY	XX	YY	YY	YY	YY	XY	YY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a	n/a

No.	OBC-25	OBC-26	OBC-27	OBC-28	OBC-29	OBC-30	OBC-31	OBC-32	OBC-33	OBC-34	OBC-35	OBC-36	OBC-37	OBC-38	OBC-39	OBC-40	OBC-41	OBC-42	OBC-43	OBC-44	OBC-45	OBC-46	OBC-47	OBC-48
29	XX	XY	XY	XX	YY	YY	XY	YY	XY	YY	XX	XY	XY	XY	YY	YY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a
30	YY	YY	XX	XX	YY	YY	YY	XY	YY	YY	XY	XY	XY	XY	YY	YY	YY	YY	XX	n/a	n/a	n/a	n/a	n/a
31	XY	XX	XX	XX	XY	YY	XY	YY	XY	YY	XY	YY	XY	XY	YY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
32	XY	XX	XY	XY	XY	XY	XY	XY	XY	YY	XY	YY	XY	XY	YY	XX	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
33	XY	XX	YY	XY	YY	XX	XX	XY	YY	YY	YY	YY	XY	XY	YY	XX	XX	XY	n/a	n/a	n/a	n/a	n/a	n/a
34	XY	XY	XY	XX	YY	XY	XY	YY	XY	YY	XY	YY	XY	XY	YY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
35	XY	XX	YY	YY	XY	XX	XX	YY	XY	YY	XY	YY	XY	XY	YY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
36	YY	XY	XY	XY	XY	XY	XX	XY	YY	YY	YY	YY	YY	XY	YY	XY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
37	XY	XY	XY	XY	YY	XX	XY	XY	XY	YY	YY	XX	XY	XY	YY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
38	XY	XX	XY	XY	XY	XY	XY	YY	YY	YY	XX	XX	YY	XY	XY	XX	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
39	XY	XX	XX	XX	XY	XY	XX	YY	YY	YY	XX	XX	YY	XY	XX	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
40	YY	XX	XY	YY	XY	XY	XX	YY	YY	YY	YY	YY	YY	XY	YY	XY	XY	XX	n/a	n/a	n/a	n/a	n/a	n/a
41	XY	XX	XY	XY	XY	XX	XX	YY	XX	XY	XY	YY	XX	XY	YY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
42	n/a	n/a	n/a	n/a	n/a	n/a	XX	n/a	n/a	XX	n/a	n/a	XX	XX	YY	XX	n/a	XY	n/a	n/a	n/a	n/a	n/a	n/a
43	XX	XX	YY	XY	XX	XX	XX	YY	XY	YY	XY	XY	YY	XY	YY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
44	XX	XX	XY	XY	XY	XX	XX	YY	XY	YY	XY	XY	XY	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
45	XX	XX	YY	XY	XY	XX	XX	YY	XX	XY	XX	XX	XY	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
46	XY	XX	XX	XY	YY	YY	XY	YY	XX	YY	XY	YY	XY	XY	YY	YY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
47	XX	XX	XY	XY	XY	YY	XX	YY	XY	YY	XY	XY	XY	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
48	XX	XX	YY	XX	XY	XY	XX	YY	XY	XX	YY	YY	XY	XY	YY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
49	XX	XX	YY	XX	YY	YY	XY	YY	XX	XY	YY	YY	XX	XY	YY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
50	XY	XX	YY	XX	YY	YY	XX	XY	XY	XY	YY	YY	YY	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
51	XX	XX	YY	YY	YY	YY	XY	XY	XY	XY	XY	YY	YY	XX	XY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
52	XX	XX	YY	XX	YY	YY	XY	XY	XX	XX	YY	YY	XX	XY	YY	XY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
53	XX	XX	YY	XX	YY	XX	XX	YY	XX	XX	YY	YY	XX	XY	YY	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
54	XX	XX	YY	XX	YY	YY	XX	YY	XX	YY	XY	n/a	YY	XY	YY	XY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
55	XY	XX	YY	XY	YY	YY	XY	YY	XY	YY	XY	YY	YY	XY	YY	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
56	XY	XY	XX	YY	XY	YY	XX	YY	XX	YY	XY	YY	XY	XY	YY	XX	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
57	XY	XX	XY	XX	YY	XY	XX	XY	YY	YY	XY	YY	XY	XY	YY	XX	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
58	YY	XY	XY	YY	XY	YY	XX	YY	YY	YY	YY	XX	YY	XY	YY	XY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
59	XY	XY	XY	YY	YY	XX	XY	YY	YY	YY	XY	XY	YY	XY	YY	XX	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
60	XY	XY	XY	YY	XY	XY	XY	XY	YY	YY	XY	YY	YY	XY	YY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
61	n/a	n/a	n/a	n/a	YY	n/a	n/a	n/a	n/a	YY	n/a	n/a	n/a	XX	YY	XY	n/a	XY	n/a	n/a	n/a	n/a	n/a	n/a
62	XX	XX	XY	XY	XY	XY	XY	XY	YY	YY	n/a	YY	XY	XY	XX	YY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a
63	n/a	n/a	XX	XX	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	XX	n/a	n/a	n/a	XX	n/a	n/a	n/a	n/a	n/a	n/a
64	YY	XX	XX	XY	XY	XY	XX	YY	YY	YY	XY	YY	YY	XY	YY	YY	XY	XX	n/a	n/a	n/a	n/a	n/a	n/a
65	YY	XX	XY	XY	XY	XX	XY	XY	YY	YY	XY	XX	XY	XY	XY	XX	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
66	XY	XY	YY	XX	XY	XY	XX	YY	YY	YY	YY	XY	YY	XY	YY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
67	XX	XX	YY	XY	XY	YY	XX	YY	YY	YY	XY	XY	YY	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
68	XY	XY	XY	XY	XY	YY	XY	YY	XY	YY	XY	XY	XY	XY	YY	YY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a
69	XY	XX	YY	XY	YY	XY	YY	YY	XY	YY	XY	YY	YY	XY	YY	XX	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
70	XY	XX	YY	YY	XY	XY	XX	YY	XX	YY	XX	YY	XX	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
71	XY	XX	YY	XX	XY	XX	XX	YY	XX	XY	XY	YY	XX	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
72	XY	XX	XX	XY	XY	XY	XY	YY	YY	YY	YY	YY	XY	XY	YY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
73	XY	XY	YY	XX	YY	XY	XX	YY	XX	YY	YY	YY	XY	XY	YY	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
74	XY	XX	YY	XY	XY	YY	XX	YY	YY	YY	XX	YY	XY	XY	YY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
75	XY	XY	XX	YY	YY	XY	XX	XX	YY	YY	XX	XY	YY	XY	YY	XX	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
76	XY	XX	XY	XY	YY	XY	XY	YY	XY	YY	XY	XY	XY	XY	XX	XY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
77	XY	XX	XY	XX	YY	YY	XY	YY	XY	XY	XY	XY	XY	XY	XY	YY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a
78	XY	XX	XY	XX	YY	YY	YY	YY	XY	XX	YY	YY	XY	XY	YY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
79	XY	XX	XX	XX	XY	YY	YY	YY	XY	XY	XY	XX	XY	XY	XY	YY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a
80	XX	XX	XY	XY	YY	XY	XY	YY	XY	YY	YY	XX	XY	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
81	XX	XX	XX	XX	XX	YY	YY	XX	XY	YY	YY	YY	YY	XY	YY	YY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
82	XY	XX	YY	XX	YY	YY	XX	YY	YY	XY	XY	YY	XY	XY	YY	YY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a
83	XX	XX	XY	XX	YY	YY	XY	YY	XY	XY	XY	YY	YY	XY	XY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
84	XX	XX	YY	XX	YY	XY	XX	YY	XX	XX	XX	YY	YY	XY	YY	XY	XY	XX	n/a	n/a	n/a	n/a	n/a	n/a
85	XY	XY	XY	XY	XY	YY	XX	YY	XY	YY	XY	XY	XY	XY	YY	XY	XX	XY	n/a	n/a	n/a	n/a	n/a	n/a
86	YY	XY	YY	XY	XY	YY	XY	XY	YY	YY	XY	XY	YY	XY	YY	XX	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
87	XY	XX	XX	YY	YY	YY	XX	YY	YY	YY	XY	XX	YY	XY	YY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
88	XY	YY	XY	XY	YY	XY	XX	YY	YY	YY	YY	YY	YY	XY	YY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
89	XY	XX	XY	XY	XX	YY	YY	XY	YY	YY	XX	XY	XY	XY	XY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
90	XY	XY	XY	XY	YY	XX	XY	YY	YY	YY	YY	YY	YY	XY	YY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
91	XY	YY	XX	XY	YY	XX	XX	XX	YY	YY	XX	YY	XY	XY	YY	XX	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
92	XX	XX	YY	XX	XX	XX	XY	YY	XY	YY	YY	YY	YY	XY	YY	XY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a
93	XY	XX	XY	XX	YY	YY	XX	YY	XY	YY	XX	YY	XY	XY	YY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
94	YY	XX	XY	XY	YY	XY	XX	XY	YY	YY	XY	YY	YY	XY	YY	XY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
95	XY	XX	XY	XX	YY	XY	XX	XY	YY	YY	XY	YY	YY	XY	YY	XX	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
96	XY	XY	YY	XY	XY	YY	XY	YY	YY	YY	XY	YY	YY	XY	YY	XY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
97	XY	XX	YY	XX	XY	YY	XX	YY	YY	YY	XY	XX	YY	XY	YY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a

No.	OBC-25	OBC-26	OBC-27	OBC-28	OBC-29	OBC-30	OBC-31	OBC-32	OBC-33	OBC-34	OBC-35	OBC-36	OBC-37	OBC-38	OBC-39	OBC-40	OBC-41	OBC-42	OBC-43	OBC-44	OBC-45	OBC-46	OBC-47	OBC-48
98	XY	XX	XY	XX	XX	XY	XX	YY	YY	YY	YY	XY	YY	XY	YY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
99	XY	XY	XX	XY	YY	XX	XY	YY	YY	YY	XX	YY	YY	XY	YY	XY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
100	XY	XX	XY	XY	XX	YY	XY	YY	XX	YY	YY	XY	YY	XY	YY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
101	XY	XY	YY	XX	YY	XY	XY	YY	XY	YY	XY	XX	XY	XY	YY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
102	XX	XX	XX	XX	XY	XX	XY	YY	YY	YY	XY	YY	YY	XY	YY	XX	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
103	XX	XX	XY	XY	XY	XX	XY	YY	XY	YY	XY	YY	XY	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
104	YY	XX	XY	XX	YY	XX	YY	YY	XY	XY	YY	XY	YY	XY	YY	XY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
105	XX	XX	YY	XY	XY	YY	XX	YY	YY	YY	YY	YY	YY	XY	YY	YY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a
106	YY	XX	YY	XX	YY	YY	XX	YY	XX	YY	YY	YY	YY	XY	XY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
107	XX	XX	XX	XY	XX	XY	XX	YY	YY	YY	XX	YY	YY	XY	XY	XY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
108	XY	XX	XY	XX	XY	XY	XY	YY	XY	YY	YY	YY	YY	XY	YY	XY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
109	XY	XY	XY	XY	YY	XY	XX	YY	YY	YY	XY	YY	YY	XY	YY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
110	XY	XY	XY	XY	YY	XY	XY	YY	XY	YY	XY	YY	XY	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
111	XY	XX	XX	XX	YY	YY	YY	YY	XY	YY	XY	XY	XX	XY	XY	XY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
112	XY	XX	XX	XX	YY	YY	YY	YY	XX	XY	YY	n/a	XX	XY	YY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
113	XX	XX	YY	XY	YY	XY	YY	YY	XX	XY	YY	YY	XY	XY	YY	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
114	XY	XX	XY	XX	XY	XY	XY	YY	XY	YY	YY	XY	XX	XY	YY	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
115	XX	XX	XX	XX	XY	YY	XY	YY	XX	YY	YY	YY	XY	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
116	XY	XX	XX	XX	XY	YY	YY	YY	XX	XY	YY	YY	XX	XY	YY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
117	XX	n/a	n/a	XX	n/a	n/a	n/a	n/a	n/a	n/a	XX	n/a	XX	XY	YY	n/a	XX	XY	n/a	n/a	n/a	n/a	n/a	n/a
118	XX	XX	XY	XX	XX	YY	XY	YY	XX	XY	YY	YY	XY	XY	YY	YY	XY	XX	n/a	n/a	n/a	n/a	n/a	n/a
119	XX	XX	XY	XX	YY	YY	XY	YY	XY	XY	YY	XX	XY	XY	YY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
120	XY	XX	XY	XX	YY	YY	XY	YY	XY	XY	YY	XX	XY	XY	YY	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
121	XY	XX	XX	XY	XY	YY	YY	YY	XY	XY	XY	YY	YY	XY	XY	XY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a
122	YY	XX	XX	YY	YY	YY	YY	XY	XX	XY	YY	XY	XX	XY	YY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
123	n/a	XX	XX	XX	YY	YY	YY	n/a	XX	XX	YY	n/a	n/a	XX	YY	XX	n/a	XY	n/a	n/a	n/a	n/a	n/a	n/a
124	XY	XX	XY	XX	YY	YY	XY	YY	XY	XX	XY	YY	YY	XY	YY	YY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a
125	YY	XX	XX	XX	XX	YY	YY	XX	XX	YY	YY	n/a	XY	XY	YY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
126	XX	XX	XX	XX	XY	YY	XY	YY	XX	XX	XX	YY	XX	XY	XX	YY	XY	XX	n/a	n/a	n/a	n/a	n/a	n/a
127	n/a	n/a	n/a	XX	n/a	n/a	YY	n/a	n/a	n/a	n/a	n/a	n/a	XX	n/a	n/a	n/a	XY	n/a	n/a	n/a	n/a	n/a	n/a
128	XX	XX	XY	XY	YY	XX	XX	XY	YY	YY	XX	XY	YY	XY	XX	XX	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
129	XX	XY	XY	XY	YY	XY	XX	YY	YY	YY	XY	XY	YY	XY	XY	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
130	XY	YY	YY	XX	YY	XX	XX	YY	YY	YY	XX	YY	YY	XY	XX	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
131	XX	XY	XX	XY	YY	XX	XX	XX	XY	YY	XY	XX	YY	XY	XY	XX	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a
132	XX	XY	YY	XY	YY	XY	XX	YY	YY	YY	YY	XY	YY	XY	YY	YY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
133	XX	XX	XY	XX	YY	XY	XY	XY	YY	YY	YY	XY	YY	XY	YY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
134	XX	XX	YY	XX	YY	XX	XX	XX	YY	YY	YY	XY	YY	XY	YY	XX	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
135	XY	XX	YY	XX	YY	YY	XX	YY	XX	YY	XX	YY	YY	XY	XX	YY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a
136	XX	XX	YY	XY	YY	XY	XX	XY	XY	YY	XY	XY	YY	XY	XY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
137	n/a	n/a	n/a	n/a	YY	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	XX	n/a	n/a	n/a	XY	n/a	n/a	n/a	n/a	n/a	n/a
138	YY	XX	YY	XX	YY	YY	XX	YY	YY	YY	XX	YY	YY	XY	XX	XY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a
139	XX	YY	XY	XY	YY	YY	XX	XY	YY	YY	XX	YY	YY	XY	XX	XY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
140	XY	XX	YY	XX	XY	XY	XX	n/a	YY	YY	XY	n/a	YY	XY	YY	XX	XX	XY	n/a	n/a	n/a	n/a	n/a	n/a
141	XX	XY	YY	YY	YY	XY	XY	YY	YY	YY	XY	YY	YY	XY	XY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
142	XX	XX	YY	XY	XX	YY	YY	YY	YY	YY	XX	XX	XY	XY	XY	YY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
143	XX	XX	YY	XY	XY	YY	XY	YY	XY	YY	XY	XY	XY	XY	YY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
144	XX	XX	YY	XX	XY	XY	XY	YY	XY	YY	XY	XX	XY	XY	XY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
145	XX	XX	YY	XY	XY	YY	XY	YY	XY	XY	XY	XX	YY	XY	YY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
146	XX	YY	YY	XX	YY	YY	YY	YY	YY	YY	XX	XX	XX	XY	XX	YY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
147	XX	XY	YY	XY	YY	YY	XY	YY	YY	YY	XY	XY	YY	XY	XY	YY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
148	XX	XX	YY	XX	XY	YY	XY	XY	XY	YY	YY	XY	XY	XY	XY	YY	XY	XX	n/a	n/a	n/a	n/a	n/a	n/a
149	XX	XY	YY	XX	YY	YY	XY	YY	XY	YY	XY	YY	XY	XY	XY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
150	XX	XY	YY	XX	YY	YY	XY	YY	XY	YY	XY	XY	YY	XY	XY	YY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
151	XX	XY	YY	XY	YY	YY	XY	YY	XY	YY	XY	XY	XY	XY	XY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
152	XX	XX	YY	XY	YY	YY	XX	YY	YY	YY	XY	XY	YY	XY	XY	YY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
153	XY	XY	YY	YY	XY	XY	XY	YY	YY	YY	XX	XX	YY	XY	XX	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
154	XX	XX	YY	XY	XY	XX	XX	YY	XY	YY	XY	XX	YY	XY	XY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
155	XX	XY	XY	YY	YY	YY	XX	YY	XY	YY	XY	XX	YY	XY	XY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
156	XX	XY	XY	XY	YY	YY	YY	YY	XY	YY	YY	XX	YY	XY	YY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
157	XX	XY	YY	YY	YY	XX	XY	XX	YY	YY	XY	XY	YY	XY	XY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
158	XX	XY	YY	XX	YY	YY	YY	YY	YY	YY	XY	XY	YY	XY	XY	XX	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
159	XX	XY	XY	XY	XY	XY	XX	YY	YY	YY	YY	YY	YY	XY	YY	YY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
160	XY	XX	YY	YY	XY	YY	XX	XY	YY	YY	XY	XX	YY	XY	XY	XX	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
161	XY	XY	YY	XX	YY	XY	YY	YY	YY	YY	XY	XY	YY	XY	XY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
162	XX	XY	XY	XY	YY	XX	XY	YY	XY	YY	XY	YY	YY	XY	XY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
163	XX	YY	XY	YY	YY	XY	XX	YY	XX	YY	YY	YY	YY	XY	XX	XY	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
164	XY	XX	YY	XY	YY	XX	XX	XY	YY	YY	XX	YY	YY	XY	XY	XX	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
165	XX	XY	XY	XY	YY	YY	XY	XY	XY	YY	XY	YY	YY	XY	XY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
166	XX	XY	XY	XX	XY	XX	XX	XY	XX	YY	XY	YY	YY	XY	XY	XY	YY	YY	n/a	n/a	n/a	n/a	n/a	n/a

No.	OBC-25	OBC-26	OBC-27	OBC-28	OBC-29	OBC-30	OBC-31	OBC-32	OBC-33	OBC-34	OBC-35	OBC-36	OBC-37	OBC-38	OBC-39	OBC-40	OBC-41	OBC-42	OBC-43	OBC-44	OBC-45	OBC-46	OBC-47	OBC-48
167	XX	XX	XY	XY	YY	XY	XX	XY	XY	YY	XY	XY	YY	XY	XY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
168	n/a	XY	n/a	n/a	XX	XX	XX	n/a	XX	XY	XX	XX	XX	XY	XX	XX	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a
169	XX	XY	YY	XY	YY	XY	XY	XY	XY	YY	XY	XY	YY	XY	XY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
170	XX	XY	YY	XY	YY	XY	XX	YY	XY	YY	XY	XY	YY	XY	XY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
171	XX	XY	YY	XY	YY	XY	XY	XY	XY	YY	XY	XY	YY	XY	XY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
172	XX	XY	XX	YY	YY	XY	XY	XY	XX	YY	XY	XY	YY	XY	XY	XX	XY	XX	n/a	n/a	n/a	n/a	n/a	n/a
173	XX	XY	XY	XY	XY	XY	XY	YY	XX	YY	XX	XY	YY	XY	XY	YY	XY	XX	n/a	n/a	n/a	n/a	n/a	n/a
174	XX	XX	XY	XY	YY	XY	XX	YY	XX	YY	XX	YY	XY	XY	XY	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
175	XX	XX	YY	XX	XY	XY	XX	YY	XY	XY	XY	XY	XY	XY	YY	XY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
176	XX	XY	YY	XY	YY	XY	XY	XY	YY	YY	XY	XY	YY	XY	XY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
177	XX	XX	YY	XY	XY	XY	XY	XY	XY	YY	XY	XY	YY	XY	XY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
178	XX	XX	YY	XY	XY	XY	XY	XY	XY	YY	XY	XY	YY	XY	XY	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
179	XX	XX	YY	XY	XY	XY	XY	XY	XY	YY	XY	XY	YY	XY	XY	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
180	XX	XY	XY	XY	YY	XY	XX	YY	XY	YY	XY	XY	YY	XY	XY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
181	XX	XY	XY	XY	YY	XY	XX	YY	XY	YY	XY	XY	YY	XY	XY	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
182	XX	XY	XY	XY	YY	XY	XX	XY	YY	YY	XY	XX	YY	XY	XY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
183	XX	XY	YY	XY	YY	XY	XX	YY	XY	YY	XY	XX	YY	XY	XY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
184	XX	XX	YY	XY	XY	XY	XX	YY	XX	XY	YY	YY	XX	XY	YY	YY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
185	XX	XY	XY	XY	YY	XY	XY	YY	XY	YY	XY	XY	YY	XY	XY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
186	XX	XX	XY	XY	XY	XY	XX	YY	XX	YY	XX	XY	XX	XY	YY	XY	XY	YY	n/a	n/a	n/a	n/a	n/a	n/a
187	XX	XX	YY	XX	XX	XY	XX	YY	XY	XY	XX	XX	XY	XY	XY	XX	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a
188	XY	XY	YY	XY	YY	YY	XX	YY	YY	YY	XY	XY	YY	XY	XY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
189	XY	XX	YY	XX	XY	XY	XY	YY	XY	YY	XY	YY	YY	XY	YY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
190	XY	XY	YY	XY	YY	YY	XX	YY	YY	YY	XY	YY	YY	XY	XY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
191	XY	XY	YY	XY	YY	XY	XX	YY	YY	YY	XY	XY	YY	XY	XY	XY	XY	XY	n/a	n/a	n/a	n/a	n/a	n/a
192	XY	XX	YY	XX	XY	XY	XY	YY	YY	YY	XY	XY	YY	XY	XY	XY	YY	XY	n/a	n/a	n/a	n/a	n/a	n/a

표 8. 전시포과제 96점의 시료에 대하여, 순도검정 관련 96종의 마커를 이용한 서비스 결과

No.	OBC0 97	OBC0 98	OBC0 99	OBC1 00	OBC1 01	OBC1 02	OBC1 03	OBC1 04	OBC1 05	OBC1 06	OBC1 07	OBC1 08	OBC1 09	OBC1 10	OBC1 11	OBC1 12	OBC1 13	OBC1 14	OBC1 15	OBC1 16	OBC1 17	OBC1 18	OBC1 19	OBC1 20
1	XY	XY	XX	YY	XX	YY	XX	YY	YY	XY	XY	YY	XY	XX	XX	XX	XX	XY	XX	XY	XX	XY	XY	YY
2	XY	XY	XX	YY	XX	YY	XX	YY	YY	YY	XX	YY	YY	XX	XX	XX	XY	YY	XX	XX	XY	YY	YY	XY
3	XY	XY	XX	YY	XX	YY	XX	YY	YY	YY	XX	YY	YY	XX	XX	XX	XY	YY	XX	XX	XY	XX	YY	YY
4	XY	YY	XX	XY	XX	XY	XX	XX	XX	YY	XX	YY	XX	XY	XX	XX	XY	XY	XX	XX	XX	XX	XY	XY
5	XY	YY	XX	YY	XY	XY	XX	YY	XY	XY	XX	YY	XY	XY	XX	XX	XY	YY	XX	XX	XY	XY	YY	XY
6	XY	YY	XX	YY	XY	YY	XX	YY	XX	XX	XY	YY	XX	YY	XX	XX	YY	YY	XX	YY	XY	XX	XY	YY
7	YY	XX	XX	YY	XX	YY	XX	YY	XY	XX	YY	YY	XX	YY	XX	YY	XY	XX	XX	YY	YY	XX	XY	YY
8	XY	XY	XX	YY	XY	YY	XX	YY	XY	YY	XX	YY	XY	XX	XX	XX	YY	YY	XX	XY	XY	YY	YY	YY
9	XY	XY	XX	YY	XY	YY	XX	YY	XY	XY	XX	YY	XX	XX	XX	XX	YY	XX	XX	XY	XY	XX	XY	YY
10	XY	XX	XX	YY	XX	YY	XX	YY	XY	YY	XX	YY	XY	XY	XX	XX	XY	XY	XX	XY	YY	YY	XY	XY
11	XY	XY	XX	YY	XX	YY	XY	XY	XY	XX	YY	XY	XY	XX	XX	XX	XY	XX	XX	XY	XY	XY	XY	XY
12	YY	YY	XX	XY	XY	XX	XX	XY	XY	YY	XX	YY	YY	XY	XX	XY	YY	XX	XX	XX	XX	XY	YY	XY
13	XY	XY	XX	XX	XX	XY	XX	XX	XX	XY	XX	YY	XX	YY	XX	XX	XY	XX	XX	XY	XY	YY	XY	XY
14	XY	YY	XX	XY	XX	XY	XX	XY	XX	XY	XY	YY	XX	XY	XX	XX	XY	XY	XX	XY	XY	YY	XY	XY
15	XY	YY	XX	YY	XX	YY	XX	YY	XX	XX	XX	YY	XY	XX	XX	XX	XY	YY	XX	YY	YY	XX	XY	XY
16	XY	XY	XX	XY	XX	YY	XX	YY	XX	YY	XY	XY	XX	XX	XX	XX	XY	XY	XX	XY	YY	XY	YY	XY
17	XY	YY	XX	YY	XX	YY	XX	YY	XX	YY	XY	YY	XX	XY	XX	XX	XY	YY	XX	XY	YY	YY	YY	XY
18	XY	XY	XX	XY	XX	YY	XY	YY	XX	XX	YY	XY	XX	XX	XX	YY	XY	XX	XX	XY	YY	XX	YY	XY
19	XY	XY	XX	YY	XX	YY	XX	YY	XX	XX	XY	YY	XX	XX	XX	XX	XY	YY	XX	XX	YY	XX	YY	XY
20	XY	XY	XY	YY	XX	YY	XX	YY	XX	YY	YY	YY	XX	XX	XY	XX	XY	XY	XX	XY	YY	YY	YY	XY
21	XY	YY	XX	YY	XX	YY	XX	YY	XX	XX	XY	YY	XX	XX	XX	XY	XY	XX	XY	XY	YY	XY	YY	XY
22	XY	YY	XX	XY	XX	YY	XY	YY	XX	XY	XX	YY	XY	XX	XX	XY	XX	YY	XX	XY	YY	XY	XY	XY
23	XY	YY	XX	YY	XX	YY	XY	YY	XX	YY	XY	YY	XX	XX	XX	XY	XY	YY	XX	XX	YY	XY	XY	XY
24	XY	XY	XY	XY	XX	XX	XX	YY	XY	XY	XX	YY	XY	XX	XY	XY	XY	XY	XX	XY	XY	XY	YY	XY
25	XY	YY	XX	YY	XX	YY	XX	XY	XX	XY	XX	YY	XX	XY	XX	XX	XY	XY	XX	XY	YY	YY	XY	XY
26	XY	YY	XX	YY	XX	YY	XX	XX	XX	XX	XX	XY	XY	XY	XX	XX	XY	XX	XX	XY	YY	YY	XY	XY
27	XY	XY	XX	YY	XX	YY	XX	XY	XX	XY	XX	YY	YY	XY	XX	XX	XY	XX	XX	XY	YY	YY	YY	XY
28	XY	XX	XX	YY	XX	YY	XX	XX	XX	YY	XX	YY	YY	XY	XX	XX	XY	XX	XX	XX	XX	YY	YY	XY
29	XX	YY	XX	YY	YY	YY	XX	XX	XX	XX	XY	XY	YY	XX	XX	XX	YY	XY	XX	YY	XY	XX	YY	XX
30	XY	XY	XX	YY	XX	YY	XX	XY	XX	XY	XX	YY	XY	XY	XX	XX	XY	XX	XX	XX	XY	YY	YY	XY
31	XY	YY	XX	YY	XX	YY	XX	XX	XX	XX	XX	YY	YY	YY	XX	XX	XY	XX	XX	XY	XX	YY	XY	XY
32	XY	YY	XY	XX	XX	YY	YY	YY	XX	YY	XY	XX	XX	XY	YY	XY	XX	XX	XX	XY	YY	YY	YY	XY
33	XX	XX	XX	YY	XX	YY	XX	YY	XX	XX	XX	XY	XY	XX	XX	XY	XX	XX	XX	YY	YY	XX	YY	XX
34	XY	XY	XY	XY	XX	YY	XX	XY	XY	YY	YY	YY	XX	XX	XY	XX	XY	XY	XX	YY	YY	XY	XY	XY
35	XY	YY	XX	YY	XX	YY	YY	XY	XX	XX	XX	YY	XX	XX	XX	XY	XY	YY	XX	XY	YY	XX	YY	XY
36	XY	YY	XY	XY	XX	YY	XX	YY	XX	YY	XY	YY	XX	XX	XY	XX	XY	XY	XX	YY	YY	YY	XY	XY
37	XY	XY	XX	YY	XX	YY	XX	XY	XX	YY	XX	YY	XX	XY	XX	XX	XY	XY	XX	XY	YY	YY	XY	XY

38	XY	XY	XY	YY	XX	YY	XX	YY	XX	YY	XY	YY	XX	XX	XY	XX	XY	XY	XX	XY	YY	YY	XY	XY	
39	XY	XY	XY	YY	XX	YY	XX	YY	XY	YY	XY	YY	XX	XY	XY	XX	XY	XX	XX	YY	YY	YY	XY	XY	
40	XY	XY	XX	YY	XX	YY	XX	XY	XX	XY	XY	YY	XX	XX	XX	XY	XY	XX	XY	XX	XY	YY	YY	XY	
41	XY	XY	XY	YY	XX	YY	XX	YY	XY	XY	XY	YY	XX	XX	XY	XX	XY	XY	XX	XY	YY	XY	YY	XY	
42	XY	YY	XX	YY	XX	YY	XX	XX	XY	XX	XX	YY	XY	XY	XX	XX	XY	XY	XX	XY	XY	XY	XY	XY	
43	XY	YY	XX	XY	XX	YY	XY	YY	XX	XY	XY	XX	XX	XX	XY	XY	XX	XX	XY	YY	XY	XY	XY	XY	
44	XY	XX	XX	YY	XX	YY	XX	YY	YY	YY	XX	YY	YY	XX	XX	XX	XY	XY	XX	XX	XX	XY	YY	YY	
45	XX	XX	XX	YY	XX	YY	XX	YY	YY	YY	XX	YY	YY	XX	XX	XX	XX	XY	XX	XX	XX	XY	YY	YY	
46	YY	XY	XX	YY	XX	YY	XX	XY	XY	XY	XX	YY	YY	XY	XX	XX	XY	XY	XX	XY	XX	XY	YY	XY	
47	XY	YY	XX	YY	XX	XX	XX	YY	YY	YY	XX	YY	YY	XX	XX	XX	XY	XX	XX	XX	XX	XY	YY	XY	
48	YY	XX	XX	YY	XY	YY	XX	YY	XY	XX	XX	YY	XX	XX	XX	XY	YY	XY	XX	YY	XX	XX	YY	XY	
49	XY	XX	XX	YY	YY	YY	XX	YY	XX	XX	XX	YY	XX	XX	XX	YY	YY	XX	XX	YY	XY	XX	XX	XY	
50	XY	YY	XX	XX	XX	YY	YY	YY	XX	XY	XY	YY	XX	XX	XX	XX	XY	XX	XX	XX	YY	XX	YY	XY	
51	XY	YY	XY	YY	XX	YY	YY	YY	XX	YY	YY	YY	XY	XY	XY	XY	YY	XX	YY	YY	YY	YY	YY	XY	
52	XY	YY	XY	YY	XX	YY	XX	YY	XX	XY	YY	XY	XX	XY	XY	XX	XY	XY	YY	XX	XX	YY	XY	XY	
53	XX	XY	XY	YY	XX	XX	XX	YY	XX	XY	XY	YY	XX	XY	XY	YY	XX	XY	XX	XY	YY	XY	YY	XX	
54	XY	YY	XX	YY	XX	YY	XX	YY	XX	XX	XY	YY	XX	XX	XX	XX	XY	XY	XX	XY	YY	YY	YY	XY	
55	XY	YY	XX	YY	XX	YY	XX	YY	XX	XY	XX	YY	XX	XX	XX	XX	XY	YY	XX	YY	YY	XX	XY	XY	
56	XY	XY	XX	YY	XX	YY	XX	YY	XX	XX	XY	XX	XY	XX	XX	XY	XY	XY	XX	XX	YY	XX	XY	XY	
57	XY	XY	XX	YY	XX	YY	XX	XY	XY	XY	YY	XX	XY	XX	XX	XY	XX	XY	YY	XX	YY	XX	YY	XY	
58	XY	YY	XY	XY	XX	YY	XX	YY	XX	YY	XX	XY	XX	XY	XY	XY	XY	XY	XX	YY	YY	YY	YY	XY	
59	XY	YY	XX	XY	XX	YY	XX	YY	XX	XY	YY	YY	XX	XY	XX	XX	XY	XY	XY	XX	YY	XY	YY	XY	
60	XY	XX	XX	YY	XX	YY	XX	XY	YY	YY	XX	YY	YY	XX	XX	XX	XY	YY	XX	XX	XX	YY	YY	XY	
61	XY	XX	XX	YY	XX	YY	XX	YY	YY	YY	XX	YY	XY	XX	XX	XX	XY	XY	XX	XX	XX	YY	YY	XY	
62	XY	YY	XX	YY	XX	XX	XX	YY	YY	YY	XX	YY	XX	XY	XX	XX	XY	YY	XX	XX	XX	YY	YY	XY	
63	XY	YY	XX	YY	XX	XX	XX	YY	XY	YY	XX	YY	XX	XY	XX	XX	XX	XY	XX	XX	XX	XY	YY	XY	
64	n/a	n/a	n/a	n/a	XX	n/a	n/a	n/a	n/a	n/a	YY	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
65	XY	XY	XX	YY	XX	YY	XX	YY	YY	YY	XX	YY	YY	XX	XX	XX	XY	XY	XX	XX	XY	YY	YY	YY	
66	XY	XY	XX	YY	XX	YY	XX	YY	YY	YY	XX	YY	YY	XX	XX	XX	XY	XY	XX	XX	YY	YY	YY	YY	
67	XY	XX	XX	YY	XX	YY	XX	YY	XY	XY	XX	XY	XX	XX	XX	YY	XY	YY	XY	XY	YY	YY	YY	XY	
68	XY	XY	XX	YY	XX	XY	XX	YY	XX	YY	XX	YY	XX	XX	XX	YY	XY	XY	YY	YY	YY	YY	YY	XY	
69	YY	XX	XX	YY	XY	XY	XX	XY	XY	XY	XX	YY	XX	XX	XX	XX	YY	XX	XX	XY	XX	XY	YY	XY	
70	XY	YY	XX	YY	XX	XX	XX	YY	YY	YY	XX	YY	XX	XX	XX	XX	XY	XX	XX	XX	XX	YY	YY	XY	
71	XY	XY	XX	YY	XX	YY	XX	YY	XX	XY	XX	YY	XX	XX	XX	XX	XY	XX	XX	YY	YY	XY	YY	XY	
72	XY	XY	XX	YY	XX	YY	XX	YY	XX	XX	XX	YY	XX	XX	XX	XY	XY	XY	XX	YY	YY	XX	YY	XY	
73	XY	XY	XY	YY	XX	XY	XX	YY	XY	XX	XX	YY	XX	XX	XY	XY	XY	YY	XX	XX	XX	XY	YY	XY	
74	XY	YY	XY	YY	XX	YY	XX	YY	YY	XY	XX	YY	XX	YY	XY	XY	XY	XY	XX	XX	XX	XY	XX	XY	
75	XY	XX	XY	YY	XX	YY	XX	YY	YY	YY	XX	YY	XX	XY	YY	XX	XY	XX	XX	XX	YY	XX	XY	XY	
76	XY	XY	XY	YY	XX	YY	XX	YY	XY	YY	XX	YY	XX	XY	XY	XY	XY	XX	XX	XY	YY	YY	XY	XY	
77	XY	XY	XY	YY	XX	YY	XX	YY	XY	YY	XX	YY	XX	XY	XY	XY	XY	XX	XX	XX	YY	XY	YY	XY	
78	XY	YY	XY	YY	XX	YY	XX	YY	XX	XY	XX	YY	XX	XY	XY	XY	XY	XX	XY	YY	XY	YY	YY	XY	
79	XY	XY	XX	YY	XX	YY	XX	YY	XX	XX	XX	YY	XX	XX	XX	XY	XY	XX	XY	XX	XY	XX	YY	XY	
80	XY	XY	XY	YY	XY	YY	XX	YY	XX	XX	XX	YY	XY	XX	XY	XX	YY	XY	XX	XX	YY	YY	YY	XX	
81	XY	YY	XY	YY	XY	YY	XX	YY	XX	XY	XX	YY	XX	XX	XY	XX	YY	XY	XX	XY	YY	YY	YY	XY	
82	XX	XX	XY	YY	XX	YY	XX	XY	XX	XY	XX	YY	XX	XY	XY	XX	XX	XX	XX	XY	YY	XX	YY	XX	
83	XY	XY	XX	YY	XX	YY	XX	YY	XY	XY	XX	XY	XX	XY	XX	XY	XY	XY	XX	XY	YY	XY	YY	XY	
84	XY	XY	XX	YY	XX	YY	XX	YY	XX	XX	XX	YY	XY	XX	XX	XX	XY	XY	XX	XY	YY	XY	YY	XY	
85	XY	XY	XX	YY	XY	YY	XX	YY	XX	XY	XX	YY	XX	XX	XX	XX	XY	YY	XX	XY	YY	XY	YY	XY	
86	XY	XX	XY	YY	XY	YY	XY	YY	XY	XX	XY	XY	XX	XY	XY	XY	YY	XX	XX	XX	XY	YY	YY	XY	
87	XY	XX	XY	YY	XY	YY	XY	XY	XX	XX	XX	XY	YY	XY	YY	XY	YY	XX	XY	XX	YY	XX	YY	XY	
88	XY	YY	XY	YY	XX	XY	XX	XY	XY	XY	XX	YY	XX	XY	XY	XX	XY	YY	XY	XY	YY	XX	YY	YY	
89	XY	XY	XX	YY	XX	YY	XX	XX	XX	XX	XX	YY	XY	XY	XX	XX	XX	YY	XX	XY	YY	YY	XY	XY	
90	XY	XY	XY	YY	XX	YY	XX	YY	XX	XX	XX	YY	XY	XX	XY	XY	XY	XX	XY	YY	XX	XY	XX	XY	
91	XY	XY	XY	YY	XX	YY	XX	YY	XX	XX	XX	YY	XY	XX	XY	XY	XY	XY	XX	XY	YY	XX	YY	XY	
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No.	OBC1 21	OBC1 22	OBC1 23	OBC1 24	OBC1 25	OBC1 26	OBC1 27	OBC1 28	OBC1 29	OBC1 30	OBC1 31	OBC1 32	OBC1 33	OBC1 34	OBC1 35	OBC1 36	OBC1 37	OBC1 38	OBC1 39	OBC1 40	OBC1 41	OBC1 42	OBC1 43	OBC1 44	
1	YY	XX	XX	XX	XX	YY	XX	YY	XY	YY	XY	YY	XY	XY	XY	XY	XX	XX	XX	XY	XX	XX	XX	XX	
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No.	OBC1 45	OBC1 46	OBC1 47	OBC1 48	OBC1 49	OBC1 50	OBC1 51	OBC1 52	OBC1 53	OBC1 54	OBC1 55	OBC1 56	OBC1 57	OBC1 58	OBC1 59	OBC1 60	OBC1 61	OBC1 62	OBC1 63	OBC1 64	OBC1 65	OBC1 66	OBC1 67	OBC1 68
1	XX	XX	XX	XY	XY	YY	XY	XX	YY	XY	YY	XX	XY	XY	YY	YY	XY	XY	YY	YY	XX	YY	XY	XX
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53	XY	YY	XX	XX	YY	YY	YY	YY	XY	YY	YY	XY	XY	XX	YY	XY	XX	XX	XX	XX	XX	XX	YY	XY
54	YY	XY	XX	XX	YY	YY	YY	YY	XX	XX	YY	XX	XY	YY	XY	XX	XY	XX	XX	XX	XX	XX	XY	XY

55	YY	XY	XX	XY	YY	YY	YY	YY	XX	XY	YY	XX	XY	XX	YY	XY	XY	XX	XY	XX	XX	XY	XX		
56	XX	XX	XX	XY	XX	YY	YY	YY	YY	YY	YY	XY	XY	XX	XY	XX	XY	XX	XX	XX	XX	XY	XX	XX	
57	YY	YY	XX	XY	XX	YY	YY	YY	XX	XY	XX	XY	XY	XX	XX	XY	XX	XX	YY	XX	XX	XX	XY	YY	
58	XY	XX	XX	XX	XX	YY	YY	YY	XY	YY	YY	XY	XY	XX	YY	XY	XX	XX	XX	XX	XX	XY	XX	YY	
59	XY	XY	XX	XX	XY	YY	YY	YY	XY	XY	XY	XY	XY	XX	XY	YY	XY	XY	XY	XX	XX	XX	XY	YY	
60	XX	XX	XY	YY	YY	XX	XX	YY	XX	YY	XX	XY	YY	YY	YY	YY	YY	YY	YY	XX	YY	XY	XY		
61	XX	XX	XX	YY	YY	YY	XX	XX	YY	XX	YY	XX	XY	YY	YY	XY	YY	YY	XX	XY	XY	XY	XY		
62	XX	XX	YY	YY	YY	XX	XX	YY	XX	YY	XX	XY	XY	YY	XY	YY	XX	XY	YY	XX	YY	XY	YY		
63	XX	XX	XX	XY	YY	YY	XX	XX	YY	XX	YY	XX	XY	XY	YY	XY	YY	YY	YY	XX	YY	XY	YY		
64	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	YY	XX	n/a	n/a	n/a	n/a	n/a	n/a		
65	XX	XX	YY	YY	YY	YY	XY	XY	YY	XX	YY	XX	XY	XY	YY	YY	XY	YY	YY	YY	XX	YY	XY	XX	
66	XX	XX	XY	YY	XY	YY	YY	XX	YY	XX	YY	XY	XY	YY	YY	YY	YY	YY	XY	XX	YY	XY	XX		
67	XX	XX	XX	XX	YY	XX	XY	YY	YY	XX	YY	YY	XY	XX	XX	XX	XX	XX	XX	XX	XX	XY	XY	XX	
68	XY	XY	XX	XX	XX	XX	XY	YY	XY	YY	XY	XY	XY	XY	XX	XX	XX	XX	XY	XX	XX	XX	XX	XX	
69	XX	XX	XY	XY	XY	XY	XY	XY	YY	XX	XY	XX	XY	YY	YY	XY	XY	XY	XY	XY	XY	XY	XY	XX	
70	XY	XX	XX	XX	XY	YY	YY	XX	YY	XX	YY	XX	XY	XX	YY	XY	YY	XX	YY	XY	XX	YY	XY	XX	
71	YY	XX	XX	XY	XX	XY	XY	YY	XX	YY	YY	XY	XY	YY	XX	XX	XX	XX	XY	XX	XX	XX	XY	XX	
72	XY	XX	XX	XX	XY	XY	YY	YY	XY	XY	YY	XY	XY	XX	YY	XX	XX	XX	XY	XX	XX	XY	XY	XX	
73	XX	XX	XX	XY	XX	XX	XY	YY	YY	XY	YY	XY	XY	XX	YY	XX	YY	XX	XX	XX	XY	XX	XX	XX	
74	YY	XX	YY	XY	YY	XX	XY	YY	YY	XY	YY	XX	XY	YY	YY	YY	YY	YY	XX	XX	XX	XX	YY	XY	XX
75	YY	XX	YY	YY	YY	XY	YY	YY	YY	XY	YY	YY	XY	YY	YY	YY	YY	YY	XX	XX	XX	XX	YY	XY	XX
76	YY	XX	YY	XY	YY	XY	XY	YY	YY	XX	YY	XY	XY	XY	XY	XY	XY	XX	XY	XX	XX	XY	XX	XX	
77	XY	XX	YY	XY	YY	XX	YY	YY	YY	XX	YY	XY	XY	XY	XY	XY	XY	XX	XY	XX	XX	XY	XX	XX	
78	XY	XX	XX	XY	XY	XX	XY	YY	XY	XY	YY	XX	XY	YY	XY	XX	XY	XX	XY	XX	XX	XY	XX	XX	
79	YY	XX	XX	XX	XX	XY	XY	YY	XX	YY	YY	XY	XY	XY	XY	XX	XX	XX	XX	XX	XX	XY	XY	XX	
80	YY	XX	XX	XX	XY	XX	YY	YY	XX	XY	YY	XY	XY	YY	YY	XX	XY	XX	XX	XX	XX	YY	XX	XX	
81	XY	XY	XX	XX	YY	XX	YY	YY	XY	XX	YY	XX	XY	XX	XX	XY	XY	XY	XY	XX	XX	XX	XY	XX	
82	YY	XX	XX	XX	XY	XX	XY	YY	XX	XY	YY	YY	XY	XY	XX	XX	XX	XX	XY	XX	XX	XY	XX	XX	
83	YY	XX	XX	XY	XY	XX	XY	YY	XX	XY	YY	XY	XY	XY	XX	XX	XY	XX	XX	XX	XX	XX	XY	XX	
84	XY	XX	XY	XY	XY	XY	XY	YY	XY	XY	YY	XY	XY	XY	XY	XY	XX	XX	XY	YY	XX	XX	XY	XX	
85	XY	XY	XX	XY	XY	XY	XY	YY	XY	XY	YY	XY	XY	XY	XY	XY	XX	XY	XX	XX	XX	XX	XX	XX	
86	XX	XY	XY	XX	XY	XX	YY	XY	XY	XY	XY	XY	XY	XY	YY	XY	XY	XY	XY	XX	XX	YY	XX	XX	
87	XX	XY	XY	XX	XY	XX	XY	XY	YY	XX	YY	YY	XY	YY	YY	XY	XY	XY	XY	XY	XX	XY	XY	XX	
88	XY	XY	XX	XY	XX	XY	XY	YY	XY	XY	YY	XX	XY	XX	XY	XX	XX	XY	XX	XX	XY	XY	XX	XY	
89	XX	XY	XY	XX	XY	YY	YY	XY	YY	XX	XY	XX	XY	XY	YY	XY	XY	XY	YY	XX	XX	YY	XY	XX	
90	XY	XX	XX	XX	XY	XY	XY	YY	XY	XY	YY	XY	XY	XY	XY	XX	XX	XX	XX	XX	XX	XX	XY	XX	
91	XY	XX	XX	XX	XY	XY	XY	YY	XY	XY	YY	XY	XY	XY	XX	XX	XX	XX	XX	XX	XX	XX	XY	XX	
92	XY	XX	XX	XY	XY	XY	XY	YY	XY	XY	YY	XY	XY	XY	XX	XX	XX	XX	YY	XX	XX	XY	XY	XX	
93	XY	XX	XY	XX	XY	XY	XY	YY	XY	XY	XY	XY	XY	XY	XX	XX	XX	XY	XX	XX	XX	XX	XX	XX	
94	XX	XY	XY	XY	YY	XY	YY	YY	XY	XX	YY	XX	XY	XY	YY	XX	XX	XY	YY	XY	YY	XY	XX	XX	
95	XY	XX	XX	XY	XX	XY	XY	YY	XY	XY	YY	XY	XY	XY	XY	XX	XX	XY	XY	XX	XX	XY	XY	XX	
96	XY	XX	XX	XX	XY	XX	YY	YY	XY	XY	YY	XY	XY	XY	XX	XX	XY	XY	XY	XX	XX	XY	XY	XX	
No.	OBC1 69	OBC1 70	OBC1 71	OBC1 72	OBC1 73	OBC1 74	OBC1 75	OBC1 76	OBC1 77	OBC1 78	OBC1 79	OBC1 80	OBC1 81	OBC1 82	OBC1 83	OBC1 84	OBC1 85	OBC1 86	OBC1 87	OBC1 88	OBC1 89	OBC1 90	OBC1 91	OBC1 92	
1	XY	YY	XY	XY	YY	YY	XX	YY	YY	XX	XY	XY	XX	XX	XX	XY	YY	XX	XX	YY	XX	XX	XY	XX	
2	YY	YY	YY	XY	XY	YY	YY	XY	YY	XY	XY	YY	XX	XX	XX	XY	YY	XX	XX	XY	XX	XY	XY	XX	
3	XX	YY	XY	XY	YY	YY	XY	YY	YY	XY	XY	YY	XX	XY	XY	YY	XY	YY	XX	YY	XX	XY	XY	XX	
4	XX	YY	XX	XY	YY	XX	XY	YY	YY	XY	XY	XX	XY	XX	XY	XX	YY	YY	XX	XY	YY	XY	XY	XY	
5	YY	YY	XY	XY	XX	XY	XX	XY	YY	XX	YY	XY	XY	XX	YY	XX	YY	XX	XY	XY	XY	XX	XY	XY	
6	XY	XY	XX	XY	YY	YY	XX	XX	YY	XX	XY	XY	XX	XX	XX	XX	XY	XY	XY	XX	XY	XX	XY	XX	
7	XY	YY	XX	XY	XY	YY	XX	XX	YY	XX	YY	YY	YY	XX	XY	XX	YY	XY	XY	XX	XY	XX	XY	XX	
8	YY	YY	YY	XY	XY	YY	XX	XY	YY	XY	YY	XY	XY	XX	XX	XY	YY	XX	XY	XX	XY	XY	XY	XX	
9	XY	YY	XY	XY	XY	XY	XX	XY	YY	XX	XY	YY	XY	XX	XY	XY	XY	XX	XY	XX	XY	XX	XY	XX	
10	YY	YY	YY	XY	XX	YY	XX	XY	YY	XX	XY	YY	XY	XX	XY	XX	YY	XY	XY	XY	XY	XX	XY	XX	
11	YY	YY	XY	XY	XX	YY	XY	XX	YY	XX	XY	XY	YY	XX	XY	XX	YY	XX	XX	XX	XY	XX	XY	XY	
12	XY	YY	XX	XY	XX	YY	n/a	XX	YY	XY	XY	XY	XY	XX	XX	XY	YY	YY	XX	XX	XX	XY	XY	XY	
13	XY	XY	XX	XY	XX	YY	XX	XX	YY	XX	XY	XY	XY	XX	XY	XX	XX	YY	XX	XX	XY	XX	XY	XX	
14	XY	XX	XX	XY	XX	YY	XX	XX	YY	XX	XY	XY	XY	XY	XX	XX	XX	YY	XX	XX	XX	XX	XY	XX	
15	XX	XX	XX	XY	XX	YY	XX	XX	YY	XX	XY	XY	YY	XX	XX	YY	XX	XX	YY	XX	YY	XX	XY	XX	
16	YY	XX	XX	XY	XX	YY	YY	XY	YY	XX	XY	XY	YY	XX	XY	YY	XX	XX	XY	XY	YY	XX	XY	XX	
17	XY	XX	XY	XY	XX	YY	XX	XX	YY	XX	YY	YY	YY	XX	XX	YY	XX	XX	XY	XX	YY	XX	XY	XX	
18	YY	XY	XX	XY	XX	YY	XY	XX	YY	XX	YY	XY	YY	XX	XX	YY	XX	XX	XX	XX	YY	XX	XY	XX	
19	XX	XX	XY	XY	YY	XX	XY	XX	XY	XX	XY	YY	XX	XY	XX	XX	XX	XX	XY	XX	XY	XX	XY	XX	
20	XY	XX	XX	XY	YY	YY	YY	XX	YY	XX	XY	YY	XX	XX	XX	XX	XX	XX	XX	XX	YY	XX	XY	XX	
21	XY	XY	XY	XY	YY	XX	XX	XX	XX	XX	XY	XY	XX	XX	XX	XX	XX	XX	XY	XX	XX	XX	XY	XX	
22	YY	XX	XX	XY	XY	XY	XX	XY	XY	XX	XY	XY	YY	XY	XX	YY	XX	XX	YY	XY	XY	XX	XY	XX	
23	XY	YY	YY	XY	XX	XY	XX	XX	XY	XX	XY	XY	YY	XX	XX	XY	XX	XX	XY	XX	XY	XX	XY	XX	
24	XX	XX	XX	XY	XX	YY	XX	XX	YY	XX	XY	XY	YY	XX	YY	XY	XY	XX	XY	XX	XY	XX	XY	XX	
25	YY	XX	XX	XY	XX	YY	XX	XX	YY	XY	YY	XY	XY	XY	XX	XY	XX	YY	XY	XX	XY	XY	XY	XX	
26	XY	XY	XX	XY	XX	YY	XX	XX	YY	XY	XY	XY	XY	XX	XY	XX	XY	YY	XY	XX	XX	XY	XY	XX	
27	XX	XY	XX	XY	XY	YY	XY	XX	YY	YY	XY	XY	XX	XX	XY	XX	YY	XX	XX	XY	YY	XY	XY	XX	

28	XX	XY	XX	XY	XX	YY	YY	XX	YY	XY	XY	XY	XX	XX	YY	YY	XX	XX	XX	XX	XY	XY	XX	
29	n/a	YY	XX	XY	YY	YY	XX	XX	YY	XX	XX	YY	XX	XX	YY	XX	XY	XX	XX	XX	XX	XX	n/a	XX
30	XY	XY	XY	XY	XY	XY	YY	XX	YY	YY	XY	YY	XY	XX	XX	XX	YY	XX	XX	XX	XX	YY	XY	XY
31	XY	XX	XX	XY	XX	YY	YY	XX	YY	XY	XY	XX	XX	YY	XX	XX	XY	XX	XX	XX	XX	XX	XY	XY
32	XX	XX	XY	XY	XY	XY	XX	XX	XX	XX	XY	XY	YY	XY	XX	YY	XX	XX	XY	XX	XX	XX	XY	XX
33	XY	XY	XY	XY	XX	XY	YY	XY	YY	XX	XY	XX	YY	XX	XX	YY	XX	XX	YY	XY	YY	XX	XY	XX
34	XX	XX	YY	XY	XX	XX	XX	XY	YY	XX	XY	XY	YY	XX	XX	YY	XY	XX	XY	XY	YY	XX	XY	XX
35	YY	XX	XY	XY	XY	XX	XX	XX	YY	XX	XY	XY	XY	XX	XX	XY	XX	XX	YY	XX	YY	XX	XY	XX
36	YY	XX	XX	XY	XY	XY	XX	XX	YY	XX	XY	XY	XY	XX	XX	XX	XY	XY	XX	YY	XX	YY	XX	XY
37	XY	XX	XY	XY	XX	XX	XY	XY	YY	XX	YY	YY	YY	XX	XX	XX	XY	XX	YY	YY	YY	XX	XY	XX
38	YY	XY	XX	XY	YY	XY	XY	XX	YY	XX	XY	XY	XX	YY	XX	XX	XX	XX	YY	XX	YY	XX	XY	XX
39	XY	XX	XY	XY	XX	XY	XX	XX	XY	XX	XY	XX	YY	XX	XY	XY	XX	XX	YY	XX	YY	XX	XY	XX
40	XY	XY	XY	XY	XY	XY	XY	XX	YY	XX	YY	XX	XX	XY	XX	XX	XY	XY	XY	XX	YY	XX	XY	XX
41	XX	XX	YY	XY	YY	XX	XX	XX	XY	XX	XY	YY	XX	XX	XX	XY	XY	XX	XY	XX	XX	XY	XY	XX
42	XY	XY	XX	XY	XX	YY	XX	XX	YY	XX	XY	XY	XY	XX	YY	XX	XY	XY	XY	XX	XY	XX	XY	XX
43	YY	XX	XX	XY	XX	XX	XX	XX	YY	XX	XY	XY	YY	XY	XX	YY	XX	XX	XY	XX	YY	XX	XY	XX
44	YY	YY	YY	XY	XY	YY	XY	YY	YY	XY	XY	XY	XX	XX	XX	XX	YY	XX	XX	YY	XY	XY	XY	XX
45	YY	YY	YY	XY	YY	YY	XY	YY	YY	XX	XX	YY	XX	XX	XX	XY	XX	XX	XX	YY	XY	XX	XY	XX
46	XY	XY	XY	XY	XY	XY	XY	YY	YY	XY	YY	YY	XY	XX	XY	XY	XY	XY	XX	YY	XY	XY	XY	XX
47	YY	YY	YY	XY	YY	YY	YY	YY	YY	XX	YY	YY	YY	XX	XX	YY	YY	YY	XX	XX	XY	XX	XY	XX
48	XX	XX	XY	XY	XX	YY	XX	XX	YY	XX	YY	YY	YY	XX	XX	XX	XX	XY	XX	XY	XX	YY	XX	XY
49	XX	XX	XX	XY	XX	YY	XX	XX	YY	YY	XY	XY	YY	XX	YY	XY	YY	XY	XX	XX	XX	YY	XY	XX
50	YY	XX	XX	XY	XY	XY	XX	XY	YY	XX	XY	XY	XY	XX	XX	XY	XX	XX	XY	XY	YY	XX	XY	XX
51	XX	XX	XX	XY	YY	XY	XX	XX	YY	XX	XY	XY	XX	XX	XX	XY	YY	XX	YY	XX	YY	XX	XY	XX
52	XX	XY	XY	XY	XY	XY	XX	YY	YY	XX	XY	XY	YY	YY	XX	YY	XX	XX	XX	YY	YY	XX	YY	XX
53	XX	XY	YY	XY	XY	XX	XY	XX	YY	XX	XX	XX	XY	XX	YY	YY	XX	XX	XX	YY	YY	XX	XX	XX
54	XY	XX	XY	XY	YY	XX	XX	XX	YY	XX	XY	XY	XX	XY	XX	XX	XX	XX	XY	XX	YY	XX	XY	XX
55	XY	XY	XY	XY	YY	XY	XX	XX	XY	XX	XY	XY	XX	XX	XY	XX	XY	XX	YY	XX	XY	XX	XY	XX
56	YY	XY	XX	XY	XX	XX	XX	XX	YY	XX	YY	XY	YY	XX	XX	XY	XY	XX	YY	XX	YY	XX	XY	XX
57	XY	XX	XX	XY	XY	YY	XX	XX	XX	XX	XY	YY	XX	XY	XX	XX	YY	XX	XX	XX	XX	XX	XY	XX
58	XY	XX	XY	XY	XY	XY	XX	XX	XX	XX	XY	XY	XY	XX	XY	XY	XY	XX	XY	XX	XY	XX	XY	XX
59	XY	XY	XY	XY	XY	XY	XX	XX	YY	XX	XY	XY	XY	XY	XY	YY	XY	XY	XY	XX	XY	XX	XY	XX
60	YY	YY	YY	XY	YY	YY	XY	YY	YY	YY	XY	YY	XX	XX	XX	XY	YY	XX	XX	YY	XY	YY	XY	XX
61	YY	YY	YY	XY	XY	XY	XX	YY	YY	XY	XY	YY	XX	XX	XX	XY	YY	XX	XX	YY	XX	XY	XY	XX
62	YY	YY	YY	XY	YY	YY	XX	XY	YY	XX	XY	YY	XX	XX	XY	XY	XX	XX	XY	XX	XX	XX	XY	XX
63	YY	YY	YY	XY	YY	YY	YY	YY	YY	XY	YY	YY	XX	XX	XX	XY	XX	XX	XX	YY	XX	XX	XY	XX
64	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	XY	n/a	n/a	n/a	XY	n/a	n/a	n/a	n/a	n/a
65	YY	YY	YY	XY	YY	YY	YY	YY	YY	XX	YY	YY	XX	XX	XX	YY	YY	XX	XX	YY	XY	XX	XY	XX
66	YY	YY	YY	XY	YY	YY	XX	XY	YY	XY	XY	XY	XX	XX	XX	XY	XY	XX	XX	XY	XX	XY	XY	XX
67	YY	XY	XX	XY	XY	XX	XY	XX	YY	XX	XY	YY	XY	XX	XX	YY	XY	XX	YY	XX	YY	XX	XY	XX
68	XY	XX	XY	XY	YY	XY	XY	XX	YY	XX	XY	YY	XY	XX	XX	XY	XX	XY	XX	YY	XX	XY	XY	XX
69	XX	YY	XY	XY	XY	YY	XX	XY	YY	XX	XY	YY	XY	XX	XY	XX	XY	XX	XX	XX	XY	XX	XY	XX
70	YY	YY	YY	XY	YY	YY	XX	XY	YY	XX	XY	YY	XX	YY	XX	XX	YY	XX	XX	XY	XX	XX	XY	XX
71	YY	XY	XX	XY	YY	XY	XY	XX	YY	XX	XY	YY	XX	XX	XX	XX	XX	XX	YY	XX	YY	XX	XY	XX
72	YY	YY	XX	XY	YY	XY	XY	XX	YY	XX	XY	YY	XY	XX	XX	XY	XX	XY	YY	XX	YY	XX	XY	XX
73	YY	XX	XX	XY	XY	XY	XX	XX	YY	XX	XY	XX	XY	XX	XX	XY	XY	XY	YY	XX	XX	XX	XY	XX
74	XX	XX	XX	XY	XX	XX	XY	XX	XY	YY	XY	XX	XY	XY	XY	YY	YY	XX	XY	XX	YY	YY	XY	YY
75	XX	XX	XY	XY	XX	XX	XX	XX	XY	YY	XY	XX	XY	YY	YY	YY	YY	XX	XX	XX	YY	YY	XY	YY
76	XY	XY	XY	XY	XY	XY	YY	XX	YY	XY	XY	XY	XY	XY	XY	YY	XY	XX	XY	XX	XY	XY	XY	XY
77	XY	XY	XY	XY	XY	XY	YY	XX	YY	XY	XY	XY	YY	XX	XX	YY	XY	XY	XY	XX	XY	XY	XY	XY
78	YY	XX	XX	XY	XY	XY	XX	XX	YY	XX	YY	XY	XX	XX	XX	XY	XY	XY	YY	XX	YY	XX	XY	XX
79	YY	XY	XY	XY	YY	XX	XY	XX	YY	XX	XY	XY	XX	XX	XX	XY	XX	XX	YY	XX	XY	XX	XY	XX
80	YY	XX	XX	XY	YY	XY	XY	XX	YY	XX	XY	XX	XX	XX	XX	XY	XX	XX	YY	XX	XY	XX	XY	XX
81	YY	XX	XX	XY	XY	XY	XX	XX	YY	XX	YY	YY	XX	XX	XX	XY	XY	XY	YY	XX	YY	XX	XY	XX
82	XY	XX	YY	XY	YY	XY	YY	XX	YY	XX	XY	YY	XX	XX	XX	XY	XY	XY	YY	XX	YY	XX	XY	XX
83	YY	XX	XX	XY	YY	XX	XX	XX	YY	XX	XY	YY	XX	XX	XY	XY	YY	XX	YY	XX	YY	XX	XY	XX
84	YY	XX	XY	XY	XY	YY	XY	XX	YY	XX	XY	XY	XX	XX	XX	XY	XX	XY	YY	XX	XY	XX	XY	XX
85	YY	XY	XY	XY	XY	XX	XY	XX	YY	XX	XY	XY	XX	XX	XX	XY	XX	XX	XY	XX	XY	XX	XY	XX
86	XY	XX	XY	XY	XY	YY	XY	XX	YY	XY	XY	XY	YY	XY	XX	XY	XX	XY	XX	XY	XX	XY	XY	XX
87	XY	XY	XY	XY	XX	XY	XY	XY	YY	XY	XY	XY	XX	XY	XX	XY	XX	XX	XY	XY	XX	XY	XY	XX
88	XY	XY	XY	XY	YY	XX	XY	XX	YY	XY	YY	XY	XY	XY	XX	XX	XX	XX	XY	XX	XY	XY	YY	XY
89	XY	XX	XY	XY	XX	YY	XX	XX	YY	XY	XY	XY	XX	XX	YY	XY	XY	XY	XY	XX	XX	XY	XY	XX
90	YY	XX	XY	XY	XY	XX	XY	XX	YY	XX	XY	XY	XX	XX	XX	XY	XX	XX	YY	XX	XY	XX	XY	XX
91	YY	XX	XY	XY	XY	XX	XY	XX	YY	XX	XY	XY	XX	XX	XX	XY	XX	XX	YY	XX	XY	XX	XY	XX
92	YY	XX	XX	XY	YY	YY	XY	XX	YY	XX	XY	XY	XY	XX	XX	XY	XX	XY	YY	XX	YY	XX	XY	XX
93	YY	XX	XY	XY	YY	XY	XY	XX	YY	XX	XY	YY	XY	XX	XX	XY	XX	XY	YY	XX	XY	XX	XY	XX
94	XX	XY	XY	XY	XX	YY	XX	XY	YY	XX	YY	XY	XX	XY	YY	XX	XY	XX	XX	XY	XY	XX	XY	XX
95	YY	XX	XX	XY	XY	XY	XX	XX	YY	XX	XY	XY	XX	XX	XX	XY	XY	XY	YY	XX	YY	XX	XY	XX
96	YY	XX	XX	XY	XY	XY	XY	XX	YY	XX	XY	YY	XY	XX	XX	XY	XY	XY	XY	XX	YY	XX	XY	XX

② 씨앗과사람들

씨앗과사람들로부터 총 1,869점의 시료를 받아 3번의 서비스를 진행하였다. 처음 233점의 시료에 대하여, 형질 관련 1종의 마커로 서비스를 진행하였다(표 9). 두 번째로는 1,200점의 시료에 대하여, 각기 다른 형질 마커(orf725, Jnurf13)의 마커로 서비스를 진행하였다(표 10). 세 번째로는 436점의 시료에 대하여, 형질 관련 마커 1종의 마커로 서비스를 진행하였다(표 11). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 9, 10, 11).

표 9. 씨앗과사람들 233점의 시료에 대하여, 형질 관련 1종의 마커를 이용한 서비스 결과

No.	orf725	No.	orf725	No.	orf725	No.	orf725	No.	orf725	No.	orf725
1	S	40	N	79	S	118	S	157	S	196	S
2	S	41	S	80	S	119	S	158	S	197	S
3	S	42	S	81	S	120	S	159	S	198	N
4	S	43	S	82	S	121	S	160	S	199	N
5	S	44	S	83	S	122	S	161	S	200	N
6	S	45	S	84	S	123	S	162	S	201	N
7	S	46	S	85	S	124	S	163	S	202	N
8	S	47	S	86	S	125	S	164	S	203	N
9	S	48	S	87	S	126	S	165	S	204	N
10	S	49	S	88	S	127	S	166	S	205	N
11	S	50	S	89	S	128	S	167	S	206	N
12	S	51	S	90	S	129	S	168	N	207	N
13	S	52	S	91	S	130	S	169	S	208	N
14	S	53	S	92	S	131	S	170	S	209	N
15	S	54	S	93	S	132	S	171	S	210	N
16	S	55	S	94	S	133	S	172	S	211	N
17	S	56	S	95	S	134	S	173	N	212	N
18	N	57	S	96	S	135	S	174	N	213	N
19	S	58	S	97	S	136	S	175	S	214	S
20	S	59	S	98	S	137	S	176	S	215	S
21	S	60	S	99	S	138	S	177	S	216	S
22	S	61	S	100	S	139	S	178	S	217	S
23	S	62	S	101	S	140	S	179	S	218	S
24	S	63	S	102	S	141	N	180	S	219	S
25	S	64	S	103	S	142	S	181	S	220	S
26	S	65	S	104	S	143	S	182	S	221	S
27	S	66	S	105	S	144	S	183	S	222	S
28	S	67	S	106	S	145	S	184	S	223	S
29	N	68	S	107	S	146	S	185	S	224	S
30	S	69	S	108	S	147	S	186	S	225	S
31	S	70	S	109	S	148	S	187	S	226	N
32	S	71	S	110	S	149	S	188	N	227	N
33	S	72	S	111	S	150	S	189	S	228	N
34	S	73	S	112	S	151	S	190	S	229	N
35	S	74	S	113	S	152	N	191	S	230	N
36	S	75	S	114	S	153	S	192	S	231	N
37	S	76	S	115	S	154	S	193	S	232	N
38	S	77	S	116	S	155	S	194	S	233	N
39	S	78	S	117	S	156	S	195	S		

표 10. 씨앗과사람들 1,200점의 시료에 대하여, 각기 다른 형질 마커(orf725, Jnurf13)를 이용한 서비스 결과

No.	orf725	Jnurf13	No.	orf725	Jnurf13	No.	orf725	Jnurf13	No.	orf725	Jnurf13
1	T	msms	277	T	MsMs	553	T	msms	829	N	H
2	T	msms	278	T	MsMs	554	T	msms	830	N	msms
3	T	msms	279	T	MsMs	555	T	msms	831	N	H
4	T	msms	280	T	MsMs	556	T	msms	832	N	msms

5	T	msms
6	T	msms
7	T	msms
8	T	msms
9	T	msms
10	T	msms
11	T	H
12	T	H
13	T	H
14	T	msms
15	T	H
16	T	msms
17	T	msms
18	T	H
19	S	MsMs
20	S	MsMs
21	S	MsMs
22	S	MsMs
23	S	MsMs
24	S	MsMs
25	S	MsMs
26	S	MsMs
27	S	MsMs
28	S	MsMs
29	S	MsMs
30	S	MsMs
31	S	H
32	S	MsMs
33	S	MsMs
34	T	msms
35	T	msms
36	T	msms
37	T	msms
38	T	msms
39	T	msms
40	T	msms
41	T	msms
42	T	msms
43	N	msms
44	N	msms
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63	T	msms
64	T	msms
65	N	msms
66	N	H
67	N	msms
68	N	msms

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970	N	MsMs
971	N	H
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513	T	msms
514	T	msms
515	N	msms
516	N	msms
517	N	msms
518	N	msms
519	N	msms
520	N	msms
521	N	msms
522	N	msms
523	N	msms
524	N	msms
525	N	msms
526	N	msms
527	N	msms
528	N	msms
529	T	msms
530	T	msms
531	T	msms
532	T	msms
533	T	msms
534	T	msms
535	T	msms
536	T	msms

749	T	MsMs
750	T	MsMs
751	T	MsMs
752	T	MsMs
753	T	MsMs
754	T	MsMs
755	T	msms
756	T	msms
757	T	msms
758	T	msms
759	T	msms
760	T	msms
761	T	msms
762	T	msms
763	T	msms
764	T	msms
765	T	msms
766	T	msms
767	T	msms
768	T	msms
769	T	msms
770	N	MsMs
771	N	H
772	N	MsMs
773	N	n/a
774	S	H
775	N	msms
776	S	H
777	N	msms
778	S	H
779	S	msms
780	N	H
781	S	H
782	N	H
783	S	MsMs
784	S	H
785	T	msms
786	T	msms
787	T	msms
788	T	msms
789	T	msms
790	T	msms
791	T	msms
792	T	msms
793	T	msms
794	T	msms
795	T	msms
796	T	msms
797	T	msms
798	T	msms
799	T	msms
800	T	msms
801	T	msms
802	T	msms
803	T	msms
804	T	msms
805	N	MsMs
806	N	msms
807	N	H
808	N	msms
809	N	msms
810	N	msms
811	T	msms
812	T	msms

1025	T	msms
1026	T	msms
1027	T	msms
1028	T	msms
1029	T	msms
1030	T	msms
1031	T	msms
1032	T	msms
1033	T	msms
1034	T	msms
1035	T	msms
1036	T	msms
1037	T	msms
1038	T	msms
1039	T	msms
1040	T	msms
1041	T	msms
1042	S	MsMs
1043	S	MsMs
1044	S	MsMs
1045	S	MsMs
1046	S	MsMs
1047	S	MsMs
1048	S	MsMs
1049	S	MsMs
1050	S	MsMs
1051	S	MsMs
1052	S	MsMs
1053	S	MsMs
1054	S	MsMs
1055	S	MsMs
1056	S	MsMs
1057	S	MsMs
1058	S	MsMs
1059	S	MsMs
1060	T	msms
1061	T	msms
1062	T	msms
1063	T	msms
1064	T	msms
1065	T	msms
1066	T	msms
1067	T	msms
1068	T	msms
1069	T	msms
1070	T	msms
1071	T	msms
1072	T	msms
1073	T	msms
1074	N	msms
1075	N	msms
1076	N	msms
1077	N	msms
1078	N	msms
1079	N	msms
1080	N	msms
1081	N	msms
1082	N	msms
1083	N	msms
1084	T	msms
1085	T	msms
1086	T	msms
1087	T	msms
1088	T	msms

261	N	msms	537	T	msms	813	T	msms	1089	T	msms
262	N	msms	538	T	msms	814	T	msms	1090	T	msms
263	N	msms	539	T	msms	815	T	msms	1091	T	msms
264	N	H	540	T	msms	816	T	msms	1092	T	msms
265	N	msms	541	N	msms	817	T	msms	1093	T	msms
266	T	MsMs	542	N	msms	818	T	msms	1094	T	msms
267	T	MsMs	543	N	msms	819	T	msms	1095	S	MsMs
268	T	MsMs	544	N	msms	820	T	msms	1096	S	MsMs
269	T	MsMs	545	N	msms	821	T	msms	1097	S	MsMs
270	T	MsMs	546	N	msms	822	T	msms	1098	S	H
271	T	MsMs	547	N	msms	823	T	msms	1099	S	MsMs
272	T	MsMs	548	N	msms	824	T	msms	1100	S	MsMs
273	T	MsMs	549	N	msms	825	T	msms	1101	S	MsMs
274	T	MsMs	550	N	msms	826	T	msms	1102	S	MsMs
275	T	MsMs	551	N	msms	827	T	msms	1103	S	MsMs
276	T	MsMs	552	N	msms	828	T	n/a	1104	S	MsMs

No.	orf725	No.	orf725	No.	orf725	No.	orf725	No.	orf725	No.	orf725
1	S	17	S	33	S	49	S	65	S	81	S
2	S	18	S	34	S	50	S	66	S	82	S
3	S	19	S	35	S	51	S	67	S	83	S
4	S	20	S	36	S	52	S	68	N	84	S
5	S	21	S	37	S	53	S	69	S	85	N
6	N	22	S	38	S	54	S	70	S	86	S
7	S	23	S	39	S	55	S	71	S	87	S
8	S	24	S	40	S	56	N	72	S	88	S
9	S	25	S	41	S	57	S	73	S	89	S
10	S	26	S	42	S	58	S	74	N	90	S
11	N	27	S	43	S	59	S	75	S	91	S
12	S	28	S	44	S	60	S	76	S	92	S
13	S	29	S	45	S	61	S	77	S	93	S
14	S	30	N	46	S	62	S	78	S	94	S
15	S	31	S	47	S	63	S	79	S	95	S
16	S	32	S	48	S	64	S	80	S	96	S

표 11. 씨앗과사람들 436점의 시료에 대하여, 형질 관련 1종의 마커를 이용한 서비스 결과

No.	orf725	No.	orf725	No.	orf725	No.	orf725	No.	orf725	No.	orf725
1	S	74	S	147	S	220	N	293	S	366	S
2	S	75	S	148	S	221	N	294	N	367	S
3	S	76	S	149	S	222	N	295	S	368	S
4	S	77	S	150	S	223	N	296	N	369	S
5	S	78	S	151	N	224	N	297	S	370	S
6	S	79	S	152	N	225	N	298	S	371	S
7	S	80	S	153	N	226	N	299	S	372	S
8	S	81	S	154	N	227	N	300	S	373	N
9	S	82	N	155	N	228	N	301	S	374	S
10	S	83	N	156	N	229	N	302	S	375	N
11	S	84	N	157	N	230	N	303	S	376	N
12	S	85	N	158	N	231	N	304	S	377	N
13	N	86	N	159	N	232	N	305	S	378	N
14	N	87	N	160	N	233	N	306	S	379	N
15	N	88	N	161	N	234	N	307	S	380	N
16	N	89	N	162	N	235	S	308	S	381	N
17	N	90	S	163	N	236	N	309	N	382	S
18	N	91	S	164	N	237	S	310	N	383	S
19	N	92	S	165	N	238	N	311	N	384	S
20	N	93	S	166	N	239	S	312	N	385	n/a
21	N	94	S	167	S	240	N	313	N	386	S
22	N	95	S	168	N	241	S	314	N	387	S
23	S	96	S	169	S	242	N	315	N	388	S
24	S	97	S	170	N	243	S	316	N	389	S
25	S	98	S	171	S	244	N	317	S	390	S
26	S	99	S	172	N	245	S	318	N	391	N

27	S	100	S	173	S	246	N	319	S	392	N
28	S	101	S	174	N	247	S	320	N	393	N
29	S	102	S	175	S	248	N	321	S	394	N
30	S	103	S	176	N	249	S	322	N	395	N
31	S	104	S	177	S	250	N	323	S	396	N
32	S	105	S	178	N	251	S	324	N	397	N
33	S	106	S	179	S	252	N	325	S	398	N
34	S	107	N	180	N	253	S	326	N	399	S
35	N	108	N	181	S	254	S	327	S	400	N
36	N	109	N	182	N	255	S	328	S	401	S
37	N	110	N	183	S	256	S	329	S	402	N
38	N	111	N	184	N	257	S	330	S	403	S
39	N	112	N	185	S	258	S	331	S	404	S
40	N	113	N	186	S	259	S	332	S	405	S
41	N	114	N	187	S	260	N	333	S	406	S
42	N	115	N	188	S	261	N	334	S	407	S
43	N	116	S	189	S	262	N	335	N	408	N
44	N	117	N	190	S	263	N	336	N	409	N
45	S	118	S	191	S	264	N	337	N	410	N
46	N	119	N	192	S	265	N	338	S	411	N
47	S	120	S	193	S	266	N	339	N	412	N
48	N	121	N	194	S	267	S	340	N	413	N
49	S	122	S	195	S	268	S	341	N	414	S
50	N	123	N	196	S	269	S	342	S	415	S
51	S	124	S	197	S	270	S	343	S	416	S
52	N	125	N	198	S	271	S	344	S	417	S
53	S	126	S	199	S	272	S	345	S	418	S
54	N	127	N	200	S	273	S	346	S	419	S
55	S	128	S	201	S	274	S	347	S	420	S
56	N	129	S	202	S	275	S	348	S	421	S
57	S	130	S	203	S	276	S	349	S	422	S
58	N	131	S	204	S	277	S	350	S	423	S
59	S	132	S	205	S	278	S	351	S	424	S
60	N	133	S	206	S	279	S	352	N	425	S
61	S	134	S	207	N	280	N	353	N	426	N
62	N	135	S	208	N	281	N	354	N	427	N
63	S	136	S	209	N	282	N	355	N	428	N
64	N	137	S	210	N	283	N	356	N	429	N
65	S	138	S	211	N	284	N	357	N	430	N
66	S	139	S	212	N	285	N	358	S	431	N
67	S	140	S	213	N	286	N	359	S	432	N
68	S	141	S	214	N	287	N	360	S	433	N
69	S	142	S	215	N	288	N	361	S	434	N
70	S	143	S	216	N	289	S	362	S	435	S
71	S	144	S	217	N	290	N	363	N	436	N
72	S	145	S	218	N	291	S	364	S		
73	S	146	S	219	N	292	N	365	S		

3-3) 3차년도 양파 분자마커 서비스 결과

3차년도에 양파 분자마커 서비스는 전시포과제에서 의뢰받아 분자마커 서비스를 실시하였다.

① 전시포과제

전시포과제로부터 총 5,072점의 시료를 받아 7번의 서비스를 진행하였다. 처음 382점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 1). 2번째로는 87점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 2). 3번째로는 191점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 3). 4번째로는 188점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 4). 5번째로는 192점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스

를 진행하였다(표 5). 6번째로는 192점의 시료에 대하여, 원예형질 관련 2종의 마커로 서비스를 진행하였다(표 6). 전시포과제 10품종에 대한 각각 384점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용하여 서비스를 진행하였다(표 7). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 1~7).

표 1. 전시포과제 382점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

순번	세포질	핵	순번	세포질	핵	순번	세포질	핵	순번	세포질	핵
1	N	msms	97	N	msms	193	N	Msms	289	N	msms
2	N	msms	98	N	msms	194	N	MsMs	290	N	msms
3	N	msms	99	N	msms	195	N	msms	291	N	msms
4	N	Msms	100	N	n/a	196	N	Msms	292	N	msms
5	N	Msms	101	N	msms	197	N	MsMs	293	N	msms
6	N	msms	102	N	msms	198	N	msms	294	N	Msms
7	N	msms	103	N	Msms	199	N	msms	295	N	msms
8	N	msms	104	N	msms	200	N	MsMs	296	N	msms
9	N	Msms	105	N	msms	201	N	MsMs	297	N	msms
10	N	msms	106	N	msms	202	N	msms	298	N	msms
11	N	msms	107	N	Msms	203	N	Msms	299	N	msms
12	N	msms	108	N	msms	204	N	msms	300	N	msms
13	N	Msms	109	N	msms	205	N	Msms	301	N	msms
14	N	msms	110	N	Msms	206	N	msms	302	N	Msms
15	N	Msms	111	N	msms	207	N	MsMs	303	N	msms
16	N	msms	112	N	msms	208	N	msms	304	N	msms
17	N	Msms	113	N	msms	209	N	Msms	305	N	msms
18	N	Msms	114	N	Msms	210	N	msms	306	N	msms
19	N	msms	115	N	msms	211	N	Msms	307	N	msms
20	N	msms	116	N	msms	212	N	Msms	308	N	msms
21	N	Msms	117	N	msms	213	N	Msms	309	N	msms
22	N	msms	118	N	Msms	214	N	Msms	310	N	msms
23	N	msms	119	N	msms	215	N	Msms	311	N	msms
24	N	Msms	120	N	msms	216	N	MsMs	312	N	msms
25	N	Msms	121	N	msms	217	N	msms	313	S	MsMs
26	N	msms	122	N	Msms	218	N	Msms	314	N	Msms
27	N	msms	123	N	Msms	219	N	Msms	315	S	MsMs
28	N	msms	124	N	msms	220	N	Msms	316	S	Msms
29	N	msms	125	N	n/a	221	N	MsMs	317	N	msms
30	N	msms	126	N	Msms	222	N	Msms	318	N	MsMs
31	N	msms	127	N	msms	223	N	Msms	319	N	MsMs
32	N	msms	128	N	msms	224	N	MsMs	320	N	msms
33	N	MsMs	129	N	Msms	225	N	msms	321	N	MsMs
34	N	Msms	130	N	msms	226	N	Msms	322	S	Msms
35	N	msms	131	N	msms	227	N	msms	323	S	MsMs
36	N	Msms	132	N	n/a	228	N	Msms	324	N	MsMs
37	N	MsMs	133	N	msms	229	N	MsMs	325	S	Msms
38	N	Msms	134	N	msms	230	N	msms	326	S	msms
39	N	Msms	135	N	n/a	231	N	MsMs	327	S	Msms
40	N	Msms	136	N	n/a	232	N	MsMs	328	N	MsMs
41	N	msms	137	N	Msms	233	N	MsMs	329	N	Msms
42	N	Msms	138	N	msms	234	N	msms	330	N	Msms
43	N	msms	139	N	msms	235	N	msms	331	N	Msms
44	N	msms	140	N	msms	236	N	Msms	332	N	MsMs
45	N	Msms	141	N	Msms	237	N	Msms	333	S	msms
46	N	msms	142	N	msms	238	N	Msms	334	N	Msms
47	N	msms	143	N	n/a	239	N	msms	335	N	Msms
48	N	Msms	144	N	msms	240	N	msms	336	S	Msms
49	N	msms	145	N	msms	241	N	msms	337	N	msms
50	N	MsMs	146	N	msms	242	N	msms	338	N	Msms
51	N	msms	147	N	msms	243	N	Msms	339	N	Msms

순번	세포질	핵	순번	세포질	핵	순번	세포질	핵	순번	세포질	핵
52	N	msms	148	N	msms	244	N	msms	340	S	Msms
53	N	msms	149	N	msms	245	N	msms	341	N	Msms
54	N	msms	150	N	msms	246	N	msms	342	N	Msms
55	N	msms	151	N	n/a	247	N	Msms	343	N	msms
56	N	msms	152	N	msms	248	N	msms	344	S	msms
57	N	msms	153	N	n/a	249	N	msms	345	S	MsMs
58	N	msms	154	N	n/a	250	N	msms	346	S	MsMs
59	N	msms	155	N	n/a	251	N	msms	347	N	Msms
60	N	msms	156	N	msms	252	N	MsMs	348	S	msms
61	N	msms	157	N	msms	253	N	Msms	349	N	MsMs
62	N	Msms	158	N	n/a	254	N	msms	350	S	MsMs
63	N	Msms	159	N	n/a	255	N	msms	351	N	Msms
64	N	msms	160	N	msms	256	N	msms	352	S	MsMs
65	N	msms	161	N	Msms	257	N	Msms	353	N	Msms
66	N	msms	162	N	Msms	258	N	msms	354	N	msms
67	N	Msms	163	N	msms	259	N	msms	355	N	Msms
68	N	msms	164	N	n/a	260	N	msms	356	N	MsMs
69	N	msms	165	N	Msms	261	N	msms	357	S	MsMs
70	N	msms	166	N	msms	262	N	Msms	358	S	MsMs
71	N	MsMs	167	N	msms	263	N	msms	359	N	MsMs
72	N	msms	168	N	Msms	264	N	msms	360	N	Msms
73	N	msms	169	N	msms	265	N	msms	361	N	MsMs
74	N	msms	170	N	msms	266	N	msms	362	S	msms
75	N	MsMs	171	N	msms	267	N	Msms	363	S	MsMs
76	N	msms	172	N	msms	268	N	msms	364	S	Msms
77	N	msms	173	N	Msms	269	N	msms	365	S	Msms
78	N	Msms	174	N	msms	270	N	msms	366	S	Msms
79	N	Msms	175	N	msms	271	N	msms	367	N	MsMs
80	N	msms	176	N	msms	272	N	Msms	368	S	msms
81	N	msms	177	N	msms	273	N	msms	369	N	MsMs
82	N	msms	178	N	MsMs	274	N	msms	370	T	msms
83	N	msms	179	N	Msms	275	N	Msms	371	T	msms
84	N	msms	180	N	Msms	276	N	msms	372	T	msms
85	N	msms	181	N	msms	277	N	msms	373	T	msms
86	N	msms	182	N	MsMs	278	N	Msms	374	n/a	n/a
87	N	msms	183	N	Msms	279	N	msms	375	N	msms
88	N	Msms	184	N	MsMs	280	N	msms	376	N	msms
89	N	msms	185	N	Msms	281	N	msms	377	N	msms
90	N	msms	186	N	MsMs	282	N	Msms	378	N	msms
91	N	msms	187	N	msms	283	N	msms	379	N	MsMs
92	N	msms	188	N	Msms	284	N	msms	380	N	MsMs
93	N	msms	189	N	msms	285	N	msms	381	N	MsMs
94	N	msms	190	N	msms	286	N	Msms	382	N	MsMs
95	N	msms	191	N	msms	287	N	msms			
96	N	msms	192	N	msms	288	N	msms			

표 2. 전세포과제 87점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

순번	세포질	핵	순번	세포질	핵	순번	세포질	핵	순번	세포질	핵
1	S	H	23	S	H	45	T	msms	67	S	H
2	S	H	24	S	msms	46	T	H	68	S	H
3	S	H	25	S	msms	47	T	msms	69	S	H
4	S	H	26	S	MsMs	48	T	msms	70	S	H
5	S	H	27	S	H	49	T	msms	71	S	H
6	S	H	28	S	msms	50	T	msms	72	S	H
7	T	H	29	S	msms	51	T	msms	73	S	H
8	T	H	30	S	msms	52	S	H	74	S	H
9	T	H	31	S	H	53	S	H	75	S	msms

순번	세포질	핵
10	T	H
11	T	H
12	T	H
13	T	MsMs
14	T	msms
15	T	msms
16	T	msms
17	T	H
18	T	H
19	S	MsMs
20	S	msms
21	S	H
22	S	H

순번	세포질	핵
32	S	MsMs
33	S	msms
34	S	msms
35	S	H
36	S	MsMs
37	S	H
38	S	MsMs
39	S	H
40	T	H
41	T	H
42	T	msms
43	T	msms
44	T	H

순번	세포질	핵
54	S	H
55	S	H
56	S	H
57	S	H
58	T	H
59	T	H
60	T	H
61	T	H
62	T	H
63	T	H
64	S	H
65	S	H
66	S	H

순번	세포질	핵
76	S	H
77	S	H
78	S	msms
79	S	H
80	S	H
81	S	H
82	T	H
83	T	H
84	T	H
85	T	H
86	T	H
87	T	H

표 3. 전세포과제 191점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

순번	세포질	핵
1	N	msms
2	N	msms
3	N	msms
4	N	msms
5	N	MsMs
6	N	H
7	T	MsMs
8	N	msms
9	N	msms
10	N	msms
11	N	msms
12	N	msms
13	T	msms
14	N	H
15	N	msms
16	N	msms
17	N	msms
18	N	MsMs
19	N	H
20	N	msms
21	N	H
22	N	msms
23	N	msms
24	T	msms
25	N	msms
26	N	H
27	N	msms
28	N	MsMs
29	N	msms
30	N	H
31	N	H
32	N	msms
33	N	msms
34	N	msms
35	N	H
36	N	msms
37	N	H
38	N	msms
39	N	MsMs
40	N	msms
41	N	H

순번	세포질	핵
49	N	msms
50	N	msms
51	N	msms
52	T	msms
53	N	msms
54	N	msms
55	N	msms
56	N	H
57	N	msms
58	N	msms
59	N	msms
60	T	H
61	N	msms
62	N	H
63	N	msms
64	T	H
65	N	H
66	N	H
67	N	msms
68	N	msms
69	N	msms
70	N	H
71	N	msms
72	T	H
73	N	msms
74	N	msms
75	N	H
76	N	MsMs
77	N	msms
78	N	H
79	N	msms
80	N	msms
81	N	H
82	N	msms
83	N	msms
84	T	msms
85	N	msms
86	N	msms
87	N	msms
88	N	msms
89	T	H

순번	세포질	핵
97	T	MsMs
98	T	H
99	N	H
100	T	H
101	T	MsMs
102	T	H
103	T	MsMs
104	N	MsMs
105	T	msms
106	T	H
107	T	H
108	T	MsMs
109	T	MsMs
110	T	MsMs
111	T	H
112	T	MsMs
113	T	msms
114	T	H
115	T	MsMs
116	T	H
117	T	H
118	T	MsMs
119	T	H
120	T	MsMs
121	T	MsMs
122	T	MsMs
123	T	msms
124	T	H
125	T	MsMs
126	T	H
127	T	H
128	T	MsMs
129	T	H
130	T	MsMs
131	T	H
132	T	MsMs
133	T	MsMs
134	N	H
135	T	MsMs
136	T	MsMs
137	T	MsMs

순번	세포질	핵
145	T	H
146	T	H
147	T	H
148	T	H
149	T	H
150	T	H
151	T	H
152	T	H
153	T	H
154	T	H
155	T	H
156	T	H
157	T	H
158	T	H
159	T	H
160	T	H
161	T	H
162	T	H
163	T	H
164	T	H
165	T	H
166	T	H
167	T	H
168	T	H
169	T	H
170	T	H
171	T	H
172	T	H
173	T	H
174	T	H
175	T	H
176	T	H
177	T	H
178	T	H
179	T	H
180	T	H
181	T	H
182	T	H
183	T	H
184	T	H
185	T	H

42	N	msms	90	N	H	138	T	MsMs	186	T	H
43	N	H	91	N	msms	139	T	MsMs	187	T	H
44	N	msms	92	N	H	140	N	H	188	T	H
45	N	msms	93	N	MsMs	141	T	H	189	T	H
46	T	msms	94	N	msms	142	T	H	190	T	H
47	N	msms	95	N	msms	143	T	H	191	T	H
48	N	msms	96	T	MsMs	144	T	H			

표 4. 전시포과제 188점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

순번	세포질	핵형	순번	세포질	핵형	순번	세포질	핵형	순번	세포질	핵형
1	T	msms	48	T	msms	95	S	MsMs	142	N	msms
2	T	msms	49	T	msms	96	S	MsMs	143	N	msms
3	n/a	msms	50	T	msms	97	S	H	144	n/a	n/a
4	T	H	51	T	H	98	S	MsMs	145	N	msms
5	T	H	52	T	msms	99	S	MsMs	146	N	msms
6	T	msms	53	T	n/a	100	S	MsMs	147	n/a	msms
7	T	H	54	T	n/a	101	S	MsMs	148	N	msms
8	S	msms	55	T	H	102	S	MsMs	149	N	msms
9	T	msms	56	T	H	103	S	MsMs	150	N	msms
10	T	msms	57	T	msms	104	S	MsMs	151	N	msms
11	T	msms	58	n/a	msms	105	S	MsMs	152	N	msms
12	T	H	59	T	msms	106	S	MsMs	153	N	msms
13	S	msms	60	T	msms	107	S	H	154	N	msms
14	T	n/a	61	T	msms	108	S	MsMs	155	N	msms
15	T	msms	62	T	msms	109	S	H	156	N	msms
16	T	H	63	T	msms	110	S	MsMs	157	N	msms
17	T	msms	64	T	msms	111	S	MsMs	158	N	msms
18	T	H	65	T	H	112	S	MsMs	159	N	msms
19	T	msms	66	T	msms	113	S	H	160	N	msms
20	T	msms	67	T	msms	114	S	MsMs	161	N	msms
21	T	H	68	T	msms	115	S	MsMs	162	N	msms
22	T	msms	69	T	msms	116	S	MsMs	163	N	msms
23	T	msms	70	T	msms	117	T	H	164	N	msms
24	T	msms	71	T	msms	118	T	H	165	n/a	msms
25	T	msms	72	T	msms	119	T	H	166	N	msms
26	T	msms	73	T	msms	120	T	msms	167	N	msms
27	T	msms	74	T	msms	121	T	H	168	N	msms
28	T	msms	75	n/a	n/a	122	T	msms	169	N	msms
29	T	msms	76	T	H	123	n/a	H	170	N	msms
30	T	msms	77	T	msms	124	T	H	171	N	msms
31	T	H	78	T	msms	125	T	H	172	N	msms
32	T	msms	79	T	H	126	n/a	H	173	N	msms
33	T	msms	80	T	msms	127	T	H	174	N	msms
34	T	msms	81	T	H	128	T	H	175	N	msms
35	T	msms	82	T	msms	129	T	H	176	N	msms
36	T	msms	83	T	msms	130	T	H	177	N	msms
37	T	msms	84	T	msms	131	T	H	178	N	msms
38	T	H	85	T	msms	132	T	H	179	N	msms
39	T	msms	86	T	msms	133	T	H	180	N	msms
40	T	msms	87	S	MsMs	134	T	H	181	N	msms
41	T	msms	88	S	MsMs	135	n/a	H	182	N	msms
42	T	H	89	S	MsMs	136	T	H	183	N	msms
43	T	msms	90	n/a	n/a	137	T	H	184	N	msms
44	T	msms	91	S	MsMs	138	T	H	185	N	msms
45	T	n/a	92	S	MsMs	139	T	H	186	N	msms
46	T	msms	93	S	H	140	T	H	187	N	msms
47	T	msms	94	S	MsMs	141	T	H	188	N	msms

표 5. 전시포과제 192점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

순번	세포질	핵형	순번	세포질	핵형	순번	세포질	핵형	순번	세포질	핵형
1	S	H	49	S	H	97	S	H	145	S	H
2	S	H	50	S	H	98	S	H	146	S	H
3	S	H	51	S	H	99	S	H	147	S	H
4	T	H	52	S	H	100	S	H	148	S	H
5	S	H	53	T	msms	101	S	H	149	S	H
6	S	H	54	S	H	102	S	H	150	S	H
7	S	H	55	S	H	103	S	H	151	S	H
8	S	H	56	S	H	104	S	H	152	S	H
9	T	msms	57	S	H	105	S	H	153	S	H
10	S	H	58	S	H	106	T	H	154	S	H
11	S	H	59	S	H	107	S	H	155	S	H
12	S	H	60	S	H	108	S	H	156	S	H
13	S	H	61	S	n/a	109	n/a	H	157	S	H
14	S	H	62	T	H	110	S	H	158	S	H
15	S	H	63	S	H	111	S	H	159	S	H
16	S	H	64	S	H	112	S	H	160	S	H
17	S	H	65	S	H	113	S	H	161	S	H
18	S	H	66	S	H	114	S	H	162	S	H
19	S	H	67	S	H	115	S	H	163	S	H
20	S	H	68	S	H	116	S	H	164	S	H
21	S	H	69	S	H	117	S	H	165	S	H
22	S	H	70	S	H	118	S	H	166	S	H
23	S	H	71	S	H	119	S	H	167	S	H
24	S	H	72	S	H	120	S	H	168	S	H
25	S	H	73	S	H	121	S	H	169	S	H
26	S	H	74	S	H	122	S	H	170	S	H
27	S	H	75	S	H	123	S	H	171	S	H
28	S	H	76	S	H	124	S	H	172	S	H
29	S	H	77	S	H	125	S	H	173	S	H
30	S	H	78	n/a	H	126	S	H	174	S	H
31	S	H	79	S	H	127	S	H	175	S	H
32	S	H	80	S	H	128	S	H	176	S	H
33	S	H	81	S	H	129	T	H	177	S	n/a
34	S	H	82	S	H	130	S	H	178	S	H
35	S	H	83	S	H	131	S	H	179	S	H
36	S	H	84	S	H	132	S	H	180	S	H
37	S	H	85	S	H	133	S	H	181	S	H
38	S	H	86	S	H	134	S	H	182	S	H
39	S	H	87	S	H	135	S	H	183	S	H
40	S	H	88	S	H	136	S	H	184	S	H
41	S	H	89	S	H	137	S	H	185	S	H
42	S	H	90	S	H	138	S	H	186	S	H
43	S	H	91	S	H	139	S	H	187	S	H
44	S	H	92	S	H	140	S	H	188	S	H
45	S	H	93	S	H	141	S	H	189	S	H
46	S	H	94	S	H	142	S	H	190	S	H
47	S	H	95	S	H	143	S	H	191	S	MsMs
48	S	H	96	S	H	144	S	H	192	S	H

표 6. 전시포과제 192점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

순번	세포질	핵형	순번	세포질	핵형	순번	세포질	핵형	순번	세포질	핵형
1	S	H	49	S	H	97	S	H	145	S	H
2	S	H	50	S	H	98	S	H	146	S	H
3	S	H	51	S	H	99	S	H	147	S	H
4	S	H	52	S	H	100	S	H	148	S	H

순번	세포질	핵형	순번	세포질	핵형	순번	세포질	핵형	순번	세포질	핵형
5	S	H	53	S	H	101	S	H	149	S	H
6	S	H	54	S	H	102	S	H	150	S	H
7	S	H	55	S	H	103	S	H	151	S	H
8	S	H	56	S	H	104	S	H	152	S	H
9	S	H	57	S	H	105	S	H	153	S	H
10	S	H	58	S	H	106	S	H	154	S	H
11	S	H	59	S	H	107	S	H	155	S	H
12	S	H	60	S	H	108	S	H	156	S	H
13	S	H	61	S	H	109	S	H	157	S	H
14	S	H	62	S	H	110	S	H	158	S	H
15	S	H	63	S	H	111	S	H	159	S	H
16	S	H	64	S	H	112	S	H	160	S	H
17	S	H	65	S	H	113	S	H	161	S	H
18	S	H	66	n/a	msms	114	S	H	162	S	H
19	S	H	67	S	H	115	S	H	163	S	H
20	S	H	68	S	H	116	S	H	164	S	H
21	S	H	69	S	H	117	S	H	165	S	H
22	S	H	70	S	H	118	S	H	166	S	H
23	S	H	71	S	H	119	S	n/a	167	S	H
24	S	H	72	S	H	120	S	H	168	S	H
25	S	H	73	S	H	121	S	H	169	S	H
26	S	H	74	S	H	122	S	H	170	S	H
27	S	H	75	S	H	123	S	H	171	S	H
28	S	msms	76	S	H	124	S	H	172	S	H
29	S	H	77	S	H	125	S	H	173	S	H
30	S	H	78	S	H	126	S	H	174	S	H
31	S	H	79	S	H	127	S	H	175	S	H
32	S	H	80	S	H	128	S	H	176	S	H
33	S	H	81	S	H	129	S	H	177	S	H
34	n/a	H	82	S	H	130	S	H	178	S	H
35	S	H	83	S	H	131	S	H	179	S	H
36	S	H	84	S	H	132	S	H	180	S	H
37	S	H	85	S	H	133	S	H	181	S	H
38	S	H	86	S	H	134	S	H	182	S	H
39	S	H	87	S	H	135	S	H	183	S	H
40	S	H	88	S	H	136	S	H	184	S	H
41	S	H	89	S	H	137	S	H	185	S	H
42	S	H	90	S	H	138	S	H	186	S	H
43	S	H	91	S	H	139	S	H	187	S	H
44	S	H	92	S	H	140	S	H	188	S	H
45	S	H	93	S	H	141	S	H	189	S	H
46	S	H	94	S	H	142	S	H	190	S	H
47	S	H	95	S	H	143	S	H	191	S	H
48	S	H	96	S	H	144	S	H	192	S	H

표 7. 전세포과제 10품종에 대한 각각 384점의 시료에 대하여, 원예형질 관련 2종의 마커를 이용한 서비스 결과

샘플명	세포질	핵	샘플명	세포질	핵	샘플명	세포질	핵	샘플명	세포질	핵	샘플명	세포질	핵	샘플명	세포질	핵
A001	S	Msms	A065	S	Msms	A129	S	Msms	A193	S	Msms	A257	S	Msms	A321	S	Msms
A002	S	Msms	A066	S	Msms	A130	S	Msms	A194	S	Msms	A258	S	Msms	A322	S	Msms
A003	S	Msms	A067	S	Msms	A131	S	Msms	A195	S	Msms	A259	S	Msms	A323	S	Msms
A004	S	Msms	A068	S	Msms	A132	S	Msms	A196	S	Msms	A260	S	Msms	A324	S	Msms
A005	S	Msms	A069	S	Msms	A133	S	Msms	A197	S	Msms	A261	S	Msms	A325	S	Msms
A006	S	Msms	A070	S	Msms	A134	S	Msms	A198	S	Msms	A262	S	Msms	A326	S	Msms
A007	S	Msms	A071	S	Msms	A135	S	Msms	A199	S	Msms	A263	S	Msms	A327	S	Msms
A008	S	Msms	A072	S	Msms	A136	S	Msms	A200	S	Msms	A264	S	Msms	A328	S	Msms
A009	S	Msms	A073	S	Msms	A137	S	Msms	A201	S	Msms	A265	S	Msms	A329	S	Msms
A010	S	Msms	A074	S	Msms	A138	S	Msms	A202	S	Msms	A266	S	Msms	A330	S	Msms

F041	T	Msms	F105	T	Msms	F169	T	Msms	F233	T	Msms	F297	T	Msms	F361	T	Msms
F042	T	Msms	F106	T	Msms	F170	T	Msms	F234	T	Msms	F298	T	Msms	F362	T	Msms
F043	T	Msms	F107	T	Msms	F171	T	Msms	F235	T	Msms	F299	T	Msms	F363	T	Msms
F044	T	Msms	F108	T	Msms	F172	T	Msms	F236	T	Msms	F300	T	Msms	F364	T	Msms
F045	T	Msms	F109	T	Msms	F173	T	Msms	F237	T	Msms	F301	T	Msms	F365	T	Msms
F046	T	Msms	F110	T	Msms	F174	T	Msms	F238	T	Msms	F302	T	Msms	F366	T	Msms
F047	T	Msms	F111	T	Msms	F175	T	Msms	F239	T	Msms	F303	T	Msms	F367	T	Msms
F048	T	Msms	F112	T	Msms	F176	T	Msms	F240	T	Msms	F304	T	Msms	F368	T	Msms
F049	T	Msms	F113	T	Msms	F177	T	Msms	F241	T	Msms	F305	T	Msms	F369	T	Msms
F050	T	Msms	F114	T	Msms	F178	T	Msms	F242	T	Msms	F306	T	Msms	F370	T	Msms
F051	T	Msms	F115	T	Msms	F179	T	Msms	F243	T	Msms	F307	T	Msms	F371	T	Msms
F052	T	Msms	F116	T	Msms	F180	T	Msms	F244	T	Msms	F308	T	Msms	F372	T	Msms
F053	T	Msms	F117	T	Msms	F181	T	Msms	F245	T	Msms	F309	T	Msms	F373	T	Msms
F054	T	Msms	F118	T	Msms	F182	T	Msms	F246	T	Msms	F310	T	Msms	F374	T	Msms
F055	T	Msms	F119	T	Msms	F183	T	Msms	F247	T	Msms	F311	T	Msms	F375	T	Msms
F056	T	Msms	F120	T	Msms	F184	T	Msms	F248	T	Msms	F312	T	Msms	F376	T	Msms
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샘플명	세포질	핵	샘플명	세포질	핵	샘플명	세포질	핵	샘플명	세포질	핵	샘플명	세포질	핵	샘플명	세포질	핵
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J020	T	Msms	J084	T	Msms	J148	T	Msms	J212	T	Msms	J276	T	Msms	J340	T	Msms
J021	T	Msms	J085	T	Msms	J149	T	Msms	J213	T	Msms	J277	T	msms	J341	T	Msms
J022	T	Msms	J086	T	Msms	J150	T	Msms	J214	T	msms	J278	T	Msms	J342	T	msms
J023	T	Msms	J087	T	Msms	J151	T	msms	J215	T	Msms	J279	T	Msms	J343	T	Msms
J024	T	Msms	J088	T	Msms	J152	T	msms	J216	T	Msms	J280	T	Msms	J344	T	Msms
J025	T	msms	J089	T	Msms	J153	T	msms	J217	T	Msms	J281	T	msms	J345	T	Msms
J026	T	Msms	J090	T	Msms	J154	T	Msms	J218	T	Msms	J282	T	Msms	J346	T	Msms
J027	T	Msms	J091	T	Msms	J155	T	Msms	J219	T	Msms	J283	T	msms	J347	T	Msms
J028	T	Msms	J092	T	Msms	J156	T	Msms	J220	T	Msms	J284	T	Msms	J348	T	Msms
J029	T	msms	J093	T	Msms	J157	T	Msms	J221	T	Msms	J285	T	Msms	J349	T	msms
J030	T	Msms	J094	T	Msms	J158	T	Msms	J222	T	msms	J286	T	Msms	J350	T	Msms
J031	T	Msms	J095	T	Msms	J159	T	Msms	J223	T	Msms	J287	T	msms	J351	T	msms
J032	T	msms	J096	T	Msms	J160	T	Msms	J224	T	Msms	J288	T	msms	J352	T	Msms
J033	T	Msms	J097	T	MsMs	J161	T	Msms	J225	T	Msms	J289	T	msms	J353	T	Msms
J034	T	Msms	J098	T	msms	J162	T	msms	J226	T	Msms	J290	T	Msms	J354	T	Msms
J035	T	msms	J099	T	msms	J163	T	Msms	J227	T	Msms	J291	T	Msms	J355	T	Msms
J036	T	Msms	J100	T	Msms	J164	T	msms	J228	T	msms	J292	T	Msms	J356	T	msms
J037	T	Msms	J101	T	Msms	J165	T	Msms	J229	T	msms	J293	T	Msms	J357	T	Msms
J038	T	Msms	J102	T	Msms	J166	T	msms	J230	T	Msms	J294	T	Msms	J358	T	Msms
J039	T	msms	J103	T	msms	J167	T	msms	J231	T	msms	J295	T	Msms	J359	T	Msms
J040	T	msms	J104	T	msms	J168	T	Msms	J232	T	Msms	J296	T	Msms	J360	T	Msms
J041	T	Msms	J105	T	Msms	J169	T	Msms	J233	T	Msms	J297	T	msms	J361	T	msms
J042	T	msms	J106	T	Msms	J170	T	Msms	J234	T	Msms	J298	T	Msms	J362	T	msms
J043	T	Msms	J107	T	Msms	J171	T	msms	J235	T	Msms	J299	T	Msms	J363	T	Msms
J044	T	Msms	J108	T	Msms	J172	T	Msms	J236	T	msms	J300	T	msms	J364	T	Msms
J045	T	Msms	J109	T	msms	J173	T	msms	J237	T	msms	J301	T	msms	J365	T	Msms
J046	T	Msms	J110	T	Msms	J174	T	Msms	J238	T	Msms	J302	T	Msms	J366	T	Msms
J047	T	Msms	J111	T	msms	J175	T	Msms	J239	T	msms	J303	T	Msms	J367	T	msms
J048	T	Msms	J112	T	Msms	J176	T	Msms	J240	T	msms	J304	T	Msms	J368	T	Msms
J049	T	Msms	J113	T	Msms	J177	T	Msms	J241	T	Msms	J305	T	Msms	J369	T	msms
J050	T	Msms	J114	T	Msms	J178	T	Msms	J242	T	Msms	J306	T	Msms	J370	T	msms
J051	T	msms	J115	T	msms	J179	T	msms	J243	T	msms	J307	T	Msms	J371	T	msms
J052	T	Msms	J116	T	Msms	J180	T	Msms	J244	T	msms	J308	T	Msms	J372	T	Msms
J053	T	Msms	J117	T	msms	J181	T	Msms	J245	T	Msms	J309	T	Msms	J373	T	Msms
J054	T	Msms	J118	T	Msms	J182	T	Msms	J246	T	msms	J310	T	Msms	J374	T	Msms
J055	T	Msms	J119	T	Msms	J183	T	Msms	J247	T	Msms	J311	T	msms	J375	T	Msms
J056	T	Msms	J120	T	msms	J184	T	Msms	J248	T	MsMs	J312	T	msms	J376	T	Msms
J057	T	Msms	J121	T	msms	J185	T	Msms	J249	T	msms	J313	T	Msms	J377	T	MsMs
J058	T	Msms	J122	T	Msms	J186	T	Msms	J250	T	MsMs	J314	T	Msms	J378	T	Msms

J059	T	msms	J123	T	Msms	J187	T	msms	J251	T	Msms	J315	T	Msms	J379	T	Msms
J060	T	Msms	J124	T	msms	J188	T	msms	J252	T	Msms	J316	T	Msms	J380	T	Msms
J061	T	Msms	J125	T	Msms	J189	T	Msms	J253	T	msms	J317	T	msms	J381	T	Msms
J062	T	Msms	J126	T	Msms	J190	T	msms	J254	T	msms	J318	T	Msms	J382	T	Msms
J063	T	Msms	J127	T	Msms	J191	T	Msms	J255	T	Msms	J319	T	Msms	J383	T	Msms
J064	T	Msms	J128	T	msms	J192	T	Msms	J256	T	msms	J320	T	Msms	J384	T	Msms
샘플명	세포질	핵	샘플명	세포질	핵	샘플명	세포질	핵	샘플명	세포질	핵	샘플명	세포질	핵	샘플명	세포질	핵
K001	T	Msms	K065	T	Msms	K129	T	Msms	K193	T	Msms	K257	T	Msms	K321	T	Msms
K002	T	Msms	K066	T	msms	K130	T	Msms	K194	T	Msms	K258	T	Msms	K322	T	Msms
K003	T	Msms	K067	T	Msms	K131	T	Msms	K195	T	Msms	K259	T	Msms	K323	T	msms
K004	T	Msms	K068	T	msms	K132	T	msms	K196	T	Msms	K260	T	Msms	K324	T	Msms
K005	T	Msms	K069	T	msms	K133	T	Msms	K197	T	Msms	K261	T	Msms	K325	T	Msms
K006	T	Msms	K070	T	Msms	K134	T	Msms	K198	T	Msms	K262	T	Msms	K326	T	Msms
K007	T	Msms	K071	T	msms	K135	T	Msms	K199	T	Msms	K263	T	Msms	K327	T	Msms
K008	T	Msms	K072	T	Msms	K136	T	Msms	K200	T	Msms	K264	T	Msms	K328	T	Msms
K009	T	Msms	K073	T	Msms	K137	T	Msms	K201	T	Msms	K265	T	Msms	K329	T	Msms
K010	T	Msms	K074	T	Msms	K138	T	Msms	K202	T	Msms	K266	T	Msms	K330	T	Msms
K011	T	Msms	K075	T	Msms	K139	T	msms	K203	T	Msms	K267	T	Msms	K331	T	msms
K012	T	Msms	K076	T	Msms	K140	T	Msms	K204	T	Msms	K268	T	Msms	K332	T	Msms
K013	T	Msms	K077	T	Msms	K141	T	Msms	K205	T	Msms	K269	T	Msms	K333	T	Msms
K014	T	Msms	K078	T	Msms	K142	T	Msms	K206	T	Msms	K270	T	Msms	K334	T	msms
K015	T	Msms	K079	T	Msms	K143	T	Msms	K207	T	Msms	K271	T	Msms	K335	T	Msms
K016	T	Msms	K080	T	Msms	K144	T	Msms	K208	T	Msms	K272	T	Msms	K336	T	Msms
K017	T	Msms	K081	T	Msms	K145	T	msms	K209	T	Msms	K273	T	Msms	K337	T	Msms
K018	T	Msms	K082	T	Msms	K146	T	Msms	K210	T	Msms	K274	T	Msms	K338	T	Msms
K019	T	Msms	K083	T	Msms	K147	T	Msms	K211	T	Msms	K275	T	Msms	K339	T	Msms
K020	T	Msms	K084	T	Msms	K148	T	Msms	K212	T	Msms	K276	T	Msms	K340	T	Msms
K021	T	Msms	K085	T	Msms	K149	T	msms	K213	T	Msms	K277	T	Msms	K341	T	msms
K022	T	Msms	K086	T	Msms	K150	T	Msms	K214	T	msms	K278	T	Msms	K342	T	Msms
K023	T	Msms	K087	T	Msms	K151	T	Msms	K215	T	msms	K279	T	Msms	K343	T	Msms
K024	T	Msms	K088	T	Msms	K152	T	Msms	K216	T	Msms	K280	T	Msms	K344	T	Msms
K025	T	Msms	K089	T	Msms	K153	T	Msms	K217	T	Msms	K281	T	Msms	K345	T	Msms
K026	T	msms	K090	T	Msms	K154	T	msms	K218	T	Msms	K282	T	Msms	K346	T	Msms
K027	T	Msms	K091	T	Msms	K155	T	Msms	K219	T	msms	K283	T	Msms	K347	T	Msms
K028	T	Msms	K092	T	Msms	K156	T	Msms	K220	T	msms	K284	T	Msms	K348	T	Msms
K029	T	Msms	K093	T	Msms	K157	T	Msms	K221	T	Msms	K285	T	Msms	K349	T	Msms
K030	T	Msms	K094	T	msms	K158	T	msms	K222	T	Msms	K286	T	Msms	K350	T	Msms
K031	T	Msms	K095	T	Msms	K159	T	Msms	K223	T	Msms	K287	T	Msms	K351	T	Msms
K032	T	Msms	K096	T	Msms	K160	T	Msms	K224	T	Msms	K288	T	Msms	K352	T	Msms
K033	T	Msms	K097	T	Msms	K161	T	Msms	K225	T	Msms	K289	T	Msms	K353	T	Msms
K034	T	Msms	K098	T	Msms	K162	T	Msms	K226	T	Msms	K290	T	msms	K354	T	Msms
K035	T	Msms	K099	T	Msms	K163	T	Msms	K227	T	Msms	K291	T	msms	K355	T	Msms
K036	T	msms	K100	T	Msms	K164	T	Msms	K228	T	Msms	K292	T	Msms	K356	T	Msms
K037	T	Msms	K101	T	Msms	K165	T	Msms	K229	T	Msms	K293	T	Msms	K357	T	Msms
K038	T	Msms	K102	T	Msms	K166	T	Msms	K230	T	Msms	K294	T	Msms	K358	T	msms
K039	T	Msms	K103	T	Msms	K167	T	Msms	K231	T	Msms	K295	T	msms	K359	T	Msms
K040	T	Msms	K104	T	Msms	K168	T	Msms	K232	T	Msms	K296	T	Msms	K360	T	Msms
K041	T	Msms	K105	T	Msms	K169	T	msms	K233	T	Msms	K297	T	Msms	K361	T	Msms
K042	T	Msms	K106	T	Msms	K170	T	Msms	K234	T	Msms	K298	T	Msms	K362	T	Msms
K043	T	Msms	K107	T	Msms	K171	T	msms	K235	T	Msms	K299	T	msms	K363	T	msms
K044	T	Msms	K108	T	Msms	K172	T	Msms	K236	T	msms	K300	T	Msms	K364	T	Msms
K045	T	Msms	K109	T	Msms	K173	T	Msms	K237	T	Msms	K301	T	Msms	K365	T	Msms
K046	T	Msms	K110	T	Msms	K174	T	Msms	K238	T	msms	K302	T	Msms	K366	T	Msms
K047	T	Msms	K111	T	Msms	K175	T	Msms	K239	T	Msms	K303	T	Msms	K367	T	Msms
K048	T	Msms	K112	T	Msms	K176	T	Msms	K240	T	Msms	K304	T	Msms	K368	T	Msms
K049	T	Msms	K113	T	Msms	K177	T	Msms	K241	T	Msms	K305	T	Msms	K369	T	Msms
K050	T	Msms	K114	T	Msms	K178	T	Msms	K242	T	Msms	K306	T	Msms	K370	T	Msms
K051	T	Msms	K115	T	Msms	K179	T	msms	K243	T	Msms	K307	T	Msms	K371	T	Msms
K052	T	Msms	K116	T	Msms	K180	T	Msms	K244	T	Msms	K308	T	Msms	K372	T	Msms
K053	T	Msms	K117	T	Msms	K181	T	Msms	K245	T	Msms	K309	T	Msms	K373	T	Msms
K054	T	Msms	K118	T	Msms	K182	T	Msms	K246	T	Msms	K310	T	Msms	K374	T	Msms
K055	T	Msms	K119	T	Msms	K183	T	Msms	K247	T	Msms	K311	T	Msms	K375	T	Msms
K056	T	Msms	K120	T	Msms	K184	T	Msms	K248	T	Msms	K312	T	Msms	K376	T	Msms
K057	T	Msms	K121	T	Msms	K185	T	Msms	K249	T	Msms	K313	T	msms	K377	T	Msms
K058	T	Msms	K122	T	Msms	K186	T	Msms	K250	T	Msms	K314	T	Msms	K378	T	Msms
K059	T	Msms	K123	T	Msms	K187	T	Msms	K251	T	Msms	K315	T	msms	K379	T	Msms
K060	T	Msms	K124	T	Msms	K188	T	Msms	K252	T	Msms	K316	T	Msms	K380	T	Msms
K061	T	Msms	K125	T	Msms	K189	T	Msms	K253	T	Msms	K317	T	Msms	K381	T	Msms
K062	T	msms	K126	T	Msms	K190	T	Msms	K254	T	Msms	K318	T	Msms	K382	T	Msms
K063	T	Msms	K127	T	Msms	K191	T	msms	K255	T	Msms	K319	T	Msms	K383	T	Msms
K064	T	Msms	K128	T	Msms	K192	T	Msms	K256	T	Msms	K320	T	msms	K384	T	Msms

3-4) 4차년도 양과 분자마커 서비스 결과

4차년도에 양과 분자마커 서비스는 순천대학교, 미라클종묘로 총 2곳에서 의뢰를 받아 실시하였다.

① 순천대학교

순천대학교로부터 총 1,732점의 시료를 받아 7번의 서비스를 진행하였다. 처음 56점의 시료에 대하여, 원예 형질 관련 2종의 마커로 서비스를 진행하였다(표 1). 2번째로 10점의 시료에 대하여, 원예 형질 관련 2종의 마커로 서비스를 진행하였다(표 2). 3번째로 254점의 시료에 대하여, 원예 형질 관련 2종의 마커로 서비스를 진행하였다(표 3). 4번째로 857점의 시료에 대하여, 원예 형질 관련 2종의 마커로 서비스를 진행하였다(표 4). 5번째로 20점의 시료에 대하여, 원예 형질 관련 2종의 마커로 서비스를 진행하였다(표 5). 6번째로 513점의 시료에 대하여, 원예 형질 관련 2종의 마커로 서비스를 진행하였다(표 6). 7번째로 22점의 시료에 대하여, 원예 형질 관련 2종의 마커로 서비스를 진행하였다(표 7). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 1~7).

표 1. 순천대학교 56점의 시료에 대하여, 원예 형질 관련 2개의 마커를 이용한 서비스 결과

No.	세포질타입	핵타입	No.	세포질타입	핵타입	No.	세포질타입	핵타입	No.	세포질타입	핵타입
1	N	ms	15	N	H	29	S	ms	43	S	Ms
2	N	ms	16	N	ms	30	T	ms	44	S	ms
3	N	H	17	T	ms	31	T	ms	45	N	ms
4	N	ms	18	T	H	32	T	ms	46	N	ms
5	N	H	19	N	ms	33	N	ms	47	S	Ms
6	N	ms	20	N	ms	34	N	ms	48	N	ms
7	N	H	21	N	ms	35	N	ms	49	S	Ms
8	N	ms	22	N	ms	36	N	H	50	S	ms
9	N	ms	23	N	H	37	N	ms	51	S	ms
10	N	ms	24	N	ms	38	N	ms	52	S	ms
11	N	ms	25	N	ms	39	N	ms	53	S	Ms
12	N	ms	26	T	ms	40	N	ms	54	S	Ms
13	N	ms	27	T	ms	41	N	ms	55	S	Ms
14	N	ms	28	n/a	n/a	42	S	ms	56	N	ms

표 2. 순천대학교 10점의 시료에 대하여, 원예 형질 관련 2개의 마커를 이용한 서비스 결과

No.	세포질타입	핵타입	No.	세포질타입	핵타입
1	N	ms	6	N	ms
2	N	ms	7	N	ms
3	N	ms	8	N	ms
4	N	H	9	N	H
5	N	ms	10	N	ms

표 3. 순천대학교 254점의 시료에 대하여, 원예 형질 관련 2개의 마커를 이용한 서비스 결과

No.	샘플명	세포질	핵	No.	샘플명	세포질	핵	No.	샘플명	세포질	핵	No.	샘플명	세포질	핵
1	SE-09#001	T	ms	65	SE-09#065	T	ms	129	SE-10#009	N	ms	193	SE-10#073	N	ms
2	SE-09#002	T	ms	66	SE-09#066	T	ms	130	SE-10#010	N	ms	194	SE-10#074	N	H
3	SE-09#003	T	ms	67	SE-09#067	T	ms	131	SE-10#011	N	ms	195	SE-10#075	N	ms
4	SE-09#004	T	H	68	SE-09#068	T	ms	132	SE-10#012	N	ms	196	SE-10#076	N	ms
5	SE-09#005	T	ms	69	SE-09#069	T	ms	133	SE-10#013	N	ms	197	SE-10#077	N	ms
6	SE-09#006	T	H	70	SE-09#070	T	ms	134	SE-10#014	N	ms	198	SE-10#078	N	ms
7	SE-09#007	T	ms	71	SE-09#071	T	ms	135	SE-10#015	N	ms	199	SE-10#079	N	ms
8	SE-09#008	T	ms	72	SE-09#072	T	ms	136	SE-10#016	N	ms	200	SE-10#080	N	ms
9	SE-09#009	T	ms	73	SE-09#073	T	ms	137	SE-10#017	N	ms	201	SE-10#081	N	ms
10	SE-09#010	T	ms	74	SE-09#074	T	ms	138	SE-10#018	N	ms	202	SE-10#082	N	ms
11	SE-09#011	T	ms	75	SE-09#075	T	H	139	SE-10#019	N	ms	203	SE-10#083	N	ms
12	SE-09#012	T	ms	76	SE-09#076	T	ms	140	SE-10#020	N	ms	204	SE-10#084	N	ms

13	SE-09#013	T	ms	77	SE-09#077	T	ms	141	SE-10#021	N	ms	205	SE-10#085	N	ms
14	SE-09#014	T	ms	78	SE-09#078	T	ms	142	SE-10#022	N	ms	206	SE-10#086	N	ms
15	SE-09#015	T	ms	79	SE-09#079	T	ms	143	SE-10#023	N	ms	207	SE-10#087	N	ms
16	SE-09#016	T	ms	80	SE-09#080	T	ms	144	SE-10#024	N	ms	208	SE-10#088	N	ms
17	SE-09#017	T	ms	81	SE-09#081	T	ms	145	SE-10#025	N	ms	209	SE-10#089	N	ms
18	SE-09#018	T	ms	82	SE-09#082	T	ms	146	SE-10#026	N	ms	210	SE-10#090	N	ms
19	SE-09#019	T	ms	83	SE-09#083	T	ms	147	SE-10#027	N	ms	211	SE-10#091	N	ms
20	SE-09#020	T	ms	84	SE-09#084	T	ms	148	SE-10#028	N	ms	212	SE-10#092	N	ms
21	SE-09#021	T	ms	85	SE-09#085	T	ms	149	SE-10#029	N	ms	213	SE-10#093	N	ms
22	SE-09#022	T	ms	86	SE-09#086	T	ms	150	SE-10#030	N	ms	214	SE-10#094	N	ms
23	SE-09#023	T	ms	87	SE-09#087	T	ms	151	SE-10#031	N	ms	215	SE-10#095	N	ms
24	SE-09#024	T	ms	88	SE-09#088	T	ms	152	SE-10#032	N	ms	216	SE-10#096	N	ms
25	SE-09#025	T	ms	89	SE-09#089	T	ms	153	SE-10#033	N	ms	217	SE-10#097	N	ms
26	SE-09#026	T	ms	90	SE-09#090	T	ms	154	SE-10#034	N	ms	218	SE-10#098	N	ms
27	SE-09#027	T	ms	91	SE-09#091	T	ms	155	SE-10#035	N	ms	219	SE-10#099	N	ms
28	SE-09#028	T	ms	92	SE-09#092	T	ms	156	SE-10#036	N	ms	220	SE-10#100	N	ms
29	SE-09#029	T	ms	93	SE-09#093	T	ms	157	SE-10#037	N	ms	221	SE-10#101	N	ms
30	SE-09#030	T	ms	94	SE-09#094	T	ms	158	SE-10#038	N	ms	222	SE-10#102	N	ms
31	SE-09#031	T	ms	95	SE-09#095	T	ms	159	SE-10#039	N	ms	223	SE-10#103	N	ms
32	SE-09#032	T	ms	96	SE-09#096	T	ms	160	SE-10#040	N	ms	224	SE-10#104	N	ms
33	SE-09#033	T	ms	97	SE-09#097	T	ms	161	SE-10#041	N	ms	225	SE-10#105	N	ms
34	SE-09#034	T	ms	98	SE-09#098	T	ms	162	SE-10#042	N	ms	226	SE-10#106	N	ms
35	SE-09#035	T	ms	99	SE-09#099	T	ms	163	SE-10#043	N	H	227	SE-10#107	N	ms
36	SE-09#036	T	ms	100	SE-09#100	T	ms	164	SE-10#044	N	ms	228	SE-10#108	N	ms
37	SE-09#037	T	ms	101	SE-09#101	T	ms	165	SE-10#045	N	ms	229	SE-10#109	N	ms
38	SE-09#038	T	ms	102	SE-09#102	T	ms	166	SE-10#046	N	ms	230	SE-10#110	N	ms
39	SE-09#039	T	ms	103	SE-09#103	T	ms	167	SE-10#047	N	ms	231	SE-10#111	N	ms
40	SE-09#040	T	ms	104	SE-09#104	T	ms	168	SE-10#048	N	ms	232	SE-10#112	N	ms
41	SE-09#041	T	ms	105	SE-09#105	T	ms	169	SE-10#049	N	ms	233	SE-10#113	N	ms
42	SE-09#042	T	ms	106	SE-09#106	T	ms	170	SE-10#050	N	ms	234	SE-10#114	N	ms
43	SE-09#043	T	ms	107	SE-09#107	T	ms	171	SE-10#051	N	ms	235	SE-20#001	N	ms
44	SE-09#044	T	ms	108	SE-09#108	T	ms	172	SE-10#052	N	ms	236	SE-20#002	N	ms
45	SE-09#045	T	ms	109	SE-09#109	T	ms	173	SE-10#053	N	ms	237	SE-20#003	N	H
46	SE-09#046	T	ms	110	SE-09#110	T	ms	174	SE-10#054	N	ms	238	SE-20#004	N	ms
47	SE-09#047	T	ms	111	SE-09#111	T	ms	175	SE-10#055	N	ms	239	SE-20#005	N	ms
48	SE-09#048	T	ms	112	SE-09#112	T	ms	176	SE-10#056	N	ms	240	SE-20#006	N	ms
49	SE-09#049	T	ms	113	SE-09#113	T	ms	177	SE-10#057	N	ms	241	SE-20#007	N	ms
50	SE-09#050	T	ms	114	SE-09#114	T	ms	178	SE-10#058	N	ms	242	SE-20#008	N	ms
51	SE-09#051	T	ms	115	SE-09#115	T	ms	179	SE-10#059	N	ms	243	SE-20#009	N	ms
52	SE-09#052	T	ms	116	SE-09#116	T	ms	180	SE-10#060	N	ms	244	SE-20#010	N	ms
53	SE-09#053	T	ms	117	SE-09#117	T	ms	181	SE-10#061	N	ms	245	SE-21#001	N	ms
54	SE-09#054	T	ms	118	SE-09#118	T	ms	182	SE-10#062	N	ms	246	SE-21#002	N	ms
55	SE-09#055	T	ms	119	SE-09#119	T	ms	183	SE-10#063	N	ms	247	SE-21#003	n/a	ms
56	SE-09#056	T	ms	120	SE-09#120	T	ms	184	SE-10#064	N	ms	248	SE-21#004	N	ms
57	SE-09#057	T	ms	121	SE-10#001	N	ms	185	SE-10#065	N	ms	249	SE-21#005	N	ms
58	SE-09#058	T	ms	122	SE-10#002	N	ms	186	SE-10#066	N	ms	250	SE-21#006	N	ms
59	SE-09#059	T	ms	123	SE-10#003	N	ms	187	SE-10#067	N	ms	251	SE-21#007	N	ms
60	SE-09#060	T	ms	124	SE-10#004	N	ms	188	SE-10#068	N	H	252	SE-21#008	N	ms
61	SE-09#061	T	ms	125	SE-10#005	N	ms	189	SE-10#069	N	ms	253	SE-21#009	N	ms
62	SE-09#062	T	ms	126	SE-10#006	N	ms	190	SE-10#070	N	ms	254	SE-21#010	N	ms
63	SE-09#063	T	ms	127	SE-10#007	N	ms	191	SE-10#071	N	ms				
64	SE-09#064	T	ms	128	SE-10#008	N	ms	192	SE-10#072	N	ms				

표 4. 순천대학교 857점의 시료에 대하여, 원예 형질 관련 2개의 마커를 이용한 서비스 결과

순번	세포질타입	핵타입	순번	세포질타입	핵타입	순번	세포질타입	핵타입	순번	세포질타입	핵타입
1	N	H	216	N	ms	431	N	ms	646	N	ms
2	N	H	217	N	H	432	N	H	647	N	H
3	N	H	218	N	ms	433	N	ms	648	N	ms
4	N	H	219	N	Ms	434	N	ms	649	N	ms
5	N	H	220	N	H	435	N	ms	650	N	H
6	N	H	221	N	H	436	N	H	651	N	H
7	N	H	222	N	ms	437	N	ms	652	N	ms

순번	세포질타입	핵타입
8	N	ms
9	N	ms
10	N	H
11	N	ms
12	N	ms
13	N	ms
14	N	H
15	N	ms
16	N	ms
17	N	H
18	N	ms
19	N	ms
20	N	H
21	N	H
22	N	ms
23	N	ms
24	N	ms
25	N	Ms
26	N	H
27	N	ms
28	N	Ms
29	N	H
30	N	H
31	N	ms
32	N	H
33	N	ms
34	N	ms
35	N	ms
36	N	ms
37	N	ms
38	N	H
39	N	ms
40	N	ms
41	N	ms
42	N	ms
43	N	ms
44	N	H
45	N	Ms
46	N	Ms
47	N	H
48	N	ms
49	N	ms
50	N	H
51	N	Ms
52	N	Ms
53	N	ms
54	N	ms
55	N	H
56	N	H
57	N	Ms
58	N	H
59	N	Ms
60	N	ms
61	N	ms
62	N	ms
63	N	H
64	N	Ms

순번	세포질타입	핵타입
223	N	ms
224	N	ms
225	N	Ms
226	N	H
227	N	ms
228	N	H
229	N	ms
230	N	ms
231	N	H
232	N	Ms
233	N	ms
234	N	H
235	N	ms
236	N	ms
237	N	ms
238	N	ms
239	N	H
240	N	ms
241	N	ms
242	N	H
243	N	ms
244	N	H
245	N	H
246	N	Ms
247	N	ms
248	N	ms
249	N	ms
250	N	ms
251	N	ms
252	N	H
253	N	ms
254	N	H
255	N	ms
256	N	ms
257	N	ms
258	N	ms
259	N	ms
260	N	ms
261	N	ms
262	N	ms
263	N	ms
264	N	H
265	N	H
266	N	ms
267	N	ms
268	N	ms
269	S	Ms
270	N	ms
271	N	Ms
272	N	H
273	N	ms
274	N	Ms
275	N	Ms
276	N	H
277	N	H
278	N	H
279	N	H

순번	세포질타입	핵타입
438	N	H
439	N	H
440	N	ms
441	N	ms
442	N	ms
443	N	Ms
444	N	H
445	N	ms
446	N	Ms
447	N	ms
448	N	Ms
449	N	ms
450	N	ms
451	N	H
452	N	Ms
453	N	H
454	N	ms
455	N	ms
456	N	Ms
457	N	ms
458	N	H
459	N	H
460	N	H
461	N	Ms
462	N	ms
463	N	Ms
464	N	ms
465	N	H
466	N	ms
467	N	H
468	N	ms
469	N	H
470	N	ms
471	N	H
472	N	ms
473	N	ms
474	N	ms
475	N	ms
476	N	ms
477	N	ms
478	N	Ms
479	N	Ms
480	N	H
481	N	ms
482	N	H
483	N	Ms
484	N	ms
485	N	H
486	N	ms
487	N	ms
488	N	ms
489	N	Ms
490	N	ms
491	N	ms
492	N	ms
493	N	ms
494	N	H

순번	세포질타입	핵타입
653	N	ms
654	N	Ms
655	N	ms
656	N	H
657	N	ms
658	N	ms
659	N	Ms
660	N	H
661	N	ms
662	N	ms
663	N	ms
664	N	ms
665	N	ms
666	N	ms
667	S	H
668	N	Ms
669	N	H
670	N	ms
671	N	ms
672	N	ms
673	N	H
674	N	H
675	N	ms
676	N	ms
677	N	H
678	N	ms
679	N	ms
680	N	ms
681	N	ms
682	N	H
683	N	ms
684	N	H
685	N	ms
686	N	Ms
687	N	H
688	n/a	ms
689	N	H
690	N	Ms
691	N	H
692	N	H
693	N	Ms
694	N	ms
695	N	ms
696	N	ms
697	N	ms
698	N	H
699	N	H
700	N	ms
701	N	ms
702	N	H
703	N	H
704	N	H
705	N	H
706	N	ms
707	N	ms
708	N	H
709	N	ms

순번	세포질타입	핵타입
65	N	Ms
66	N	Ms
67	N	H
68	N	ms
69	N	ms
70	N	ms
71	N	ms
72	N	H
73	N	ms
74	N	ms
75	N	H
76	N	Ms
77	N	H
78	N	H
79	N	ms
80	N	Ms
81	N	Ms
82	N	H
83	N	ms
84	N	ms
85	N	ms
86	N	H
87	N	ms
88	N	ms
89	N	ms
90	N	ms
91	N	ms
92	N	H
93	S	ms
94	N	ms
95	N	H
96	N	ms
97	N	ms
98	N	H
99	N	H
100	N	H
101	N	ms
102	N	H
103	N	Ms
104	N	Ms
105	N	Ms
106	N	H
107	N	ms
108	N	ms
109	N	ms
110	N	ms
111	N	ms
112	N	H
113	N	ms
114	N	ms
115	N	ms
116	N	ms
117	N	ms
118	N	ms
119	N	H
120	N	H
121	N	H

순번	세포질타입	핵타입
280	N	H
281	N	ms
282	N	ms
283	N	ms
284	N	H
285	N	ms
286	N	H
287	N	ms
288	N	H
289	N	H
290	N	ms
291	N	ms
292	N	ms
293	N	ms
294	N	H
295	N	H
296	N	Ms
297	N	ms
298	N	H
299	N	ms
300	N	H
301	N	ms
302	N	ms
303	N	Ms
304	N	Ms
305	N	H
306	N	H
307	N	H
308	N	Ms
309	N	ms
310	N	ms
311	N	ms
312	N	ms
313	N	H
314	N	H
315	N	H
316	N	H
317	N	H
318	N	H
319	N	H
320	N	H
321	N	ms
322	N	ms
323	N	H
324	N	ms
325	N	H
326	N	H
327	N	H
328	N	H
329	N	H
330	N	n/a
331	N	Ms
332	N	H
333	N	ms
334	N	H
335	N	H
336	N	ms

순번	세포질타입	핵타입
495	N	ms
496	N	ms
497	N	H
498	N	H
499	N	H
500	N	ms
501	N	ms
502	N	H
503	N	H
504	N	H
505	N	H
506	N	ms
507	N	H
508	N	H
509	N	ms
510	N	H
511	N	ms
512	N	Ms
513	N	ms
514	N	H
515	N	Ms
516	N	ms
517	N	H
518	N	ms
519	N	H
520	N	Ms
521	N	Ms
522	N	H
523	N	ms
524	N	Ms
525	N	H
526	N	ms
527	N	H
528	N	ms
529	N	H
530	N	H
531	N	ms
532	N	ms
533	N	H
534	N	ms
535	N	H
536	N	H
537	S	Ms
538	N	ms
539	N	H
540	N	ms
541	N	ms
542	N	ms
543	S	Ms
544	N	ms
545	N	ms
546	N	ms
547	S	H
548	N	ms
549	N	ms
550	N	H
551	N	H

순번	세포질타입	핵타입
710	N	ms
711	N	H
712	N	Ms
713	N	H
714	n/a	n/a
715	N	H
716	N	H
717	N	ms
718	N	Ms
719	N	ms
720	N	Ms
721	N	ms
722	N	ms
723	N	ms
724	N	ms
725	N	Ms
726	N	H
727	N	H
728	N	H
729	N	ms
730	N	H
731	N	ms
732	N	ms
733	N	ms
734	N	Ms
735	N	ms
736	N	ms
737	N	H
738	N	ms
739	N	ms
740	N	ms
741	N	ms
742	N	ms
743	N	H
744	N	H
745	N	ms
746	S	H
747	N	H
748	S	H
749	N	H
750	N	ms
751	N	H
752	N	ms
753	N	ms
754	N	n/a
755	N	H
756	N	ms
757	N	H
758	N	H
759	N	ms
760	n/a	ms
761	N	H
762	N	Ms
763	N	ms
764	N	H
765	N	ms
766	N	ms

순번	세포질타입	핵타입
122	N	Ms
123	N	H
124	N	H
125	N	ms
126	n/a	H
127	N	ms
128	N	ms
129	N	ms
130	N	ms
131	N	ms
132	N	ms
133	N	ms
134	N	H
135	N	ms
136	N	H
137	N	ms
138	N	ms
139	N	H
140	N	ms
141	N	ms
142	N	H
143	N	H
144	N	Ms
145	N	ms
146	N	ms
147	N	ms
148	N	H
149	N	ms
150	N	ms
151	N	H
152	N	H
153	N	ms
154	N	Ms
155	N	ms
156	N	H
157	N	H
158	N	H
159	N	ms
160	N	ms
161	N	ms
162	N	ms
163	N	Ms
164	N	H
165	N	ms
166	N	ms
167	N	Ms
168	N	H
169	N	ms
170	N	Ms
171	N	ms
172	N	H
173	N	H
174	N	ms
175	N	ms
176	N	H
177	N	H
178	N	ms

순번	세포질타입	핵타입
337	N	H
338	N	ms
339	N	H
340	N	H
341	N	ms
342	N	H
343	N	ms
344	N	Ms
345	N	ms
346	N	ms
347	N	ms
348	N	ms
349	N	H
350	N	H
351	N	H
352	N	Ms
353	N	H
354	N	ms
355	N	H
356	N	ms
357	N	ms
358	N	ms
359	N	Ms
360	N	H
361	N	H
362	N	H
363	N	ms
364	N	H
365	N	ms
366	N	Ms
367	N	H
368	N	H
369	N	ms
370	N	H
371	N	H
372	N	H
373	N	ms
374	N	ms
375	N	H
376	N	H
377	N	H
378	N	ms
379	N	H
380	N	ms
381	N	H
382	N	ms
383	N	ms
384	N	ms
385	N	ms
386	N	H
387	N	Ms
388	N	ms
389	N	H
390	N	ms
391	N	H
392	S	Ms
393	N	ms

순번	세포질타입	핵타입
552	N	H
553	N	H
554	N	H
555	N	H
556	N	H
557	N	ms
558	N	H
559	N	Ms
560	N	ms
561	N	Ms
562	N	H
563	N	ms
564	N	H
565	N	H
566	N	ms
567	N	Ms
568	N	ms
569	N	H
570	N	ms
571	N	ms
572	N	ms
573	N	ms
574	N	H
575	N	ms
576	N	ms
577	N	ms
578	N	H
579	N	H
580	N	Ms
581	N	H
582	N	H
583	N	ms
584	N	H
585	N	H
586	N	H
587	N	Ms
588	N	ms
589	N	ms
590	N	ms
591	N	ms
592	N	H
593	N	H
594	N	n/a
595	N	n/a
596	N	ms
597	N	ms
598	N	H
599	N	ms
600	N	ms
601	N	ms
602	N	ms
603	N	ms
604	N	H
605	N	H
606	N	ms
607	N	ms
608	N	ms

순번	세포질타입	핵타입
767	N	ms
768	N	ms
769	N	ms
770	N	ms
771	N	ms
772	N	ms
773	N	Ms
774	N	ms
775	N	ms
776	N	H
777	N	H
778	N	ms
779	N	ms
780	N	H
781	N	Ms
782	N	Ms
783	N	ms
784	N	H
785	N	H
786	N	ms
787	N	ms
788	N	ms
789	N	ms
790	N	H
791	N	ms
792	N	H
793	N	Ms
794	N	H
795	N	Ms
796	N	H
797	N	ms
798	N	H
799	N	ms
800	N	ms
801	N	H
802	N	Ms
803	N	ms
804	N	ms
805	N	ms
806	N	H
807	N	ms
808	N	ms
809	N	ms
810	N	ms
811	N	ms
812	N	ms
813	N	H
814	N	Ms
815	N	ms
816	N	ms
817	N	ms
818	N	ms
819	N	ms
820	N	Ms
821	N	ms
822	N	ms
823	N	ms

순번	세포질타입	핵타입
179	N	ms
180	N	ms
181	N	H
182	N	H
183	N	ms
184	N	ms
185	N	ms
186	N	ms
187	N	ms
188	N	H
189	N	H
190	N	ms
191	N	Ms
192	N	ms
193	N	H
194	N	Ms
195	N	ms
196	N	ms
197	N	ms
198	N	H
199	N	H
200	N	ms
201	S	Ms
202	N	ms
203	N	H
204	N	H
205	N	ms
206	N	H
207	N	ms
208	N	ms
209	N	Ms
210	N	Ms
211	N	ms
212	N	H
213	N	ms
214	N	H
215	N	H

순번	세포질타입	핵타입
394	N	ms
395	N	H
396	N	ms
397	N	H
398	N	ms
399	N	H
400	N	H
401	N	ms
402	N	H
403	N	H
404	N	ms
405	N	H
406	N	ms
407	N	ms
408	N	H
409	N	ms
410	N	ms
411	N	Ms
412	N	ms
413	N	H
414	N	ms
415	N	H
416	N	H
417	N	ms
418	N	ms
419	N	Ms
420	N	H
421	N	Ms
422	N	ms
423	N	H
424	N	H
425	N	H
426	N	H
427	N	ms
428	N	ms
429	N	ms
430	N	ms

순번	세포질타입	핵타입
609	N	H
610	N	Ms
611	N	ms
612	N	H
613	N	ms
614	N	H
615	N	H
616	N	ms
617	N	ms
618	N	ms
619	N	H
620	N	H
621	N	H
622	N	ms
623	N	ms
624	N	H
625	N	ms
626	N	ms
627	N	H
628	N	H
629	N	H
630	N	ms
631	N	ms
632	N	Ms
633	N	H
634	N	ms
635	N	ms
636	N	Ms
637	N	ms
638	N	ms
639	N	ms
640	N	ms
641	N	H
642	N	H
643	N	n/a
644	N	H
645	N	H

순번	세포질타입	핵타입
824	N	Ms
825	N	H
826	N	ms
827	N	ms
828	N	H
829	N	ms
830	N	H
831	N	H
832	N	ms
833	N	ms
834	N	H
835	N	ms
836	N	ms
837	N	H
838	N	Ms
839	N	H
840	N	ms
841	N	ms
842	N	ms
843	N	ms
844	N	H
845	N	ms
846	N	H
847	N	ms
848	N	ms
849	N	ms
850	N	H
851	N	H
852	N	Ms
853	N	ms
854	N	ms
855	N	H
856	N	ms
857	N	H

표 5. 순천대학교 20점의 시료에 대하여, 원예 형질 관련 2개의 마커를 이용한 서비스 결과

No.	세포질 type	핵 type
1	S	ms
2	S	H
3	S	H
4	S	ms
5	S	ms

No.	세포질 type	핵 type
6	S	H
7	S	H
8	S	ms
9	S	H
10	S	ms

No.	세포질 type	핵 type
11	S	H
12	S	ms
13	S	H
14	S	H
15	S	ms

No.	세포질 type	핵 type
16	S	H
17	S	ms
18	S	H
19	S	H
20	S	ms

표 6. 순천대학교 513점의 시료에 대하여, 원예 형질 관련 2개의 마커를 이용한 서비스 결과

No.	세포질타입	핵타입
1	S	ms
2	S	ms
3	S	ms
4	S	ms
5	S	ms
6	S	ms
7	S	ms

No.	세포질타입	핵타입
130	S	ms
131	S	ms
132	S	ms
133	S	ms
134	S	ms
135	S	ms
136	S	ms

No.	세포질타입	핵타입
259	T	Ms
260	T	Ms
261	T	Ms
262	T	Ms
263	T	Ms
264	T	Ms
265	T	Ms

No.	세포질타입	핵타입
388	T	Ms
389	T	Ms
390	T	Ms
391	T	Ms
392	T	Ms
393	T	Ms
394	T	Ms

8	S	ms
9	S	ms
10	S	ms
11	S	ms
12	S	ms
13	S	ms
14	S	ms
15	S	ms
16	S	ms
17	S	ms
18	S	ms
19	S	ms
20	S	ms
21	S	ms
22	S	ms
23	S	ms
24	S	ms
25	S	ms
26	S	ms
27	S	ms
28	S	ms
29	S	ms
30	S	ms
31	S	ms
32	S	ms
33	S	ms
34	S	ms
35	S	n/a
36	S	ms
37	S	ms
38	S	ms
39	S	ms
40	S	ms
41	S	ms
42	S	ms
43	S	ms
44	S	ms
45	S	ms
46	S	ms
47	n/a	n/a
48	S	ms
49	S	ms
50	S	ms
51	S	ms
52	S	ms
53	S	ms
54	S	ms
55	S	ms
56	S	ms
57	S	ms
58	S	ms
59	S	ms
60	S	ms
61	S	ms
62	S	ms
63	S	ms
64	n/a	n/a
65	S	ms
66	S	ms

137	S	ms
138	S	ms
139	S	ms
140	S	ms
141	S	ms
142	S	ms
143	S	ms
144	S	ms
145	S	ms
146	S	ms
147	S	ms
148	S	ms
149	S	ms
150	S	ms
151	S	ms
152	n/a	n/a
153	S	ms
154	S	ms
155	S	ms
156	S	ms
157	S	ms
158	S	ms
159	S	ms
160	S	ms
161	S	ms
162	S	ms
163	S	ms
164	S	ms
165	S	ms
166	S	ms
167	S	ms
168	S	ms
169	S	ms
170	S	ms
171	S	ms
172	n/a	ms
173	S	ms
174	S	ms
175	S	ms
176	S	ms
177	S	ms
178	S	ms
179	S	ms
180	S	ms
181	S	ms
182	S	ms
183	S	ms
184	S	ms
185	S	ms
186	S	ms
187	S	ms
188	S	ms
189	S	ms
190	S	ms
191	S	ms
192	S	ms
193	S	ms
194	S	ms
195	S	ms

266	T	Ms
267	T	Ms
268	T	Ms
269	T	Ms
270	T	Ms
271	T	Ms
272	T	Ms
273	T	Ms
274	T	Ms
275	T	Ms
276	T	Ms
277	T	Ms
278	T	Ms
279	T	Ms
280	T	Ms
281	T	Ms
282	T	Ms
283	T	Ms
284	T	Ms
285	T	Ms
286	T	Ms
287	T	Ms
288	T	Ms
289	T	Ms
290	n/a	Ms
291	T	Ms
292	T	Ms
293	T	Ms
294	T	Ms
295	T	Ms
296	T	Ms
297	T	Ms
298	T	Ms
299	T	n/a
300	T	Ms
301	T	Ms
302	T	Ms
303	T	Ms
304	T	Ms
305	T	n/a
306	T	Ms
307	T	Ms
308	T	Ms
309	T	Ms
310	T	Ms
311	T	Ms
312	T	Ms
313	T	Ms
314	T	Ms
315	T	Ms
316	T	Ms
317	T	Ms
318	T	Ms
319	T	Ms
320	T	Ms
321	T	Ms
322	T	Ms
323	T	Ms
324	T	Ms

395	T	Ms
396	T	Ms
397	N	ms
398	N	ms
399	N	ms
400	N	ms
401	N	ms
402	N	ms
403	N	ms
404	N	ms
405	N	ms
406	N	ms
407	N	ms
408	N	ms
409	N	ms
410	N	ms
411	N	ms
412	N	ms
413	N	ms
414	N	ms
415	N	ms
416	N	ms
417	N	ms
418	N	ms
419	N	ms
420	N	ms
421	N	ms
422	N	ms
423	N	ms
424	N	ms
425	N	ms
426	N	ms
427	N	ms
428	N	ms
429	N	ms
430	N	ms
431	N	ms
432	N	ms
433	N	ms
434	N	ms
435	N	ms
436	N	ms
437	N	ms
438	N	ms
439	N	ms
440	N	ms
441	N	ms
442	N	ms
443	N	ms
444	N	ms
445	N	ms
446	N	ms
447	S	H
448	S	H
449	S	H
450	n/a	H
451	S	H
452	S	H
453	S	H

67	S	ms
68	S	ms
69	S	ms
70	S	ms
71	S	ms
72	S	ms
73	S	ms
74	S	ms
75	S	ms
76	S	ms
77	S	ms
78	S	ms
79	S	ms
80	S	ms
81	S	ms
82	S	ms
83	S	ms
84	S	ms
85	S	ms
86	n/a	ms
87	S	ms
88	S	ms
89	S	ms
90	S	ms
91	S	ms
92	S	ms
93	S	ms
94	S	ms
95	S	ms
96	S	ms
97	S	ms
98	S	ms
99	S	ms
100	S	ms
101	S	ms
102	S	ms
103	S	ms
104	S	ms
105	S	ms
106	S	ms
107	S	ms
108	n/a	n/a
109	S	ms
110	S	ms
111	S	ms
112	S	ms
113	S	ms
114	S	ms
115	S	ms
116	S	ms
117	S	ms
118	S	ms
119	S	ms
120	S	ms
121	S	ms
122	S	ms
123	S	ms
124	S	ms
125	S	ms

196	S	ms
197	S	ms
198	S	ms
199	S	ms
200	S	ms
201	S	ms
202	S	ms
203	S	ms
204	S	ms
205	S	ms
206	S	ms
207	S	ms
208	S	ms
209	S	ms
210	S	ms
211	S	ms
212	S	ms
213	S	ms
214	S	ms
215	S	ms
216	S	ms
217	S	ms
218	S	ms
219	S	ms
220	S	ms
221	S	ms
222	S	ms
223	S	ms
224	S	ms
225	S	n/a
226	S	ms
227	S	ms
228	S	ms
229	S	ms
230	S	ms
231	S	ms
232	S	ms
233	S	ms
234	S	ms
235	S	ms
236	S	ms
237	S	ms
238	S	ms
239	S	ms
240	S	ms
241	S	n/a
242	S	ms
243	S	ms
244	S	ms
245	S	ms
246	T	Ms
247	T	Ms
248	T	Ms
249	T	Ms
250	T	Ms
251	T	Ms
252	T	Ms
253	T	Ms
254	T	Ms

325	T	Ms
326	T	Ms
327	T	Ms
328	T	Ms
329	T	Ms
330	T	Ms
331	T	Ms
332	T	Ms
333	T	Ms
334	T	Ms
335	T	Ms
336	T	Ms
337	T	Ms
338	T	Ms
339	T	Ms
340	T	Ms
341	T	Ms
342	T	Ms
343	T	Ms
344	T	Ms
345	T	Ms
346	T	Ms
347	T	Ms
348	T	Ms
349	T	Ms
350	T	Ms
351	T	Ms
352	T	Ms
353	T	Ms
354	T	Ms
355	n/a	Ms
356	T	Ms
357	T	Ms
358	T	Ms
359	n/a	n/a
360	T	Ms
361	T	Ms
362	T	Ms
363	T	Ms
364	T	Ms
365	T	Ms
366	T	Ms
367	T	Ms
368	T	Ms
369	T	Ms
370	n/a	Ms
371	T	Ms
372	T	Ms
373	T	Ms
374	T	Ms
375	T	Ms
376	T	Ms
377	T	Ms
378	T	Ms
379	T	Ms
380	T	Ms
381	T	Ms
382	T	Ms
383	T	Ms

454	S	H
455	S	H
456	n/a	H
457	S	H
458	S	H
459	S	H
460	S	H
461	S	H
462	S	H
463	S	H
464	T	Ms
465	T	Ms
466	T	Ms
467	T	n/a
468	T	Ms
469	T	Ms
470	T	Ms
471	T	Ms
472	T	Ms
473	T	Ms
474	T	Ms
475	n/a	Ms
476	T	Ms
477	T	Ms
478	T	n/a
479	T	Ms
480	T	n/a
481	T	Ms
482	T	Ms
483	T	Ms
484	T	Ms
485	T	Ms
486	T	Ms
487	T	Ms
488	T	Ms
489	T	Ms
490	T	Ms
491	T	Ms
492	T	Ms
493	T	Ms
494	T	Ms
495	T	Ms
496	S	Ms
497	S	Ms
498	S	Ms
499	S	Ms
500	S	Ms
501	S	Ms
502	S	Ms
503	S	Ms
504	S	Ms
505	S	Ms
506	S	Ms
507	S	Ms
508	S	Ms
509	S	Ms
510	S	Ms
511	S	n/a
512	S	Ms

126	S	ms
127	S	ms
128	S	ms
129	S	ms

255	T	Ms
256	T	Ms
257	T	Ms
258	T	Ms

384	T	Ms
385	T	Ms
386	T	Ms
387	T	Ms

513	S	Ms
-----	---	----

표 7. 순천대학교 22점의 시료에 대하여, 원예 형질 관련 2개의 마커를 이용한 서비스 결과

순번	샘플명	세포질 타입	핵 타입
1	12-1	T	H
2	12-2	T	H
3	12-3	T	Ms
4	12-4	T	Ms
5	12-5	T	H
6	12-6	T	Ms

순번	샘플명	세포질 타입	핵 타입
7	12-7	T	H
8	12-8	T	ms
9	12-9	T	H
10	12-10	T	H
11	13-1	S	Ms
12	13-2	S	Ms

순번	샘플명	세포질 타입	핵 타입
13	13-3	S	H
14	13-4	S	H
15	13-5	S	Ms
16	13-6	S	H
17	13-7	S	Ms
18	13-8	S	H

순번	샘플명	세포질 타입	핵 타입
19	13-9	S	Ms
20	13-10	S	ms
21	13-11	S	ms
22	13-12	S	H

② 미라클종묘

미라클종묘로부터 총 20점의 시료를 받아 1번의 서비스를 진행하였다. 20점의 시료에 대하여, 원예 형질 관련 2종의 마커로 서비스를 진행하였으며, 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 8).

표 8. 미라클종묘 20점의 시료에 대하여, 원예 형질 관련 2개의 마커를 이용한 서비스 결과

No.	세포질 type	핵 type
1	T	ms
2	T	Ms
3	T	ms
4	T	ms
5	N	H

No.	세포질 type	핵 type
6	T	ms
7	T	H
8	T	H
9	T	ms
10	T	H

No.	세포질 type	핵 type
11	T	H
12	N	ms
13	T	ms
14	T	H
15	T	ms

No.	세포질 type	핵 type
16	T	ms
17	T	ms
18	T	H
19	T	H
20	T	H

3-5) 5차년도 양파 분자마커 서비스 결과

5차년도에 양파 분자마커 서비스는 순천대학교 1곳에서 의뢰를 받아 실시하였다.

① 순천대학교

순천대학교로부터 총 60,803점의 시료를 받아 2번의 서비스를 진행하였다. 처음 87점의 시료에 대하여, 원예형질 관련 1종의 마커로 서비스를 진행하였다(표 1). 2번째로는 60,716점의 시료에 대하여, 원예형질 관련 1종의 마커로 서비스를 진행하였다(표 2). 의뢰받은 시료들에 대한 서비스 결과는 아래의 표와 같다(표 1~2).

표 1. 순천대학교 87점의 시료에 대하여, 원예형질 관련 1종의 마커를 이용한 서비스 결과

No.	핵
1	Msms
2	Msms
3	Msms
4	Msms
5	Msms
6	Msms
7	Msms

No.	핵
13	Msms
14	Msms
15	Msms
16	Msms
17	Msms
18	Msms
19	Msms

No.	핵
25	Msms
26	Msms
27	Msms
28	Msms
29	Msms
30	Msms
31	Msms

No.	핵
37	Msms
38	Msms
39	Msms
40	Msms
41	Msms
42	Msms
43	Msms

No.	핵
49	Msms
50	Msms
51	Msms
52	Msms
53	Msms
54	Msms
55	Msms

No.	핵
61	MsMs
62	MsMs
63	MsMs
64	MsMs
65	MsMs
66	MsMs
67	MsMs

No.	핵
73	MsMs
74	MsMs
75	MsMs
76	MsMs
77	MsMs
78	MsMs
79	MsMs

No.	핵
85	MsMs
86	MsMs
87	MsMs

8	Msms	20	Msms	32	Msms	44	Msms	56	Msms	68	MsMs	80	MsMs
9	Msms	21	Msms	33	Msms	45	Msms	57	MsMs	69	MsMs	81	MsMs
10	Msms	22	Msms	34	Msms	46	Msms	58	Msms	70	MsMs	82	MsMs
11	Msms	23	Msms	35	Msms	47	Msms	59	Msms	71	MsMs	83	MsMs
12	Msms	24	Msms	36	Msms	48	Msms	60	MsMs	72	MsMs	84	MsMs

표 2. 순천대학교 60,716점의 시료에 대하여, 원예형질 관련 1종의 마커를 이용한 순도검정 서비스 결과

품종번호	샘플수	혼입샘플수	F1순도(%)	품종번호	샘플수	혼입샘플수	F1순도(%)
1	1,536	0	100.0	31	1,536	0	100.0
2	1,504	1	99.9	32	1,536	1	99.9
3	1,536	0	100.0	33	1,464	0	100.0
4	1,504	2	99.9	34	1,424	0	100.0
5	1,528	0	100.0	35	1,152	0	100.0
6	1,516	1	99.9	36	1,516	1	99.9
7	1,524	0	100.0	37	1,536	0	100.0
8	1,152	3	99.7	38	1,508	0	100.0
9	1,536	1	99.9	39	1,536	0	100.0
10	1,536	0	100.0	40	1,488	0	100.0
11	768	3	99.6	41	1,536	4	99.7
12	1,528	0	100.0	42	376	4	98.9
13	1,520	0	100.0	43	384	10	97.4
14	384	0	100.0	44	384	14	96.4
15	384	0	100.0	45	372	13	96.5
16	384	10	97.4	46	1,536	1	99.9
17	372	4	98.9	47	1,504	1	99.9
18	384	10	97.4	48	384	0	100.0
19	384	0	100.0	49	384	0	100.0
20	384	0	100.0	50	384	1	99.7
21	384	0	100.0	51	384	0	100.0
22	1,360	6	99.6	52	1,152	8	99.3
23	384	2	99.5	53	1,140	6	99.5
24	384	1	99.7	54	384	10	97.4
25	384	0	100.0	55	1,492	0	100.0
26	1,536	0	100.0	56	748	4	99.5
27	1,536	1	99.9	57	384	0	100.0
28	1,536	3	99.8	58	384	12	96.9
29	1,536	0	100.0	59	768	23	97.0
30	1,536	0	100.0				

3-6) 1차년도 ~ 5차년도 양파 분자마커 서비스 종합

기관별로 분자마커 서비스 점수는 아래 표와 같으며, 1차년도, 2차년도, 3차년도, 4차년도, 5차년도의 양파 분자마커 서비스의 총 점수는 6,440점, 30,161점, 10,144점, 3,504점, 60,803점이다.

또한 1차년도에는 아래 그림과 같이 마커 유형별 혹은 분석방법에 따른 양파 분자마커 서비스 중 가장 많은 비율을 차지한 마커로는 EP1 system마커로 전체 마커 중 35.8%가 사용되었으며, 그 다음으로는 32.1%인 simple PCR마커와 HRM마커 이었다. 2차년도에는 EP1 system마커가 61.1%로 가장 많이 이용되었으며, 그 다음이 simple PCR마커로 20.7%를 차지하였고, 마지막으로 HRM마커가 18.2%가 이용되었다. 또한 3차년도에는 아래 그림과 같이 마커 유형별 혹은 분석방법에 따른 양파 분자마커 서비스 중 가장 많은 비율을 차지한 마커유형으로는 Simple PCR과 HRM마커가 각각 50%씩 이용되었다. 4차년도도 3차년도와 동일하게 Simple PCR마커와 HRM마커가 각각 50%로 이용되었다. 5차년도에는 100% HRM마커만 이용되었다.

1차년도에 원예형질 및 순도/고정도에 따른 양파 분자마커 서비스로는 원예형질 마커가 64.2%로

가장 많았으며, 그 다음으로 순도/고정도 마커가 35.8%를 차지하였다. 2차년도에는 순도검정 마커가 61.1%로 많았으며, 나머지가 원예형질 마커로 38.9%를 차지하였다. 3차년도 및 4차년도에는 병, 원예형질에 따른 양과 분자마커 서비스로는 전부 원예형질 마커에 대해서만 서비스를 실시하였다. 5차년도에는 순도/고정도 마커가 99.9%이었으며, 원예형질마커로는 0.1%가 이용되었다.

양과에서는 아직까지 병 마커에 대한 분자마커 서비스는 의뢰가 들어오지 않아 진행되지 않았으며, 의뢰가 들어온 분자마커로는 원예형질 마커인 세포질웅성불임성 유형 및 웅성불임 회복 유전자형 판별마커가 유일 하였다. 세포질웅성불임성 유형 및 웅성불임 회복 유전자형을 판별하는 것은 계통 및 품종의 순도를 판단하는 기준이 되며, 본 연구팀에서 분자마커 서비스 수행한 결과 현재 국내에서 시판 중인 양과들에서 상당 부분 세포질이나 핵타입이 유전적으로 고정되어 있지 않은 품종들이 많이 있었다. 따라서 이들 품종에 분자마커를 활용하여 세포질 및 핵타입을 고정시키는 작업이 더 필요할 것으로 보인다.

<1차년도 기관별 양과 서비스 의뢰 건수 및 분자마커 서비스 점수>

기관명	시료수	마커수	분자마커 서비스 점수	기관별 분자마커 서비스 점수
아시아종묘	48	48	2,304	2,304
씨앗과사람들	1440	2	2,880	4,136
	628	2	1,256	
소 계		-		6,440

<2차년도 기관별 양과 서비스 의뢰 건수 및 분자마커 서비스 점수>

기관명	시료수	마커수	분자마커 서비스 점수	기관별 분자마커 서비스 점수
전시포과제	662	2	1,324	27,188
	2,016	2	4,032	
	1,152	2	2,304	
	288	2	576	
	260	2	520	
	192	24	4,608	
	192	24	4,608	
	96	96	9,216	
씨앗과사람들	233	1	233	2,973
	1,104	2	2,208	
	96	1	96	
	436	1	436	
소 계		-		30,161

<3차년도 기관별 양과 서비스 의뢰 건수 및 분자마커 서비스 점수>

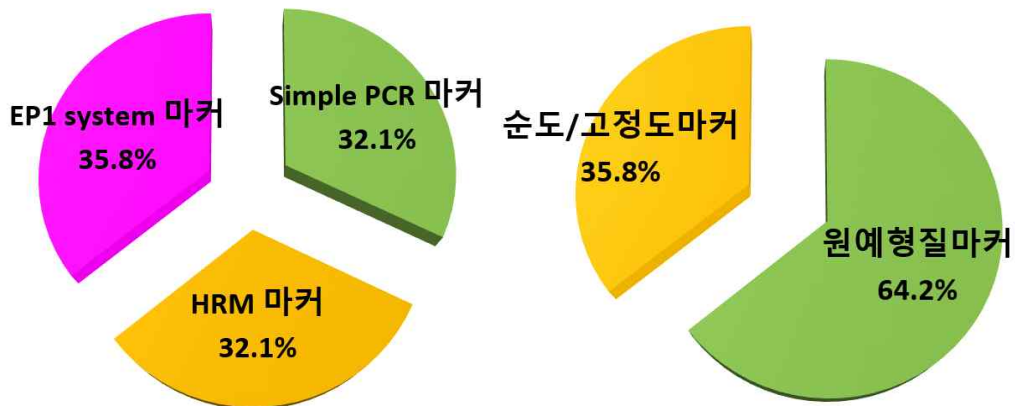
업체명	시료수	마커수	분자마커 서비스 점수	기관별 분자마커 서비스 점수
전시포과제	382	2	764	10,144
	87	2	174	
	191	2	382	
	188	2	376	
	192	2	384	
	192	2	384	
	3,840	2	7,680	
소계		-		10,144

<4차년도 기관별 양과 서비스 의뢰 건수 및 분자마커 서비스 점수>

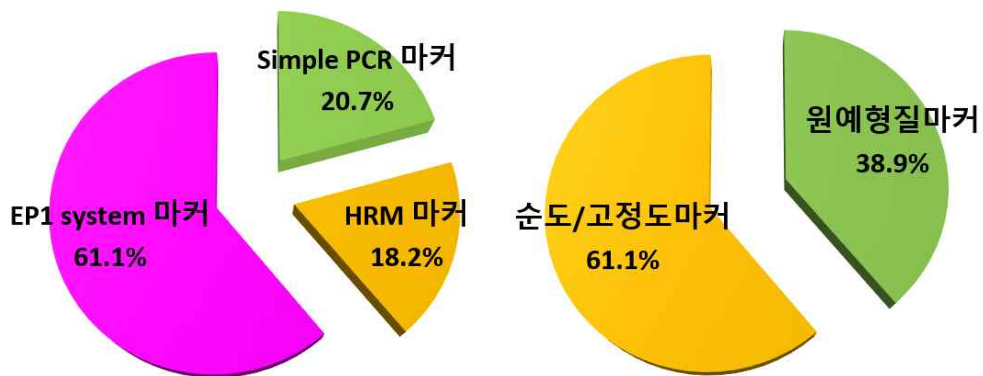
기관명	시료수	마커수	분자마커 서비스 점수	기관별 분자마커 서비스 점수
순천대학교	56	2	112	3,464
	10	2	20	
	254	2	508	
	857	2	1,714	
	20	2	40	
	513	2	1,026	
미래클종묘	20	2	40	40
소 계		-		3,504

<5차년도 기관별 양과 서비스 의뢰 건수 및 분자마커 서비스 점수>

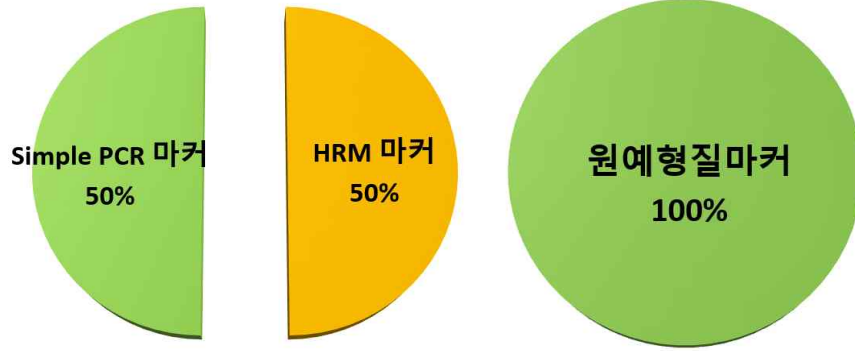
기관명	시료수	마커수	분자마커 서비스 점수	기관별 분자마커 서비스 점수
순천대학교	87	1	87	60,803
	60,716	1	60,716	
소 계		-		60,803



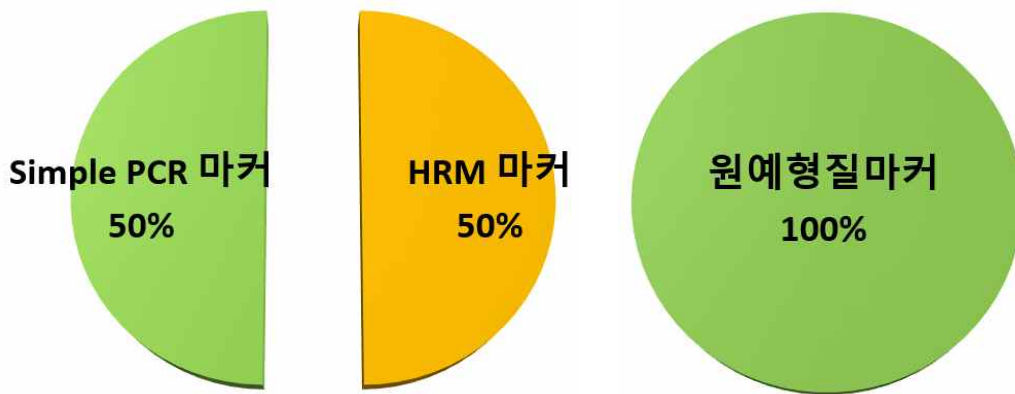
<1차년도 마커 유형별(분석방법)에 따른 양과 분자마커 서비스(좌) 및 원예형질 및 순도/고정도에 따른 양과 분자마커 서비스(우)>



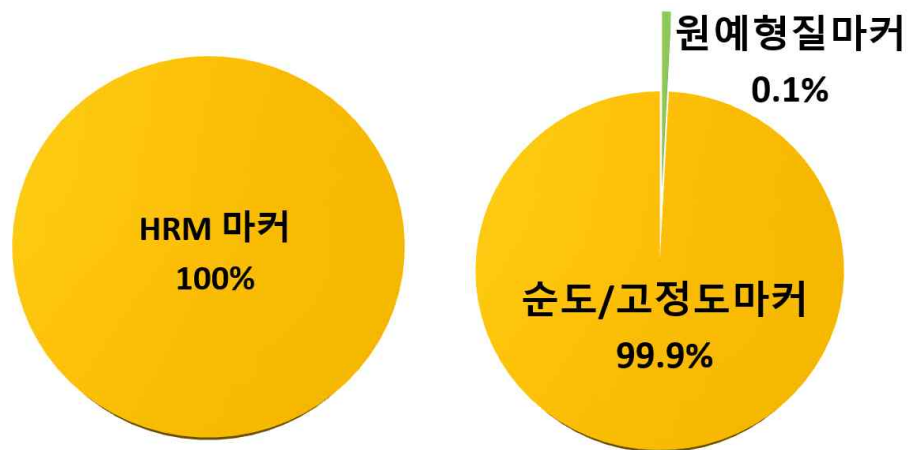
<2차년도 마커 유형별(분석방법)에 따른 양과 분자마커 서비스(좌) 및 원예형질 및 순도/고정도에 따른 양과 분자마커 서비스(우)>



<3차년도 마커 유형별(분석방법)에 따른 양과 분자마커 서비스(좌) 및 원예형질에 따른 양과 분자마커 서비스(우)>



<4차년도 마커 유형별(분석방법)에 따른 양과 분자마커 서비스(좌) 및 원예형질 및 순도/고정도에 따른 양과 분자마커 서비스(우)>

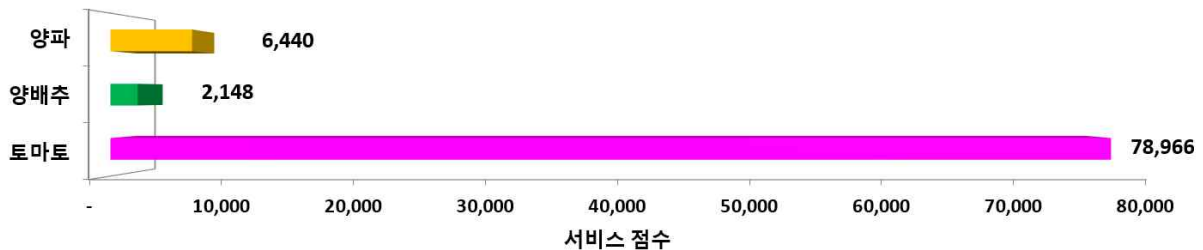


<5차년도 마커 유형별(분석방법)에 따른 양과 분자마커 서비스(좌) 및 원예형질 및 순도/고정도에 따른 양과 분자마커 서비스(우)>

4) 분자마커 서비스 종합

현재까지 분자마커 서비스 결과를 종합해보면, 1차년도, 2차년도, 3차년도, 4차년도, 5차년도에 분자마커 서비스는 아래 그림과 같이 총 87,55점, 95,783점, 83,177점, 114,466점, 102,175점의 서비스를 진행하였다. 1차년도의 토마토에서는 병, 형질 및 순도/고정도 분자마커 서비스를 통해 78,966점을 수행하였으며, 양배추에서는 병 및 원예형질 분자마커 서비스를 통해 2,148점을 수행하였고, 양파에서는 원예형질 및 순도/고정도 분자마커 서비스를 통해 6,440점을 수행하였다. 2차년도의 토마토에서는 병, 형질 및 고정도/MABC 분자마커 서비스를 통해 64,350점을 수행하였으며, 양배추에서는 병 및 원예형질 분자마커 서비스를 통해 1,272점을 수행하였고, 양파에서는 원예형질 및 순도 분자마커 서비스를 통해 30,161점을 수행하였다. 3차년도의 토마토에서는 병, 원예형질 분자마커 서비스를 통해 52,051점을 수행하였으며, 양배추에서는 병 및 원예형질 분자마커 서비스를 통해 20,982점을 수행하였고, 양파에서는 원예형질 분자마커 서비스를 통해 10,144점을 수행하였다. 4차년도의 토마토에서는 병, 원예형질 및 순도/고정도 분자마커 서비스를 통해 85,636점을 수행하였으며, 양배추에서는 병 및 원예형질 분자마커 서비스를 통해 25,326점을 수행하였고, 양파에서는 원예형질 분자마커 서비스를 통해 3,504점을 수행하였다. 5차년도에는 토마토에서 병, 원예형질 및 순도/고정도 분자마커 서비스를 통해 37,736점을 수행하였으며, 양배추에서는 병, 원예형질 및 순도/고정도 분자마커 서비스를 통해 3,646점을 수행하였으며, 양파에서는 원예형질 및 순도/고정도 분자마커 서비스를 통해 60,803점을 수행하였다.

총 분자마커 서비스 점수 : 87,554



<1차년도 분자마커 서비스 종합>

총 분자마커 서비스 점수 : 95,783



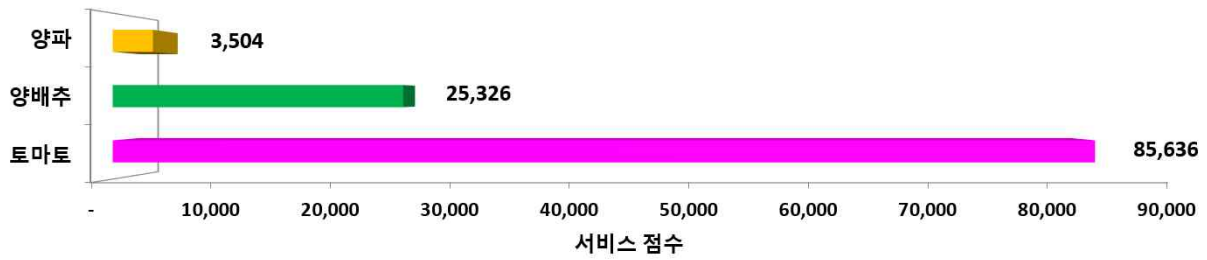
<2차년도 분자마커 서비스 종합>

총 분자마커 서비스 점수 : 83,177



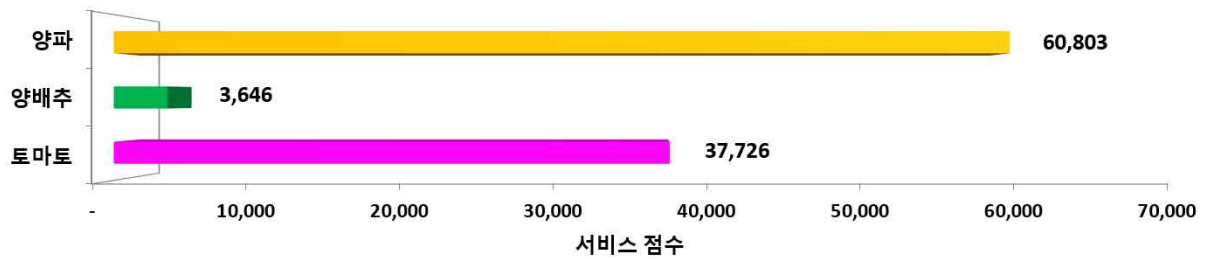
<3차년도 분자마커 서비스 종합>

총 분자마커 서비스 점수 : 114,466



<4차년도 분자마커 서비스 종합>

총 분자마커 서비스 점수 : 102,175



<5차년도 분자마커 서비스 종합>

제 2 절 하우스 장기재배용 내병계 토마토 대목 개발

1). 유전자원 수집 및 수집된 유전자원의 병 저항성 검정

(1) 유전자원 수집

해외 토마토 대목 사용률은 증가하고 있으며, 대목 품종의 수도 증가하고 있는 추세이다. 이에 해외 토마토 시설재배의 대목 시장규모는 2018년 기준 6,500억으로 2013년의 3,700억에 비해 약 1.8배 증가하였다. 우리나라의 대목 종자시장은 약 25억 정도의 규모(한국종자협회 자료)이며 대목 사용률은 꾸준한 증가 추세이다. 그러나 국내 토마토 대목은 대부분이 일본의 종묘회사로부터 종자를 수입하여 판매하고 있는 실정이다.

최근 몬산토에서는 여러개의 장기재배용 토마토 대목 품종을 개발하여 판매하고 있으며 국내에는 몬산토에서 장기재배용 토마토 대목품종 “Maxifort”종자를 수입하여 팜한농에서 고가로 판매하고 있다. 이 장기재배용 토마토 대목품종 “Maxifort”는 재배종과 야생종을 교배하여 만들어진 품종이다.

이에 본 연구는 복합내병성 장기재배용 토마토 대목 품종을 개발하기 위하여 먼저 일본에서 판매되고 있는 43개의 토마토 대목 품종과 야생종 102개의 accession 종자를 수집하여 연구를 수행하였다(표 1). 또한 현재 시판되고 있는 장기재배용 토마토 대목품종 “Maxifort”, “Beaufort”, “Amaron” 품종들을 수집하여 연구를 수행하였다.

표 1. 야생종 토마토 수집 목록

No	Accession	Collection site	Origin	No	Accession	Collection site	Origin
1	LA2567	Quita	Peru	52	LA1696	Huanchuy to Cacara	Peru
2	LA2110	Yangana#2	Ecuador	53	LA1718	Huancabamba	Peru
3	LA2107	Los Lirios	Ecuador	54	LA1721	Ticrapo Viejo	Peru
4	LA1393	Huaraz	Peru	55	LA1736	Pucutay	Peru
5	LA1361	Pariacoto	Peru	56	LA1737	Cashacoto	Peru
6	LA1625	Jipijapa	Ecuador	57	LA1738	Desfiladero	Peru
7	LA2104	Pena Negra	Ecuador	58	LA1739	Canchaque to Cerran	Peru
8	LA1265	RioChimbo	Ecuador	59	LA1753	Surco	Peru
9	LA1253	Pueblo Nuevo	Ecuador	60	LA1761	Rio Chillon	Peru
10	LA2975	Coltao	Peru	61	LA1764	Westofcanta	Peru
11	LA2105	Jardin	Ecuador	62	LA1772	West of canta	Peru
12	LA1266	Pallatanga	Ecuador	63	LA1775	Rio casma	Peru
13	LA2869	Matala	Ecuador	64	LA1777	Rio casma	Peru
14	LA1918	Llauta	Ecuador	65	LA1778	Rio casma	Peru
15	LA2175	Timbruca	Peru	66	LA1779	Rio casma	Peru
16	LA1624	Jipijapa	Ecuador	67	LA1927	Ocobamba	Peru
17	LA2976	Huangra	Peru	68	LA1928	Ocana	Peru
18	LA2101	San Pedro de	Ecuador	69	LA1978	Colca	Peru

		Cariamanga					
19	LA2098	Sabiango	Ecuador	70	LA1986	Casmiche	Peru
20	LA2722	Puente Auco	Peru	71	LA2103	Lansaca	Ecuador
21	LA2860	Cariamanga	Ecuador	72	LA2106	Yambra-La Providencia	Ecuador
22	LA2861	Las Juntas	Ecuador	73	LA2108	Protete de Anganuma	Ecuador
23	LA2329	Aricapampa	Peru	74	LA2109	Yangana#1	Ecuador
24	LA2100	Sozoranga	Ecuador	75	LA2114	San Juan	Ecuador
25	LA2119	Saraguro	Ecuador	76	LA2115	Pucala	Ecuador
26	LA2099	Sabiango to Sozoranga	Ecuador	77	LA2116	Las Juntas	Ecuador
27	LA1392	Huaraz	Peru	78	LA2124	Cumbaratza	Ecuador
28	LA2204	Balsapata	Peru	79	LA2128	Zumbi	Ecuador
29	LA1560	Matucana	Peru	80	LA2144	Chanchan	Ecuador
30	LA2155	Maydasbamba	Peru	81	LA2156	Ingenio Montan	Peru
31	LA0094	Yangas to Canta	Peru	82	LA2158	Rio Chotano	Peru
32	LA0361	Canta	Peru	83	LA2159	Atonpampa	Peru
33	LA0407	El Mirador	Ecuador	84	LA2167	Cementerio cajamarca	Peru
34	LA1033	Hacienda Taulis	Peru	85	LA2171	El Molino	Peru
35	LA1223	Alausi	Ecuador	86	LA2174	Rio Chinchipe	Peru
36	LA1252	Loja	Ecuador	87	LA2196	Caclic	Peru
37	LA1255	Loja	Ecuador	88	LA2314	San Francisco	Peru
38	LA1264	Bucay	Ecuador	89	LA2324	Leimebamba	Peru
39	LA1295	Surco	Peru	90	LA2409	Rio Miraflores	Peru
40	LA1298	Yaso	Peru	91	LA2541	Olmos-Jaen	Peru
41	LA1347	Empalme	Peru	92	LA2552	Las Flores	Peru
42	LA1352	Rupe	Peru	93	LA2556	Puente Moche	Peru
43	LA1353	Contumaza	Peru	94	LA2574	Cullaspungro	Peru
44	LA1354	Contumaza to cascás	Peru	95	LA2648	Santo Domingo	Peru
45	LA1378	Navan	Peru	96	LA2650	Ayabaca	Peru
46	LA1557	Huaral to cerro de pasco	Peru	97	LA2651	Puente Tordopa	Peru
47	LA1559	Desvio Huamantanga-Canta	Peru	98	LA2812	Lambayeque	Peru
48	LA1648	Above Yaso	Peru	99	LA2855	Celica	Ecuador
49	LA1681	Mushka	Peru	100	LA2859	Yangana	Ecuador
50	LA1691	Yauyos	Peru	101	LA2864	Sozorango	Ecuador
51	LA1695	Cacachuusaiin	Peru	102	LA2868	Arenillas	Ecuador

(2) 분자마커를 이용한 수집된 유전자원의 병 저항성 검정

일본에서 판매되고 있는 43개의 토마토 대목 품종(F1)들은 주요 병들의 저항성들에 대한 특징들이 종자봉투에 설명되어 있었지만 더 자세히 알아보기 위하여 본 연구실에서 보유하고 있는 분자마커들을 이용하여(시들음병, 반쪽시들음병, 근부위조병, 갈색근부병, 고구마선충뿌리혹병, 풋마름병, 잎곰팡이병, 얼룩시들음병, 모자이크바이러스병, 황화잎말림바이러스병, 역병, 점무늬병 등) 병 저항성 검정을 수행하였다(그림 1). 그 결과 토마토 대목 품종에 중요한 토양전염병인 시들음병(I2), 반쪽시들음병(Ve2), 근부위조병(J3), 고구마선충뿌리혹병(Mi23), 풋마름병(Bw6, Bw12)에 대부분의 품종들이 저항성을 나타내었다. 그러나 갈색근부병(Py1) 및 잎곰팡이병(CF9)은 대부분의 품종들에서 이병성을 나타내었다. 매개충들에 의하여 전염되는 모자이크바이러스병(Tm2a)는 대부분의 품종들에서 저항성을 나타내었지만, 얼룩시들음병(Sw5) 및 황화잎말림바이러스병(Ty1, Ty2)에는 모든 품종들이 이병성을 나타내었다. 또한 공기 전염병인 역병(Ph3)은 대부분의 품종들에서 이병성을 나타내었지만, 점무늬병(Sm)은 대부분의 품종들에서 저항성을 나타내었다(표 1, 2).

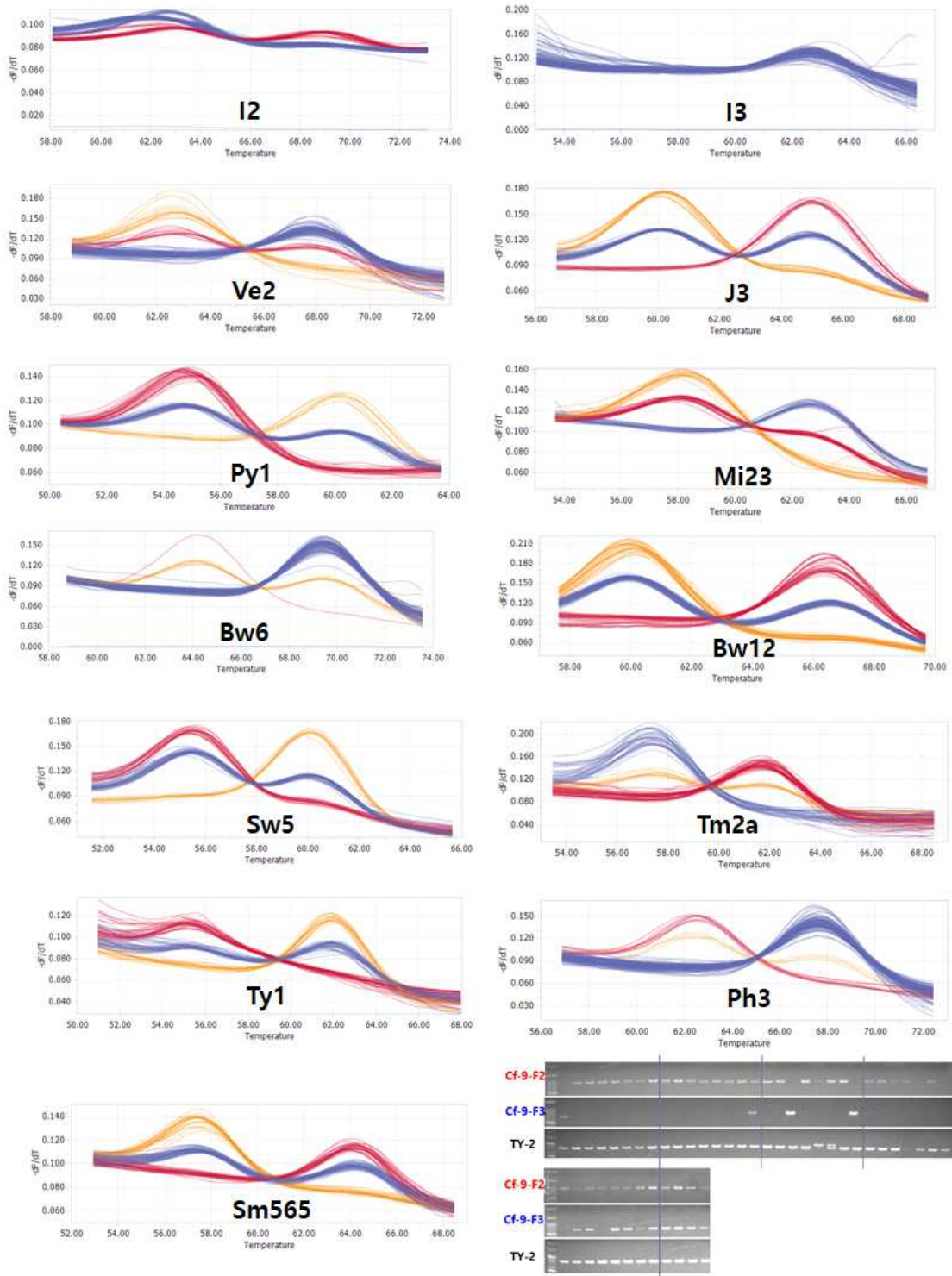


그림 1. 토마토 병 관련 분자마커들을 이용한 병 저항성 검정

표 1. 수집된 토마토 대목품종들 및 분자마커들을 이용한 병 저항성 검정 결과

	Soil-Borne Pathogens									Vector-Borne				Air-Borne	
	I2 (F)	I3 (F)	Ve2 (F)	J3 (F)	Py1 (F)	Mi23 (N)	Bw6 (B)	Bw12 (B)	Cf9 (F)	Sw5 (V)	Tm2a (V)	Ty1 (V)	Ty2 (V)	Ph3 (F)	Sm (F)
	시들음병	시들음병	반쪽 시들음병	근부 위조병	갈색 근부병	고구마선충 뿌리혹병	꽃마름병	꽃마름병	잎곰팡이병	열록 시들음병	모자이크 바이러스병	황화잎말림 바이러스병	황화잎말림 바이러스병	역병	점무늬병
JTS01	H	H	H	R	S	H	H	R	S	S	R	S	S	S	R
JTS02	S	S	H	H	S	R	R	R	S	S	R	S	S	S	S
JTS03	H	S	H	R	S	R	R	R	S	S	R	S	S	S	R
JTS04	R	H	H	R	S	H	H	H	S	S	R	S	S	S	R
JTS05	R	H	R	H	S	H	S	R	S	S	R	S	S	S	R
JTS06	H	S	R	R	S	H	H	H	S	S	R	S	S	S	H
JTS07	H	S	H	R	S	R	H	R	S	S	R	S	S	H	H
JTS08	R	H	H	R	R	R	H	H	H	S	R	S	S	S	H
JTS09	R	H	R	R	H	H	H	R	S	S	R	S	S	R	S
JTS10	H	H	R	R	H	H	H	R	S	S	R	S	S	R	H
JTS11	H	H	H	R	R	R	R	R	H	S	S	S	S	S	H
JTS12	H	H	H	R	R	H	R	R	S	S	R	S	S	S	H
JTS13	R	H	H	R	R	R	R	R	S	S	R	S	S	S	S
JTS14	R	H	H	R	R	R	R	R	S	S	R	S	S	S	S
JTS15	S	S	H	H	S	R	R	H	S	S	R	S	S	S	H
JTS17	H	S	H	H	S	H	H	R	S	S	R	S	S	S	H
JTS18	H	S	H	S	S	H	H	R	S	S	S	S	S	S	R
JTS19	H	S	H	H	S	R	H	R	S	S	R	S	S	S	H
JTS20	S	S	S	H	S	R	H	R	S	S	R	S	S	S	S
JTS21	H	S	R	H	S	R	R	R	H	S	H	S	S	H	H
JTS22	H	H	H	R	S	H	H	R	S	S	R	S	S	S	R
JTS23	H	S	R	S	S	H	S	H	S	S	S	S	S	S	R

표 2. 수집된 토마토 대목품종들 및 분자마커들을 이용한 병 저항성 검정 결과

	Soil-Borne Pathogens									Vector-Borne				Air-Borne	
	I2 (F)	I3 (F)	Ve2 (F)	J3 (F)	Py1 (F)	Mi23 (N)	Bw6 (B)	Bw12 (B)	Cf9 (F)	Sw5 (V)	Tm2a (V)	Ty1 (V)	Ty2 (V)	Ph3 (F)	Sm (F)
	시들음병	시들음병	반쪽 시들음병	근부 위조병	갈색 근부병	고구마선충 뿌리혹병	꽃마름병	꽃마름병	잎곰팡이병	얼룩 시들음병	모자이크 바이러스병	황화잎말림 바이러스병	황화잎말림 바이러스병	역병	점무늬병
JTS24	H	S	R	R	S	H	H	R	S	S	R	S	S	S	H
JTS25	S	S	H	R	H	R	H	H	R	S	R	S	S	H	S
JTS26	R	H	H	H	H	H	S	R	S	S	R	S	S	S	H
JTS27	S	S	R	R	S	H	R	R	S	S	R	S	S	S	S
JTS28	S	S	H	H	S	H	H	H	S	S	H	S	S	S	R
JTS29	H	S	H	H	S	H	H	R	S	S	R	S	S	S	R
JTS30	H	S	H	S	S	H	H	R	S	S	H	S	S	S	R
JTS31	H	S	H	S	S	H	H	R	S	S	S	S	S	S	R
JTS32	H	S	H	H	S	R	H	S	S	S	S	S	H	H	S
JTS33	H	S	H	H	S	R	R	H	S	S	R	S	S	S	H
JTS34	S	S	H	H	S	R	R	H	S	S	R	S	S	S	H
JTS35	S	S	S	H	S	H	H	H	R	S	H	S	S	S	H
JTS36	H	S	H	H	S	H	H	R	S	S	R	S	S	S	R
JTS37	H	S	H	H	S	H	H	R	S	S	H	S	S	S	R
JTS38	R	S	H	R	R	H	R	R	S	S	H	S	S	S	S
JTS39	H	S	H	H	S	H	H	R	S	S	R	S	S	S	H
JTS40	H	S	R	S	S	H	S	H	S	S	S	S	S	S	R
JTS41	H	S	H	H	S	R	H	R	S	S	H	S	S	S	H
JTS42	S	S	S	H	S	R	R	R	S	S	R	S	S	S	H
JTS43	R	H	R	H	S	H	S	R	S	S	R	S	S	S	R
JTS44	S	S	S	H	S	R	R	R	S	S	R	S	S	S	H

2). 수집된 일반 토마토 대목품종들에 대한 세대진전

일본에서 수집된 43개 품종들의 세대진전을 위하여 순천대학교 유리온실에 F1을 정식(그림 1)하여 재배한 후 각각의 품종들에 대하여 F2 종자를 수확하였다. 수확한 각각의 F2 종자들은 표 1, 2(수집된 토마토 대목품종들 및 분자마커들을 이용한 병 저항성 검정 결과 표임)에서 보여지는 것과 같이 병 관련 유전자들이 hetero 상태인 것들은 저항성 homo, 이병성 homo, hetero로 분리가 일어난다. 이에 hetero 상태인 유전자들에 대하여 저항성 homo화 된 것들을 선발하기 위하여 각 품종당 50립을 파종한 후 자엽 단계에서 엽을 채취한 후 DNA를 추출하여 병 관련 분자마커를 이용하여 병 검정을 수행하였다. 그 결과 표 1에서 보여지는 것과 같이 각각 50개의 F2 식물체에서 hetero 상태인 유전자가 저항성 homo화 된 것들을 선발하였으며, F4종자들을 수확하기 위하여 현재 F3 식물체들을 유리온실에 정식하여 재배 하였다(그림 2, 3). 2020년 봄에 일본에서 수집된 43개의 대목 품종들은 F4세대까지 세대를 진전시켰으며 F5세대를 진전시키기 위하여 수확된 F4종자를 각 계통당 10립씩 파종하여 병 관련 분자마커 검정을 실시한 후 병 저항성 유전자들을 많이 보유하고 있는 식물체들을 선발하여 현재 F5세대를 진전시키고 있는 중이다(표 2).

JTS 17



JTS 18



JTS 19



JTS 20



JTS 21



JTS 22



JTS 23



JTS 24



JTS 25



JTS 26





그림 1. 일본에서 수집된 F1 토마토 대목품종 재배

표 1. 병 관련 분자마커들을 이용한 F2 세대진전 식물체 선발

샘플명	Soil-Borne Pathogens									Vector-Borne				Air-Borne	
	I2 (F)	I3 (F)	Ve2 (F)	J3 (F)	Py1 (F)	Mi23 (N)	Bw6 (B)	Bw12 (B)	Cf9 (F)	Sw5 (V)	Tm2a (V)	Ty1 (V)	Ty2 (V)	Ph3 (F)	Sm (F)
	시들음병	시들음병	반쪽 시들음병	근부 위조병	갈색 근부병	고구마선충 뿌리혹병	꽃마름병	꽃마름병	잎곰팡이병	열매시들음병	모자이크 바이러스병	황화잎말림 바이러스병	황화잎말림 바이러스병	역병	점무늬병
JTS01 (F1)	H	H	H	R	S	H	H	R	S	S	R	S	S	S	R
JTS01-9 (F2)	H	R	R	R	S	H	H	R	S	S	R	S	S	S	R
JTS02 (F1)	S	S	H	H	S	R	R	R	S	S	R	S	S	S	S
JTS02-4 (F2)	S	S	H	H	S	R	R	R	S	S	R	S	S	S	S
JTS03 (F1)	H	S	H	R	S	R	R	R	S	S	R	S	S	S	R
JTS03-2 (F2)	R	S	R	R	S	R	R	R	S	S	R	S	S	S	R
JTS04 (F1)	R	H	H	R	S	H	H	H	S	S	R	S	S	S	R
JTS04-9 (F2)	R	H	H	R	S	R	R	R	S	S	R	S	S	S	R
JTS05 (F1)	R	H	R	H	S	H	S	R	S	S	R	S	S	S	R
JTS05-1 (F2)	R	R	R	H	S	H	S	R	S	S	R	S	S	S	R
JTS06 (F1)	H	S	R	R	S	H	H	H	S	S	R	S	S	S	H
JTS06-7 (F2)	R	S	R	R	S	H	H	H	S	S	R	S	S	S	H
JTS07 (F1)	H	S	H	R	S	R	H	R	S	S	R	S	S	H	H
JTS07-5 (F2)	H	S	R	R	S	R	H	R	S	S	R	S	S	R	H
JTS08 (F1)	R	H	H	R	R	R	H	H	H	S	R	S	S	S	H
JTS08-10 (F2)	R	R	H	R	R	R	R	H	R	S	R	S	S	S	R
JTS09 (F1)	R	H	R	R	H	H	H	R	S	S	R	S	S	R	S
JTS09-8 (F2)	R	H	R	R	H	R	R	R	S	S	R	S	S	R	S
JTS10 (F1)	H	H	R	R	H	H	H	R	S	S	R	S	S	R	H
JTS10-2 (F2)	R	S	R	R	R	R	R	R	S	S	R	S	S	R	S
JTS11 (F1)	H	H	H	R	R	R	R	R	H	S	S	S	S	S	H
JTS11-1 (F2)	R	H	n/a	R	R	R	R	R	S	S	R	S	S	S	H
JTS12 (F1)	H	H	H	R	R	H	R	R	S	S	R	S	S	S	H
JTS12-1 (F2)	S	S	H	R	R	H	R	R	S	S	R	S	S	S	R
JTS13 (F1)	R	H	H	R	R	R	R	R	S	S	R	S	S	S	S
JTS13-4 (F2)	R	R	H	R	R	R	R	R	S	S	R	S	S	S	S
JTS14 (F1)	R	H	H	R	R	R	R	R	S	S	R	S	S	S	S
JTS14-2 (F2)	R	R	H	R	R	R	R	R	S	S	R	S	S	S	S
JTS15 (F1)	S	S	H	H	S	R	R	H	S	S	R	S	S	S	H
JTS15-9 (F2)	S	S	H	H	S	R	R	R	S	S	R	S	S	S	R

JTS01-03



JTS01-05



JTS01-06



JTS01-09



JTS02-01



JTS 02-02



JTS 02-04



JTS 03-01



JTS 03-02



JTS 04-01



JTS 04-06



JTS 04-09



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JTS 06-09



JTS 07-03



JTS 07-05



JTS 07-06



JTS 08-02



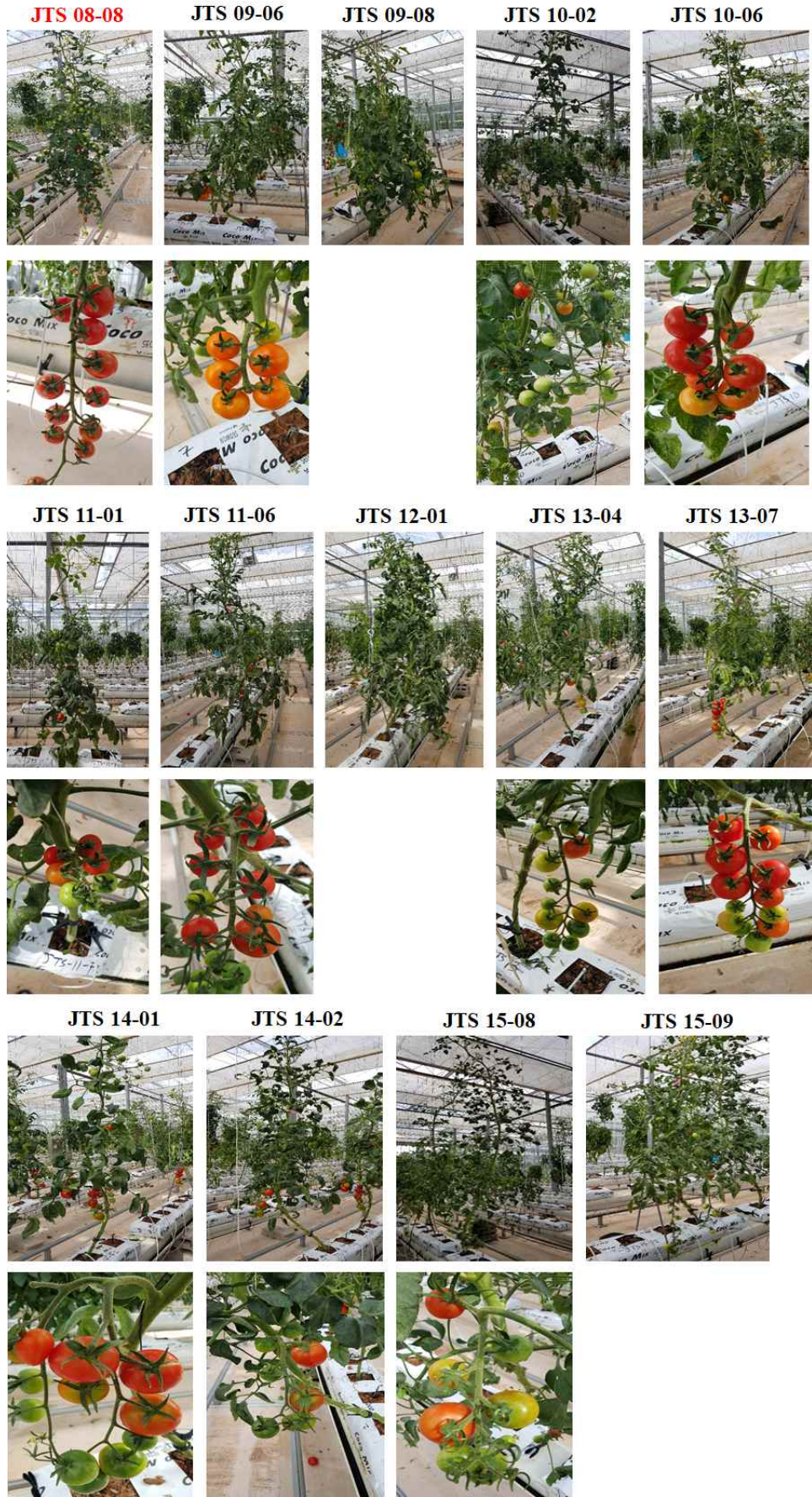


그림 2. 분자마커를 이용하여 선발된 F2 식물체 재배



그림 3. 분자마커를 이용하여 선발된 F3 식물체 재배

표 2. F5 세대진전을 위한 F4 세대의 병 관련 분자마커들을 이용한 식물체 선발

샘플명		Soil-Borne pathogens								Vector-borne				Air-borne		
		I2	I3	Ve2	J3	py1	Mi23	Bw6	Bw12	Cf9	Sw5	Tm2a	Ty1	Ty2	Ph3	Sm
		(F)	(F)	(F)	(F)	(F)	(N)	(B)	(B)	(F)	(V)	(V)	(V)	(V)	(F)	(F)
JTS1	F4	H	R	R	R	S	H	R	R	S	S	R	S	S	S	R
JTS2	F4	H	R	R	R	S	R	H	R	S	S	R	S	S	S	R
JTS3	F4	S	S	R	H	S	R	R	R	S	S	R	S	S	S	S
JTS5	F4	S	S	R	H	S	R	R	R	S	S	R	S	S	S	S
JTS8	F4	R	H	H	R	S	R	R	R	S	S	R	S	S	S	R
JTS9	F4	R	H	R	R	S	R	R	R	S	S	R	S	S	S	R
JTS10	F4	R	R	R	H	S	R	S	R	S	S	R	S	S	S	R
JTS11	F4	R	R	R	H	S	R	S	R	S	S	R	S	S	S	R
JTS12	F4	R	S	R	R	S	H	R	R	S	S	R	S	S	S	H
JTS13	F4	R	S	R	R	S	H	H	R	S	S	R	S	S	S	H
JTS14	F4	R	S	R	R	S	R	H	H	S	S	R	S	S	S	R
JTS15	F4	R	S	R	R	S	H	H	R	S	S	R	S	S	S	R
JTS17	F4	H	S	H	R	S	R	H	R	S	S	R	S	S	H	S
JTS17-09	F4	H	S	S	H	S	R	H	R	S	S	R	S	S	S	R
JTS17-10	F4	H	S	R	H	S	H	R	R	S	S	R	S	S	S	R
JTS18-04	F4	H	S	R	S	S	H	H	R	S	S	S	S	S	S	R
JTS18-07	F4	H	S	R	S	S	H	R	R	S	S	S	S	S	S	R

샘플명		Soil-Borne pathogens								Vector-borne				Air-borne		
		I2	I3	Ve2	J3	py1	Mi23	Bw6	Bw12	Cf9	Sw5	Tm2a	Ty1	Ty2	Ph3	Sm
		(F)	(F)	(F)	(F)	(F)	(N)	(B)	(B)	(F)	(V)	(V)	(V)	(V)	(F)	(F)
JTS19-04	F4	H	S	S	H	S	R	H	R	S	S	R	S	S	S	H
JTS19-06	F4	H	S	R	H	S	R	R	R	S	S	R	S	S	S	H
JTS20-04	F4	S	S	S	H	S	R	R	R	S	S	R	S	S	S	S
JTS20-08	F4	S	S	S	H	S	R	H	R	S	S	R	S	S	S	S
JTS20-10	F4	S	S	S	H	S	R	R	R	S	S	R	S	S	S	S
JTS21-02	F4	H	S	R	H	S	R	R	R	S	S	H	S	S	S	R
JTS21-08	F4	H	S	R	H	S	R	R	R	H	S	H	S	S	S	H
JTS22-05	F4	H	R	H	R	S	R	R	R	S	S	R	S	S	S	R
JTS22-07	F4	H	S	H	R	S	H	S	R	S	S	R	S	S	S	R
JTS24-02	F4	H	S	R	R	S	H	H	R	S	S	R	S	S	S	S
JTS24-07	F4	S	S	R	R	S	R	H	R	S	S	R	S	S	S	R
JTS24-10	F4	H	S	R	R	S	H	H	R	S	S	R	S	S	S	H
JTS25-03	F4	S	S	R	R	H	R	H	H	R	S	R	S	S	H	S
JTS25-04	F4	S	S	H	R	NA	R	H	H	R	S	R	S	S	R	S
JTS25-09	F4	S	S	R	R	H	R	H	H	R	S	R	S	S	H	S
JTS26	F4	R	H	S	R	R	R	R	R	S	S	R	S	S	S	R
JTS26-04	F4	R	H	S	H	R	R	S	R	S	S	R	S	S	S	R
JTS26-08	F4	R	H	R	H	H	H	S	R	S	S	R	S	S	S	R
JTS26-09	F4	R	R	NA	H	H	R	S	R	S	S	R	S	S	S	H
JTS27	F4	R	H	S	R	R	R	R	R	S	S	R	S	S	S	R
JTS28	F4	R	H	S	R	R	R	R	R	S	S	R	S	S	S	R
JTS28-03	F4	S	S	H	H	S	R	R	R	S	S	H	S	S	S	R
JTS29	F4	S	S	H	R	R	S	R	R	S	S	R	S	S	S	R
JTS29-06	F4	H	S	H	H	S	R	R	R	S	S	R	S	S	S	R
JTS29-09	F4	H	S	S	H	S	H	H	R	S	S	R	S	S	S	R
JTS30-01	F4	H	S	NA	S	S	NA	H	R	S	S	R	S	S	S	R
JTS30-07	F4	S	S	H	S	S	R	S	R	S	S	H	S	S	S	R
JTS30-09	F4	H	S	H	S	S	H	H	R	S	S	S	S	S	S	R
JTS31-05	F4	H	S	R	S	S	R	R	R	S	S	S	S	S	S	R
JTS31-08	F4	H	S	R	S	S	H	R	R	S	S	S	S	S	S	R
JTS33-08	F4	S	S	S	R	S	R	R	H	S	S	R	S	S	S	S
JTS33-09	F4	H	S	H	H	S	R	R	H	S	S	R	S	S	S	H
JTS34	F4	R	R	H	R	R	R	R	R	S	S	R	S	S	S	S
JTS34-05	F4	S	S	S	H	S	R	R	R	S	S	R	S	S	S	R
JTS34-10	F4	S	S	R	H	S	R	R	R	S	S	R	S	S	S	S
JTS35-07	F4	S	S	S	S	S	R	S	H	R	S	S	S	S	S	R

샘플명		Soil-Borne pathogens								Vector-borne				Air-borne		
		I2	I3	Ve2	J3	py1	Mi23	Bw6	Bw12	Cf9	Sw5	Tm2a	Ty1	Ty2	Ph3	Sm
		(F)	(F)	(F)	(F)	(F)	(N)	(B)	(B)	(F)	(V)	(V)	(V)	(V)	(F)	(F)
JTS35-09	F4	S	S	S	H	S	NA	H	H	R	S	H	S	S	S	H
JTS36	F4	R	R	H	R	R	R	R	R	S	S	R	S	S	S	S
JTS36-04	F4	H	S	R	H	S	H	S	R	S	S	R	S	S	S	R
JTS36-08	F4	H	S	H	H	S	S	S	R	S	S	R	S	S	S	R
JTS37-09	F4	H	S	S	H	S	H	R	R	S	S	H	S	S	S	R
JTS37-10	F4	NA	S	S	R	S	H	H	R	S	S	NA	S	S	S	R
JTS38-07	F4	R	S	R	R	R	R	R	R	S	S	H	S	S	S	S
JTS39-03	F4	H	S	R	H	S	H	H	R	S	S	R	S	S	S	S
JTS40-04	F4	H	S	R	S	S	H	S	R	S	S	S	S	S	S	R
JTS40-07	F4	H	S	R	S	S	H	S	H	S	S	S	S	S	S	R
JTS41-03	F4	H	S	R	H	S	R	R	R	S	S	H	S	S	S	H
JTS41-10	F4	H	S	H	H	S	R	R	R	S	S	H	S	S	S	S
JTS43-02	F4	R	S	R	H	S	H	S	R	S	S	R	S	S	S	R
JTS43-08	F4	R	NA	R	H	S	H	S	R	S	S	R	S	S	S	R

3). 수집된 장기재배용 토마토 대목품종들에 대한 세대진전

현재 시판중인 장기재배용 토마토 대목품종 “Maxifort”, “Beaufort”, “Amaron” 품종을 수집하여 세대진전을 수행하였다. 먼저 이들 장기재배용 토마토 대목품종들에 대하여 어떤 병에 대하여 저항성을 가지고 있는지를 알아보기 위하여 병 관련 분자마커들을 이용하여 검정하였다. 그 결과 “Maxifort” 품종은 토양전염병인 시들음병(I2), 반쪽시들음병(Ve2), 고구마선충뿌리혹병(Mi23)에 저항성을 나타내었으며 시들음병 유전자인 I3, 근부위조병(J3), 갈색근부병(Py1), 풋마름병(Bw6, Bw12), 잎곰팡이병(Cf9)에는 이병성을 나타내었다. 매개충들에 의해 전염되는 얼룩시들음병(Sw5), 모자이크바이러스병(Tm2a)에는 저항성을 나타내었지만 황화잎말림바이러스병(Ty1, Ty2)에는 이병성을 나타내었다. 또한 공기로 전염되는 역병(Ph3)에는 저항성을 나타내었지만 점무늬병(Sm)에는 이병성을 나타내었다(표 1). “Beaufort” 품종은 시들음병(I2), 근부위조병(J3), 잎곰팡이병(Cf9), 얼룩시들음병(Sw5), 모자이크바이러스병(Tm2a), 황화잎말림바이러스병(Ty2), 역병(Ph3)에 저항성을 나타내었다(표 1). 또한, “Amaron” 품종은 시들음병(I2), 반쪽시들음병(Ve2), 근부위조병(J3), 고구마선충뿌리혹병(Mi23), 잎곰팡이병(Cf9), 얼룩시들음병(Sw5), 모자이크바이러스병(Tm2a), 황화잎말림바이러스병(Ty1, Ty2), 역병(Ph3), 점무늬병(Sm)에 저항성을 나타내어 “Amaron” 품종이 “Maxifort” 품종이나 “Beaufort” 품종 보다 더 많은 병 관련 유전자들이 집적되어 있음을 확인 할 수 있었다(표 1). 그러나 이들 모든 품종들은 풋마름병 저항성 유전자인 Bw6 및 Bw12는 집적되어 있지 않았다. 또한 “Beaufort” 품종은 병 관련 유전자의 집적도의 빈도가 다른 품종들 보다 낮아 이 후의 실험에서는 배재하였다.

표 1. 수집된 장기재배용 토마토 대목품종들에 대한 병 저항성 분자마커 검정

샘플명	Soil-Borne Pathogens									Vector-Borne				Air-Borne	
	I2 (F)	I3 (F)	Ve2 (F)	J3 (F)	Py1 (F)	Mi23 (N)	Bw6 (B)	Bw12 (B)	Cf9 (F)	Sw5 (V)	Tm2a (V)	Ty1 (V)	Ty2 (V)	Ph3 (F)	Sm (F)
	시들음병	시들음병	반쪽 시들음병	근부 위조병	갈색 근부병	고구마선충 뿌리혹병	풋마름병	풋마름병	잎곰팡이병	얼룩 시들음병	모자이크 바이러스병	황화잎말림 바이러스병	황화잎말림 바이러스병	역병	점무늬병
Maxifort F1	R	S	R	S	S	R	S	S	S	H	H	S	S	R	S
LA1681	n/a	S	R	R	n/a	n/a	S	n/a	n/a	R	S	S	R	R	S
Beaufort F1	H	S	S	R	S	n/a	S	S	R	H	H	S	H	R	S
Amaron F1	R	S	R	R	S	R	S	S	R	H	H	H	H	H	H

“Maxifort” 품종의 세대를 진전시키기 위하여 F1으로부터 selfing하여 F2 종자를 수확한 다음 병 관련 분자마커를 이용하여 검정한 다음 41개체를 선발하여 유리온실에 정식하였다(그림 1). 이들 41개체의 F2 식물체들을 이용하여 야생종 및 재배종의 genetic background를 확인하기 위하여 본 실험실에서 개발한 재배종 및 야생종 구분용 chip을 이용하였다. 그 결과 그림 2에서 보여지는 것과 같이 야생종 genetic background가 가장 높은 식물체가 74%, 가장 낮은 식물체가 39%로 다양하게 나타났다. 이에 야생종 genetic background가 높은 그룹과 낮은 그룹들로부터 식물체를 선발하여 현재 F3세대 까지 세대를 진전시켰다.



그림 1. 선발된 “Maxifort” F2 재배

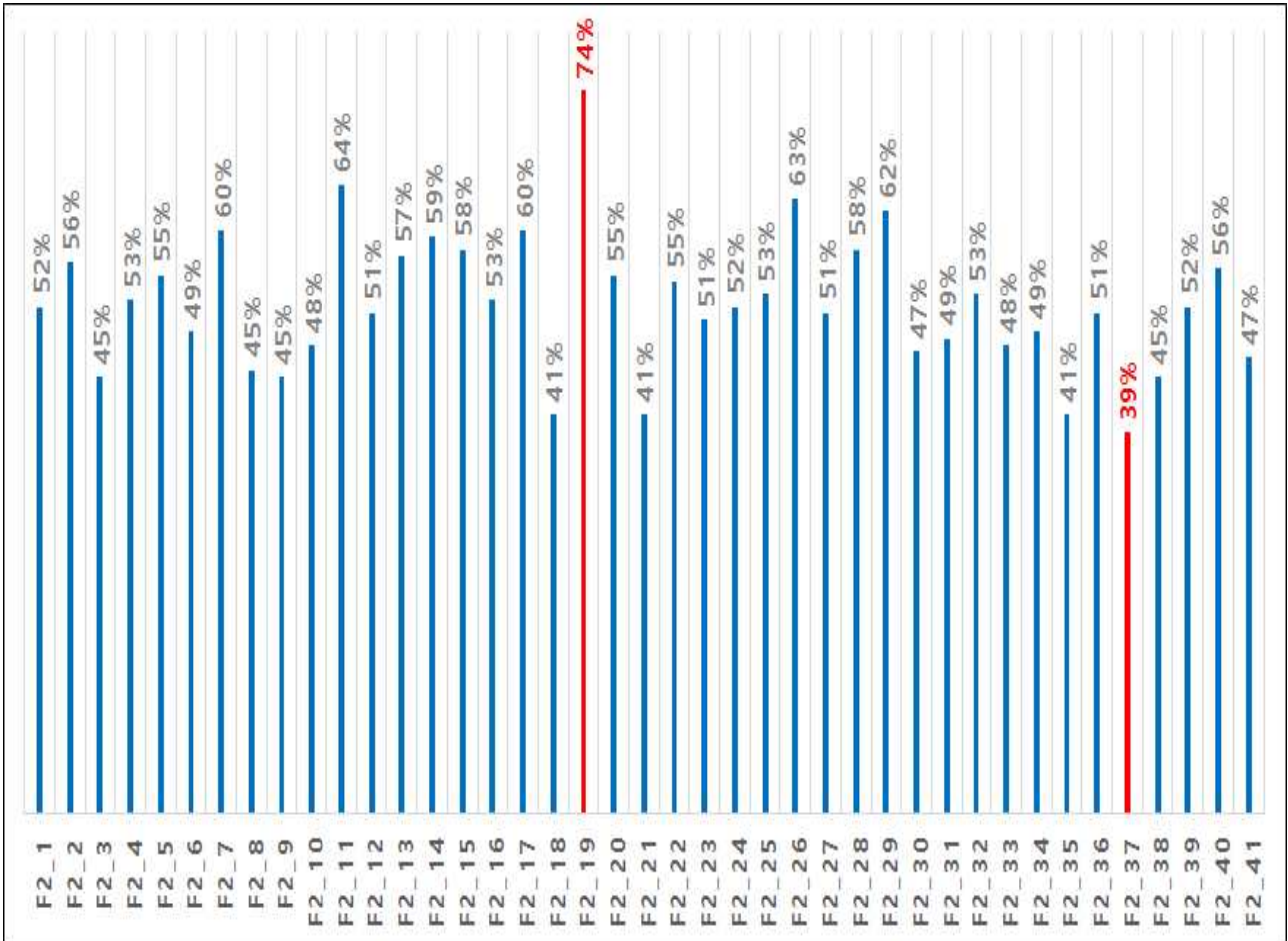


그림 2. MABC를 이용한 Maxifort F2의 genetic background 검정

세 개의 품종 중에 가장 많은 병 관련 유전자가 집적되어 있는 “Amaron” 품종의 세대진전을 위하여 F1으로부터 selfing하여 F2 종자를 수확하였다. 수확된 F2 종자 100립을 파종한 후 1차적으로 세력이 좋은 58개체의 식물을 선발하였다. “Amaron” F1 품종은 토양전염병인 시들음병(I2), 반쪽시들음병(Ve2), 근부위조병(J3), 고구마선충뿌리혹병(Mi23), 잎곰팡이병(Cf9)등의 저항성 유전자는 homo화 되어 있어 F2에서는 분리가 일어나지 않지만, 매개충 및 공기 감염인 얼룩시들음병(Sw5), 모자이크바이러스병(Tm2a), 황화잎말림바이러스병(Ty1, Ty2), 역병(Ph3), 점무늬병(Sm)이 모두 hetero 상태로 존재하므로 F2에서 이들 유전자들은 분리가 일어난다. 이에 선발된 58개의 F2 식물체들을 이용하여 병 저항성 분자 마커들을 이용하여 병 저항성 유전자들이 집적 정도를 검정하였다(그림. 3). 그 결과 11개의 F2 식물체에서 얼룩시들음병(Sw5), 모자이크바이러스병(Tm2a), 황화잎말림바이러스병(Ty1, Ty2), 역병(Ph3), 점무늬병(Sm) 저항성 유전자들이 모두 집적되어 있었으며, 나머지 47개의 F2 식물체들은 분리가 일어나서 하나 또는 그 이상의 병 저항성 유전자들이 이병성을 나타내었다(표 2-1, 2-2, 2-3). 따라서 11개체의 F2 식물체(Amaron F2-1, Amaron F2-2, Amaron F2-17, Amaron F2-20, Amaron F2-26, Amaron F2-31, Amaron F2-41, Amaron F2-45, Amaron F2-46, Amaron F2-49, Amaron F2-53)들을 선발하였으며, 현재 F3까지 세대진전을 수행하였다. 이들 식물체들은 계속해서 세대진전을 해 나가는 과정에서 병 관련 분자마커 검정을 통하여 선발할 계획이다. 또한 수집된 야생종 102개의 accession들을

2019년 순천대학교 하우스에 과종하여 종자 수확량이 많은 32개의 accession을 선발하였다. 이렇게 선발된 32개의 accession (LA0094#4, LA0407#2, LA1223#5, LA1233#2, LA1252#3, LA1253#3, LA1255#3, A1264#2, LA1266#3, LA1681#2, LA1691#2, LA1695#3, LA1696#4, LA1721#1, LA1918#1, LA1927#1, LA1928#3, LA2103#1, LA2104#1, LA2105#2, LA2107#3, LA2108#1, LA2109#2, LA2114#2, LA2115#3, LA2116#2, LA2119#3, LA2124#1, LA2128#1, LA2144#5, LA2859#11, LA2861#2)은 F2 세대진전을 위하여 현재 재배 중에 있다.

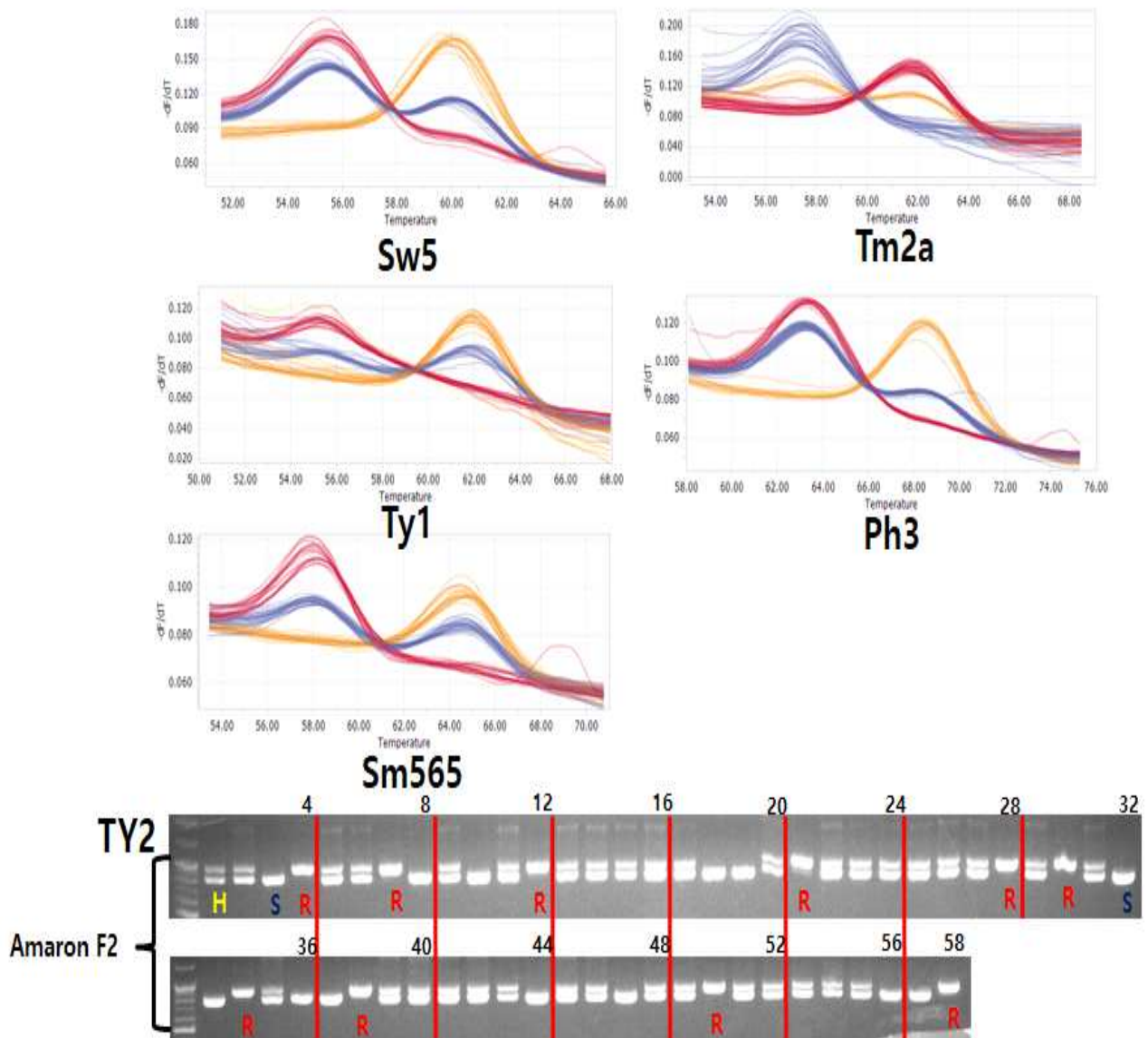


그림 3. “Amaron” 품종의 F2세대를 이용한 병 관련 분자마커 검정

표 2-1. “Amaron” 품종의 F2세대를 이용한 병 관련 분자마커 검정 결과

	Soil-Borne Pathogens									Vector-Borne				Air-Borne	
	I2 (F)	I3 (F)	Ve2 (F)	J3 (F)	Py1 (F)	Mi23 (N)	Bw6 (B)	Bw12 (B)	Cf9 (F)	Sw5 (V)	Tm2a (V)	Ty1 (V)	Ty2 (V)	Ph3 (F)	Sm (F)
	시들음병	시들음병	반쪽 시들음병	근부 위조병	갈색 근부병	고구마선충 뿌리혹병	꽃마름병	꽃마름병	잎곰팡이병	얼룩 시들음병	모자이크 바이러스병	황화잎말림 바이러스병	황화잎말림 바이러스병	역병	점무늬병
Amaron F1	R	S	R	R	S	R	S	S	R	H	H	H	H	H	H
Amaron F2-1	R	S	R	R	S	R	S	S	R	H	H	R	H	H	R
Amaron F2-2	R	S	R	R	S	R	S	S	R	H	R	H	H	H	R
Amaron F2-3	R	S	R	R	S	R	S	S	R	H	S	S	S	H	H
Amaron F2-4	R	S	R	R	S	R	S	S	R	S	H	R	R	S	R
Amaron F2-5	R	S	R	R	S	R	S	S	R	H	S	H	H	R	H
Amaron F2-6	R	S	R	R	S	R	S	S	R	S	S	S	H	S	S
Amaron F2-7	R	S	R	R	S	R	S	S	R	S	S	H	R	H	S
Amaron F2-8	R	S	R	R	S	R	S	S	R	S	H	S	S	S	H
Amaron F2-9	R	S	R	R	S	R	S	S	R	R	R	S	H	S	H
Amaron F2-10	R	S	R	R	S	R	S	S	R	H	H	R	S	H	H
Amaron F2-11	R	S	R	R	S	R	S	S	R	S	R	S	H	S	S
Amaron F2-12	R	S	R	R	S	R	S	S	R	H	R	S	R	H	H
Amaron F2-13	R	S	R	R	S	R	S	S	R	S	H	H	H	H	S
Amaron F2-14	R	S	R	R	S	R	S	S	R	R	H	S	H	H	H
Amaron F2-15	R	S	R	R	S	R	S	S	R	S	S	S	H	S	H
Amaron F2-16	R	S	R	R	S	R	S	S	R	S	H	S	H	H	H
Amaron F2-17	R	S	R	R	S	R	S	S	R	R	H	H	H	R	R
Amaron F2-18	R	S	R	R	S	R	S	S	R	H	H	H	S	H	H
Amaron F2-19	R	S	R	R	S	R	S	S	R	H	H	R	S	H	R
Amaron F2-20	R	S	R	R	S	R	S	S	R	H	H	R	H	R	S

표 2-2. “Amaron” 품종의 F2세대를 이용한 병 관련 분자마커 검정 결과

	Soil-Borne Pathogens									Vector-Borne				Air-Borne	
	I2 (F)	I3 (F)	Ve2 (F)	J3 (F)	Py1 (F)	Mi23 (N)	Bw6 (B)	Bw12 (B)	Cf9 (F)	Sw5 (V)	Tm2a (V)	Ty1 (V)	Ty2 (V)	Ph3 (F)	Sm (F)
	시들음병	시들음병	반쪽 시들음병	근부 위조병	갈색 근부병	고구마선충 뿌리혹병	꽃마름병	꽃마름병	잎곰팡이병	얼룩 시들음병	모자이크 바이러스병	황화잎말림 바이러스병	황화잎말림 바이러스병	역병	점무늬병
Amaron F2-21	R	S	R	R	S	R	S	S	R	H	H	S	R	R	S
Amaron F2-22	R	S	R	R	S	R	S	S	R	R	R	S	H	R	S
Amaron F2-23	R	S	R	R	S	R	S	S	R	S	R	S	H	S	H
Amaron F2-24	R	S	R	R	S	R	S	S	R	H	S	H	H	H	S
Amaron F2-25	R	S	R	R	S	R	S	S	R	H	R	S	H	H	H
Amaron F2-26	R	S	R	R	S	R	S	S	R	H	R	H	H	H	H
Amaron F2-27	R	S	R	R	S	R	S	S	R	H	H	S	H	H	H
Amaron F2-28	R	S	R	R	S	R	S	S	R	S	R	H	R	S	S
Amaron F2-29	R	S	R	R	S	R	S	S	R	S	R	R	H	S	R
Amaron F2-30	R	S	R	R	S	R	S	S	R	R	H	S	R	R	H
Amaron F2-31	R	S	R	R	S	R	S	S	R	H	H	H	H	H	R
Amaron F2-32	R	S	R	R	S	R	S	S	R	R	H	S	S	R	R
Amaron F2-33	R	S	R	R	S	R	S	S	R	H	H	R	S	H	R
Amaron F2-34	R	S	R	R	S	R	S	S	R	H	S	R	R	H	S
Amaron F2-35	R	S	R	R	S	R	S	S	R	H	S	H	H	H	R
Amaron F2-36	R	S	R	R	S	R	S	S	R	R	S	S	S	R	R
Amaron F2-37	R	S	R	R	S	R	S	S	R	H	S	S	S	H	H
Amaron F2-38	R	S	R	R	S	R	S	S	R	H	R	S	R	H	H
Amaron F2-39	R	S	R	R	S	R	S	S	R	R	H	H	H	R	S
Amaron F2-40	R	S	R	R	S	R	S	S	R	H	S	R	H	H	H
Amaron F2-41	R	S	R	R	S	R	S	S	R	R	H	H	H	R	R

표 2-3. “Amaron” 품종의 F2세대를 이용한 병 관련 분자마커 검정 결과

	Soil-Borne Pathogens									Vector-Borne				Air-Borne	
	I2 (F)	I3 (F)	Ve2 (F)	J3 (F)	Py1 (F)	Mi23 (N)	Bw6 (B)	Bw12 (B)	Cf9 (F)	Sw5 (V)	Tm2a (V)	Ty1 (V)	Ty2 (V)	Ph3 (F)	Sm (F)
	시들음병	시들음병	반쪽 시들음병	근부 위조병	갈색 근부병	고구마선충 뿌리혹병	꽃마름병	꽃마름병	잎곰팡이병	얼룩 시들음병	모자이크 바이러스병	황화잎말림 바이러스병	황화잎말림 바이러스병	역병	점무늬병
Amaron F2-42	R	S	R	R	S	R	S	S	R	R	S	H	H	R	S
Amaron F2-43	R	S	R	R	S	R	S	S	R	H	R	S	H	H	H
Amaron F2-44	R	S	R	R	S	R	S	S	R	H	S	S	S	H	R
Amaron F2-45	R	S	R	R	S	R	S	S	R	R	H	R	H	R	H
Amaron F2-46	R	S	R	R	S	R	S	S	R	R	H	H	H	R	R
Amaron F2-47	R	S	R	R	S	R	S	S	R	S	H	H	S	S	S
Amaron F2-48	R	S	R	R	S	R	S	S	R	R	R	H	H	H	S
Amaron F2-49	R	S	R	R	S	R	S	S	R	H	R	H	H	H	R
Amaron F2-50	R	S	R	R	S	R	S	S	R	R	H	H	R	R	S
Amaron F2-51	R	S	R	R	S	R	S	S	R	H	S	S	H	R	S
Amaron F2-52	R	S	R	R	S	R	S	S	R	H	S	H	H	H	H
Amaron F2-53	R	S	R	R	S	R	S	S	R	R	H	H	H	R	R
Amaron F2-54	R	S	R	R	S	R	S	S	R	S	H	H	H	S	R
Amaron F2-55	R	S	R	R	S	R	S	S	R	S	H	H	H	H	H
Amaron F2-56	R	S	R	R	S	R	S	S	R	H	H	H	S	H	S
Amaron F2-57	R	S	R	R	S	R	S	S	R	H	H	R	S	H	H
Amaron F2-58	R	S	R	R	S	R	S	S	R	S	S	S	R	S	S

4). 토마토 야생종 및 재배종 구분용 분자마커 개발

토마토의 장기재배용 대목품종인 “Maxifort”는 야생종인 *S. habrochaites*를 활용하여 개발되었다. 이에 본 연구에서는 장기재배용 토마토 대목을 단기간에 육성하기 위하여 *S. habrochaites*의 대립유전자형(allele)을 특이적으로 발굴할 수 있는 SNP들을 선발하여, EP-1 system에 적용하여 여교배세대단축(MABC)에 활용하고자 하였다.

*S. habrochaites*를 특이적으로 선발할 수 있는 SNP를 확보하기 위하여, public 지놈을 활용하였는데, 재배종으로 *S. lycopersicum*에서는 “Heinz 1706”의 V2.50의 지놈을 이용하였으며, *S. habrochaites*에서는 “LA1777”의 지놈을 이용하였다. 두 개의 지놈에 대하여 *in silico* analysis를 통해 다수의 SNP 및 InDel을 얻어 낼 수 있었다. InDel에 비하여 SNP는 20배 더 많은 수를 나타내었다(표 1). EP-1 시스템에 적용하기 위해서 본 연구실에서는 InDel 보다는 SNP에 초점을 두었으며, 두 개의 지놈 분석을 통해 확인된 SNP들을 염색체별로 보면 총 7,891,627개의 SNP들 중에서 86,955개는 아직 mapping 되어 있지 않은 SNP들이었으며, 나머지 SNP들은 염색체에 위치하고 있었다. 평균적으로 염색체 당 약 65만 여개의 SNP들이 있었으며, 이중 6번 염색체는 상대적으로 가장 적은 수의 SNP로 약 46만 여개의 SNP가 있었으며, 1번 염색체는 가장 많은 수의 SNP로 약 94만 여개의 SNP가 있었다(표 2).

EP-1을 통해 실제 본 연구실에서 보유 중인 재배종 및 야생종(*S. habrochaites*)의 품종 및 계통에 적용하여 *S. habrochaites*를 특이적으로 선발할 수 있는 SNP들을 선발하기 위하여 96.96 fluid chip을 활용하였는데, 실험을 위해 96개의 샘플에서 지놈 DNA를 추출하였으며, 위에서 분석한 SNP들 중에서 유전자 유래의 96개의 SNP들을 선발하였다. 실험을 위하여 대조군으로 쓰일 재배종(*S. lycopersicum*)에서는 13샘플, *S. habrochaites*에서는 35샘플을 그리고 재배종과 *S. habrochaites* 간의 F1 및 F2로 47샘플을 가지고, 96.96 fluid chip에 적용하였다.

EP-1적용을 위하여 선발한 SNP의 정보는 아래의 표 3과 같으며, 각 염색체별로 6~10개의 SNP를 선발하였다. 대부분의 염색체의 경우는 8개씩 SNP를 선발하였으며, 1번 염색체의 경우는 10개의 SNP를, 12번 염색체에서는 6개의 SNP를 선발하였다. 선발한 96개의 SNP들을 전부 유전자 유래의 SNP들을 타겟으로 하였다. EP-1 실험 결과 최종적으로 96개의 SNP 중에서 35샘플의 *S. habrochaites*에서만 특이적인 62개의 SNP를 선발하였다(그림 1).

선발한 62개의 SNP를 12개의 토마토 염색체에 위치시켰을 때, 많게는 염색체 1번, 7번, 11번이 각각 7개의 SNP들이 위치해 있었으며, 그 다음으로는 염색체 5번, 12번이 6개의 SNP들이 위치해 있었으며, 그 다음으로 염색체 2번, 3번, 4번, 8번이 5개의 SNP들이 위치해 있었다. 그 외에 염색체 10번이 4개, 염색체 6번이 3개, 그리고 염색체 9번은 2개로 가장 적은 수의 SNP가 위치해 있었다. 그리고 위치적으로 보았을 때 염색체 2번을 제외하고는 대부분 염색체에 있어서 양말단 부분에 위치하고 있었다(그림 2). 최종 선발한 62개의

SNP들은 *S. habrochaites* 유래의 토마토 장기재배용 품종을 육성하는데 여교배세대단축 (MABC)로 활용 가능할 것으로 기대된다.

표 1. Heinz 1706과 LA1777 간의 지놈 비교를 통한 SNP 및 InDel의 확인

	SNP	Insertion	Deletion
Heinz 1706 vs LA1777	7,891,627	390,722	364,863

표 2. Heinz 1706과 LA1777 간의 지놈 비교를 통한 SNP 및 InDel의 확인

염색체	ch00	ch01	ch02	ch03	ch04	ch05	ch06	ch07	ch08	ch09	ch10	ch11	ch12
SNP수	86,955	945,423	550,178	715,984	680,571	736,864	463,319	642,683	591,888	680,006	646,172	484,688	666,896

표 3. 96개의 SNP에 대한 염색체, 유전자 및 description 정보

Assay Name	Chromosomes	Orientation	Gene	Description
TR01	1	+	Solyc01g005210	Alpha alpha-trehalose-phosphate synthase (UDP-forming) (AHRD V1 **** A3CXN9_METMJ); contains Interpro domain(s) IPR001830 Glycosyl transferase, family 20
TR02	1	-	Solyc01g006430	Omega-6 fatty acid desaturase (AHRD V1 **** Q461Q1_HEVBR); contains Interpro domain(s) IPR005804 Fatty acid desaturase, type 1
TR03	1	+	Solyc01g008330	Acetyl-CoA carboxylase biotin carboxylase (AHRD V1 ***- B4VQU4_9CYAN); contains Interpro domain(s) IPR004549 Acetyl-CoA carboxylase, biotin carboxylase
TR04	1	-	Solyc01g066520	Dihydrolipoyllysine-residue acetyltransferase component of pyruvate dehydrogenase complex (AHRD V1 ***- C3BP76_9BACI); contains Interpro domain(s) IPR015761 Lipoamide Acyltransferase
TR05	1	+	Solyc01g094700	Glycerol-3-phosphate acyltransferase 4 (AHRD V1 **** D7KQ54_ARALY); contains Interpro domain(s) IPR002123 Phospholipid/glycerol acyltransferase
TR06	1	+	Solyc01g107130	Vacuolar sorting receptor (AHRD V1 ***- Q93X09_VIGMU); contains Interpro domain(s) IPR003137 Protease-associated PA
TR07	1	+	Solyc01g108070	4-methyl-5(B-hydroxyethyl)-thiazole monophosphate biosynthesis enzyme (AHRD V1 *- C5BNJ2_TERTT); contains Interpro domain(s) IPR006287 DJ-1
TR08	1	+	Solyc01g109220	Mitochondrial import receptor subunit TOM6 homolog (AHRD V1 ***- TOM6_ARATH)
TR09	1	+	Solyc01g111530	Ubiquitin-protein ligase 4 (AHRD V1 *** D7M7X1_ARALY); contains Interpro domain(s) IPR000569 HECT
TR10	1	+	Solyc01g112350	Sec7 guanine nucleotide exchange factor (AHRD V1 *** B0CY77_LACBS); contains Interpro domain(s) IPR000904 SEC7-like
TR11	2	+	Solyc02g043860	Insulin degrading enzyme (AHRD V1 ***- Q8CGB9_MOUSE); contains Interpro domain(s) IPR011237 Peptidase M16, core
TR12	2	-	Solyc02g038740	3-hydroxy-3-methylglutaryl coenzyme A reductase (AHRD V1 **** Q9FS01_SOLTU); contains Interpro domain(s) IPR004554 Hydroxymethylglutaryl-CoA reductase, class I, catalytic
TR13	2	+	Solyc02g069350	Transmembrane protein 56 (AHRD V1 ***- B6TI82_MAIZE);

				contains Interpro domain(s) IPR006634 TRAM, LAG1 and CLN8 homology
TR14	2	-	Solyc02g071250	Protein phosphatase (AHRD V1 *-*- A8N6T5_COPC7); contains Interpro domain(s) IPR011948 Dullard-like phosphatase domain
TR15	2	+	Solyc02g077830	Unknown Protein (AHRD V1)
TR16	2	-	Solyc02g080200	Pectinesterase (AHRD V1 ***- B9RXQ4_RICCO); contains Interpro domain(s) IPR000070 Pectinesterase, catalytic
TR17	2	+	Solyc02g086240	50S ribosomal protein L5 (AHRD V1 ***- RL5_XANP2); contains Interpro domain(s) IPR002132 Ribosomal protein L5
TR18	2	-	Solyc02g094510	Ring finger protein 10 (AHRD V1 *-*- Q6P1V6_XENTR)
TR19	3	+	Solyc03g005170	PHD finger family protein (AHRD V1 *--- D7MI23_ARALY); contains Interpro domain(s) IPR019787 Zinc finger, PHD-finger
TR20	3	+	Solyc03g025310	Sec-independent protein translocase protein tatA/E homolog (AHRD V1 *-*- D4TUR0_9NOST); contains Interpro domain(s) IPR006312 Twin-arginine translocation protein TatA/E
TR21	3	-	Solyc03g044080	Unknown Protein (AHRD V1)
TR22	3	+	Solyc03g058920	Porin/voltage-dependent anion-selective channel protein (AHRD V1 ****- A9P802_POPTR); contains Interpro domain(s) IPR001925 Porin, eukaryotic type
TR23	3	+	Solyc03g095840	Eukaryotic translation initiation factor 2 alpha subunit family protein expressed (AHRD V1 ****- Q10MT2_ORYSJ); contains Interpro domain(s) IPR011488 Eukaryotic translation initiation factor 2, alpha subunit
TR24	3	+	Solyc03g114340	Dxr encodes a non-limiting regulatory enzyme in the Rohmer pathway, also known as 2-C-methyl-d-erythritol 4-phosphate (MEP) pathway. It catalyzes the conversion of 1-deoxy-d-xylulose 5-phosphate (DXP) into MEP. MEP pathway is responsible for biosynthesis of plastid isoprenoids.
TR25	3	+	Solyc03g118570	Geranylgeranyltransferase type II beta subunit (AHRD V1 ****- D3TMI7_GLOMM); contains Interpro domain(s) IPR008930 Terpenoid cyclases/protein prenyltransferase alpha-alpha toroid
TR26	3	+	Solyc03g122350	Cytochrome P450 (AHRD V1 ***- Q0PNH1_CAPCH); contains Interpro domain(s) IPR002401 Cytochrome P450, E-class, group I
TR27	4	+	Solyc04g005640	S-like ribonuclease (AHRD V1 ***- Q9FQL6_PRUDU); contains Interpro domain(s) IPR001568 Ribonuclease T2
TR28	4	+	Solyc04g014720	60S ribosomal protein L6 (AHRD V1 ***- B9RHH3_RICCO); contains Interpro domain(s) IPR000915 Ribosomal protein L6E
TR29	4	-	Solyc04g014760	RHO protein GDP dissociation inhibitor (AHRD V1 ****- Q705X3_MEDTR); contains Interpro domain(s) IPR000406 RHO protein GDP dissociation inhibitor
TR30	4	+	Solyc04g025300	wiry 4 is defective in lamina expansion and phenotype is highly similar to w and w2 mutants.
TR31	4	+	Solyc04g049330	V-type proton ATPase subunit G 1 (AHRD V1 ***- VATG1_TOBAC); contains Interpro domain(s) IPR005124 Vacuolar (H+)-ATPase G subunit
TR32	4	-	Solyc04g064760	Serine carboxypeptidase F13S12.6 (AHRD V1 ****- B6U5K7_MAIZE); contains Interpro domain(s) IPR001563 Peptidase S10, serine carboxypeptidase
TR33	4	-	Solyc04g074240	Adenosine 5'-phosphosulfate reductase 3 (AHRD V1 *-*- Q5EUC7_MAIZE); contains Interpro domain(s) IPR017936 Thioredoxin-like
TR34	4	-	Solyc04g082400	1,4-alpha-glucan branching enzyme (AHRD V1 ****- Q08131_MANES); contains Interpro domain(s) IPR006589 Glycosyl hydrolase, family 13, subfamily, catalytic region
TR35	5	-	Solyc05g005020	Alpha-glucan water dikinase (GWD) encodes an enzyme that controls the phosphate content of starch. It is known to catalyze the degradation of starch, preventing starch excess phenotype, in potato and Arabidopsis leaves. In tomato, mutation in GWD causes starch excess phenotype and reduced pollen germination.
TR36	5	-	Solyc05g006890	Eukaryotic translation initiation factor 5A (AHRD V1 ****- D6N3G5_GOSHI); contains Interpro domain(s) IPR001884

				Translation elongation factor, IF5A
TR37	5	+	Solyc05g008090	Os02g0200800 protein (Fragment) (AHRD V1 *-.- Q0E303_ORYSJ); contains Interpro domain(s) IPR009675 Targeting for Xklp2
TR38	5	-	Solyc05g012160	Nitrilase associated protein-like (Fragment) (AHRD V1 *--- Q1HEA6_MUSAC)
TR39	5	-	Solyc05g015070	U-box domain-containing protein (AHRD V1 ***- D7KBV1_ARALY); contains Interpro domain(s) IPR011989 Armadillo-like helical
TR40	5	+	Solyc05g050970	Transketolase 1 (AHRD V1 **** O78327_CAPAN); contains Interpro domain(s) IPR005478 Bacterial transketolase
TR41	5	+	Solyc05g053470	chaperonin (AHRD V1 ***- D2LE93_RHOVA); contains Interpro domain(s) IPR001844 Chaperonin Cpn60
TR42	5	-	Solyc05g056540	Alcohol dehydrogenase-like protein (AHRD V1 **** Q8LDF7_ARATH); contains Interpro domain(s) IPR002085 Alcohol dehydrogenase superfamily, zinc-containing
TR43	6	-	Solyc06g009960	Elongation factor 1-alpha (AHRD V1 ***- Q8H9C0_SOLTU); contains Interpro domain(s) IPR004539 Translation elongation factor EF1A, eukaryotic and archaeal
TR44	6	+	Solyc06g036430	Reticulon family protein (AHRD V1 ***- B2WS91_9BRAS); contains Interpro domain(s) IPR003388 Reticulon
TR45	6	+	Solyc06g059930	The gene is a terpenoid cyclase that produces multiple reaction products by cyclization of farnesyl diphosphate (FDP).
TR46	6	-	Solyc06g066280	Cytochrome P450 (AHRD V1 ***- B9GKS3_POPTR); contains Interpro domain(s) IPR002401 Cytochrome P450, E-class, group I
TR47	6	+	Solyc06g071350	Os02g0742100 protein (Fragment) (AHRD V1 *-.- Q0DXN7_ORYSJ); contains Interpro domain(s) IPR017923 TFIS N-terminal IPR001025 Bromo adjacent region
TR48	6	-	Solyc06g071960	Nucleoside diphosphate kinase (AHRD V1 **** B9RAM1_RICCO); contains Interpro domain(s) IPR001564 Nucleoside diphosphate kinase, core
TR49	6	+	Solyc06g073060	laa-amino acid hydrolase 6 (AHRD V1 **** A9PG36_POPTR); contains Interpro domain(s) IPR017439 Peptidase M20D, mername-AA028/carboxypeptidase Ss1
TR50	6	+	Solyc06g084590	Heparan-alpha-glucosaminide N-acetyltransferase (AHRD V1 ***- HG NAT_HUMAN); contains Interpro domain(s) IPR019259 Protein of unknown function DUF2261, transmembrane
TR51	7	+	Solyc07g005200	Synaptobrevin homolog YKT6 (AHRD V1 **-- C4QZ63_PICPG); contains Interpro domain(s) IPR010908 Longin
TR52	7	-	Solyc07g008250	SCF E3 ubiquitin ligase complex F-box protein grrA (AHRD V1 *-** C5FDH1_NANOT); contains Interpro domain(s) IPR006553 Leucine-rich repeat, cysteine-containing subtype
TR53	7	-	Solyc07g042830	Glycogen synthase (AHRD V1 ***- D1R4V0_9CHLA); contains Interpro domain(s) IPR011835 Glycogen/starch synthases, ADP-glucose type
TR54	7	-	Solyc07g053060	Pentatricopeptide repeat (AHRD V1 ***- Q2HRN6_MEDTR); contains Interpro domain(s) IPR002885 Pentatricopeptide repeat
TR55	7	-	Solyc07g056020	Translation initiation factor IF-2 (AHRD V1 **** A5B2X2_VITVI); contains Interpro domain(s) IPR000178 Initiation factor 2
TR56	7	+	Solyc07g056540	glycolate oxidase
TR57	7	+	Solyc07g063520	Transmembrane protein 34 (AHRD V1 ***- A5D9H3_BOVIN); contains Interpro domain(s) IPR005178 Protein of unknown function DUF300
TR58	7	-	Solyc07g066610	Phosphoglycerate kinase (AHRD V1 ***- O81394_SOLTU); contains Interpro domain(s) IPR001576 Phosphoglycerate kinase
TR59	8	-	Solyc08g006940	F-box family protein (AHRD V1 ***- D7M2J7_ARALY); contains Interpro domain(s) IPR001810 Cyclin-like F-box
TR60	8	-	Solyc08g008610	Hydrolase alpha/beta fold family protein (AHRD V1 ***- D7M8X4_ARALY); contains Interpro domain(s) IPR000073 Alpha/beta hydrolase fold-1
TR61	8	-	Solyc08g014190	Cytochrome P450 (AHRD V1 ***- Q8H016_PETHY); contains Interpro domain(s) IPR002401 Cytochrome P450, E-class, group I

TR62	8	+	Solyc08g043170	delta 1-pyrroline-5-carboxylate synthetase
TR63	8	+	Solyc08g065190	Zinc transporter protein (AHRD V1 **** D5LMF9_9FABA); contains Interpro domain(s) IPR004698 Zinc/iron permease, fungal and plant
TR64	8	+	Solyc08g074290	BRI1-KD interacting protein 129 (Fragment) (AHRD V1 *-*- Q761Y5_ORYSJ)
TR65	8	-	Solyc08g076360	gamma-tocopherol methyltransferase
TR66	8	-	Solyc08g081890	Multidrug resistance protein ABC transporter family (AHRD V1 **-- B9GX56_POPTR); contains Interpro domain(s) IPR003439 ABC transporter-like
TR67	9	-	Solyc09g005080	verticillium wilt disease resistance 2
TR68	9	-	Solyc09g007300	Subtilisin-like protein serine protease-like protein (AHRD V1 ***- D2ASL5_STRRD); contains Interpro domain(s) IPR015500 Peptidase S8, subtilisin-related
TR69	9	+	Solyc09g011650	Glutathione S-transferase (AHRD V1 **** D8UY87_GLYSO); contains Interpro domain(s) IPR017933 Glutathione S-transferase/chloride channel, C-terminal
TR70	9	+	Solyc09g018510	Phosphatidate cytidyltransferase family protein expressed (AHRD V1 **-* Q2QYV3_ORYSJ); contains Interpro domain(s) IPR000374 Phosphatidate cytidyltransferase
TR71	9	+	Solyc09g061890	Pectate lyase 1-27 (AHRD V1 **** B9TU35_9ROSI); contains Interpro domain(s) IPR002022 Pectate lyase/Amb allergen
TR72	9	-	Solyc09g065730	Methyltransferase (AHRD V1 *-** A0QNM6_MYCS2); contains Interpro domain(s) IPR013216 Methyltransferase type 11
TR73	9	-	Solyc09g075890	Pyrimidine 5' nucleotidase (AHRD V1 **** B4WF69_9CAUL); contains Interpro domain(s) IPR010237 Pyrimidine 5-nucleotidase
TR74	9	-	Solyc09g098540	Chitinase-like protein (AHRD V1 ***- Q6JX03_GOSHI); contains Interpro domain(s) IPR000726 Glycoside hydrolase, family 19, catalytic
TR75	10	+	Solyc10g005370	Pyruvate, phosphate dikinase regulatory protein 2 (AHRD V1 ***- PDRP2_ARATH); contains Interpro domain(s) IPR005177 Protein of unknown function DUF299
TR76	10	+	Solyc10g008950	Guanylate-binding protein 10 (AHRD V1 *-*- Q29RG2_MOUSE); contains Interpro domain(s) IPR015894 Guanylate-binding protein, N-terminal
TR77	10	-	Solyc10g044780	Cell cycle checkpoint control protein family (AHRD V1 **-- D7L3V1_ARALY); contains Interpro domain(s) IPR007268 Rad9
TR78	10	-	Solyc10g054440	arginine decarboxylase
TR79	10	-	Solyc10g078690	Mitochondrial protein translocase family (Fragment) (AHRD V1 ***- C1N7T2_MICPS); contains Interpro domain(s) IPR003397 Mitochondrial inner membrane translocase complex, subunit Tim17/22
TR80	10	-	Solyc10g081430	Exostosin family protein (AHRD V1 **-- D7LML7_ARALY); contains Interpro domain(s) IPR004263 Exostosin-like
TR81	10	-	Solyc10g083760	chloroplast threonine deaminase 1 precursor
TR82	10	+	Solyc10g086730	Fructose-1,6-bisphosphatase class 1 (AHRD V1 ***- D0MHZ8_RHOM4); contains Interpro domain(s) IPR000146 Fructose-1,6-bisphosphatase
TR83	11	-	Solyc11g006680	Pentatricopeptide repeat-containing protein (AHRD V1 ***- D7LY59_ARALY); contains Interpro domain(s) IPR000504 RNA recognition motif, RNP-1
TR84	11	+	Solyc11g008860	Laccase-2 (AHRD V1 ***- LAC2_ORYSJ); contains Interpro domain(s) IPR001117 Multicopper oxidase, type 1
TR85	11	+	Solyc11g010950	Elongator complex protein 4 (AHRD V1 ***- ELP4_BOVIN); contains Interpro domain(s) IPR008728 Elongator complex protein 4
TR86	11	-	Solyc11g011440	Aspartic proteinase nepenthesin-1 (AHRD V1 **-- B6TS94_MAIZE); contains Interpro domain(s) IPR001461 Peptidase A1
TR87	11	+	Solyc11g012770	Sister chromatid cohesion protein PDS5 homolog B (AHRD V1 **-- PDS5B_HUMAN); contains Interpro domain(s) IPR016024 Armadillo-type fold
TR88	11	-	Solyc11g042990	Kinase family protein (AHRD V1 ***- D7KYV4_ARALY); contains Interpro domain(s) IPR002290 Serine/threonine

				protein kinase
TR89	11	+	Solyc11g071840	SISUN31 is part of the 34 member SUN-like gene family. Computational annotation: Calmodulin binding protein (AHRD V1 **-- B6TPD8_MAIZE); contains Interpro domain(s) IPR000048 IQ calmodulin-binding region
TR90	11	-	Solyc11g073290	Unknown Protein (AHRD V1)
TR91	12	+	Solyc12g009560	EBF1 is involved in negatively regulating the ethylene signalling pathway. It plays a crucial role in regulating the stages of flower and fruit development.
TR92	12	+	Solyc12g014420	Glucan endo-1 3-beta-glucosidase A6 (AHRD V1 ***- B6TIF7_MAIZE); contains Interpro domain(s) IPR000490 Glycoside hydrolase, family 17
TR93	12	+	Solyc12g038970	Agmatine deiminase (AHRD V1 **** B6TJ57_MAIZE); contains Interpro domain(s) IPR017754 Agmatine deiminase
TR94	12	-	Solyc12g042060	ATP-dependent clp protease ATP-binding subunit (AHRD V1 **-- Q85G08_CYAME); contains Interpro domain(s) IPR013093 ATPase associated with various cellular activities, AAA-2
TR95	12	+	Solyc12g044860	SIDEAD37 belongs to the helicase gene family, a class of molecular motor proteins. The helicase family has 3 subfamilies, the DEAD-box, DEAH-box and DExD/H-box helicases. They all have common motif, known as motif II. The RNA helicases are involved in every step of RNA metabolism, including nuclear SIDEAD37 transcription, pre-mRNA splicing, ribosome biogenesis, nucleocytoplasmic transport, translation, RNA decay, and organellar gene expression.
TR96	12	+	Solyc12g100180	ATP-binding cassette transporter (AHRD V1 ***- D8RL93_SELML); contains Interpro domain(s) IPR013525 ABC-2 type transporter

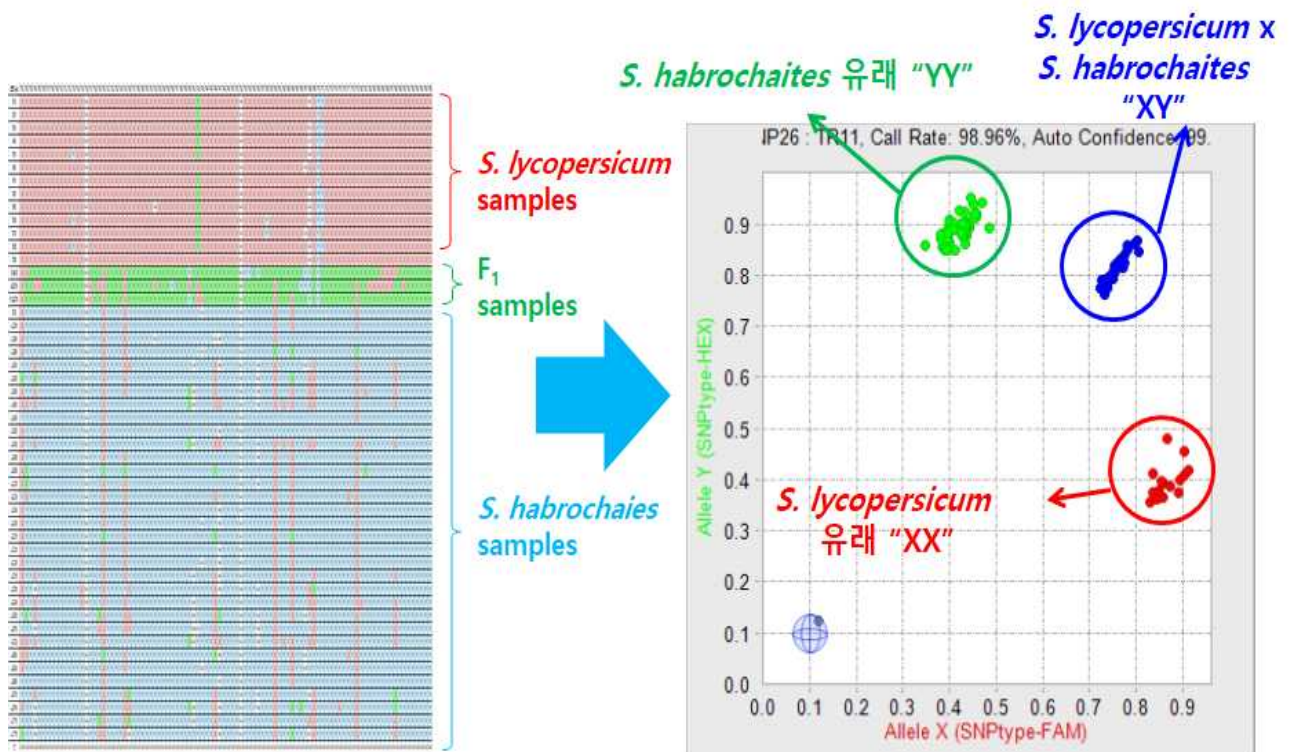


그림 1. EP-1 system을 이용한 토마토 야생종 특이적 SNP 선발

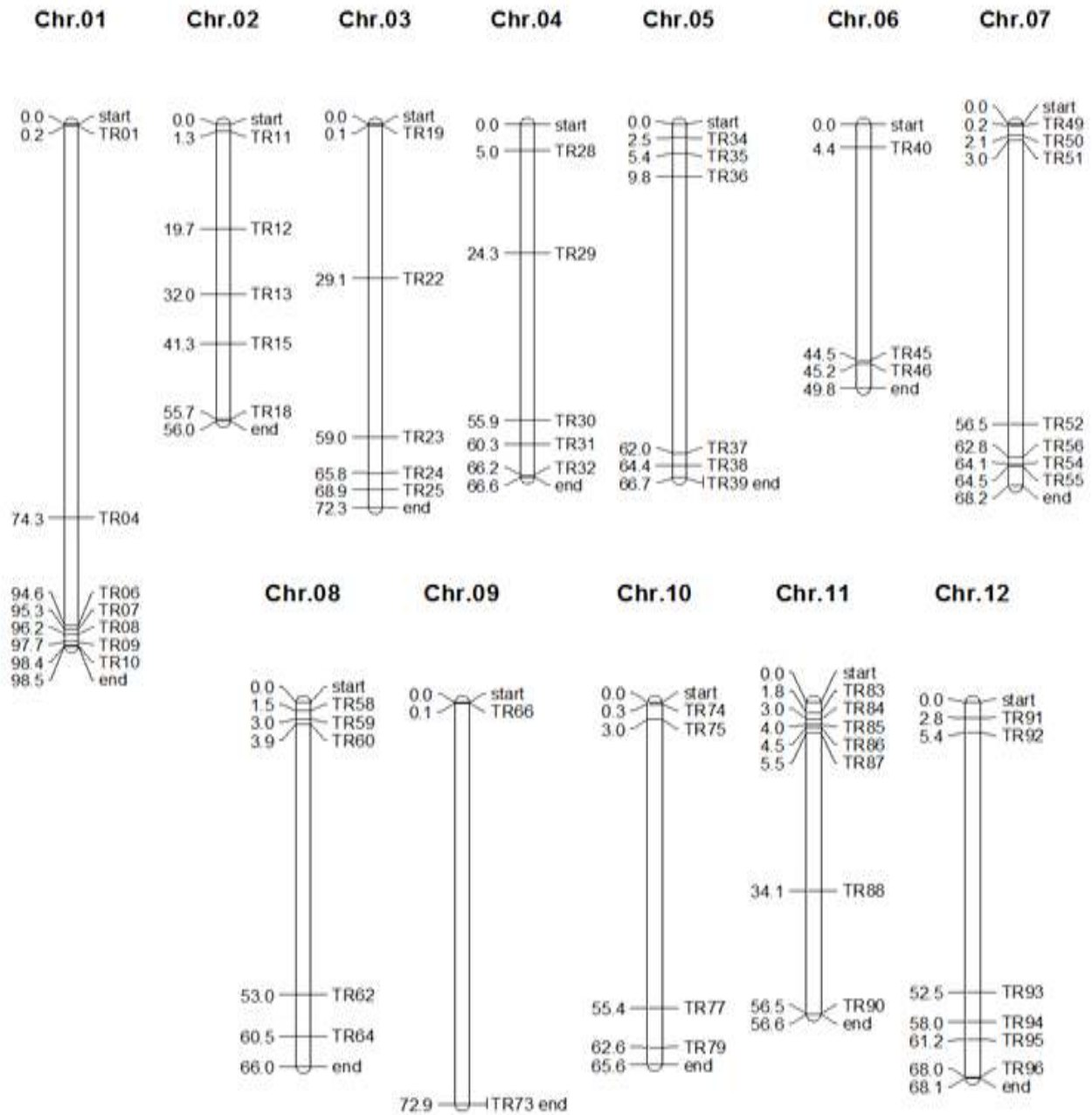


그림 2. 선발된 토마토 야생종 특이적 SNP들의 염색체상에서의 위치

5). 자가불화합성/자가화합성 구분용 분자마커 개발 및 일측성 자가불화합성 검정

토마토 재배종은 자가화합성 성질을 가지고 있지만 야생종은 종내에서 자가화합불화합성 성질과 자가화합성의 성질을 모두 가지고 있으며, 같은 종내에서도 자가불화합성 성질 및 자가화합성 성질을 갖는다. 자가불화합성을 갖는 야생종은 세대진전 및 원종 채종에 시간과 노력이 많이 소요되는 단점이 있다. 이에 본 연구에서는 자가화합성 야생종을 쉽게 탐색하기 위하여 자가불화합 및 자가화합성을 구분할 수 있는 분자마커를 개발하였다. 분자마커를 개발하기 위하여 유전자은행으로부터 야생종 자가화합성 성질을 가지고 있는 LA0407, PI_134418, CGN15791, CGN15793, LYC4의 유전체 염기서열 정보를 수집하였으며, 야생종 자가불화합성 성질을 가지고 있는 LA1718, LA1777의 유전체 염기서열 정보를 수집하여 자가불화합성 및 자가화합성 특이적 영역을 동정하였다(그림 1). 이들 동정된 영역으로부터 다수의 프라이머 조합을 디자인한 후 수집된 야생종 식물체들을 이용하여 실험을 수행한 결과, 한 조합의 분자마커에서 정확하게 자가불화합성 야생종 토마토와 자가화합성 야생종 토마토를 구분할 수 있었다(그림 2, 그림 3). 현재 자가불화합성 및 자가화합성을 구분할 수 있는 분자마커를 이용하여 선발된 43개의 야생종 자가화합성 토마토 식물체들은 자식종자를 수확하기 위하여 비닐하우스에서 재배 중이다(그림 4).

재배종(*S. lycopersicum*)과 야생종간에는 일측성 자가불화합성이 존재한다고 보고되었다. 이는 재배종과 야생종간의 교배시 재배종을 female측으로 이용하고 야생종을 male측으로 이용했을 때 수정이 가능하며, 반대로 야생종을 female측으로 이용하고 재배종을 male측으로 이용했을 때에는 수정이 불가능하여 종자를 얻을 수 없다. 이에 본 연구에서는 이들 보고들을 확인하기 위하여 재배종(*S. lycopersicum*) 2개의 계통(422 계통, 244계통)과 야생종(*S. habrochaites*)을 이면교배하였다. 그 결과 재배종(*S. lycopersicum*) 2개의 계통(422 계통, 244계통)을 female측으로 이용했을 때에는 종자를 수확할 수 있었지만, 야생종(*S. habrochaites*)을 female측으로 사용하였을 때에는 종자를 수확할 수 없었다(표 1). 이들 결과들은 이미 보고된 일측성 자가불화합성 현상으로 장기재배용 토마토 대목품종 개발을 위하여 한쪽 친으로 사용될 야생종은 화분친 으로서만 사용해야 할 것이다.

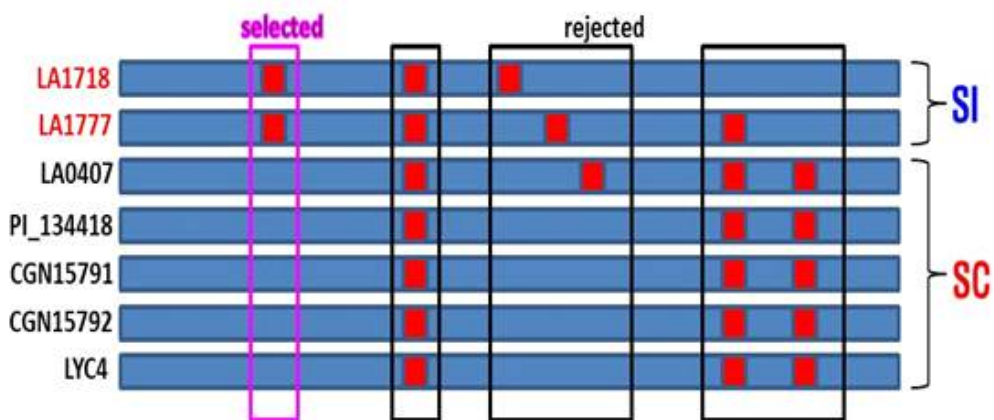


그림 1. 자가불화합성 및 자가화합성 토마토 특이적 영역 동정

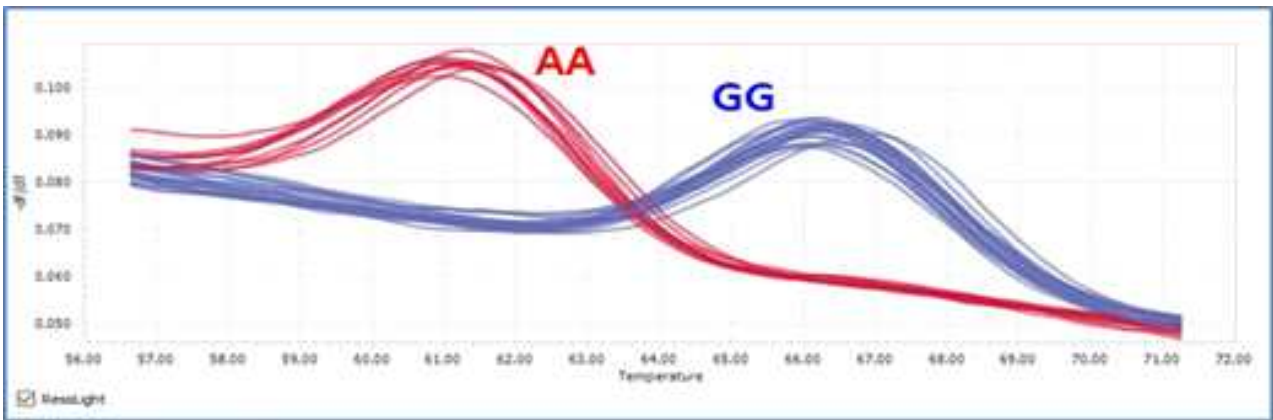


그림 2. 자가불화합성 및 자가화합성 구분용 분자마커 개발

HRM ID	Samples	Phenotype	Genotype	Pheno by Geno
SCSI01	LA2869	F-SC	GG	SC
SCSI02	LA1624	F-SC	GG	SC
SCSI03	LA2104	F-SC	GG	SC
SCSI04	LA1265	Unknown	GG	SC
SCSI05	LA1253	F-SC	GG	SC
SCSI06	LA1266	F-SC	GG	SC
SCSI07	LA2105	F-SC	GG	SC
SCSI08	LA2098	F-SC	GG	SC
SCSI09	LA2860	F-SC	GG	SC
SCSI10	LA2861	F-SC	GG	SC
SCSI11	LA2101	F-SC	GG	SC
SCSI12	LA1361	A-SI	AA	SI
SCSI13	LA1625	F-SC	GG	SC
SCSI14	LA2155	A-SI	AA	SI
SCSI15	LA2119	F-SC	GG	SC
SCSI16	LA1560	A-SI	AA	SI
SCSI17	LA1392	A-SI	AA	SI
SCSI18	LA2567	Unknown	AA	SI
SCSI19	LA2107	F-SC	GG	SC
SCSI20	LA2110	F-SC	GG	SC
SCSI21	LA1393	A-SI	AA	SI
SCSI22	LA2329	A-SI	AA	SI
SCSI23	LA2100	F-SC	GG	SC
SCSI24	LA2204	A-SI	AA	SI
SCSI25	LA2099	Mixed	GG	SC
SCSI26	LA2175	Mixed	GG	SC
SCSI27	JTS35	SC	GG	SC

그림 3. 자가불화합성 및 자가화합성 구분용 분자마커를 이용한 검정 결과



그림 4. 자가화합성 야생종 43 accession 재배

표 1. 재배종 및 야생종간 일측성 자가불화합성 검정 결과

Crossing Combination	Crossing no.	Fruit no.	Seed no.
<i>S. lycopersicum</i> (422) × <i>S. habrochaites</i>	31/36	14.5	222
<i>S. habrochaites</i> × <i>S. lycopersicum</i> (422)	6/13	0	0
<i>S. lycopersicum</i> (244) × <i>S. habrochaites</i>	10/19	24	197
<i>S. habrochaites</i> × <i>S. lycopersicum</i> (244)	13/16	0	0

1. 스페인 해외 법인 설립

2019년02월01일 스페인 마드리드 지역에 GANASEED DQ.S.L 현지 법인을 설립하여 국내 개발 품종의 유럽지역의 품종홍보와 수출확대 기반을 마련 하였다(그림 1).



GSV: 12814001-INC-18186987-INV-62551375

CERTIFICACIÓN NO. 18186987

DON Francisco J. Salvador Campderá, Registrador Mercantil Central, en base a lo interesado por: Dña. DISTRIBUIDORA DE ASOCIADOS, S.L., en solicitud presentada con fecha 16/12/2018 y número de entrada 19001044.

CERTIFICADO: Que NO EXISTE registrada la denominación

GANA SEED DQ, SOCIEDAD LIMITADA

En consecuencia, QUEDA RESERVADA DICHA DENOMINACION a favor del citado interesado, por el plazo de seis meses a contar desde esta fecha, conforme a lo establecido en el artículo 417.1 del reglamento del Registro Mercantil.

Madrid, a Once de Diciembre de Dos Mil Dieciocho.

EL REGISTRADOR,

La presente certificación aparece inscrita por el Registrador antes expresado, con su firma electrónica reconocida, creada y desarrollada al amparo del artículo 159 y siguientes de la Ley 34/2002 de 11 de diciembre y disposiciones concordantes. El presente documento podrá verificarse utilizando el CVF arriba indicado en la URL <http://www.rmc.es/cvf>

DILIGENCIA: Para hacer constar que la presente certificación ha sido modificada en virtud de lo establecido en los arts. 14 y 16 de la Ordenanza del Registro Mercantil. En Madrid a 28 de Enero de 2019.

NOTA.- Esta certificación tendrá una vigencia, a efectos de otorgamiento de escritura, de TRES MESES contados desde la fecha de su expedición, de conformidad a lo establecido en el art. 414.1 del Reglamento del Registro Mercantil.

그림 1 스페인 법인 설립 계약서

2. 코트라 마드리드 무역관 지사화 사업 협약

코트라 마드리드의 무역관 지사화 사업에 참여하여 수출성약지원, 시장, 산업 동향조사, 브랜드 홍보, 현지 홍보 관련 정보 및 컨설팅 제공, 현지 법인 설립지원, 법인 설립 절차 자문, 인허가 취득 지원, 인허가 취득 절차 컨설팅의 지원 협약 하였다(그림 2).



그림 2 코트라 자사화/ 마드리드 무역관 지사화 협약

3. 해외 자사 전시포 운영

스페인 자사 직영 전시포 5개소에서 순천대학교 대목 품종인 TR-906, TR-951을 가나종묘 적색 대추 품종인 도토리 레드 티와이와 접목하여 정식하였다(표 1). 대조구로는 스페인 현지에서 가장 많이 판매되는 MAXIFORT 품종에 도토리레드티와이를 동일하게 접목하여 비교 시험을 진행 하였다. 대목 품종 파종은 9월 2일, 10월2일 접목 후 정식일은 10월 17일으로 동일하게 진행하였다.(표1, 그림 3, 4, 5, 6)

표1. 스페인 대목 품종 전시포 운영 및 지역 적응성 지역 현황

구분	지역	재배 관리자	작황조사	시험 품목
1	ALBUNOL	FranciscoPugar	Oscar Ramirez	TR-906- 10주 TR-951- 25주
2	ALMERIA	Antonio Montes	Oscar Ramirez	TR-906-10주 TR-951- 25주
3	NIJAR	Antonio Moreno	Oscar Ramirez	TR-906-10주 TR-951- 25주
4	MAZZARON	Vicente Pugar	Oscar Ramirez	TR-906-10주 TR-951- 25주
5	MONTRIL	Sergio Lozano	Oscar Ramirez	TR-906-10주 TR-951- 25주



TR-951 파종



TR-906 파종

그림3. 대목 품종 파종 후 10일 모습



그림4. 대목품종 파종 후 20일 모습

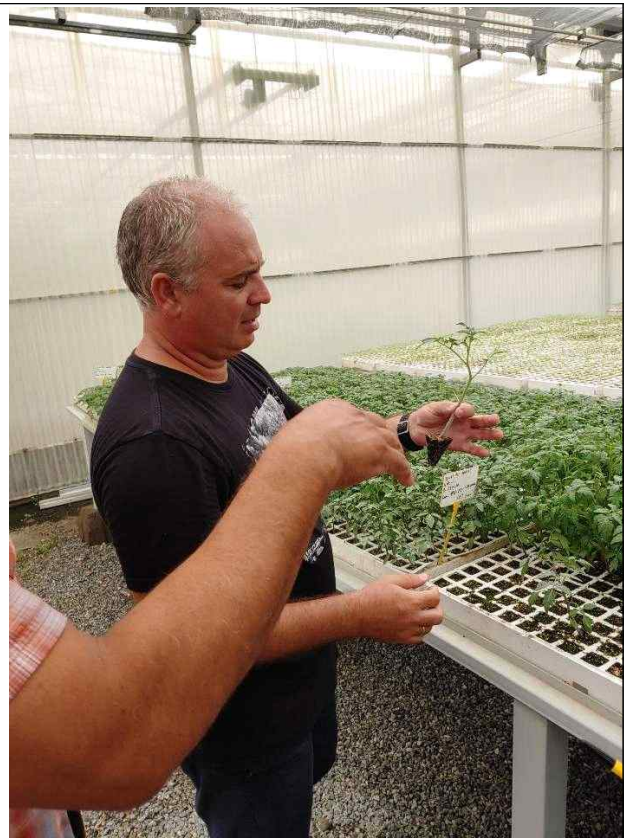


그림5. 멕시코트, TR951, TR906대목 품종 도토리레드티와이와 접목후 모습



그림6. MONTRIL과 ALBUNOL 지역 정식 후 모습

1. 전시포 운영

2019년 스페인 자사 직영 전시포 5개소에서 순천대학교에서 개발한 대목 품종인 TR-906, TR-951을 가나종묘 적색 대추품종인 도토리 레드 티와이와 접목하여 정식하였다. 대조구로는 스페인 현지에서 가장 많이 판매되는 MAXIFORT 품종에 도토리 레드 티와이를 동일하게 접목하여 대목 품종 파종은 9월 2일, 10월2일 접목 후 정식일은 10월 17일으로 동일하게 진행하여 비교 시험을 진행 중이었으나, 6화방 전개 전 고사하여 품종의 결과를 얻는데 실패하여 현지 전시포 운영하는데 애로가 있었다.

그래서 2020년에는 국내에서도 확인이 필요하다 사료되어 국내 1곳을 선정하여 전시포를 운영하기로 하였다. 순천대학교에서 개발한 대목품종 2품종과 비교품종 1품종을 선정하여 스페인과 국내에 각1개소를 운영하여 품종 특성 평가를 하고 있다. KR201, KR202, Kardia 품종을 Caniles 타입의 No.GNSL(F1)품종과 접목하여 국내전시포 1개소와 해외 전시포1개소를 Aguilas 지역을 선정하여 운영 하였다.

1). 해외 전시포

- 장소: 스페인 Aguilas
- 대목품종: KR201, KR202, Kardia
- 접수품종: No.GNSL
- 파종일: 2020년 07월 29일
- 접수일: 2020년 09월01일
- 정식일: 2020년 09월15일

표2. 해외전시포 운영

Variety	Type	Place	Sowing (Date)	Planting (Date)	Grafting	soil or nutrient	number of branch
GN08	No.GNSL	Aguilas	29th July 2020	15 th September 2020	Kardia	soil	2
KR201	Root stock	Aguilas	29th July 2020	15 th September 2020	Caniles	soil	2
KR202	Root stock	Aguilas	29th July 2020	15 th September 2020	Caniles	soil	2

2020년07월29일 파종하여 9월 01일 접수 후 9월15일 스페인의 Aguilas지역에 토경에 정식하였다.


	
<p>Damián Camacho Sown 29th July and crafted 1stSeptember 15thSeptember Transplanted Paraje Los Indalecios, A Ibuñol Granada, Cherry GN1-8-11-12</p>	<p>Diego López Sown 29th July and crafted 1stSeptember 15thSeptember Transplanted Finca Los Catalanes, Pun talón, Motril, Granada. GN 07 Roma Type GN08 and GN 09 Caniles type</p>
	
<p>Diego López Sown 29th July and crafted 1stSeptember 15thSeptember Transplanted Finca Los Catalanes, Pun talón, Motril, Granada.</p>	<p>Diego López Sown 29th July and crafted 1stSeptember 15thSeptember Transplanted Finca Los Catalanes, Pun talón, Motril, Granada. GN 07 Roma Type GN08 and GN 09 Caniles type</p>

그림6.스페인의 Aguilas지역 전시포 정식사진

<해외 전시포운영 결과>

해외전시포 운영 및 대목 성능평가 품종은 KR-201, KR-202 품종으로 대비품종으로는 KARDIA(신젠타) 품종으로 비교 시험 하였다. 재배기간이 2020년 07월09일부터 2021년 07월까지 재배하는 월동형 작기였다. 접수 품종은 샐러드용 토마토 품종으로 4화방의 과실의 특성을 조사한 결과 아래 표1과 같았다. KARDIA, KR202대목 품종으로 접목한 경우 과실의 모양이 PLUM과 형태로 표현되었으며 KR201대목 품종의 경우 ROUND 형태로 표현되었다. 당도 경우는 거의 차이가 없었으며, 과중의 경우는 KARDIA 품종에 비해 KR201, KR202 대목품종으로 접목한 품종의 과실이 30% 정도 더 크게 조사되었다. (표1, 표2, 그림 1)

표 1. 과실특성조사(2021.01.27.)

Fruit Research CristóbalDíaz							
Variety	Cluster	Shape	Color	Brix	Weight(g)	Length(cm)	Width(cm)
Kardia	4th	Plum	Red	3.4	104.6	6.3	5.5
KR201	4th	Round	Red	3.4	137.3	6.5	7.3
KR202	4th	Plum	Red	3.5	139.6	8.7	6



그림 1. 전시포 화방 전개 모습(2021.01.27.)

표 2. 생육조사 내용

Variety	Research date	Comments
Kardian	2020-10-29	Vigorous plant starting to grow clusters
	2020-11-30	Good plant health and 4 clusters with 6 fruits per cluster starting to mature.
	2020-12-30	Plant looking good and vigorous, 8 clusters and 6 fruits per cluster, long and bigger fruit than Caniles.
	2021-01-27	Fruit to long and wide than Caniles
KR201	2020-10-29	Strong plants with less fruits than control
	2020-11-30	Good plant health with big leaves and 4 clusters with 6 fruits per cluster starting to mature.
	2020-12-30	Vigorous plant similar to Kardian with an intermedian rootstock. More even fruits but bigger calibers. 11 clusters 6-7 fruits per cluster.
	2021-01-27	Fruits still immature but look a bit bigger than the ones with the rootstock Kardian
KR202	2020-10-29	Strong plants quicker and with more fruits growing
	2020-11-30	Good plant health with bigger leaves and 4 clusters with 6 fruits per cluster starting to mature.
	2020-12-30	To vigorous plants and bigger fruits, very strong rootstock for Aguilassoil conditions. 11 clusters 6-7 fruits per cluster.
	2021-01-27	Fruits still immature but look bigger than the ones with the rootstock Kardian

2). 국내 전시포

COVID-19로 인한 국가간 이동제한으로 인한 대목품종의 시범포운영과 품종 성능평가 방법을 보완할 목적으로 국내의 토마토 주산지에도 전시포를 운영하여 해외 전시포와 비교하고 품종의 평가방법을 보완할 목적이다. 스페인 현지와의 비교평가를 위해 대목 시험재배 품종 KR201, KR202와 대비품종으로는 커넥션(PPS사) 품종을 전라남도 담양지역에 전시포를 운영하였다. 2020년 08월31일 파종 후 2020년 09월28일 접목하여 2020년 10월 20일 정식하였다. (그림 9-14)

- 장소: 전라남도 담양
- 대목품종: KR201, KR202, 커넥션(PPS)
- 접수품종: 도토리레드티와이
- 파종일: 2020년 08월 31일
- 접목일: 2020년 09월28일
- 정식일: 2020년 10월20일경 예상

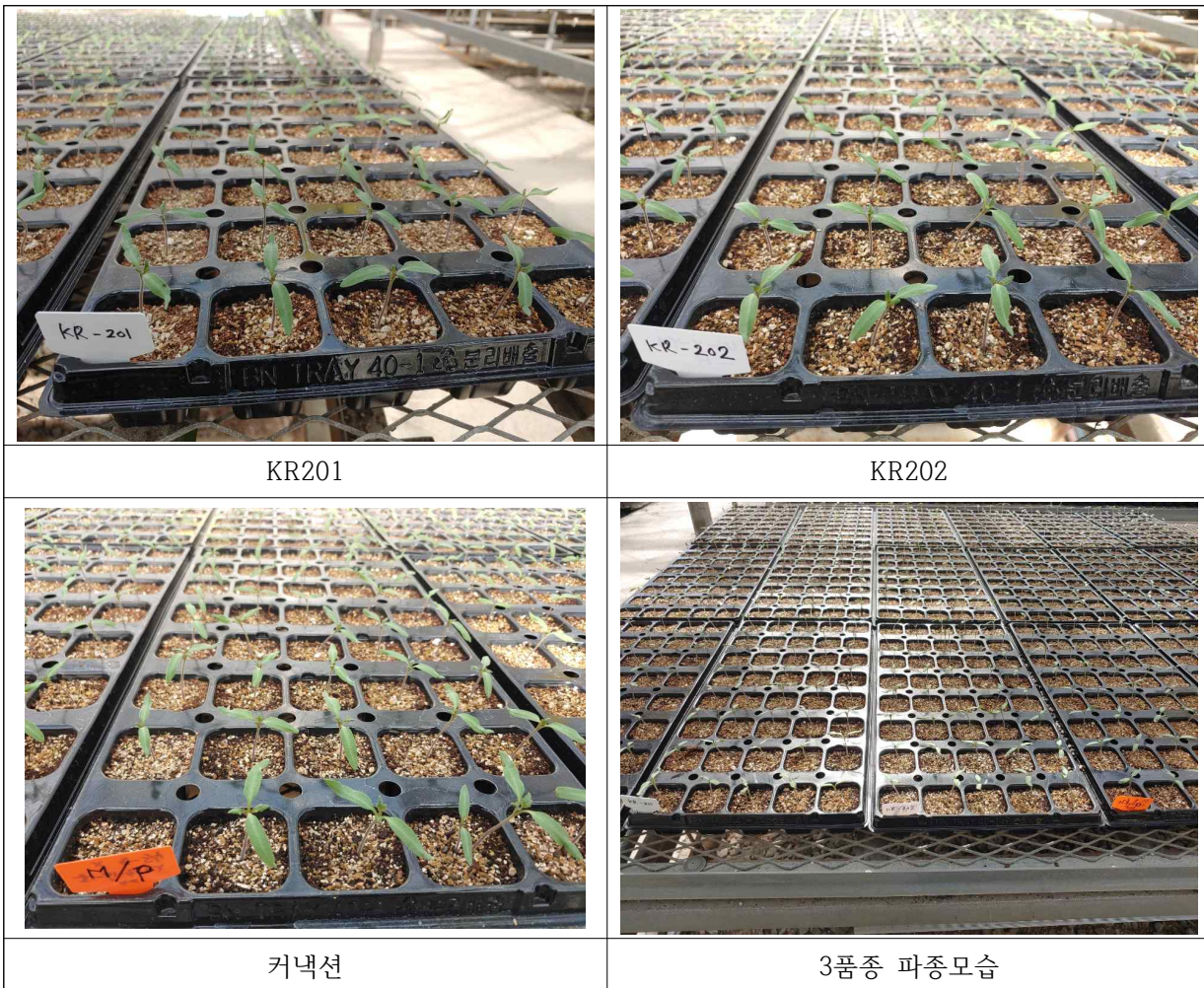


그림7. 파종후 10일후 모습



그림8. 파종후 20일 모습





커넥션



3품종 파종모습

그림9. 파종 후 30일경 접목사진



KR201



KR202



커넥션(PPS사)



3품종 접목모습

그림10. 접목 후 비교사진

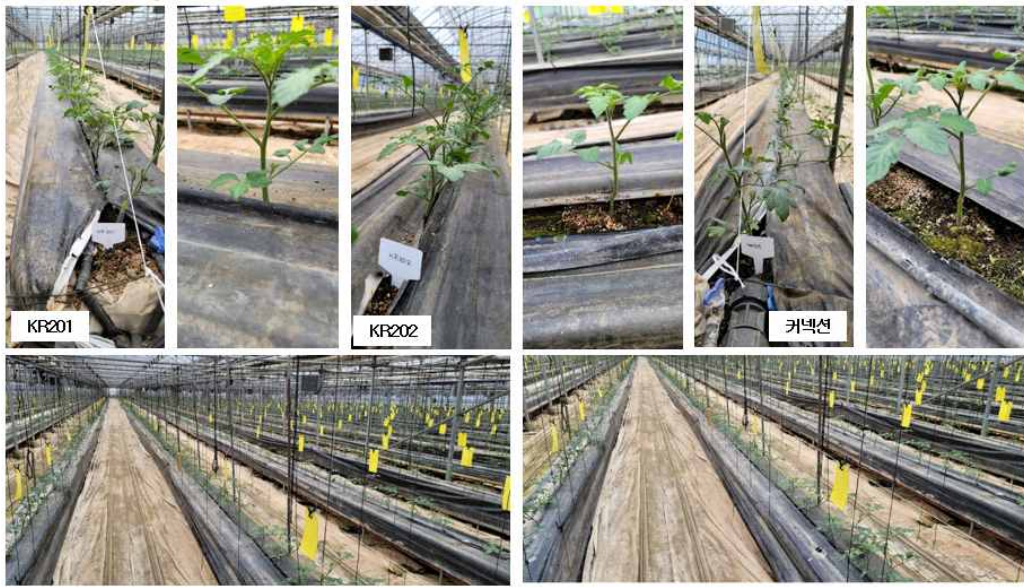


그림10. 파종 후 30일경 접목한 모습



그림12. 정식 전경(2020년 10월20일)



그림13. 정식 후 10일경(2020년10월30일)



그림14. 정식 후 20일경 모습(2020년11월11일)



그림15. 정식 후 40일경 모습(2020년12월02일)

<국내 전시포운영 결과>

전라남도 담양군 무정면에서 전시포 1개소를 운영하였다. 대목품종으로는 KR201, KR202, 품종과 대비품종으로는 커넥션(PPS사) 대목 품종으로 재배시험을 하였다. 접수 품종은 자사의 적색 대추토마토 품종인 도토리레드티와이 품종으로 재배시험하였고 2021년 10월 20일에 정식하여 2021년 5월까지 펠라이트 양액 재배 방식으로 운영하였다. 2021년03월23일에 대목 품종 특성 평가를 하였다.

KR201 대목품종은 생육 초기, 중기, 후기까지 세력이 강하게 발현되며, 뿌리 활착력이 좋고 접수와 친화력도 양호하여 내병성도 비교품종인 커넥션과 비슷하며, 접수의 수량성도 재배 후기까지 많은 차이가 없었다. (그림 1)



그림 1. KR201 재배시험 평가 사진

KR202 대목품종은 생육 초기, 중기, 후기까지 세력이 강하게 발현되며, 뿌리 활착력이 좋고 접수와 친화력도 양호하여 내병성도 비교품종인 커넥션과 비슷하며, 접수의 수량성도 재배 후

기까지 많은 차이가 없음. KR201대목품종과 특성이 비슷하나 잎이 약간 작으며 세력이 201에 비해 다소 떨어진다고.(그림 2)



그림 2. KR202 재배시험 평가 사진

대목품종인 커넥션은 KR201. ,KR202에 비해서 생육 초기 중기까지는 세력이 비슷하였으나 후기에는 세력이 약해지고 수량성도 다소 떨어지는 차이를 보였다.(그림 3)



그림 3. 커넥션 재배시험 평가 사진

재배시험 평가 결과는 세근 분포량에서는 헤라클래스, KR202, KR201, 커넥션 순으로 국내에 대목품종으로는 많이 심어지고 있는 헤라클래스 품종이 가장 많았으며, KR201, KR202 대목품종 또한 세근의 분포량이 커넥션에 비해 우수함을 알수있었다. 접수의 성능이 대목 뿌리 강도에 따라 비례하여 발현되는 것을 확인하였으며. 작황면에서도 헤라클래스 대목품종으로 접목한 접수의 작황이 가장 좋았으며, KR201, KR202, 커넥션 순으로 좋았다.

KR201, KR202 대목은 발아력과 발아세 불량률의 문제점이 극복 되어지면 대목의 기능면에서 우수하여 좋은 품종이 될수 있는 가능성이 있다. (그림 4)



그림 4. 세근 분포량 비교사진

제 3 장 목표 달성도 및 관련 분야 기여도

제 1 절 정량적 연구개발 성과 목표 대비 실적

성과목표		제품 경쟁력 강화		권리확보		홍보역량 강화			목표고객	매출 및 수출	
		논문		품종개발		국내외 전시포/시범포 개설편수	국내외 전시포/시범포 운영(일반)	종자교역회(품평회) 참여	판매국가(누적)	국내 매출액(백만원)	종자 수출액(만달러)
		SCI	비SCI	출원	등록						
1차년도 (2017)	목표	0	-	-	-	-	-	-	-	-	-
	실적	2	-	-	-	-	-	-	-	-	-
2차년도 (2018)	목표	1	-	-	-	-	-	-	-	-	-
	실적	1	-	-	-	-	-	-	-	-	-
3차년도 (2019)	목표	0	-	0	-	1	0	0	1 (1)	-	1
	실적	0	-	0	-	5	0	1	1 (1)	-	1.07
4차년도 (2020)	목표	1	-	1	-	1	0	0	1 (2)	-	2
	실적	1	-	0	-	2	0	0	2 (3)	-	1.07
5차년도 (2021)	목표	0	-	1	-	0	1	0	1 (3)	-	5
	실적	0	-	0	-	0	1	0	4 (4)	-	0.5
계 (2단계)	목표	2	-	2	-	2	1	0	3 (3)	-	8
	실적	4	-	0	-	7	1	1	4 (4)	-	2.64
달성율(%)		200	-	0	-	350	100	200	133.3	-	33

제 2 절 연차별 연구개발 목표, 내용 및 달성도

[제1세부]

구분 (연도)	세부프로젝트명	세부연구목표	달성도 (%)	연구개발 수행내용
1차년도 (2017)	원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스	○ MAS 지원용 대용량·신속 분자마커 지원 시스템 개발	100	○ 분자마커 서비스를 위한 장비 인프라 구축 - SNP line(384), 대용량 DNA 추출장치, EP-1 시스템, 염기서열 및 fragment 분석, SSR 분석장치, PCR 장치, HRM 분석장치 ○ 토마토 풋마름병(Bw) 저항성 분자마커(2종) 정보 확보 및 validation Test ○ 토마토 Joint 관련 분자마커(2종) 정보 확보 및 validation Test ○ 양배추 시들음병 저항성 판별 분자마커(Fusa6m) 정보 확보 및 validation Test ○ 양파 MABC용 SNP chip validation Test

		○ 병저항성 판별 관련 분자마커 검정 서비스: EP1, HRM, PCR, SSR 마커 이용	100	○ 토마토 병저항성 판별 관련 분자마커 검정 지원 - Ty1, Ty2, Ty4, ty5, Tm2a, Mi-rex, Cf9, I, I2, I3, Bw06, Bw12, Ve2, J3, Sw5, Ph3, Ol2, Lv 등 50,228점 서비스 지원 ○ 양배추 병저항성 판별 관련 분자마커 검정 지원 - 시들음병 저항성 판별 1,014점 서비스 지원
		○ 주요 원예형질 판별 관련 분자마커 검정 서비스: EP1, HRM, PCR, PCR-CAPs 마커 이용	100	○ 토마토 주요 원예형질 판별 관련 분자마커 검정 지원 - 과색, 응성불임성, 화방수 판별 등 1,090점 분자마커 검정 지원 ○ 양배추 주요 원예형질 판별 관련 분자마커 검정 지원 - 자가불화합성 유전자형 판별, 세포질 응성불임성 판별 등 1,134점 분자마커 검정 지원 ○ 양과 주요 원예형질 판별 관련 분자마커 검정 지원 - 양과 응성불임세포질 유형 판별 및 응성불임 회복 유전자 판별 등 4,136점 분자마커 검정 지원
		○ 여교잡 세대단축, 종자순도 분자마커 개량 및 서비스	100	○ 토마토 여교잡 세대단축 및 고정도 확인 관련 분자마커 등 27,648점 검정 지원 ○ EP1 system을 이용한 양과 순도검정 2,304점 검정 지원
2차년도 (2018)	원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스	○ MAS지원용 대용량·신속 분자마커 지원 시스템 개발	100	○ 토마토 세균성점무늬병(<i>Rx-3, Rx-4</i>) 관련 분자마커(2종) 정보 확보 및 validation Test ○ 토마토 회색점무늬병(<i>Sm-CT55</i>) 관련 분자마커(1종) 정보 확보 및 validation Test ○ 토마토 흰가루병(<i>ol-2</i>) 저항성 분자마커(1종) 정보 확보 및 validation Test ○ 토마토 고구마선충뿌리혹병(<i>Mi-23</i>) 관련 분자마커(1종) 정보 확보 및 validation Test ○ 토마토 응성불임성(<i>GMS</i>) 관련 분자마커(1종) 정보 확보 및 validation Test ○ 양배추 시들음병 저항성판별 분자마커인 SSR 마커를 HRM 마커로 전환 후 validation Test ○ 양과 MABC용 SNP 384chip 완료 및 validation Test
		○ 병저항성 판별 관련 분자마커 검정 서비스: EP1, HRM, PCR, SSR 마커 이용	100	○ 토마토 병저항성 판별 관련 분자마커 검정 지원 - Ty1, Ty2, Ty4, ty5, Tm2a, Sw5, Bw6, Bw12, Cf9, I, I2, I3, Mi-rex, Mi-23, J3, Ve2, ol2, Lv, Rx3, Rx4, Sm 등 56,669점 서비스 지원

				<ul style="list-style-type: none"> ○ 양배추 병저항성 판별 관련 분자마커 검정 지원 - 시들음병 저항성 판별 168점 서비스 지원
		<ul style="list-style-type: none"> ○ 주요 원예형질 판별 관련 분자마커 검정 서비스: EP1, HRM, PCR, PCR-CAPS 마커 이용 	100	<ul style="list-style-type: none"> ○ 토마토 주요 원예형질 판별 관련 분자마커 검정 지원 - 응성불임성(GMS), 화방수(J2-TE, EJ2) 판별 등 793점 분자마커 검정 지원 ○ 양배추 주요 원예형질 판별 관련 분자마커 검정 지원 - 자가불화합성 유전자형 판별(class I, class II) 등 1,104점 분자마커 검정 지원 ○ 양파 주요 원예형질 판별 관련 분자마커 검정 지원 - 양파 응성불임세포질 유형(orf725) 판별 및 응성불임회복 유전자(Jnurfl3) 판별 등 11,729점 분자마커 검정 지원
		<ul style="list-style-type: none"> ○ 여교잡 세대단축, 종자순도 분자마커 개량 및 서비스 	100	<ul style="list-style-type: none"> ○ 토마토 여교잡 세대단축 및 고정도 확인 관련 분자마커 등 6,888점 검정 지원 ○ EP1 system을 이용한 양파 순도검정 18,432점 검정 지원
3차년도 (2019)	원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스	<ul style="list-style-type: none"> ○ MAS지원용 대용량·신속 분자마커 지원 시스템 개발 	100	<ul style="list-style-type: none"> ○ 토마토 점무늬병(Sm-InDel, Sm-565) 저항성 분자마커(2종) 정보 확보 및 validation test ○ 토마토 Flavor 관련 분자마커(24종) 정보 확보 및 validation test ○ 양배추 자가불화합성 Class-II 분자마커(3종)의 개선 및 validation test
		<ul style="list-style-type: none"> ○ 병저항성 판별 관련 분자마커 검정 서비스: EP1, HRM, PCR, SSR 마커 이용 	100	<ul style="list-style-type: none"> ○ 토마토 병저항성 판별 관련 분자마커 검정 지원 - Ty1, Ty2, Ty4, ty5, Tm2a, Mi23, Cf9, I, I2, I3, Bw6, Bw12, Ve2, J3, Sw5, Ph3, ol2, Lv, Sm 등 37,729점 서비스 지원 ○ 양배추 병저항성 판별 관련 분자마커 검정 지원 - 시들음병 및 노균병 저항성 판별 567점 서비스 지원
		<ul style="list-style-type: none"> ○ 주요 원예형질 판별 관련 분자마커 검정 서비스: EP1, HRM, PCR, PCR-CAPS 마커 이용 	100	<ul style="list-style-type: none"> ○ 토마토 주요 원예형질 판별 관련 분자마커 검정 지원 - 응성불임성, 야생종(<i>S. habrochaites</i>) 구분용 마커, 토마토 Flavor 관련 마커 등 14,322점 분자마커 검정 지원 ○ 양배추 주요 원예형질 판별 관련 분자마커 검정 지원 - 자가불화합성 유전자형 판별, 세포질 응성불임성 판별 등 20,415점 분자마커 검정 지원

				<ul style="list-style-type: none"> ○ 양과 주요 원예형질 판별 관련 분자마커 검정 지원 - 양과 응성불임세포질 유형 판별 및 응성불임 회복 유전자 판별 등 10,144점 분자마커 검정 지원
4차년도 (2020)	원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스	○ MAS지원용 대용량·신속 분자마커 지원 시스템 개발	100	<ul style="list-style-type: none"> ○ 토마토 시들음병(I2) 저항성 판별 분자마커(1종) 개선 및 validation test ○ 토마토 잎곰팡이병(Cf-9) 저항성 판별 분자마커(1종) 개선 및 validation test ○ 양배추 오렌지색(Or) 판별 분자마커(1종)의 개선 및 validation test ○ 양배추 자가불화합성 Class-I 유전자형 판별 분자마커(31종)의 qPCR로의 적용 및 validation test
		○ 병저항성 판별 관련 분자마커 검정 서비스: EP1, HRM, PCR, SSR 마커 이용	100	<ul style="list-style-type: none"> ○ 토마토 병저항성 판별 관련 분자마커 검정 지원 - Ty1, Ty2, ty5, Tm2a, Mi23, Cf9, I2, I3, Bw6, Bw12, Ve2, J3, Sw5, Ph3, ol2, Sm-565 등 75,492점 서비스 지원 ○ 양배추 병저항성 판별 관련 분자마커 검정 지원 - 시들음병 저항성 판별 1,464점 서비스 지원
		○ 주요 원예형질 판별 관련 분자마커 검정 서비스: EP1, HRM, PCR, PCR-CAPS 마커 이용	100	<ul style="list-style-type: none"> ○ 토마토 주요 원예형질 판별 관련 분자마커 검정 지원 - 응성불임성, 과피색, 숙기 등 928점 분자마커 검정 지원 ○ 양배추 주요 원예형질 판별 관련 분자마커 검정 지원 - 자가불화합성 유전자형 판별, 세포질 응성불임성 판별 등 23,862점 분자마커 검정 지원 ○ 양과 주요 원예형질 판별 관련 분자마커 검정 지원 - 양과 응성불임세포질 유형 판별 및 응성불임 회복 유전자 판별 등 3,504점 분자마커 검정 지원
		○ 여교잡 세대단축, 종자순도 분자마커 개량 및 서비스	100	<ul style="list-style-type: none"> ○ 토마토 계통 고정도 확인 관련 분자마커 등 9,216점 검정 지원
5차년도 (2021)	원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스	○ 병저항성 판별 관련 분자마커 검정 서비스: EP1, HRM, PCR, SSR 마커 이용	100	<ul style="list-style-type: none"> ○ 토마토 병저항성 판별 관련 분자마커 검정 지원 - Ty1, Ty2, ty5, Tm2a, Mi23, Cf9, I2, I3, Bw6, Bw12, Ve2, J3, Sw5, Ph3, ol2, Sm-565 등 22,969점 서비스 지원 ○ 양배추 병저항성 판별 관련 분자마커 검정 지

				원 - 시들음병 저항성 판별 1,200점 서비스 지원
		○ 주요 원예형질 판별 관련 분자마커 검정 서비스: EP1, HRM, PCR, PCR-CAPS 마커 이용	100	○ 토마토 주요 원예형질 판별 관련 분자마커 검정 지원 - 응성불임성, 분지수 등 590점 분자마커 검정 지원 ○ 양배추 주요 원예형질 판별 관련 분자마커 검정 지원 - 자가불화합성 유전자형 판별, 세포질 응성불임성 판별 등 142점 분자마커 검정 지원 ○ 양파 주요 원예형질 판별 관련 분자마커 검정 지원 - 양파 응성불임회복 유전자 판별 등 87점 분자마커 검정 지원
		○ 계통 고정도 및 F1품종 순도검정 서비스: EP1, HRM, PCR, SSR 마커 이용	100	○ 토마토 계통/순도검정 판별 관련 분자마커 검정 지원 - 계통 고정도 및 F1품종 순도검정 등 14,167점 분자마커 검정 지원 ○ 양배추 계통/순도검정 판별 관련 분자마커 검정 지원 - 계통 고정도 및 F1품종 순도검정 등 2,304점 분자마커 검정 지원 ○ 양파 계통/순도검정 판별 관련 분자마커 검정 지원 - F1품종 순도검정 등 60,716점 분자마커 검정 지원

[제2세부]

구분 (연도)	세부프로젝트명	세부연구목표	달성도 (%)	연구개발 수행내용
3차년도 (2019)	자가불화합성 야생종 토마토를 이용한 대목 품종개발 및 품질관리체계 구축	국내외 장기재배용 토마토 야생종 등의 유전자원 수집	100	- 아시아채소연구개발센터 및 미국 농무부(AVRDC 및 USDA)로부터 유전자원 수집 - 현재 시판중인 토마토 대목용 품종 수집 - 국내 농업유전자원센터로부터 유전자원 수집 - 수집된 유전자원들의 특성 검정
		토마토 종 구분용 분자마커 개발	100	- 토마토 종 구분관련 문헌정보 수집 - NCBI등으로부터 토마토 재배종(<i>S. lycopersicum</i>) 및 야생종(<i>S. chmielewskii</i> , <i>S. habrochaites</i> , <i>S. pennellii</i> 등)들의 유전체 정보 탐색

				<ul style="list-style-type: none"> - 탐색된 정보를 이용한 토마토 종 구분용 분자마커 개발
		자가불화합성 유전자형 동정을 위한 분자마커 개발	100	<ul style="list-style-type: none"> - 토마토 자가불화합성 유전자형 구분관련 문헌정보 수집 - NCBI등으로부터 토마토 자가불화합성 유전자 정보 탐색 - 탐색된 정보들을 이용한 토마토 야생종 자가불화합성 유전자형 동정용 분자마커 개발 - 수집 대목용 토마토 야생종의 자가불화합성 유전자형 동정
		재배종 및 야생종간 교배친화성 여부 검정	100	<ul style="list-style-type: none"> - 재배종(<i>S. lycopersicum</i>) 및 야생종(<i>S. chmielewskii</i>, <i>S. habrochaites</i>, <i>S. pennellii</i>)들간의 이면교배 수행 - 일측성 및 양측성 교배친화성 조사
		토마토 유전자원(야생종 포함)의 병 저항성 평가	100	<ul style="list-style-type: none"> - 대목용 토마토 유전자원들에 대한(야생종 포함) 및 풋마름병, 황화잎말림바이러스병, 고구마선충뿌리혹병, 근부위조병 등의 병 저항성 검정(분자마커 이용) - 선발 유전자원의 세대진전 및 계통 육성
		스페인 현지 전시포 운영	100	<ul style="list-style-type: none"> - 정기적인 현지 재배농가 방문 등을 통한 개발 품종의 우수성 홍보 - EU국 육성 품종과의 비교 분석 결과를 이용하여 품종 선정 및 홍보에 활용 - 토마토 자사 전시포운영(토마토 전문 재배 농가 섭외 운영), 토마토 생산 및 회사, 유통회사, 농산물 마케팅 회사등과 시교 사업운영 - 수출 목표 1만불 달성
4차년도 (2020)	자가불화합성 야생종 토마토를 이용한 대목 품종개발 및 품질관리체계 구축	국내외 장기재배용 토마토 야생종 등의 유전자원 수집	100	<ul style="list-style-type: none"> - 아시아채소연구개발센터 및 미국 농무부(AVRDC 및 USDA)로부터 유전자원 수집 - 현재 시관중인 토마토 대목용 품종 수집 - 국내 농업유전자원센터로부터 유전자원 수집 - 수집된 유전자원들의 특성 검정
		토마토 대목용 계통의 풋마름병 저항성 유전자 도입	100	<ul style="list-style-type: none"> - 육성된 계통에 풋마름병 등의 병 저항성 유전자 도입을 위한 여교

				<ul style="list-style-type: none"> 잡 실시 - 각 세대진전시 풋마름병 저항성 분자마커를 이용한 선발
	자가불화합성을 이용한 원종채종 체계 확립 및 자가불화합성 유전자형 기반 교배조합 작성	100		<ul style="list-style-type: none"> - 이산화탄소를 이용한 자가불화합성 타과 여부 확인 - 정식 시기 조절을 통한 채종량 확인(야생종은 장주화임) - 재배종 및 야생종들간 서로 다른 S-genotype들을 이용한 다수의 교배조합 작성
	MAS 및 포장 저항성 검정을 통한 복합내병성 장기재배용 대목 육성	100		<ul style="list-style-type: none"> - 선발 및 육성된 우수형질 계통(재배종 및 야생종)들에 대하여 풋마름병, 황화잎말림바이러스병, 고구마선충뿌리혹병, 근부위조병 등의 병 저항성 검정(분자마커 이용) - 우수형질 계통(재배종 및 야생종)들을 이용한 F1 조합작성 및 형질조사 - 오염포장을 이용한 저항성 정도 검정 - F1 품종의 종자 채종량 확인 - 장기재배용 대목 품종 1종 개발
	교배 조합당 종자 채종효율 분석	100		<ul style="list-style-type: none"> - 재배종(<i>S. lycopersicum</i>)과 야생종(<i>S. chmielewskii</i>, <i>S. habrochaites</i>, <i>S. pennellii</i>)들간의 중간교잡에 있어서 종자 수확량 확인
	MABC을 이용한 복합내병성 장기재배용 대목 계통 육성 세대 단축	100		<ul style="list-style-type: none"> - 재배종(<i>S. lycopersicum</i>) 및 야생종(<i>S. chmielewskii</i>, <i>S. habrochaites</i>, <i>S. pennellii</i> 등) 유전체를 이용한 MABC용 chip 개발 - 개발된 MABC용 chip을 이용한 계통 육성 세대 단축
	복합병저항성 재배종 및 야생종간의 교배친화성 분석	100		<ul style="list-style-type: none"> - 복합병저항성 재배종(<i>S. lycopersicum</i>) 및 야생종(<i>S. chmielewskii</i>, <i>S. habrochaites</i>, <i>S. pennellii</i>)들간의 이면교배를 통한 교배친화성 조사 - 장기재배용 대목 F1 품종 생산 및 풋마름병, 황화잎말림바이러스병, 고구마선충뿌리혹병, 근부위조병 등의 마커들을 이용한 저항

				<ul style="list-style-type: none"> 성 검정 - 다양한 elite 품종들을 이용한 접목 친화성 검정 및 특성 분석
		스페인 현지 전시포 운영	100	<ul style="list-style-type: none"> - 정기적인 현지 재배농가 방문 등을 통한 개발 품종의 우수성 홍보 - EU국 육성 품종과의 비교 분석 결과를 이용하여 품종 선정 및 홍보에 활용 - 토마토 자사 전시포운영(토마토 전문 재배 농가 섭외 운영), 토마토 생산 및 회사, 유통회사, 농산물 마케팅 회사등과 시교 사업운영 - 수출 목표 2만불 달성
5차년도 (2021))	자가불화합성 야생종 토마토를 이용한 대목 품종개발 및 품질관리체계 구축	교배 조합당 종자 채종효율 분석	100	<ul style="list-style-type: none"> - 재배종(<i>S. lycopersicum</i>)과 야생종(<i>S. chmielewskii</i>, <i>S. habrochaites</i>, <i>S. pennellii</i>)들간의 중간교잡에 있어서 종자 수확량 확인
		MABC을 이용한 복합내병성 장기재배용 대목 계통 육성 세대 단축	100	<ul style="list-style-type: none"> - 재배종(<i>S. lycopersicum</i>) 및 야생종(<i>S. chmielewskii</i>, <i>S. habrochaites</i>, <i>S. pennellii</i> 등) 유전체를 이용한 MABC용 chip 개발 - 개발된 MABC용 chip을 이용한 계통 육성 세대 단축
		복합병저항성 재배종 및 야생종간의 교배친화성 분석	100	<ul style="list-style-type: none"> - 복합병저항성 재배종(<i>S. lycopersicum</i>) 및 야생종(<i>S. chmielewskii</i>, <i>S. habrochaites</i>, <i>S. pennellii</i>)들간의 이면교배를 통한 교배친화성 조사 - 장기재배용 대목 F1 품종 생산 및 풋마름병, 황화잎말림바이러스병, 고구마선충뿌리혹병, 근부위조병 등의 마커들을 이용한 저항성 검정 - 다양한 elite 품종들을 이용한 접목 친화성 검정 및 특성 분석
		스페인 현지 전시포 운영	100	<ul style="list-style-type: none"> - 정기적인 현지 재배농가 방문 등을 통한 개발 품종의 우수성 홍보 - EU국 육성 품종과의 비교 분석 결과를 이용하여 품종 선정 및

				홍보에 활용 - 토마토 자사 전시포운영(토마토 전문 재배 농가 섭외 운영), 토마토 생산 및 회사, 유통회사, 농산물 마케팅 회사등과 시교 사업운영 - 수출 목표 5만불 달성
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※ 목표 미달성 시 원인(사유) 및 차후대책(후속연구의 필요성 등)

- 토마토 해외 채종시 이상 기후(고온, 다습 등)으로 인해 채종이 불량하여 종자 수확이 원활이 이루어지지 않아 품종 출원이 이루어지지 않았으며, 코로나19로 인해 해외 종자 수출에 차질이 있었음

제 4 장 연구결과의 활용 계획

- PCR시스템, Qiaxcel 시스템, HRM분석시스템, 염기서열분석장치, DNA대량추출장치, EP1 분석장치, SNPLine 분석 장비 등 대용량 분자마커 서비스를 위한 분석장비 인프라 구축이 완비되어 있어 각종 병저항성 및 우수한 원예형질을 지닌 품종 육성에 적극 활용할 계획임
- 국내에서 MAS용 분자마커 서비스에 이용되는 대부분의 마커는 SSR 또는 PCR, PCR-CAPS 마커로 대량분석이 어려워 이를 해결하기 위해 SNP마커로 전환하여 HRM(High Resolution Melting)분석 시스템으로 전환함. 이는 앞으로 분자마커 대량지원 시스템이 갖추어진 것으로 보다 업그레이드된 고품질의 분자마커 서비스를 제공할 수 있도록 활용될 것임
- 기 개발된 분자마커를 가지고 육종현장에 적용가능한지 국내품종 및 계통을 대상으로 활용성 검토를 실시 함으로서 분자마커 정확도를 높여 고품질의 분자마커 서비스를 제공 함으로서 현장육종가의 신로도가 높아짐으로서 육종기술의 효율성을 높여줄 수 있을 것으로 기대됨
- 수집된 토마토 야생종 유전자원들은 병 등의 분자마커 개발, 장기재배용 토마토 대목 육종에 활용할 계획임
- 재배종(*S. lycopersicum*) 및 야생종(*S. chmielewskii*, *S. habrochaites*, *S. pennellii* 등)을 구분할 수 있는 토마토 종 구분용 분자마커는 토마토 종간교잡(재배종×야생종 등) 육종에 활용할 계획임
- 재배종(*S. lycopersicum*) 및 야생종(*S. chmielewskii*, *S. habrochaites*, *S. pennellii* 등) 유전체를 이용하여 개발된 MABC용 chip은 토마토 종간교잡(재배종×야생종 등) 육종에 활용할 계획임
- 재배종(*S. lycopersicum*) 및 야생종(*S. chmielewskii*, *S. habrochaites*, *S. pennellii* 등)을 이용한 토마토 종간교잡 육성 계통들은 장기재배용 토마토 대목 품종 개발에 활용할 계획임
- 해외 전시포 운용 및 마케팅에 대한 축적된 노하우들은 토마토 수출을 위한 새로운 시장 개척에 활용할 계획임

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연구개발보고서 초록

프로젝트명	(국문) 원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스				
	(영문) Development and Service of Mass Supporting System for MAS in Horticultural Crops				
프로젝트 연구기관	순천대학교		프로젝트연구 책임자	순천대학교	
참여기업	농업회사법인 가나종묘(주)			정희정	
총연구개발비 (2,664,200천원)	계	2,664,200천원	총 연구 기간	2017.01.01.~2021.12.31. (5년)	
	정부출연 연구개발비	2,664,200천원	총 참여 연구원 수	총 인원	86
	기업부담금	0		내부인원	86
	연구기관부담금	0		외부인원	0

○ 연구개발 목표 및 성과

- 분자마커 대량지원 시스템 개발 및 서비스에 의한 육종효율 증대
 - MAS 지원용 대용량 · 신속 분자마커 지원 시스템 개발 및 기 개발마커의 개량
 - 토마토, 양배추, 양파 분자마커의 대용량 · 신속 서비스
- 하우스 장기재배용 내병계 토마토 대목 개발
 - 풋마름병, 황화잎말림바이러스병, 고구마선충뿌리혹병, 근부위조병 등이 도입된 복합병저항성 토마토 대목 개발
- 2021년도 종자수출 5만불 달성, 해외전시포 1개소/년 운영
 - 해외 현지 전시포 운영 등에 의한 품종의 우수성 홍보 및 마케팅 강화

○ 연구내용 및 결과

- 토마토 신규 분자마커 정보 확보, 유효성 검증 및 지원
 - 유효성 검증: 토마토 풋마름병 마커 2종 (*Bwr-12*, *Bwr-6*), 세균성 점무늬병 마커 2종 (*Rx-3*, *Rx-4*), 회색점무늬병 마커 3종 (*Sm-CT55*, *Sm-InDel*, *Sm-565*), 흰가루병 마커 1종 (*ol-2*), 시들음병 마커 1종 (*I-2*), 잎곰팡이병 마커 1종 (*Cf-9*), 고구마선충뿌리혹병 마커 1종 (*Mi-23*), joint 관련 유전자 마커 2종 (*J2*, *EJ2*), 웅성불임성 마커 1종 (*ms*), Flavor 관련 EP1칩 (24 SNP)
 - 주요 병 및 원예형질 관련 서비스: 637,458점
- 양배추 신규 분자마커 정보 확보, 유효성 검증 및 지원

- 유효성 검증: 양배추 시들음병 마커 2종 (Fusa6m, HRM마커), 오렌지색 마커 1종 (Or), 자가불화합성 Class I 및 Class II 마커 34종

- 주요 병 및 원예형질 관련 서비스: 106,748점

- **양파 신규 분자마커 정보 확보, 유효성 검증 및 지원**

- 유효성 검증: 계통 고정도 및 순도 확인용 384칩 (EP1 시스템)

- 주요 원예형질 관련 서비스: 222,104점

- 재배종(*S. lycopersicum*) 및 야생종(*S. chmielewskii*, *S. habrochaites*, *S. pennellii* 등)을 구분할 수 있는 토마토 종 구분용 분자마커 개발

- 재배종(*S. lycopersicum*) 및 야생종(*S. chmielewskii*, *S. habrochaites*, *S. pennellii* 등) 유전체를 이용한 MABC용 chip 개발

- 재배종(*S. lycopersicum*) 및 야생종(*S. chmielewskii*, *S. habrochaites*, *S. pennellii* 등)을 이용한 토마토 중간교잡 계통 육성

- 해외 전시포 6개소 운영 및 누적수출 2.64만불 달성

○ **연구성과 활용실적 및 계획**

- 본 과제에서 확립된 분석 시스템(PCR 시스템, Qiaxcel 시스템, HRM 분석 시스템, 염기서열분석 장치, DNA대량추출장치, EP1분석장치, SNPline 분석장치) 등은 대용량분자마커 서비스 확대를 통한 육종연한 단축 및 육종효율 증대를 위해 장비인프라를 적극 활용할 계획임

- 분자마커의 대량분석을 위해 구축된 HRM (High Resolution Melting) 분석 시스템으로 맞추어 개량 및 개발된 분자마커들은 서비스의 정확도, 분석 시간 단축으로 신속한 내병성 및 중요 원예형질을 지닌 신품종 육성의 가속화에 활용할 계획임

- 수집된 토마토 야생종 유전자원들은 병 등의 분자마커 개발, 장기재배용 토마토 대목 육종에 활용할 계획임

- 재배종(*S. lycopersicum*) 및 야생종(*S. chmielewskii*, *S. habrochaites*, *S. pennellii* 등)을 구분할 수 있는 토마토 종 구분용 분자마커는 토마토 중간교잡(재배종×야생종 등) 육종에 활용할 계획임

- 재배종(*S. lycopersicum*) 및 야생종(*S. chmielewskii*, *S. habrochaites*, *S. pennellii* 등) 유전체를 이용하여 개발된 MABC용 chip은 토마토 중간교잡(재배종×야생종 등) 육종에 활용할 계획임

- 재배종(*S. lycopersicum*) 및 야생종(*S. chmielewskii*, *S. habrochaites*, *S. pennellii* 등)을 이용한 토마토 중간교잡 육성 계통들은 장기재배용 토마토 대목 품종 개발에 활용할 계획임

- 해외 전시포 운용 및 마케팅에 대한 축적된 노하우들은 토마토 수출을 위한 새로운 시장 개척에 활용할 계획임

[별첨 2]

자체평가보고서

사업단명	GSP원예종자사업단	과제번호	213007-05-5-CGG00		
프로젝트명	원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스				
프로젝트연구기관	순천대학교				
연구담당자	프로젝트 연구책임자	정 희 정			
	세부프로젝트 연구책임자	기관(부서)	순천대학교	성명	정 희 정
		기관(부서)	순천대학교	성명	박 종 인
연구기간	총 기간	2017.01.01 ~ 2021.12.31 (5년)	당해 연도 기간	2021.01.01. ~ 2021.12.31	
연구비(천원)	총 규모	2,664,200	당해 연도 규모	716,350	

1. 연구는 당초계획대로 진행되었는가?

당초계획 이상으로 진행 계획대로 진행 계획대로 진행되지 못함

계획대로 수행되지 않은 원인은?

2. 당초 예상했던 성과는 얻었는가?

예상외 성과 얻음 어느 정도 얻음 얻지 못함

구분	품종개발		특허		논문		분자마커지원 (점)	유전자원		국내매출액	종자수출액	국내외 전실포 개설	국내외 전실포 운영	종자교역회 (품평회) 참여	판매국가 (누적)
	출원	등록	출원	등록	SCI	비SCI		수집	등록						
최종목표	2				2		380,000				8	2		0	3 (3)
연구기간 내 달성실적	0				4		483,155				2.64	7	1	1	4 (4)
달성율(%)	0				200		127.1				33	350	100	200	133.3

3. 연구개발 성과 세부 내용

3-1 기술적 성과

- 기 개발된 분자마커의 현장 활용도를 높이기 위하여 토마토 11건, 양배추 4건, 양파 1건의

validation 시험을 수행하여 분자마커의 정확도를 높였음

- 토마토 재배종과 야생종을 구분할 수 있는 토마토 종 구분마커의 개발로 중간교잡에 의한 야생종 대목 품종 육성에 활용

3-2 과학적 성과

- 원예작물의 유전체 해석, 병저항성 및 형질에 대한 유전자의 발현분석을 및 분자마커 개발에 관련하여 SCI급 논문 4편을 투고함
- 대용량 시스템인 EP-1을 활용하여 토마토에서 384칩, 양파에서 384칩, 양배추에서 96칩을 개발하여 대용량 신속 정확한 분자마커 서비스를 실시함

3-3 경제적 성과

- 분자마커 지원을 통해 영세 육종회사의 육종 능력을 향상시키고, 육종기간 단축, 시험포장의 면적 축소, 다양한 우수 육종소재 확보의 용이성 등으로 민간종자회사 및 개인육종자의 경제적 이익과 품종 육성 경쟁력을 상승할 것으로 기대됨
- 육종가가 의뢰한 종자의 내병성 관련 분자마커 검정 결과를 제공함으로써 복합 내병성 품종 개발을 촉진하였음

3-4 사회적 성과

- 분자마커 대용량 분석 시스템이 확립됨으로서 분자마커의 현장적용 및 활용화가 확대될 것이며, 타 작물의 분자마커 이용 육종기술의 기반 구축을 위한 모델시스템으로 활용될 것임
- 내병성 품종의 육성은 독성이 있는 살균제의 사용을 줄임으로서 친환경적인 농산물을 생산하는데 기여하였음

3-5 인프라 성과

- 국내에서 다양한 작물과 다양한 마커를 대상으로(토마토, 양배추, 양파) 다양한 병 및 원예형질에 대한 정보를 수집하여 활용성을 검토하였으며, 대용량으로 신속하게 분자마커 서비스를 실시할 수 있는 software와 hardware를 모두 갖춘 시스템을 확립하였음

4. 연구과정 및 성과가 농림어업기술의 발전·진보에 공헌했다고 보는가?

- 공헌했음 현재로서 불투명함 그렇지 않음

5. 경제적인 측면에서 종자산업의 수출증대와 수입대체에 공헌했다고 보는가?

- 공헌했음 현재로서 불투명함 그렇지 않음

6. 얻어진 성과와 발표상황

6-1 경제적 효과

- 기술료 등 수익 수 익 :
- 기업 등예의 기술이전 기업명 :
- 기술지도 등 기업명 :

6-2 산업·지식재산권 등

- 국내출원/등록 출원 건, 등록 건
 해외출원/등록 출원 건, 등록 건

6-3 논문게재·발표 등

- 국내 학술지 게재 1건
 해외 학술지 게재 3건
 국내 학·협회 발표 건
 국내 세미나 발표 건
 기 타 건

6-4 인력양성효과

- 석 사 명
 박 사 명
 기 타 명

6-5 수상 등

- 있다 상 명칭 및 일시 :
 없다

6-6 매스컴 등의 PR

- 있다 건
 없다

7. 연구개발 착수 이후 국내 다른 기관에서 유사한 기술이 개발되거나 또는 기술 도입함으로 연구의 필요성을 감소시킨 경우가 있습니까?

- 없다 약간 감소되었다 크게 감소되었다

○ 감소되었을 경우 구체적인 원인을 기술하여 주십시오.

8. 관련된 기술의 발전속도나 추세를 감안할 때 연구계획을 조정할 필요가 있다고 생각하십니까?

- 없다
- 약간 조정필요
- 전반적인 조정필요

9. 연구과정에서의 애로 및 건의사항은?

해당없음

(※ 아래사항은 기업참여시 기업대표가 기록하십시오)

1. 연구개발 목표의 달성도는?

- 만족
- 보통
- 미흡

(근거 :)

2. 참여기업 입장에서 본 본과제의 기술성, 시장성, 경제성에 대한 의견

가. 연구 성과가 참여기업의 기술력 향상에 도움이 되었는가?

- 충분
- 보통
- 불충분

나. 연구 성과가 기업의 시장성 및 경제성에 도움이 되었는가?

- 충분
- 보통
- 불충분

3. 연구개발 계속참여여부 및 향후 추진계획은?

가. 연구수행과정은 기업의 요청을 충분히 반영하였는가?

- 충분
- 보통
- 불충분

나. 향후 계속 참여 의사는? (※중간·단계평가에 한함)

- 충분
- 고려 중
- 중단

다. 계속 참여 혹은 고려중인 경우 연구개발비의 투자규모(전년도 대비)는? (※중간·단계평가에 한함)

- 확대
- 동일
- 축소

4. 연구개발결과의 상품화(기업화) 여부?

- 즉시 기업화 가능
- 수년 내 기업화 가능
- 기업화 불가능

5. 기업화가 불가능한 경우 그 이유는?

--

구 분	소 속 기 관	직 위	성 명
프로젝트 책임자	순천대학교	학술연구교수	정 희 정 

[별첨 3]

연구성과 활용계획서 (2017~2021)

1. 연구과제 개요

사업추진형태	<input type="checkbox"/> 자유응모과제 <input checked="" type="checkbox"/> 지정공모과제	분 야		
프로젝트명	원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스			
프로젝트 연구기관	순천대학교	프로젝트연구책임자	정 희 정	
연구개발비	정부출연 연구개발비	기업부담금	연구기관부담금	총연구개발비
	2,664,200천원	0	0	2,664,200천원
연구개발기간	2017.01.01. ~ 2021.12.31. (5년)			
주요활용유형	<input type="checkbox"/> 산업체이전 <input type="checkbox"/> 교육 및 지도 <input checked="" type="checkbox"/> 정책자료 <input checked="" type="checkbox"/> 기타(서비스) <input type="checkbox"/> 미활용 (사유:)			

2. 연구목표 대비 결과

당초목표	당초연구목표 대비 연구결과
①토마토 주요형질 판별을 위한 마커 지원 체계 확립	o 토마토 병해 및 원예형질관련 분자마커 실증 실험을 통해 대량 분석 지원체계 확립 - 풋마름병 (Bwr12, Bwr6), 세균성점무늬병 (Rx3, Rx4), 회색점무늬병 (Sm-CT55, Sm-InDel, Sm-565), 흰가루병 (ol-2), 시들음병 (I-2), 잎곰팡이병 (Cf-9), 고구마선충뿌리혹병 (Mi-23), 화방의 joint 관련 마커 (J2, EJ2), 웅성불임성 (ms), Flavor 관련 24chip
②양배추 주요형질 판별을 위한 마커 지원 체계 확립	o 양배추 병해 및 원예형질관련 분자마커 실증 실험을 통해 대량 분석 지원체계 확립 - 시들음병 (Fusa6m, SSR마커의 HRM화), 오렌지색 (Or), 자가불화합성의 qPCR화 (34 S-allele)
③양파 주요형질 판별을 위한 마커 지원 체계 확립	o 양배추 원예형질관련 분자마커 실증실험을 통해 대량 분석 지원체계 확립 - 양파 MABC용 SNP chip validation을 통해 384chip 완성
④토마토 주요 병 및 원예형질 관련 분자마커 서비스 실시	o 육종회사 및 연구소에서 의뢰한 시료에 대해 분자마커 서비스 : 637,458점
⑤양배추 주요 병 및 원예형질 관련 분자마커 서비스 실시	o 육종회사 및 연구소에서 의뢰한 시료에 대해 분자마커 서비스 : 106,748점
⑥양파 원예형질 관련 분자마커 서비스 실시	o 육종회사 및 연구소에서 의뢰한 시료에 대해 분자마커 서비스 : 222,104점
⑦중간교잡 육성에 의한 장기재배용 토마토 육성	o 재배종 및 야생종을 구분할 수 있는 토마토 중

기반 마련	구분용 분자마커 o 중간교잡에서 활용 가능한 MABC chip개발 o 중간교잡 육성 계통들은 장기재배용 토마토 대목 품종 개발에 활용 가능
⑧국내외 전시포 개설 및 운영에 의한 홍보역량 강화	o 해외 전시포 6개소 운영(스페인 지역) 및 국내 전시포 1개소 운영(전남 담양) o 종자 누적수출액 2.64만달러 달성(중국, 스페인, 베트남, 러시아에 수출)

3. 연구비 집행실적 (2017~2021)

구분	금액		계획금액	사용액	잔액	비고
	세부프로젝트명					
토마토 1차년도	1세부: 원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스	290,000,000	290,000,000	290,000,000		
	2세부: 자가불화합성 야생종 토마토를 이용한 대목 품종개발 및 품질관리체계 구축	-	-	-		
토마토 2차년도	1세부: 원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스	303,000,000	303,000,000	303,000,000		
	2세부: 자가불화합성 야생종 토마토를 이용한 대목 품종개발 및 품질관리체계 구축	-	-	-		
토마토 3차년도	1세부: 원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스	446,000,000	446,000,000	446,000,000		
	2세부: 자가불화합성 야생종 토마토를 이용한 대목 품종개발 및 품질관리체계 구축	202,500,000	202,500,000	202,500,000		
토마토 4차년도	1세부: 원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스	436,350,000	436,350,000	436,350,000		
	2세부: 자가불화합성 야생종 토마토를 이용한 대목 품종개발 및 품질관리체계 구축	270,000,000	270,000,000	270,000,000		
토마토 5차년도	1세부: 원예작물의 MAS 지원용 대용량 분자마커 지원 시스템 개발 및 서비스	446,350,000	446,350,000	446,350,000		
	2세부: 자가불화합성 야생종 토마토를 이용한 대목 품종개발 및 품질관리체계 구축	270,000,000	270,000,000	270,000,000		
총계		2,664,200,000	2,664,200,000	2,664,200,000		

4. 연구목표 대비 성과

성과지표구분	단위	최종			1차년도			2차년도			3차년도			4차년도			5차년도		
		실적	목표	달성률	실적	목표	달성률	실적	목표	달성률	실적	목표	달성률	실적	목표	달성률	실적	목표	달성률
제품경쟁력	논문 SCI	4	2	200	2	0	400	1	1	100	-	-	-	1	1	100	-	-	-
	논문 비SCI																		
	품종 지역 적응성 검정																		

	유전자원수집																		
	계통선발																		
	저장성검증																		
	마커분석																		
	분자마커서비스	483,155	380,000	127	87,554	50,000	175	95,783	60,000	160	83,177	80,000	104	114,466	90,000	127	102,175	100,000	102
	RT-PCR 바이러스 검정																		
권리 확보	품종출원	건	0	2	0	-	-	-	-	-	0	0	0	0	1	0	0	1	0
	품종등록																		
	특허출원																		
	특허등록																		
생산역량강화	종자생산수량	kg																	
	국내외 생산기지 구축	개소																	
	인력양성																		
	중간모본육성																		
	종자발아력 검정	건																	
	기술이전																		
	생산량검정																		
	종구보급	만구																	
무병묘품종수(원원종)	건																		
유통경쟁력강화	품종생산 판매신고	건																	
	유통채널구축																		
	MOU체결																		
홍보역량강화	국내외 전시포/시범포 개설	개소	7	2	350	-	-	-	-	-	5	1	500	2	1	200	-	-	-
	국내외 전시포/시범포 운영	건	1	1	100	-	-	-	-	-	-	-	-	-	-	-	1	1	100
	홍보물 제작																		

	품종평가회/설명회 참가		1	0	200	-	-	-	-	-	-	1	0	200	-	-	-	-	-		
목표고객	판매국가	건	4	3	133	-	-	-	-	-	-	1	1	100	2	1	200	1	1	100	
	판매국가(누적)		4(4)	3(3)	133	-	-	-	-	-	-	1(1)	1(1)	100	2(3)	1(2)	200	1(4)	1(3)	100	
	해외 판매																				
	국내판매업체																				
	국내판매업체(누적)																				
	판매업체																				
	판매업체(누적)																				
	품종인지도	점수																			
	무병묘보급율	%																			
매출수 및 수출	국내매출액	백만원																			
	종자수출액	만불	2.64	8	33	-	-	-	-	-	-	1.07	1	107	1.07	2	54	0.5	5	10	

5. 핵심기술

구분	핵심기술 명
①	토마토 풋마름병(Bw) 저항성 분자마커(2종) 정보 확보 및 유효성 검증
②	토마토 세균성점무늬병(Rx-3, Rx-4) 관련 분자마커(2종) 정보 확보 및 유효성 검증
③	토마토 회색점무늬병(Sm-CT55, Sm-InDel, Sm-565) 관련 분자마커(3종) 정보 확보 및 유효성 검증
④	토마토 흰가루병(ol-2) 저항성 분자마커(1종) 정보 확보 및 유효성 검증
⑤	토마토 시들음병(I-2) 저항성 판별 분자마커(1종) 개선 및 유효성 검증
⑥	토마토 잎곰팡이병(Cf-9) 저항성 판별 분자마커(1종) 개선 및 유효성 검증
⑦	토마토 고구마선충뿌리혹병(Mi-23) 관련 분자마커(1종) 정보 확보 및 유효성 검증
⑧	토마토 Joint 관련 분자마커(2종) 정보 확보 및 유효성 검증
⑨	토마토 응성불임성(GMS) 관련 분자마커(1종) 정보 확보 및 유효성 검증
⑩	토마토 Flavor 관련 분자마커(24종) 정보 확보 및 유효성 검증
⑪	양배추 시들음병 저항성판별 분자마커(Fusa6m) 정보 확보, SS마커의 HRM 전환 후 및 유효성 검증
⑫	양배추 오렌지색(Or) 판별 분자마커(1종)의 개선 및 유효성 검증

⑬	양배추 자가불화합성 Class-I 및 Class-II 유전자형 판별 분자마커(34종)의 개선 및 유효성 검증
⑭	양파 MABC용 SNP 384chip 완료 및 유효성 검증
⑮	토마토 종 구분 및 MABC용 62-chip 완료 및 유효성 검증

6. 연구결과별 기술적 수준

구분	핵심기술 수준					기술의 활용유형(복수표기 가능)				
	세계 최초	국내 최초	외국기술 복제	외국기술 소화·흡수	외국기술 개선·개발	특허 출원	산업체이전 (상품화)	현장애료 해결	정책 자료	기타
①의 기술					v			v		
②의 기술					v			v		
③의 기술					v			v		
④의 기술					v			v		
⑤의 기술					v			v		
⑥의 기술					v			v		
⑦의 기술					v			v		
⑧의 기술					v			v		
⑨의 기술					v			v		
⑩의 기술					v			v		
⑪의 기술					v			v		
⑫의 기술					v			v		
⑬의 기술					v			v		
⑭의 기술					v			v		
⑮의 기술					v			v		
⑯의 기술					v			v		
⑰의 기술					v			v		
⑱의 기술					v			v		

* 각 해당란에 v 표시

7. 각 연구결과별 구체적 활용계획

핵심기술 명	핵심기술별 연구결과 활용계획 및 기대효과
①의 기술	분자마커 사용으로 토마토 풋마름병 저항성 계통 육성 및 품종 개발에 활용
②의 기술	분자마커 사용으로 토마토 세균성점무늬병 저항성 계통 육성 및 품종 개발에 활용
③의 기술	분자마커 사용으로 토마토 회색점무늬병 저항성 계통 육성 및 품종 개발에 활용

④의 기술	분자마커 사용으로 토마토 흰가루병 저항성 계통 육성 및 품종 개발에 활용
⑤의 기술	분자마커 사용으로 토마토 시들음병 저항성 계통 육성 및 품종 개발에 활용
⑥의 기술	분자마커 사용으로 토마토 잎곰팡이병 저항성 계통 육성 및 품종 개발에 활용
⑦의 기술	분자마커 사용으로 토마토 고구마선충뿌리혹병 저항성 계통 육성 및 품종 개발에 활용
⑧의 기술	분자마커 사용으로 가공용 jointless 토마토 계통 육성 및 품종 개발에 활용
⑨의 기술	분자마커 사용으로 토마토 응성불임성 계통 육성 및 품종 개발에 활용
⑩의 기술	분자마커 사용으로 토마토 고당도, 고아미노산, 고향기 함유 계통 육성에 활용
⑪의 기술	분자마커 사용으로 양배추 시들음병 저항성 계통 육성 및 품종 개발에 활용
⑫의 기술	분자마커 사용으로 양배추 오렌지색 계통 육성 및 품종 개발에 활용
⑬의 기술	분자마커 사용으로 양배추 자가불화합성 유전자형 판별 후 F1 교배조합 작성에 활용
⑭의 기술	분자마커 사용으로 양파 여교잡세대단축으로 계통 육성에 활용
⑮의 기술	분자마커 사용으로 야생종 토마토로부터 계통 육성에 및 품종 개발에 활용

8. 연구종류 후 성과창출 계획

구분	품종 개발		특허		논문		분자마커 지원 (점)	유전자원		국내 매출액 (백만원)	중자 수출액 (만불)	국내외 전시포/시범포 개설	국내외 전시포/시범포 운영	종자교육회(품평회) 참여	판매 국가 (누적)
	출원	등록	출원	등록	SCI	비SCI		수집	등록						
최종목표	2				2		380,000				8	2	1	0	3 (3)
연구기간 내 달성실적	0				4		483,155				2.64	7	1	1	4 (4)
연구종료 후 성과창출 계획	0				0		0				1	0	0	0	0

9. 연구결과의 기술이전조건(산업체이전 및 상품화연구결과에 한함) : 해당없음

핵심기술 명			
이전형태	<input type="checkbox"/> 무상 <input type="checkbox"/> 유상	기술료 예정액	천원
이전방식	<input type="checkbox"/> 소유권이전 <input type="checkbox"/> 전용실시권 <input type="checkbox"/> 통상실시권 <input type="checkbox"/> 협의결정 <input type="checkbox"/> 기타()		
이전소요기간		실용화예상시기	
기술이전 시 선행조건			

* 핵심기술이 2개 이상일 경우에는 각 핵심기술별로 위의 표를 별도로 작성

** 기술이전 시 선행요건 : 기술실시계약을 체결하기 위한 제반 사전협의사항(기술지도, 설비 및 장비 등 기술이전 전에 실시기업에서 갖추어야 할 조건을 기재)

*** 실용화예상시기 : 상품화인 경우 상품의 최초 출시 시기, 공정개선인 경우 공정개선 완료시기 등

주 의

1. 이 보고서는 농림축산식품부에서 시행한 Golden Seed 프로젝트 사업 연구개발과제 최종보고서이다.
2. 이 연구개발내용을 대외적으로 발표할 때에는 반드시 농림축산식품부(농림식품기술기획평가원)에서 시행한 Golden Seed 프로젝트 사업의 결과임을 밝혀야 한다.
3. 국가과학기술 기밀 유지에 필요한 내용은 대외적으로 발표 또는 공개하여서는 안 된다.