Korean Policy for Enhancing Agricultural Productivity

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During the 1960s, in the early stage of economic development in Korea, famine was a serious problem. Thus, the focus of the Korean government's agricultural policy in the 1960s and 1970s was improvements in food production. The Korean government had to support a large population within a limited, relatively small arable area. Therefore, the government consistently initiated projects to acquire high-yielding breeds, mechanize agriculture and secure water for agricultural use.

The agricultural development plan established in 1967, which is based on a five-year economic development plan starting from 1966, was the first general agricultural development plan with the goal of establishing a modernized agricultural production system and developing a foundation for self-sufficiency in rice, a staple crop in Korea. Programs for the development and dissemination of agricultural production technology, reclamation of farmland, exploitation of agricultural water, breed improvement, and agricultural mechanization were initiated as actual action items for the plan. In particular, the Rural Development Administration (RDA) founded in 1962 played a central role in R&D for breed improvement and agricultural production technology as well as in the dissemination of such knowledge and technologies to the local farms. In addition, the Korean Rural Community Corporation (KRC) founded in 1970 took the initiative to build a solid foundation for agricultural production through various measures such as exploiting agricultural water, reclaiming farmland, mechanizing agricultural production, enlarging average farm size, and so on.

As a consequence, prominent improvements in agricultural productivity occurred and a foundation for agricultural production was firmly established. The production of most food crops such as barley, beans, and corn increased. For instance, per unit production of rice, a stable crop in Korea, increased from 330kg/10a in 1970 to 508kg/10a in 2013.

Table 1. Grain yield by major commodity (milled)

(Unit: Kg/10a)

Year	Rice	Barley	Soybean	Corn
1970 (A)	330	195	79	145
1980	289	241	115	436
1990	451	254	153	461
2000	497	199	131	406
2013 (B)	508	244	193	506
B/A	1.54	1.25	2.44	3.49

Source: Ministry of Agriculture, Food and Rural Affairs (MAFRA), Statistical Yearbook 2014

Above all, high-yielding, superior breed improvement is necessary for advancements in productivity. For the past 50 years, Korea, with the RDA in the leading position, has conducted active research in the field of breed improvement and has accomplished

noticeable results. New breed development cases jumped from 62 cases in the 1960s to more than 1000 cases in the 2000s. The content also broadened from mainly food crops to various other crops that can contribute to increases in agricultural income such as cash crops, horticultural crops and so on.

In addition, to increase actual food production at the farm level, the dissemination of high-yielding breeds and technology to farmers is imperative. The Korean government appointed the RDA as a center not only for agricultural research and technology development but also for agricultural extension activities. These projects have been consistently conducted together. This single, integrated organization for agricultural R&D and extension service is evaluated to be highly effective at conducting the aforementioned tasks. For instance, research organizations affiliated with the RDA first developed an advanced breed or technology. This improvement is passed on to the extension work department in the RDA and applied to tryout areas. The research institute evaluates the tryout results and revises their outcomes before the product is disseminated across the entire country. Integration of research and extension activities within a single organization has contributed to improving agricultural productivity and income with a close cooperative relationship in accordance with the national agricultural strategy.

Table 2. RDA's crop seed development by period

(Unit: Number)

Year	Food grains	Horticulture	Special crops	Forage	Total
1961-1970	40	6	16	-	62
1971-1980	91	40	42	-	173
1981-1990	115	75	47	1	238
1991-2000	222	255	124	2	603
2001-2010	420	1,297	201	19	1,076
Total	888	1,673	430	22	

Source: Rural Development Administration (RDA) and Ko, et al (2014)

In order to further improve agricultural productivity, it is necessary to expand agricultural infrastructures such as irrigation facilities and agricultural machinery, arrange farmlands and increase farm size. The Korean government established the KRC to do such matters. With the continuous work of the KRC, the percentage of farmlands with irrigation and drainage facilities increased from 58% in 1970 to 81% in 2012 and the percentage of arranged farmlands increased from 11% in 1970 to 65% in 2012. The KRC also implemented a five-year agricultural mechanization plan starting from 1972, which resulted in prominent achievements. For example, the mechanization rate of rice farming in Korea increased from 17% in 1970 to 94% in 2012 while the mechanization rate of upland farming approached 56% in 2012. Such improvements in the agricultural infrastructure have contributed to the progress in both agricultural labor and farmland productivity and thus maintaining a certain level of self-sufficiency for food crops in spite of the reduction in farmland and agricultural labor force. This is mainly because a reliable water supply helps to reduce labor costs for water supply management and increases the capability of agricultural production to cope with drought. Farmland arrangement and consolidation also helps to expand

agricultural mechanization. Eventually, the improved agricultural infrastructure contributes to an increase in farm income by reducing production costs and enhancing agricultural productivity.

Table 3. Irrigation, land consolidation and agricultural mechanization in Korea

(Unit: 1000 ha)

Year	Total paddy area (A)	Irrigated paddy area (B)	Ratio of irrigated land (B/A, %)	Ratio of paddy land consolidation (%)	Mechanization rate of paddy farming	Mechanization rate of upland farming	Labor productivity (KRW/hour)	Land productivity (KRW/10a)
1970	1,284	745	58%	11.3%	17%	N.A	500	82,600
1980	1,307	893	68%	28.1%	41%	N.A	1,200	196,400
1990	1,345	987	73%	42.7%	68%	30%	4,932	624,893
2000	1,149	880	77%	61.0%	87%	46%	11,778	1,050,677
2012	966	778	81%	64.7%	94%	56%	16,591	1,295,941

Source: Ministry of Agriculture, Food and Rural Affairs (MAFRA), Statistical Yearbook 2014

The Korean government has concentrated on the fertilizer industry since the 1960s so that farmers could obtain fertilizers at a cheap cost and increase land productivity. Per unit fertilizer use increased from 162kg/ha in 1970 to 458kg/ha in 1990, raising agricultural productivity. After 1990, however, with the nation-wide concern for eco-friendly ecological agriculture, the use of fertilizer decreased and excess supply is being exported.

Table 4. Production and consumption of fertilizer in Korea

(Unit: 1000 M/T)

Year	Production(A)	Consumption(B)		Self-sufficiency (A/B, %)
		Total	kg/ha	
1970	590	563	162	105%
1980	1,345	828	285	162%
1990	1,648	1,104	458	149%
2000	1,546	801	382	211%
2013	890	459	260	194%

Source: Ministry of Agriculture, Food and Rural Affairs (MAFRA), Statistical Yearbook 2014

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