

최 종
연구보고서

육계 생산성 향상을 위한 제한급이 프로그램 설정
Development of a Limited Feeding Program to Improve
the Broiler Productivity

육계의 암수 분리사육을 통한 대형화 사육과
대일수출 경제성 검토

Performance of Broiler Chicks Reared Sexes Separate and
the Economics of Exporting Broiler Chicks to Japan

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농림부행정자료실



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농 립 부

1994- 1997

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1997. 12. .

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 (: .
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 .
 ○ 가
 2.5kg ,
 가
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 ○ , (7
) , 가
 ○ 가
 ○ SDS,
 ○ 가
 , 가
 .
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 ○ 가 ,
 가 .
 ○ .
 ○ , , ,
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- 가 , , 가 가
- , , .
- .
- 2 (skip- a- day feeding program)
- 가 kg 1,108 , 1,224 , 1,010 (2) 1996 1.298
- 1995 kg 1,253 , 가 665 , 가 616 , 457 .
- kg 613 kg 351 , 394 , 366 , 370 가
- 가 가 가 가
- 가 가 “ ”가 55.2% , “ ”가 37.5% , 가
- .

가 가
○ 가 (1,010 /kg)
가 가

kg 4,044
가 2,600 2,955 가
○ kg 가 가
가 가 30% 가 70%

○ 가 가
가 2.5kg 가
, , 30%

○ 7 가
2

○ 가 ,

○ 가 ,
3 가 가 , 3 가

○ 가 가가
, 가

SUMMARY

I. Title

Development of a limited feeding program to improve the broiler productivity

(Subtitle : Performance of broiler chicks reared sexes separate and the economics of exporting broiler meat to Japan)

II. Objectives and Importance of the Project

- In order to diversify the products and enhance the consumption of broiler meat, the market weight of broilers should be more than 2.5 kg, so that the carcass could be cut into several desired parts. At present, however, it is uneconomical to keep the broilers up to that market weight (6.5 weeks of age or older for the male, and 7.5 weeks of age or older for the female), mainly due to the extremely high mortality in the domestic broiler industry. Therefore, it is urgent to develop a feeding program which can enable the production of large size broilers.

- Because the growth rate of male broilers is faster than that of females, it appears reasonable to rear the broilers sexes separate. The female broilers could be reared up to 5 weeks of age (1.5 kg liveweight) to meet the demand of domestic market, while the male broilers could be reared up to 7 weeks of age or longer (2.5 kg liveweight or more), and exported to Japan in a cold-stored cut-up state. In rearing the male broilers, however, a limited feeding program, such as the skip-a-day feeding during the second weeks of age, might be necessary to decrease the higher mortality rate at the finishing period.

- The economics of the feeding program described above, together with

the balance of exporting cut-up and parts of broilers in a cold-stored state to Japan should be tested, so that short- and long-term strategies could be developed for Korean broiler industry.

III. Contents and Scope of the Project

- Develop a limited feeding program to restrict the early growth of broiler chicks
- Conduct a feeding trial at the farm level to obtain data regarding the growth performance of broiler chicks reared either unsexed state or sexes separate, and their respective production costs.
- Conduct a thorough survey on the Japanese broiler market.
- Compare the competitiveness of Korean broiler meats with several other countries, such as the U.S., China, Thailand, and Brazil.
- Conduct a survey on the behavior of Japanese consumers, guidelines and preferences of importing companies, and the market structure of Japanese broiler market.
- Provide informations about the regulations and check-lists at the Japanese customs office to Korean broiler producers and broiler meat handlers.

IV. Results of the Project

- Among the several limited feeding programs, the skip-a-day feeding program during the second week of age was selected as the most suitable one to the Korean broiler industry.
- The costs of production at a Korean broiler farm household were ₩1,108/kg for unsexed broilers, ₩1,224/kg for female broilers, and ₩1,010/kg for male broilers. The skip-a-day feeding program was applied, during the second week of age, to the rearing of male broilers. The average production cost in 1996 was ₩1,298/kg.

- In 1995, the production cost was ~~¥~~1,253/kg in Japan. In Thailand, the production costs were ~~¥~~665/kg for a private farm household, and ~~¥~~616/kg for an integrated farm household. The production cost of the U.S. was ~~¥~~457/kg, much lower than those of the other countries.

- The retail prices of broiler meats were ¥613/kg for Japanese broiler meat, ¥351/kg for Chinese broiler meat, ¥394/kg for Thai broiler meat, ¥366/kg for American broiler meat, and ¥370/kg for Brazilian broiler meat. The imported broiler meats were a lot cheaper (10-50%) than that of the locally produced ones.

- More than half of the Japanese housekeepers think that the current retail price of the broiler meat was reasonable. It was found out that 37.5% of them don't mind paying a little bit higher price for the safer and higher quality broiler meat.

- The possible retail price of Korean broiler meat in Japanese market was estimated to be ~~¥~~4,044/kg, a price far higher than those(~~¥~~2,600-2,955/kg) from the other exporting countries.

- In order to be competitive in the Japanese market, it is necessary to reduce the current possible export price(~~¥~~4,044/kg) by 30% or more. In addition, the quality of the meat should be assured in terms of uniformity, freshness, hygiene, and residuals,

V. Suggestions

- The current demand of Korean market for wholebird carcass (about 1.5kg market weight) would be supplied by both unsexed broilers and female chicks reared separately. In order to export to Japan, male broilers should be reared separately up to 7 weeks of age or longer to reach the market weight of at least 2.5 kg and slaughtered to produce cut-ups and parts. A limited feeding program, preferably the skip-a-day feeding program, should be employed in

rearing the male broiler chicks to reduce the mortality rate.

- Among the several cut-ups and parts, only leg and breast meats could be exported. Therefore, the remaining parts, i.e., necks, wings, and backs, should be consumed domestically through extensive marketing drive.

- Because the Korean broiler meats in a ready-to-cook state are less competitive in the Japanese market, it would be wiser to export further-processed broiler meats. The Japanese housekeepers are switching from ready-to-cook broiler meat to heat-and-eat ones.

- In price wise, Korean broiler meats are not competitive in Japanese market at this moment. Therefore, we have to regain competitiveness of Korean broiler meats through other means, such as safety, freshness, and high quality.

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.	48
2	49
1.	49
2.	51
3.	가	53
4.	56
5.	58
3	60
1.	60
2.	62
3.	65
가.	65
.	65
4	가	67
1.	가	67
가.	가	67
.	가 가	68
2.	71
3.	가	76
가.	.....	76
.	.....	78
1)	.....	78
2)	.....	79
5	.....	80
6	.....	80

1

1

40g

, 가 , 가 (SDS) ,

가 가 () 가 (compensatory growth catch-up growth)

가 (0-4)

97 7

가

가

,

가

800g

1.5kg

2.5 kg

(6

1.8kg)

가 가

가

가

가

가

가

2.5- 3.0kg

가

가,

가

가

가

< 1-1> .

	1	2	3	4	5	6	7	8
g/bird	153.9	399.9	786.5	1,226	1,776	2,322	2,839	3,126
	147.6	366.9	700.8	1,091	1,529	1,996	2,372	2,638
g/bird	138.6	483.7	1,135	2,008	3,099	4,414	6,038	7,571
	139.3	465.5	1,054	1,845	2,828	3,967	5,311	6,662
feed/gain	1.27	1.36	1.53	1.70	1.79	1.94	2.16	2.46
	1.36	1.45	1.61	1.76	1.91	2.03	2.28	2.57

< 1-2> .

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	Overall
.	3.8	1.3	0.5	1.4	0.5	0.5	1.1	1.1	10.2
%	0.8	0.4	0	0	0	0.5	1	0	2.7

, ()
가 , SDS

,
(P>.05).

1.5kg , 2.0 kg

가 ,
2

2

가

1 2

가

8 14 7
 , < 2-1> . 2 , 3 4
 가 ()
 (P<.05) . 5
 , 7 8 가 .
 2 , 3 , 4 5 가
 . 6 가 .
 (feed/gain) 4 , 5 6 가
 . 7 8 .
 < 2-2> 가 .
 , 가 .

< 2-1> 2

가

	1	2	3	4	5	6	7	8
, g/bird	152.7	402.7a	769.2a	1,173a	1,808	2,345	2,858	3,464
	153.1	294.6b	678.6b	1,108b	1,739	2,340	2,894	3,547
, g/bird	153.3	584.6a	1,482a	2,346a	3,619a	5,031	6,516	8,114
	162.5	390.1b	1,144b	1,971b	3,222b	4,712	6,228	7,857
, feed/gain	1.42	1.64	2.04	2.08a	2.05a	2.18a	2.31	2.38
	1.50	1.57	1.81	1.86b	1.91b	2.06b	2.19	2.25

ab P<0.05.

< 2-2> 2

가

.

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	Overall
.	0.6	0.6	3.2	0.7	0	2.2	0.8	0.8	8.9
, %	2.4	1.9	0.7	2.8	0	0.8	1.6	0.8	11.0

(pullet developer; ME 2950 kcal/kg, CP 13%)

가 , < 2-3> . 5
(P<.05) , 6
가 , 7 8
가 . 2 bulky
胃腸管
().
2 5
, 8
가 . 2
, 가
, .
< 2-4> . 가 . 8 14

< 2-3> 2

가

	1	2	3	4	5	6	7	8
, g/bird	152.7	402.7a	769.2a	1,173a	1,808a	2,345	2,858	3,464
	153.2	293.1b	649.7b	1,053b	1,664b	2,283	2,885	3,500
g/bird'	153.3	584.6b	1,482	2,346	3,619a	5,032	6,515	8,114
	167.5	655.4a	1,319	2,095	3,320b	4,730	6,244	7,877
Feed/gain'	1.42	1.64b	2.04	2.08	2.05	2.18	2.31	2.38
	1.55	2.65a	2.18	2.08	2.05	2.12	2.20	2.28

ab P < 0.05.

< 2-4>. 2

가

.

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	Overall
.	0.6	0.6	3.2	0.7	0	2.2	0.8	0.8	8.9
%	0.6	1.9	1.3	0	0.7	2.9	1.6	0.8	9.8

3 2

가

8 14 (; 3200
 kcal/kg, CP 23%) , (1300 kcal/kg, CP 15.7%)
 30:70 (1870 kcal/kg, CP 17.9%)

2가 . < 2-5>
 2 ,

50:50(:)

가 2 가

3 가

< 2-6> . 가 . 가 .

< 2-5> 2

가

	1	2	3	4	5	6	7	8
, g/bird	135.2	362.3a	604.3a	984.7a	1,339a	1,944a	2,509a	3,091a
	136.8	193.4b	430.4b	783.5b	1,136b	1,678b	2,234b	2,793b
, g/bird	89.8	470.8a	898.9a	1,720a	2,641a	4,006a	5,493a	7,069a
	96.7	216.6b	563.6b	1,247b	2,064b	3,238b	4,611b	6,100b
, Feed/gain	1.02	1.49	1.61a	1.83a	2.04a	2.11a	2.23a	2.32a
	1.08	1.48	1.47b	1.69b	1.90b	1.99b	2.11b	2.22b

ab P<0.05

< 2-6> 2

가

.

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	Overall
•	0	3.89	2.78	2.77	1.67	3.33	3.89	6.67	25.00
, %	0	3.89	3.33	2.22	2.23	2.77	3.34	5.55	23.33

4

2
 3가 (-) , 8
 -14 , (-)
 , 30:70
 가 ,
 가 , 2
 가
 가 , 5
 , 7-8

3

1

40
g (Mallard Douaire, 1988).
(sudden death syndrome;
SDS)
(Hulan , 1980).
(Madrigal , 1994).
,
.
가 . 가
(Yu Robinson, 1992).
() 가
(Wilson Osbourn, 1960;
Deaton ,1973). 가
,
(Plavnik Hurwitz, 1985).
, , , -
가

Runnels, 1976; Proudfoot, 1982). Moran(1979, 1980)

(가,) , (23% - 18% 20% - 20%) ,

2

1. 1 : 가
 1 (Avian strain) 495
 3,200 kcal 20%
 NRC(1984)
 1 3 , 3 , 55

T 1 : 1-4 (CP 20%), 5- 8 (CP 20%)
 T 2 : 1-4 가 (CP 20%), 5- 8 (CP 20%)
 T 3 : 1-4 가 (CP 20%), 5- 8 가 (CP 20%)

2. 2 : (가) ()

2 가 , ,
 3,200 kcal
 Avian strain) 328 2 4 , 41

T 1 : 1-4 가 (CP 23%), 5-7 (CP 18%)

T2 : 1-4 가 (CP 20%), 5-7 (CP 20%)

3. 3 : () ()

3

3,200 kcal
(Avian strain) 480 2 6 , 40

T1 : 1-4 (CP 23%), 5-7 (CP 18%)

T2 : 1-4 (CP 20%), 5-7 (CP 20%)

3

1. 1 : 가

1 가 < 3-1> < 3-4> . <
3-1> 가 가 (T2, T3) (T1)

, 2 (P<0.05) .

(3-3, T2), 8 T1

가 (3-1, 3-4). (feed/gain) < 3-2>

가 .

(T1, T2) (3-3).

1 가 가 () (

) . Runnels

(1976) Choi (1986) . T2

, 가 ,

가

Proudfoot (1982) Proudfoot Hulan(1989) 가
 SDS 가
 1 가 가
 1 NRC(1984) 23% 20%
 가 (Twining, 1974;
 Moran, 1979, 1980), 가

< 3-1> (g)

	0	2	4	6	8
T 1	47.0 ± 0.0	390.7a ± 11.0	1,085 ± 6.3	1,843a ± 26.0	2,796a ± 10.8
T 2	47.0 ± 0.0	370.4b ± 8.0	1,057 ± 26.5	1,764b ± 46.9	2,735ab ± 74.1
T 3	47.0 ± 0.0	356.4b ± 9.1	1,065 ± 11.0	1,689c ± 35.3	2,519b ± 172.2

ab P<0.05

< 3-2> , , (0-4)

	(g)	(g)	(feed/gain)	(%)
T1	1,038a ± 6.3	1,764 ± 25.7	1.70 ± 0.03	3.72 ± 1.08a
T2	1,010b ± 21.2	1,819 ± 20.9	1.80 ± 0.04	0.62 ± 1.07b
T3	1,018ab ± 11.0	1,826 ± 44.2	1.79 ± 0.04	0.62 ± 1.07b

ab P<0.05

< 3-3> , , (5-8)

	(g)	(g)	(feed/gain)	(%)
T1	1,711a ± 16.8	4,078 ± 34.9	2.38b ± 0.04	6.83 ± 3.84
T2	1,678ab ± 93.1	3,986 ± 342.9	2.38b ± 0.10	8.64 ± 4.28
T3	1,453b ± 183.1	3,823 ± 412.6	2.64a ± 0.16	4.32 ± 2.14

ab P<0.05

< 3-4> , , (0-8)

	(g)	(g)	(feed/gain)	(%)
T 1	2,749a ± 10.8	5,737 ± 33.9	2.09b ± 0.02	10.54 ± 5.31
T 2	2,688ab ± 74.1	5,674 ± 285.7	2.11b ± 0.06	9.26 ± 4.90
T 3	2,472b ± 172.2	5,546 ± 360.4	2.24a ± 0.05	4.94 ± 2.83

ab P<0.05

2. 2 : (가) ()

2 20% 가
20%

< 3-5> T 1 (23%-18%)가 T 2 (20%-20%)
T 1 가 (3-6). T 2
T 1 ,
(3-7).
(3-8).
(0-4)
(Twining, 1974; Moran, 1979) . 가
1
2 T 2
가 . (5-7)
가
) 가
. Deaton (1973) 가 13%

가 . 2 4

가 15-18%

Moran(1979)

가 가 가

< 3-5> (g)

	0	2	4	6	7
T 1	48.8 ± 0.13	323.0a ± 10.8	1,141a ± 25.4	2,225a ± 50.6	2,840a ± 39.5
T 2	49.1 ± 0.04	287.7b ± 2.05	967.2b ± 10.9	2,087b ± 25.3	2,670b ± 30.3

ab P<0.05

< 3-6> (0-4)

	(g)	(g)	(feed/gain)	(%)
T 1	1,092a ± 25.5	1,776 ± 21.4	1.63b ± 0.02	3.28 ± 1.66
T 2	913.6b ± 13.4	1,669 ± 44.3	1.83a ± 0.03	3.3 ± 1.98

ab P<0.05

< 3-7> , (4-7)

	(g)	(g)	(feed/gain)	(%)
T 1	1,669 ± 17.6	3,887 ± 70.9	2.29 ± 0.05	15.13 ± 2.73
T 2	1,703 ± 38.2	3,686 ± 56.0	2.17 ± 0.04	12.53 ± 4.07

< 3-8> , , (0-7)

	(g)	(g)	(feed/gain)	(%)
T 1	2,791a ± 39.6	5,664 ± 88.3	2.03 ± 0.03	18.45 ± 1.86
T 2	2,621b ± 30.3	5,354 ± 50.9	2.05 ± 0.03	15.8 ± 3.40

ab P<0.05

3. 3: () ()

< 3-9> < 3-10>

. 가
(3-11) ,
(T1)
(3-9).
T2 가 T1
(3-10), ,

가 (3-12).
 NRC(1984) 23%, 20%,
 18% 3 (0-4)
 , (5-7) , (0-7)
 (20%)
 가 가 .
 가

< 3-9> (g)

	0	1	3	4	5	7
T 1	43.1 ± 0.17	132.7a ± 0.7	661.4a ± 5.0	1,175a ± 13.0	1,738a ± 18.8	2,729 ± 45.0
T 2	43.5 ± 0.22	120.3b ± 0.8	511.5b ± 6.0	899.7b ± 11.0	1,401b ± 14.9	2,550 ± 52.6

ab P<0.05

< 3-10> , (0-4)

	(g)	(g)	(feed/gain)	(%)
T 1	1,132a ± 12.9	1,649 ± 41.8	1.46b ± 0.03	6.25 ± 1.68
T 2	856.2b ± 11.2	1,500 ± 62.4	1.75a ± 0.07	8.75 ± 2.39

ab P<0.05

< 3- 11> , (5-7)

	(g)	(g)	(feed/gain)	(%)
T 1	1,554 ± 88.2	2,939 ± 100.6	1.89 ± 0.06	5.86 a ± 0.83
T 2	1,650 ± 43.4	2,855 ± 104.5	1.73 ± 0.06	0.42 b ± 0.42

ab P<0.05

< 3- 12> , , (0-7)

	(g)	(g)	(feed/gain)	(%)
T 1	2,686 ± 84.2	4,587 ± 128.9	1.71 ± 0.04	12.1 ± 1.19
T 2	2,506 ± 52.7	4,369 ± 136.7	1.74 ± 0.05	9.17 ± 2.47

4

(0-4) (5-7) (가 ,)
 , (23% - 18% :
 20% - 20%), 3
 3,200
 kcal ME/kg .
 1) 가 가 . 가

- 가 .
- 2) , , 23% ,
18% (NRC, 1984) (0-7) 20%
- 가가 .
- 3) 가 , ,
NRC 23% - 18%

5

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4

1

1.

가 2.5 kg

가

1.5 kg (5)

가

가

2.

가

60

2 (A B)

. A 2,700

(Cobb

) 37

. B

27 (B

-1) 33 (B -2)

. B -1

1,350

37

. B -2

1,350 49

. 2

(8, 10, 12 14 4

)

B -2 37 B -1

38

가

<

4-1>

< 4-1> 가

					1 Feed/gain			
					(/)			
		-----g/bird-----					(%)	
A	()	37	1,634	1,591	43.0	3,044 (1,928/1,116)	1.91	3.82
B - 1	()	37	1,505	1,460	39.5	3,343 (1,994/1,049)	2.08	2.24
B - 2	()	49	2,607	2,562	52.3	5,268 (1,831/3,437)	2.06	4.28

1

: 323.6 /kg

: 314.8 /kg

< 4-2> . < 4-2> ()
kg

1,108 , 1,010 가
1996
1,098 88 /kg

kg
'93 945 , '94 964 , '95 1,046 , '96 1,098
가

'95 4,328 , 31,400 ,
 1 127,000 (2.72kg) .
 가 65%, 32%, 6%
 .
 < 4-3> 1995 . < 4-3>
 167 , 가
 89% 149 , 가 110% 183 .
 16.8%, 62.4%, 7.7%
 가 86.9% .

< 4-3> : , /100

			가		가	
가	7,647	57,353	6,691	50,183	7,710	57,825
	28,366	212,745	25,423	190,673	30,374	227,805
	3,505	26,288	2,496	18,720	4,956	37,170
	1,366	10,245	1,303	9,773	1,045	7,838
	123	923	52	390	284	2,130
	918	6,885	1,010	7,575	1,298	9,735
	51	383	0	-	35	263
	999	7,493	758	5,685	1,267	9,735
	64	480	0	-	308	263
	1,508	11,310	2,029	15,218	1,536	11,520
	273	2,048	265	19,875	237	1,778
	617	4,628	315	2,363	643	4,823
		45,437	340,778	40,432	303,240	49,693	372,698
1kg	167	1,253	149	1,115	183	1,370
	2.72kg/		2.71kg/		2.72kg/	

: 100円 =750 () .
 : , “ (1)- -”,1996.

80.6%
2.72 kg

가

2.

< 4-4> 1 . <
4-4> 1 '80 100 kg '90 127 kg
가 , '94 130 kg, 2005 145 156 kg
가 가
'93 12.7kg, '95 12.7kg

< 4-4> 1 :kg

	1980	1990	1992	1994	1995	2005(P)
	3.5	6.1	6.7	7.4	12.0	9.6 11
	9.6	11.5	11.5	11.4	16.5	11 12
	7.7	10.2	10.6	10.4	12.7	11 12
	14.3	16.5	17.7	17.9		18
	64.9	82.9	83.2	83.2		95 103
	100	127.2	129.7	130.3		144.6 156

: 農林水産省 畜産局, 『畜産關係資料』, 1996.

< 4-5>

'95 1,164 737
427 63.3%
'98 58%, 2000 55%, '95
43 2000 52
가

< 4- 5>

: , %

1991	799.3	381.3	1,181	67.7
1992	803.9	368.9	1,191	67.5
1993	799.9	394.6	1,195	67.0
1994	759.9	420.4	1,180	64.4
1995	737.1	426.8	1,164	63.3
1996	715.0	443.9	1,159	61.7
1997	693.5	461.6	1,155	60.0
1998	672.7	480.1	1,153	58.4
1999	652.6	499.3	1,152	56.7
2000	633.0	519.3	1,152	54.9
2001	614.0	540.1	1,154	53.2
2002	595.6	561.7	1,159	51.5
2003	577.7	584.1	1,162	49.7

: 農林水産省 畜産局, 『畜産關係資料』, 1996.

3. 가

< 4- 6>

가

. < 4- 6>

가 가

100 91%, 94% 57%,

64%, 60%, 60%

가

< 4-6>

가 (1996)

: , ()

	가		가			
	가	가				
가	320(100.0) 613(100.0)	- 1,082	290(91.0) 351(57.0)	302(94.0) 394(64.0)	- 366(60.0)	- 370(60.0)

: 農林水産省 統計情報部, 『輸入農畜水産物流通調査報告』, 1997.

< 4-7>

가 , 가 , 가

'75 292 '95

186

가

가

'91 413

'96

310

가

75

103

'95

110

가

가

가 1,455 (194 , 1 =7.5) ,

4,598 , 가 2,325

2 가

< 4-7>

가

	가 (/kg)	가 (/kg)		가 (/kg) ()
		가	가	
1991	188	580	413	1,010
1992	189	568	345	1,130
1993	186	528	309	1,110
1994	184	538	311	1,090
1995	179	556	273	1,070
1996	194	613	310	1,082

: 農林水産省, 畜産の情報, 1997. 7.

가 , , 가
 , 가 가
 가 1.7 2 가 가
 < 4-8> 가 '91 30.9
 , '94 35 , '96 38.8 / 가 '91
 52 '96 61.3 .

< 4-8> 가 : US /

	가	가 ()	가 (,)
1991	30.9	52.0	88.0
1992	31.7	52.6	86.9
1993	34.2	55.2	89.0
1994	35.0	55.7	90.1
1995	34.6	56.4	91.7
1996	38.8	61.3	-

: USDA, "Livestock and Poultry", 1997.

< 4-9> 가 , 가
 '96 65,390 '93 56,673
 가 '97 1,700
 1,800\$/MT .
 가 가가

< 4-9> 가

	가 (, ,Baht/)
1991	62,311
1992	59,361
1993	56,673
1994	64,560
1995	64,416
1996	65,390

: Baht = ₩34.02('96.12)

4.

< 4-10> , ,

,

.

가 38.9% 가

가 가 “ 가 ” “ ”

33.5%

“ 가 ” 가

69.4%

“ ”

8.9%

가

가 .

< 4- 10>

:%

		가	가	가	,			
		33.5	38.9	6.5	8.2	5.7	1.3	6.0
		5.1	69.4	7.9	8.9	4.4	1.8	2.6
		19.1	55.2	4.5	10.4	5.0	2.7	3.2
		5.6	62.6	5.6	14.1	6.3	2.2	3.6
		40.8	34.1	5.7	9.5	2.2	0.5	7.2
		7.4	64.6	7.0	10.3	4.4	-	6.3
		37.2	36.1	5.1	6.8	7.9	0.6	6.2
		4.3	73.4	8.7	7.4	3.6	1.7	0.8
		20.0	43.5	13.7	9.3	4.6	3.8	5.1
		4.2	74.1	9.8	3.9	3.3	3.0	1.8

: 輸入農畜産物 流通調査報告, 農林水産省統計情報部, '97.3

< 4- 11>

.

< 4- 11>

:%

		가	가		,			
		-	60.0	-	-	20.0	-	20.0
		5.5	78.2	3.6	5.5	3.6	-	3.6
		12.5	62.5	12.5	3.1	3.1	3.1	3.1
		3.9	71.8	9.7	7.8	1.9	2.9	1.9
		5.9	64.7	11.8	5.9	-	11.8	-
		1.5	80.3	10.6	1.5	1.5	1.5	3.0

: 輸入農畜産物 流通調査報告, 農林水産省統計情報部, '97.3,

< 4-11> 가
 “ 가 ” , ,
 60 80%가 “ 가 ” “
 , 3-13% 가 ”
 가 .

< 4-12> 가
 가 가
 1.9% , 가 98.1%
 가 가 가
 , 가 20 30%
 30 50% , 10 20% 20 40% , 10%
 5 13% .

1

0% 30% 가 .

< 4-12> 가

								가
	10%	10- 20%	20- 30%	30- 50%	50%			
	-	40.0	40.0	20.0	-	-	-	-
	9.1	32.7	40.0	16.4	1.8	-	-	-
	12.5	18.8	50.0	12.5	6.3	-	-	-
	4.9	25.2	36.9	22.3	8.7	1.9	-	-
	11.8	23.5	23.5	29.4	11.8	-	-	-
	7.6	19.7	33.3	25.8	13.6	-	-	-

: 輸入農畜産物 流通調査報告, 農林水産省統計情報部, '97.3.

5.

< 4-13> < 4-15> 『21』
650

150 (地鷄)
, 49.5% 가
가

< 4-13> , 가 ,

(%)	15.3	2.2	8.8	3.8	38.5	8.2	10.5	12.7	100.0

: 日本 鷄肉協會, 鷄の研究, 97.1 .

< 4-13> 가
38.5%가 “ ” , “ ” 15.3% ,
“ ” 10.5% .

< 4-14> 가

(%)	16.0	34.0	50.0	100.0

: 日本 鷄肉協會, 鷄の研究, 97.1 .

< 4-14> 가
“ ” 50.0% , “
” 16.0% “ ”가 34%
가

가

가

< 4-15> 가

			(가)	
(%)	75.7	15.8	8.5	100.0

: 日本 鶏肉協會, 鶏の研究, 97.1 .

< 4-15> 가

15.8%

75.7%

가

“

” 34.5%, “

” 18.3%, “

가

” 14.7%

가

3

1.

가

가

가

2.

가 , ,

,
80%

가 .

가

가

• 가 가 . 가

가 . ,

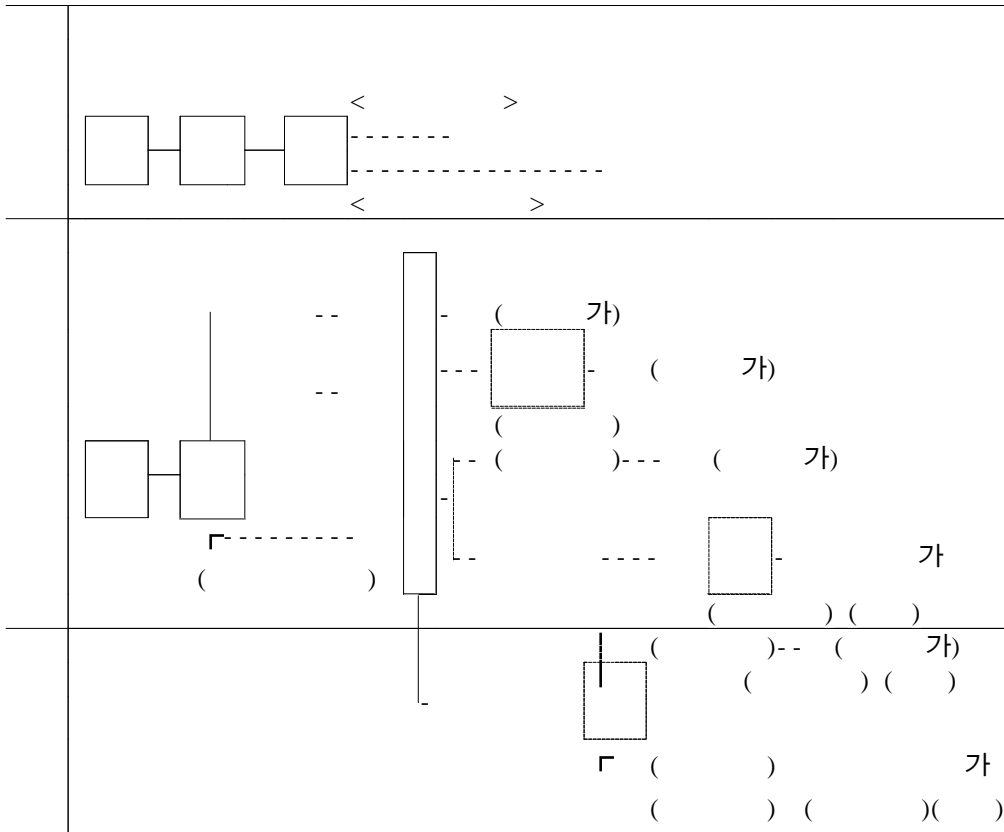
가 ,

가 , 가 가

가 가 .

가 가

가



< 4-3 >

(食肉國際化問題研究會, 1995).

가

< 4-16 >

-		5	7
-	()	72	
-	()	FSIS 가	
-		FSIS	
-	, ,	1. : low risk	
-	, ,	2. : high risk	
-		가	
-		1	
-		FSIS	

: , 가 , 1996.

3.

가.

가 , ()

< 4-17 >

DDT		5.0ppm
()		0.2ppm
()		0.2ppm
		1.0ppm

: 食肉國際化問題研究會, 畜産物のUR合意と輸入ガイド, 1995.

가 . 가

,

.

.

가

가 .

가

가가

가

가

Penicillin Penicillin Ampicillin Amoxicillin	0.5Et 0.01Et 0.01Et	0Et 0.1Et	
Aminoglycoside Streptomycin Dihydrstreptomcine Fradiomycin Hygromycin B	0 Et 0.25Et	0Et 0.25M 0Et	
Tetracycline Oxytetracycline Chlotetracycline	0.1Et 0.1M	0.1Et 1M	
Macrolide Tylosin Oleandmysin Erythromycin Spiramycin	0.2M 0Et	0.2M 0.15Et 0.1Et	
Polypeptide Bacitracin Virginiamycin	0.5Et		
Polyethor Lasalosid Monensin	0.7L 0.05Et		
Chloramphenicol Lincomycin Tiamulin		0.1Et 0.4L	
Sulfadimethoxine Sulfadimidice Farazolidone Amprolium Clopidol Decoquinat Ethopabate Nicarbazin Carbadox	0.1Et 0.1Et 0.5M 0.2M 2Et	0.1Et 0Et 0.2Et 0Et	

: Et 가 , M , L .

: 食肉國際化問題研究會, 畜産物のUR合意と輸入ガイド, 1995.

4 가

1. 가

, 가 가 ,
가 .

가. 가

< 4-19> 가 : , /kg

	가 가 ()	가		가
			가	
	194 /kg	613	310	1,082 /kg
	1,455 /kg	4,598	2,325	7,899

: 1) 가 (1996).

2) 1 =7.5 .

: 輸入農畜産物 流通調査報告, 農林水産省統計情報部, '97.3.

< 4-20> 가 (CIF) : , /kg

	()		()	
(kg)	259	290	185	259
(kg)	1,943	2,175	1,388	1,943

:1996 가 .

: 輸入農畜産物 流通調査報告, 農林水産省統計情報部, '97.3.

CIF가 1,943 , 1,388
 가 < 4-21> 가 ,
 , ,
 가
 가 2,175 , 2,633 93.5%,
 57.3% 가 가
 가 가
 3 가 가

< 4-21> 가 가 : , /kg

		가		가		
	351	290	394	302	366	370
	2,633	2,175	2,955	2,265	2,745	2,775

: 1996 ,
 : 輸入農畜産物 流通調査報告, 農林水産省統計情報部, '97.3.

가 가 ,
 가 .
 가 가
 가 kg 1,010 , ,
 가 가 (CIF) 3,370 , 10%
 10% 가 가 (가) 4,044 .

가 가 가 2,745 , 2,955
 가 가
 가 1
 가 가
 ,
 , , 10% , 20% , 30% 가
 10 20% 가 가 3,643 3,236
 500 1,000 가
 , 30%
 가 가 2,833 가

< 4-22> 가 가 : /kg

	1,010	
	35	
가	1,571	66.5%
	200	
가	1,771	
가	3,107	
	170	
	93	57%
가 가 (CIF)	3,370	
	337	10%
	337	10%
가 가	4,044	

< 4-26> 가 가 :

		가	
- (g)	321g	298g	
- 가 (kg)	4,044	2,346	
- ()	1,298	699	1,997(B)
- 가			
- 가(kg)	4,598	2,325	
- ()	1,476	693	2,169(A)
- ()			172(A- B)
- 가 90%			
- 가(kg)	4,138	2,093	
- ()	1,328	624	1,952(C)
- ()			45(C- B)
- 가 80%			
- 가(kg)	3,678	1,860	
- ()	1,181	554	1,735(D)
- ()			262(D- B)

:가 가 58% .

321g, 가 298g 가 가
 가 58% .
 가 가 (< 4-22>, < 4-23>, < 4-24>, <
 4-25> 가 가) 4,044 /kg
 가 90%, 80%
 172
 45 , 262 .

< 4-27> 가 가 10%

		가	
- (g)	321g	298g	
- 가 ()	3,643	2,113	
- ()	1,169	630	1,797(B)
- 가			
- 가(kg)	4,598	2,325	
-	1,476	693	2,169(A)
- ()			372(A- B)
- 가 90%			
- 가(kg)	4,138	2,093	
-	1,328	624	1,952(C)
- ()			155(C- B)
- 가 80%			
- 가(kg)	3,678	1,860	
-	1,181	554	1,735(D)
- ()			62(D- B)

가 가 1 10%
 가 372 , 가 90% 155
 가 80% 62 .
 가 2 20% 572 , 355 , 138
 가 70% 79

< 4-28> 가 가 20% :

		가	
- (g)	321g	298g	
- 가 (kg)	3,236	1,877	
-	1,039	559	1,597(B)
- 가			
- 가(kg)	4,598	2,325	
-	1,476	693	2,169(A)
- ()			572(A- B)
- 가 90%			
- 가(kg)	4,138	2,093	
-	1,328	624	1,952(C)
- ()			355(C- B)
- 가 80%			
- 가(kg)	3,678	1,860	
-	1,181	554	1,735(D)
- ()			138(D- B)
- 가 70%			
- 가(kg)	3,219	1,628	
-	1,033	485	1,518(E)
- ()			79(E- B)

554 , 337 , 120 가 가 30% 771 , 가

< 4-29> 가 가 30% :

		가	
- (g)	321g	298g	
- 가 (kg)	2,833	1,643	
-	909	490	1,399(B)
- 가			
- 가(kg)	4,598	2,325	
-	1,476	693	2,169(A)
- ()			771(A-B)
- 가 90%			
- 가(kg)	4,138	2,093	
-	1,328	624	1,952(C)
- ()			554(C-B)
- 가 80%			
- 가(kg)	3,678	1,860	
-	1,181	554	1,735(D)
- ()			337(D-B)
- 가 70%			
- 가(kg)	3,219	1,628	
-	1,033	485	1,518(E)
- ()			120(E-B)
- 가 60%			
- 가(kg)	2,759	1,395	
-	886	416	1,302(F)
- ()			96(F-B)

가 가 30% 가

< 4 - 3 0 >

		20,000	50,000	70,000	100,000
	()	5	5	5	5
	(%)	4.29	2.0	2.0	2.0
		40.9	45	47	50
	가 ()	350	300	200	100
	()	50	20	17	15
	가 (kg)				
	()	323.6	291.2	262.1	233.0
	()	314.8	283.3	255.0	226.6
	()	2,633	2,295	2,028	1,764
	kg()	1,010(100)	880(87.1)	778(77.0)	677(67.0)

가

가

가

가

가

, , 가 ,

1)

10
 . < 4-31>
 , 가
 3 , 1
 , 5 17,641
 , 1,616 가 , 40 가 88 가, 84 가
 가 . < 4-31> 1 가 619g(321g,
 가 298g)
 10

< 4-31> (10)

1	1 /20t	200	1 /7t	70
1	1 가 619g	323,100	1 가 619g	113,086
가	12 (1)	52	12 (3)	156
	200 /1	10,400	70 /1	10,920
	323,100 / 1	16,801,200	113,086 /1	17,641,416
	5	3,360,240	5	3,528,283
가	40,000	84 가	40,000	88 가

2)

가, 가, 가
가, 가가
가

가

< 4-32>

< 4-32>

	()	()
- - -	- - - (,))	- - (,))
가		
		,

, 가

5

가

가

kg

1,010

30%

707

가

10%

50%

30%

가

가

가

10%

90%, 20%

80%, 30%

70%

6

1996

가

1995

1997

1995

1997 1996

後藤悦男 1991 『養鶏』 (株)ゴトウテクニカル. 東京.

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