

Animal Production and Its Use in Korea

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I . Introduction

Typical agriculture in Korea has mainly comprised plant crop industry since ancient times in our history. The main crops are rice from paddy field, barley, wheat, soy - bean, potato and vegetables from upland. Animal agriculture had never been a major part before 1950. Limited number of Korean Native Cattle(HANWOO), horses, and other native animals were raised for draft or meat purpose as complementary to rice production during the old days. Korean War(1950 - 1953) devastated almost all parts of animal industry drastically. Consequently, statistics during the war and a few years after is not available.

Animal agriculture in Korea has overcome a great deal of difficulties and hardships during the past 45 years(since the Korean War). Government and private funds were poured into animal agriculture to increase production of Korean Native Cattle, dairy cattle, swine and poultry in the late 60's. As a result the size of animal agriculture has rapidly increased from the mid 80's up to now. The percentage of GNP(\$3869.8 billion) which is accounted for by Agricultural Product(\$218.6 billion) was about 5.6% in 1995. The contribution of Animal Production(\$26.8 billion) to the total Agricultural Production was about 12.2% in the same year.

Present animal agriculture in Korea is somewhat stable in terms of facilities and technologies, but with the limited resources of feed and forage, our farmers are having difficulties to compete with foreign animal products imported through the open market system. We are trying hard to make our production system more competitive to face the world open market through an increased efficiency and quality.

For presentation, I will introduce the past and present animal production and its use in Korea.

II . Trends of Livestock Farming

Korean Native Cattle(Hanwoo) were domesticated at the early stage of civilization in Korean penninsular. According to the record on ancient remains and fossils found in Korea cattle were raised about 4,000 years ago. Hanwoo were used for carrying burden, and ploughing. Hanwoo are considered to be a crossbreed between Bos Zebu and Bos Primigenius.

Table 1 shows the number of Hanwoo raised and beef cattle imported during the last 40 years. The number of Hanwoo increased from 867,000 in 1955 to 2,844,000 in

1996. The present population of Hanwoo may be too big, when the demand and beef price are considered. An optimum population may be about 2,000,000. By 48,000 heads, the number increased annually during the 41-year period. However, the number of beef cattle farms has decreased since 1975, and average farm size(heads/farm) increased from 1.1 in 1955 to 5.5 in 1996. There are still many small farms. As shown in Table 2, the percentage of farms raising less than 10 heads was 86 in 1996. These small scale farms will disappear in the near future.

Table 1. The number of beef cattle and of cattle-raising farms in Korea

Year	Native cattle(HANWOO)			Beef cattle		
	Farms	Heads	Heads/farm	Farms	Heads	Heads/farm
1955	773,706	866,825	1.1	-	-	-
1960	893,465	1,010,235	1.1	76	656	8.6
1965	1,156,529	1,313,487	1.1	176	805	4.6
1970	1,101,448	1,283,646	1.2	838	2,738	3.3
1975	1,274,680	1,545,832	1.2	2,055	9,979	4.9
1980	988,933	1,389,648	1.4	8,259	37,552	4.5
1985	1,047,573	2,553,449	2.4	-	-	-
1990	620,266	1,620,654	2.6	-	-	-
1995	518,952	2,594,027	5.0	-	-	-
1996	513,319	2,843,535	5.5	-	-	-

Source : Monthly Review, 1997, National Livestock Co-operative Federation.

Year Book of Agriculture and Forestry Statistics, 1978, Ministry of Agriculture and Fisheries, Rep. of Korea.

Table 2. The number of Hanwoo raised on farms of various sizes in 1996

Item	Farm size						Total
	1 - 9	10 - 19	20 - 29	30 - 39	40 - 49	above 50	
Farms	441,392	47,298	13,993	5,659	2,181	2,796	513,319
(%)	(86.0)	(9.2)	(2.7)	(1.1)	(0.4)	(0.6)	(100)
Heads	1,381,516	614,463	325,771	187,544	93,830	240,411	2,843,535
(%)	(48.6)	(21.6)	(11.5)	(6.6)	(3.3)	(8.4)	(100)

There was a government-led plan to improve Hanwoo by crossbreeding with foreign beef cattle in order to meet the rising demand for beef. Some experimental stations imported exotic breeds such as Brahman, Aberdeen Angus, Charolais,

Simmental and Hereford from the year 1960 to 1980. A series of studies proved that Hanwoo should be improved by selecting for the traits of growth performance and meat quality not by crossbreeding. Koreans prefer beef from Hanwoo to that from foreign breeds or crossbreds. At present there are about 25,000 imported and crossbred cattle, mainly in Cheju Island. The number of cattle with foreign blood and farms raising them has rapidly decreased.

Before 1900, the only source of milk was from Hanwoo, but 20 dairy cattle were introduced into Korea from France in 1902, and this was the first history of dairy farming. After the Korean War (in 1960), the number of dairy cattle was only around 800. After 1960, it has increased rapidly due to a dairy promotion policy of the government, and the number reached 23,624 in 1970, and 85,542 in 1975, and 206,000 in 1980. From the year 1962 to 1982 dairy cattle importation increased every year, and the number reached 92,000. Imported dairy cattle, Holstein breed, were mostly from New Zealand, Canada, USA and Australia. Since 1990, the number of dairy cattle in Korea has slowly increased and reached 553,000 heads in the peak year, 1995. The number of dairy farms sharply increased until 1985 and then decreased after 1990, and was 21,000 in 1996. The number of dairy cattle per farm increased continuously and reached 26.1 in 1996 (Table 3). This trend is expected to continue for some time. The percentage of farms raising less than 10 heads was 13.5% in 1996 (Table 4).

Because of the decreasing value of horses for draft or riding, the number of horses sharply decreased from 15,265 in 1970 to 3,894 in 1980. After 1985 Thoroughbred breed horses have been imported for racing by the Korea Race Association, and Cheju

Table 3. The number of dairy and horse farms and the number of their animals in Korea

Year	Dairy cattle			Horse		
	Farms	Heads	Heads/farm	Farms	Heads	Heads/farm
1955	-	-	-	-	-	-
1960	76	866	11.4	-	-	-
1965	1,210	6,612	5.5	-	-	-
1970	3,126	23,624	7.6	9,302	15,265	1.6
1975	9,415	85,542	9.1	5,793	9,042	1.6
1980	22,122	206,851	9.4	2,153	3,894	1.8
1985	43,760	390,135	8.9	639	3,009	4.7
1990	33,277	503,947	15.1	384	4,937	12.9
1995	23,519	553,467	23.5	351	6,215	17.7
1996	21,129	551,493	26.1	376	6,693	17.8

Source : Monthly Review, 1997, NLCF and YBAF Statistics, 1978, Rep. of Korea

Table 4. The number of dairy cattle on farms of various sizes in 1996

Item	Farm size						Total
	1 - 9	10 - 19	20 - 29	30 - 39	40 - 49	above 50	
Farms	2,853	5,435	5,742	3,717	1,771	1,611	21,129
(%)	(13.5)	(25.7)	(27.2)	(17.6)	(8.4)	(7.6)	(100)
Heads	14,252	79,252	138,672	124,925	76,121	118,271	551,493
(%)	(2.6)	(14.4)	(25.1)	(22.7)	(13.8)	(21.4)	(100)

horses have also been used for racing in Cheju Racetrack, a branch of Korea Race Association. For this purpose the number of horses has slowly increased and reached 6,693 in 1996. About 4,000 horses are in Cheju Island, and they are Thoroughbred, Cheju horses, and crossbreds of Anglo-Norman, American Quarter Horse, Anglo-Arab, and Cheju horses. Most crossbreds are being used for riding and cart-pulling purposes in horse-back riding places.

After the Korean war, swine production was rapidly restored. Types have been changed from native to imported pure breeds or crossbreds among the native and imported breeds during the period from 1955 to today. The imported breeds were Berkshire, Yorkshire, Hampshire, Duroc Jersey, Landrace and some others. As shown in the Table 5, the number of swine per farm was below 2 before 1975, 11.4 in 1985, 140.8 in 1995, and more than 195 in 1996, while the number of swine farms decreased sharply from 654,000 in 1975 to 251,000 in 1985, 45,878 in 1995, and 33,276 in 1996. There are still many small size farms raising less than 50 pigs. The percentage of the number of farms raising less than 50 heads was 59.9% in 1996.

Table 5. The number of swine and goat and of farms raising them in Korea

Year	Pig			Goat		
	Farms	Heads	Heads/farm	Farms	Heads	Heads/farm
1955	870,908	1,261,592	1.4	-	-	-
1960	1,096,730	1,397,139	1.3	-	155,492	-
1965	1,082,786	1,381,873	1.3	-	177,491	-
1970	883,747	1,126,130	1.3	72,831	131,646	1.8
1975	654,257	1,247,181	1.9	149,036	250,211	1.7
1980	502,899	1,783,536	3.5	107,994	200,502	1.9
1985	251,196	2,852,799	11.4	118,133	318,014	2.7
1990	133,428	4,528,008	33.9	49,281	211,292	4.3
1995	45,878	6,461,179	140.8	82,719	680,761	8.2
1996	33,276	6,515,773	195.8	76,037	674,814	8.9

Source : Monthly Review, 1997, NLCF and YBAF Statistics, 1978, Rep. of Korea

Table 6. Number of swine raised on farms of various sizes in 1996

Item	Farm size					Total
	1 - 49	50 - 99	100 - 499	500 - 999	above 100	
Farms	19,942	2,534	7,129	2,373	1,298	33,276
(%)	(59.9)	(7.6)	(21.4)	(7.2)	(3.9)	(100)
Heads	159,383	179,490	1,729,282	1,665,460	2,782,158	6,515,773
(%)	(2.4)	(2.8)	(26.5)	(25.6)	(42.7)	(100)

The number of goats and goat farms increased slowly from 1970 up to the year 1985, and then reduced during the 1990's due to the sufficient supply of other animal meat. Interestingly in the last few years, the number of goats raised increased again due to an increased consumption as a health food by health-conscious people.

Table 7. The number of fowls and ducks and farms raising them in Korea

Year	Fowl			Duck		
	Farms	Birds	Birds/farm	Farms	Birds	Birds/farm
1955	1,123,636	8,923,594	7.9	-	-	-
1960	1,210,565	12,030,411	9.9	-	-	-
1965	1,320,425	11,892,612	9.0	-	-	-
1970	1,338,481	23,632,717	17.7	17,985	22,571	1.3
1975	1,094,464	20,938,732	19.1	63,722	489,838	7.7
1980	692,219	40,129,924	58.0	66,686	403,882	6.1
1985	302,775	51,081,237	168.7	32,308	688,988	21.3
1990	161,357	74,463,090	461.5	13,804	716,871	51.9
1995	203,414	85,799,729	421.8	9,485	2,356,903	248.5
1996	187,467	82,829,359	441.8	8,624	3,464,872	401.8

Source : Monthly Review, 1997, NLCF and YBAF Statistics, 1978, Rep. of Korea

Table 7 shows the number of poultry and poultry farms. Up until 1960 chickens were reared in no-roof barns located in the corner of farm yard. Large scale poultry production was begun in closed barns in the early 1960's in the form of a full-time job. Up to today many different breeds and strains such as Babcock, Hisex White, Hyline, Shaver, Starcross, Warren and various commercial meat strains have been imported. The total number of chickens in 1955 was 8,923,000(7.9 birds/farm). It kept increasing up to 85,799,000 birds in 1995. Poultry production experienced difficult times because of an unbalance between supply and demand in 1965 and 1975. In 1996 the

total number of chickens reduced a little again. The number of chicken farms increased until 1970 and then showed a downward trend. The farm size has kept increasing each year since 1955. In 1996 the average number of chickens per farm was 441.8. Farms raising less than 2,000 birds accounted for 98% of the poultry farms in 1996 (Table 8). Chicken population in 1996 comprised breeders(6%), layers(55%), broilers(37%), and dual purpose types(2%).

Duck meat gains popularity as a source of specialty meat among consumers in Korea. The number of ducks raised per farm was less than 10 before 1980. The number of ducks rapidly increased in a period of 5 years between 1991 to 1996, to meet the demand for duck meat. In 1996 the number of ducks was 3,464,000 raised in 8,624 farms, and the number of birds per duck farm was 401.8.

Table 8. The number of chickens raised on farms of various sizes in 1996

Item	Farm size					Total
	1-2,000	2,000-4,999	5,000-9,999	10,000-29,999	above 30,000	
Farms	183,282	542	911	2,032	856	187,467
(%)	(97.7)	(0.3)	(0.5)	(1.1)	(0.4)	(100)
Birds	1,990,562	1,691,731	6,807,579	33,474,308	38,865,179	82,829,359
(%)	(2.4)	(2.1)	(8.2)	(40.4)	(46.9)	(100)

Table 9. The number of farms, deer and bee hives in Korea

Year	Deer			Bee		
	Farms	Heads	Heads/farm	Farms	Hives	Hives/farm
1970	88	860	9.8	25,814	129,179	5.0
1975	389	3,677	9.5	33,128	150,955	4.6
1980	1,032	8,726	8.5	30,873	244,764	7.9
1985	2,646	22,712	8.6	51,479	467,062	9.1
1990	5,785	53,360	9.2	45,382	526,603	11.6
1995	8,950	100,137	11.2	43,258	764,243	17.7
1996	9,451	111,413	11.8	39,678	719,224	18.1

Source : Monthly Review, 1997, NLCF and YBAF Statistics, 1978, Rep. of Korea

Deer farming in Korea started in the 1970's and slowly expanded in numbers of farms and animals. The numbers of deer farms and deer in 1996 were 9,451 and 111,000, respectively. Deer raised in Korea are mainly used for production of antlers as

a component of medicine. A few deer farmers directly run restaurants, here they prepare venison dish, or distribute venison to supper markets. It seems that it will take some time for venison to gain popularity in the domestic market.

Honey bee keeping in Korea has a long history. According to a record, Silla Dynasty introduced the bee keeping techniques into Japan in 682 AD. Even with the long history, the number of bee keeping farms and bee hives did not much increase. In 1996 the number of bee hives per farm was 18.1, and the number of bee-keeping farms was 40,000.

III. Consumption of meat and animal products

Pork, beef and chicken are major meat consumed in Korea, and pork is most popular. Consumption of meat continuously increased in the period of last 6 years, and amounted to 1,231,000 M/T in 1995. The average percentage of meats consumed was 22.6 % for beef, 55.8% for pork, and 21.6% for chicken during the past 6 years. Among these meats beef consumption showed a gradual increase since 1990.

Table 10. Meat consumption and the percentage of each meat consumed during 1990-1995

Year	Consumption	Beef	Pork	Chicken meat
	M/T	-----	%	-----
1990	853,485	20.7	59.2	20.1
1991	940,638	23.7	54.3	22.0
1992	1,043,314	21.7	56.1	22.2
1993	1,086,979	21.4	56.4	22.2
1994	1,146,654	23.5	55.1	21.3
1995	1,231,003	24.4	53.8	21.8
Average		22.6	55.8	21.6

In 1995 beef consumption was 301,217 M/T, of which 146,495 M/T(48.6%) was imported beef and 154,722 M/T(51.4%) domestic beef. During the last 6 years, average rate of annual increase in beef consumption was 20,705 M/T(11.7%). It is likely that the amount of consumption of both imported and domestic beef will go up for the time being.

In 1995, total pork consumption was 661,710 M/T, of which 36,720 M/T(5.5%) was imported pork and 624,990 M/T(94.5%) domestic pork. An average annual

increment of pork consumption during the last 6 years was 26,152 M/T(5.2%). Because the swine industry in Korea well advanced, and the amount of pork exported to Japan has increased in the last few years, pork production in Korea is likely to increase in coming years.

Table 11. Beef and pork consumption during 1990-1995 (Unit:M/T)

Year	Beef			Pork		
	Imported	Domestic	Total	Imported	Domestic	Total
1990	82,064	94,924	176,988	2,583	502,216	504,799
1991	124,741	98,529	223,270	15,768	495,080	510,848
1992	127,314	99,577	226,891	1,899	583,054	584,953
1993	103,373	129,625	232,998	-	613,215	613,215
1994	122,537	147,274	269,811	18,347	613,897	632,244
1995	146,495	154,722	301,217	36,720	624,990	661,710

Source : NLCF,1996, Materials on price, supply & demand of livestock products

Table 12. Consumption of milk, chicken and egg during 1990-1995 (Unit:M/T)

Year	Milk			Chicken meat	Egg
	Imported	Domestic	Total	Domestic	Domestic
1990	-	1,879,044	1,879,044	171,698	393,305
1991	171,000	1,698,205	1,869,205	206,520	421,872
1992	69,700	1,850,743	1,920,443	231,470	424,010
1993	139,710	1,843,963	1,983,673	240,766	445,494
1994	131,029	1,947,318	2,078,347	244,599	442,056
1995	195,876	1,947,965	2,143,841	268,076*	454,354

Source : NLCF,1996, Materials on price, supply & demand of livestock products

*, included 5,750 M/T imported chicken

In 1995 a total of 2,144,000 M/T(about 9% imported) of milk was consumed. The average rate of annual increase was 44,133 M/T(2.3%).

Chicken and eggs consumed in Korea were mostly from domestic production. A total of 268,076 M/T of chicken meat was consumed in 1995, and annual increase in consumption was 16,063 M/T(9.4%) during the last 6 years. The consumption of eggs was 454,354 M/T, and its annual increase was 10,175 M/T(2.6%).

The rate of annual increase was highest in beef consumption(11.7%) during the last 6 years, and that of chicken, pork, egg, and milk was 9.4, 5.2, 2.6 and 2.3 %, respectively.

respectively

As shown in the Table 13, the total consumption of beef, pork and chicken has increased during the last 20 years with increasing GNP. In 1977, the total meat consumption per capita was 8.13kg, and of which 2.24kg was beef, 3.88kg prok, and 2.01kg chicken, and amounted to 27.45kg in 1995. Of 27.45kg, 6.72kg was beef, 14.75kg pork, and 5.98kg chicken. The average rate of annual increase in meat consumption was 1.07kg for total meat, 0.25kg for beef, 0.60kg for pork, and 0.22kg for chicken.

The consumption of eggs and milk was 5.39kg and 6.98kg in 1977. In 1995 the consumption of eggs and milk was 10.1kg and 47.8kg, respectively, and the average rate of annual increase was 0.26kg for eggs and 2.27kg for milk. The consumption of animal products per capita is expected to increase for the time being. According to The World Livestock(NLCF, 1997) the total meat consumption per capita in Japan was 41.2kg, of which 12kg was beef, 16.5kg pork, and 12.7kg chicken in 1995. In USA a total of 111kg of meat was consumed by a person in 1995 : 44kg beef, 31kg pork, and 36kg chicken.

Table 13. Consumption of major animal products per capita during 1977-1995 (Unit:kg)

Year	Meat				Egg	Milk
	Beef	Pork	Chicken	Total		
1977	2.24	3.88	2.01	8.13	5.39	6.98
1978	3.10	4.81	2.22	10.14	5.56	8.82
1979	3.03	6.00	2.39	11.43	6.22	9.98
1980	2.62	6.34	2.38	11.35	6.55	10.80
1981	2.41	5.42	2.34	10.17	6.27	14.40
1982	2.71	6.04	2.52	11.27	6.33	15.07
1983	2.89	7.38	3.00	13.27	6.80	18.26
1984	2.63	8.37	2.91	13.91	6.70	22.53
1985	2.92	8.41	3.07	14.40	7.20	23.83
1986	3.56	7.71	3.11	14.38	7.98	28.23
1987	3.60	8.86	3.34	15.80	8.59	34.27
1988	3.37	10.14	3.54	17.05	9.46	39.37
1989	3.38	11.13	3.66	18.17	8.97	38.73
1990	4.13	11.78	4.01	19.91	9.18	43.83
1991	5.16	11.81	4.77	21.74	9.75	43.20
1992	5.20	13.40	5.30	23.90	9.71	43.98
1993	5.29	13.93	5.47	24.69	10.12	45.06
1994	6.10	14.20	5.50	25.80	9.90	46.80
1995	6.72	14.75	5.98	27.45	10.13	47.80

Source : NLCF,1996, Materials on price, supply & demand of livestock products

IV. Conclusion

Animal industry in Korea has rapidly increased for the past 45 years. Animal growing as a part of farming in crop-oriented farms has changed into a full scale farming or enterprise farming during the last 15 years. The number of animals increased continuously while the number of animal farms decreased with some fluctuations during the period. The amount of consumption of animal meat and products per capita has gone up continuously each year since the 1970's, and this increasing trend is expected to continue for the time being.

With facility expansion and technology development the animal farm size has also increased, and animal farms were able to produce meat and other animal products more efficiently to meet the increasing demand. Small farms growing animals as a part of farming will have difficulties in the near future and will not be maintained because of increasing production cost and influx of cheap foreign meat and its products. In response to WTO system, government and farmers are working hard to lower the production costs, although they understand it is not easy with limited resources such as concentrate, feed and forage produced in Korea. Over 90% of feed ingredients is imported.

Consequently under these difficult circumstances, our farmers have to compete with foreign farmers to produce meat and meat product by increasing farm size and also by improving the quality of products for consumers' favor.

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