最近 韓國의 農業發展과 試驗研究事業의 役割

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Reprinted from
The Research Reports
of
The Rural Development Administration
Vol. 27, No. 1 (E·Fm & S), June 1985
Suweon, Rep. of Korea

農試論文集(農機·農經·蠶業) 27(1): 39—54(1985)
Res. Rept. RDA(E·Fm & S)

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INTRODUCTION

In the early 1960s, Korea was one of the poorest developing countries, with heavy dependence on agriculture and a weak balance of payments financed almost entirely by foreign grants. But after the early 1960s, Korea performed such rapid economic growth that economic analysts frequently use such adjectives as "remarkable", "extraordinary", and "spectacular" to describe Korea's economic performance during the last two decades. The GNP grew over the period at an average rate of more than 8 percent a year, and per capita income increased from 248 U.S. dollars in 1970 to 1800 dollars in 1982. Income per farm household an average increased also from 613 dollars to 4,048 dollars during same period. The sustained high rate of expansion in income transformed Korea from one of the poorest developing countries to a middle income nation with an increasingly strong external payment position.

Rapid economic growth transformed the structure

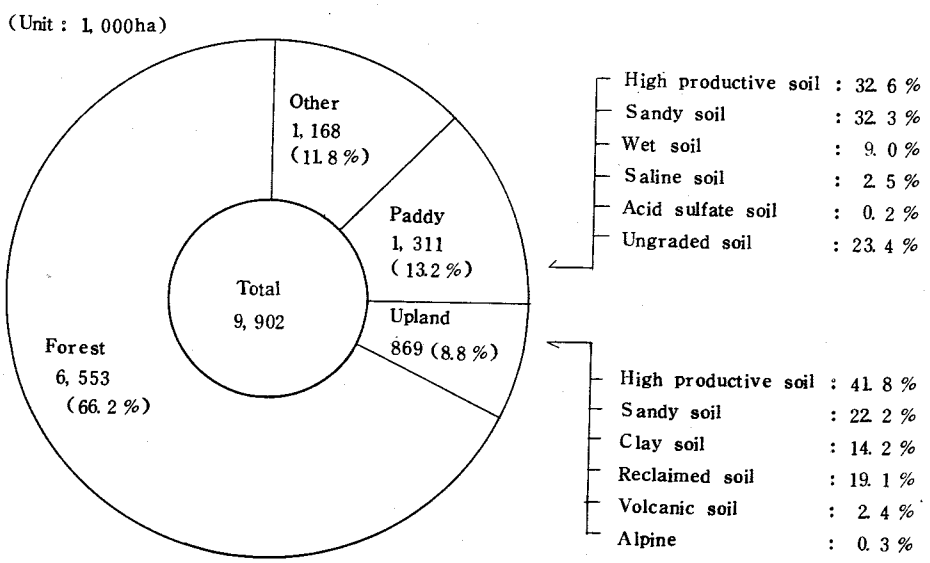

Fig-1-1. Area and land utilizations.

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This report was presented at workshop on "Impact of Research on the Agricultural and Rural Development" held for 5 days ('85 1.15—1.19) by IFARD/AARD at Indonesia.

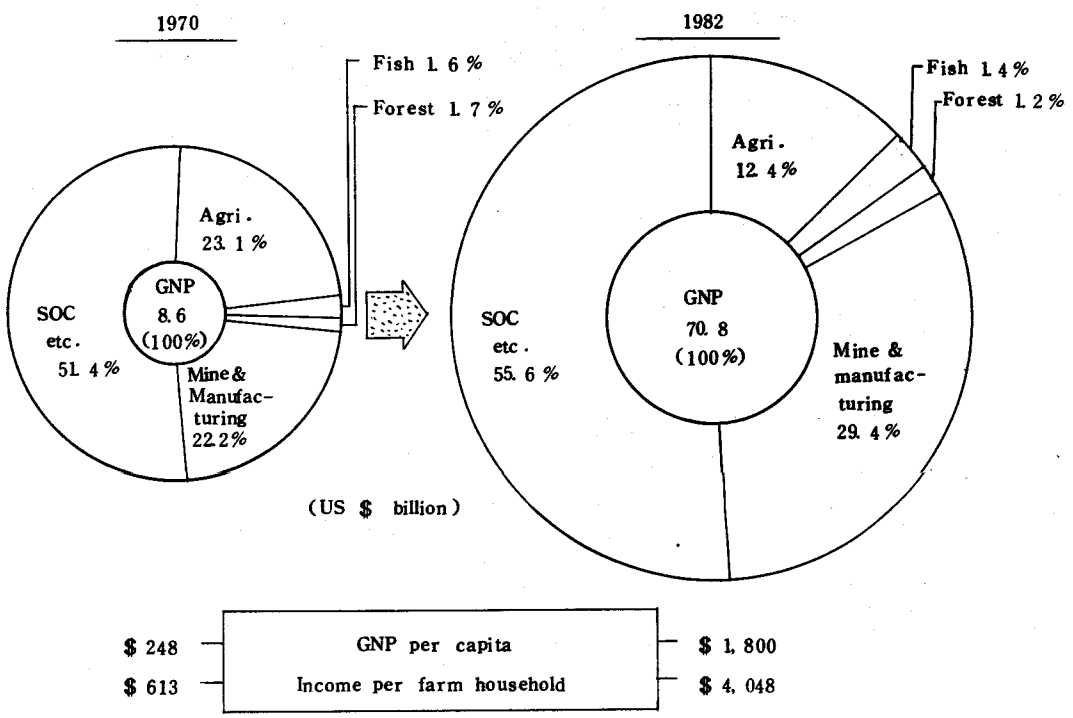


Fig. 1-2. Trend of GNP composition.

of the economy. Despite average annual growth of value-added in agriculture of 2.4 percent, agriculture's share in the GNP declined from 23.1 percent in 1970 to 12.4 percent in 1982. The primary reason for this decline was the manufacturing sector's growth of about 16 percent a year, and the share of mine and manufacturing in GNP rose from 22.2 percent in 1970 to 29.4 percent in 1982.

Rapid economic growth influenced also the structure of agriculture. Because of the relatively low income-forming potential in agriculture and the expanded opportunities for non-agricultural pursuits, labor has shifted from the agricultural to the non-agricultural sector. This transition has caused a labor shortage within agriculture as a result of a sharp decline in the number of farm households as well as a considerable decrease in the agricultural population. Total farm population has continuously decreased at a rate of 41 percent since 1967 as economic development has accelerated. The proportion of farmers to the total population reduced from 56.9 percent in 1962 to 23.7 percent in 1983. The number of farm households has followed the same pattern, decreasing 23 percent during the years 1967-1982. The average land holding per farm household in Korea increased by 18 percent during 1967-1983 and it reached 1.08 ha in 1983. The attachment to homelands, the uncertainty that all able family members could obtain urban jobs, and the preservation of assets handed down from predecessors were not only part of the reasons to restrict land fluidity, but also the reasons not to change the small scale Korean agriculture.

The reduction of farm labor force had also influenced negatively to land utilization. Land intensity has decreased steadily since 1975 when the farm labor shortage started to be serious. Therefore, land intensity was only 123.8 percent in 1983. Double cropping creates peaks in labor demand, especially for areas sown with rice and winter crops. The mechanized farm operations, particularly in the peak labor season, are crucial to increased land intensity.

Despite agriculture's declining significance in the economy, it continues to play a crucial role in providing the main source of income for rural residents and in providing food for the growing population. Therefore, Korean government has strongly supported to agricul-

Table I-1. Tendency of farm population and cultivated land

	1962	1967	1975	1983
Farm household (1000 household)	2, 469	2, 589	2, 379	2, 000
Farm population (1000 persons)	15, 097 (56. 9) *	16, 078 (55. 1)	13, 244 (37. 5)	9, 475 (23. 7)
Cultivated land (1000 ha)	2, 063	2, 312	2, 240	2, 167
Land area per farm household (ha)	0. 84	0. 89	0. 94	1. 08
Land intensity	143. 5	142. 0	140. 4	123. 8

* ( ) : Indicate the percentage to total population.

tural programs. As a result, the average yields of food crops increased steadily from 1962 to 1983, even though total production was not enough to ensure a growing domestic demand. Rice, the dominant crop, increased 70 percent in yield during 1962-1983 and reached 4.42 M/T per ha on the polished basis in 1983. This yield was among the highest in the world. Other food grains which comprise barley, soybeans, corn and potatoes increased also over 100 percent on average in yield.

Table I-2. Yields of major crops on farm level (M/T/ha)

Grains	1962	1970	1975	1983
Rice	2. 65	3. 27	3. 83	4. 42
Barley	1. 66	2. 18	2. 39	2. 55
Soybean	0. 54	0. 79	1. 13	1. 24
Corn	0. 68	1. 45	1. 72	3. 66
Potato	1. 69	2. 26	2. 56	3. 10

Growth in agricultural output has to be based on development of new mechanical, chemical, and biological technologies, and on their dissemination to farmers. The technological innovation depends on the capacity to develop and to manage technology in a manner consistent with a nations physical and cultural endowments.

The purpose of this presentation is to analyse how agricultural researches to be developed and their contributions to Korean agriculture. The activities of the Rural Development Administration which is the main institute for agricultural research and extension in Korea would be focused for the matters.

AGRICULTURAL RESEARCH INSTITUTIONS

Korea has established the systematic organization for agricultural development imposing administration, under the Ministry of Agriculture and Fisheries where the national agricultural policies are formulated and executed. The administrative information reached farmers ed. The administrative information reached farmers through the Provincial Government and the financial supports through the National Agriculture Cooperation Federation, respectively. Development of agricultural technology and extension services are the major roles of the Rural Development Administration (RDA). The flowchart of information in three organizations is illustrated in Fig. II-1.

The goal of the RDA's function is to improve rural

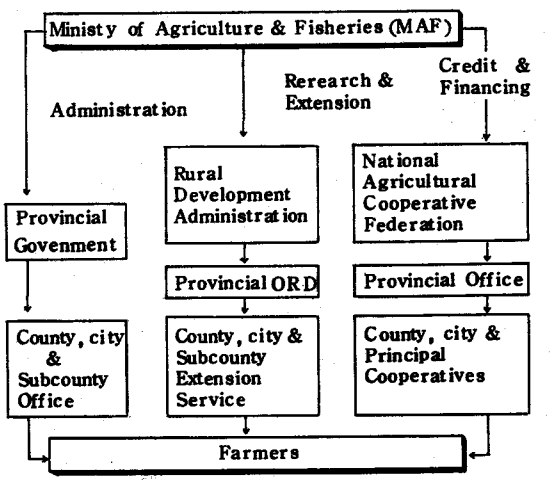


Fig. II-1. Interrelationships of agricultural organization.

life achieving self-sufficiency of staple food crops, maximizing utilization of agricultural resources, and increasing farm income (Fig. II-2). The RDA's activities, therefore, are defined as:

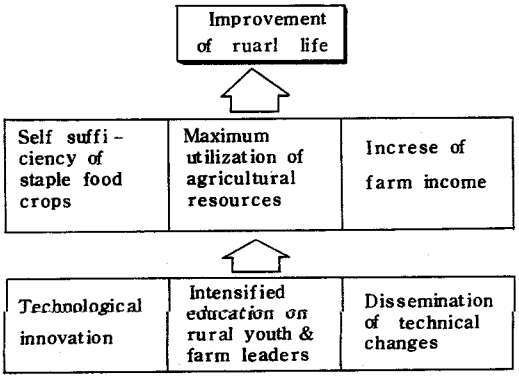


Fig. Ⅱ-2. Goal of RDA activity.

1) Research on development of agricultural technology to increase productivities of crops and livestocks. 2) Dissemination of developed technology on-farm level. Research sector provides information and training to extension workers and farmers. Dissemination sector transfers technology from research to farmers and collects problems involved in on-farm application. The farmers receive technical assistants from research and dissemination sectors and their problems are feeded back to research development (Fig. II-3). This close tie between research-extension-farming is essential to get the systematic agricultural development.

The RDA consists of the 6 bureaus in the headquarter, the 14 key research organizations and the 9

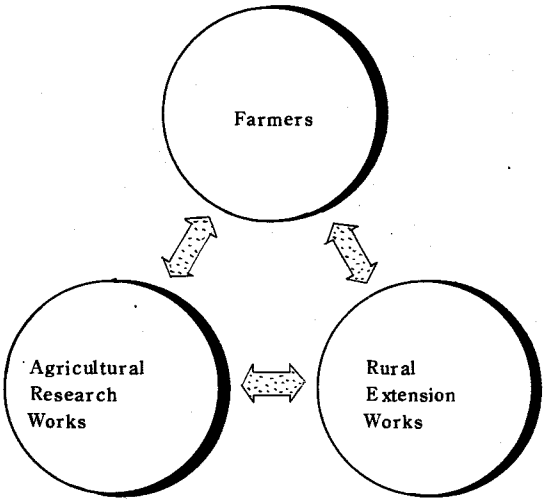


Fig. Ⅱ-3. RDA function.

Bureau	Institute	Provincial Office	City/County Office	Branch Office
6	14	9	179	1, 454

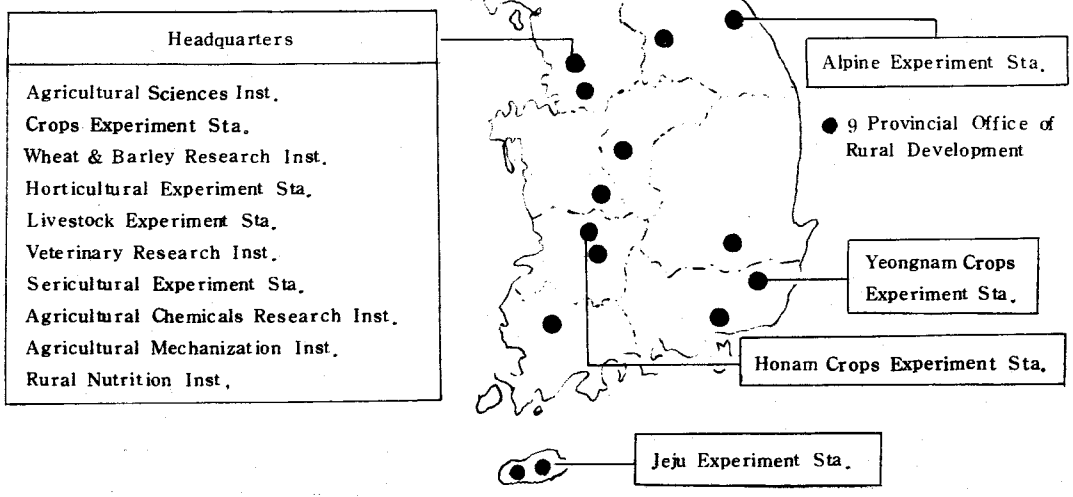


Fig. Ⅱ 4. Organization of RDA.

provincial ORDs as shown in Fig. II-4. The research institutions have expended rapidly since establishment of RDA in 1962 as agricultural technology has become specialized and complicated. The research departments in 1984 was more than doubled in 1962 (Table II-1).

Table Ⅱ-1. Change in No. of research organizations

	1962	1975	1984
Institute	10	11	14
Department	27	38	55
Branch Sta.	12	6	12

The number of research scientists also increased from 357 persons in 1962 to 1,004 persons in 1984 and that of extension workers increased from 3,173 persons to 7,979 persons. However, the number of management staffs supporting research activities was reduced from 47 in 1975 to 28 in 1984 due to efficient management (Table II-2).

The total research fund of the RDA in 1984 amounted 30 million dollars, which is 3.6 times to that in 1975. The 22.2 million dollars were funded by the central government (Fig. II-5). The allocation of the central government funds was 43 percents for salary and regular administrative supports and 57 percents for research activities, respectively (Fig. II-6). The 60 percents of the research fund were used on food and cash

Table Ⅱ-2. Research and extension staffs

Year	1962	1975	1984
Scientist (persons)	357 (10)	791 (47)	1, 004 (28)
Extension staff (persons)	3, 173	5, 984	7, 979
Farm households/ scientist (household)	6, 917	3, 008	1, 992
Farm households/ extension worker (household)	778	398	251

( ) : Indicate research management staffs.

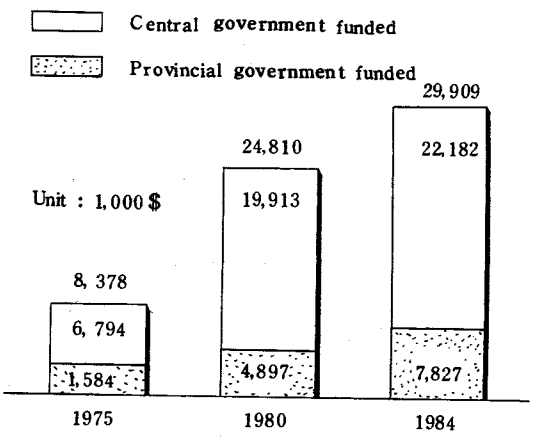


Fig. Ⅱ-5. Research funds and sources.

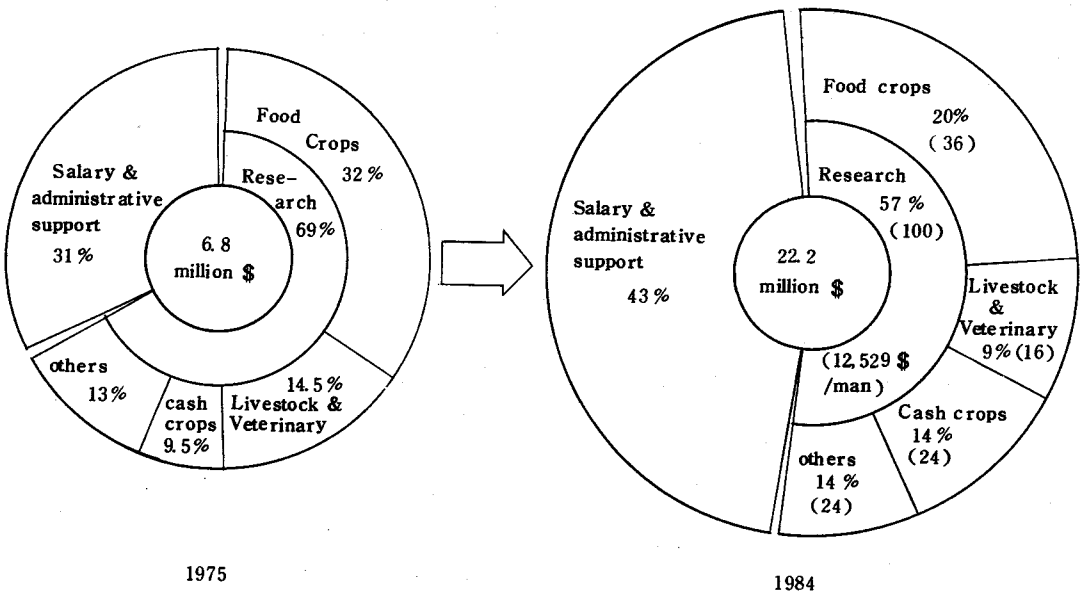


Fig. Ⅱ-6. Allocation of research fund.

crops, 16 percents on livestock and veterinary science. The other 24 percents were invested to the interdisciplinary projects such as bio-technology, power transplanting of rice, upgrading of grass land, and etc.

MAN-POWER DEVELOPMENT

Qualification of scientists is the crucial factor to obtain productive research results. Various training programs have been emphasized to improve the quality of the scientists since the establishment of the RDA in 1962. However, many of the experienced scientists and the most of scientists trained in advanced countries had transferred to universities or private companies. The annual transfer rate reached 6 to 10 percents presumably due to the relatively low salaries, early retirement ages and low socio-economic values, etc. In this aspect, the Korean Government renewed man-power management system which included mainly salary and rank for the government employed scientists in 1981. Only two categories, senior and junior scientist, are classified as the ranks of scientists instead of nine ranks which other government officials are still adopted. More specifically, senior scientists who got promotion by the competitive examination could devote themselves to the research works because of the socio-economic benefits in the new system. The scientists need not pay any attention to their promotions which usually accompanied increase in salary in the former system and have advantages of automatical wage increases every year.

Senior scientists have a choice whether get into research administrative positions or continue the their scientific achievements which reflect to their salaries.

Table Ⅲ-1. Change in rank position of researchers

Former system			Present system (Nov. 1981)
Rank	Position		
1	Director general	Directorial officer	◦ Senior scientist ◦ Supervisory group -Director general -Directors
2			
3	Director or coordinator		
4	Department head	Senior researcher	
5	Project head		
6	Researcher		Junior scientist
7	Junior researcher		
8	Research assistant		
9			

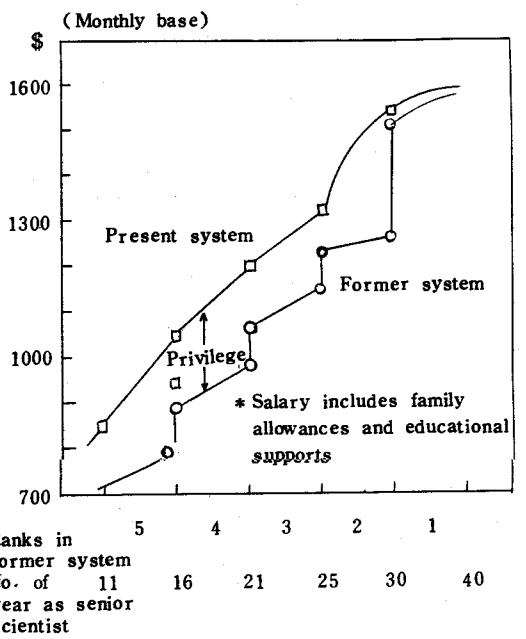


Fig.Ⅲ-1. Privilege for senior researchers on the new salary system.

To the senior scientists, the increased rate of salary appears approximately 13 percents in average and 25 percents for those who have 10 to 20 year of research carrier, respectively, comparing with the former system.

These privileges and other subsidiary benefits provided to all public employees including family allowances, educational supports for their dependents, and health care improve the financial situation of the scientists, and, therefore, they are working with self-esteem.

The introduction of new system has significantly contributed to reducing the transfer rate, attaining capable scientists, and promoting research activities. First of all, the transfer rate of RDA scientists was reduced to 3.3 percent in 1984 which is comparable to that of 7.2 percent in 1980 (Fig. III-2). The transfer rate of the scientists who got M.S. or Ph.D. degrees, or trained in advanced countries were also reduced significantly from 5.7 percent in 1980 to 2.3 percent in 1984.

Secondly, improvement in socio-economic situation makes the scientists concentrate themselves on their researches. Research reports published in scientific journals have, therefore, dramatically increased by reaching 456 in 1984 comparing to 151 articles in 1980

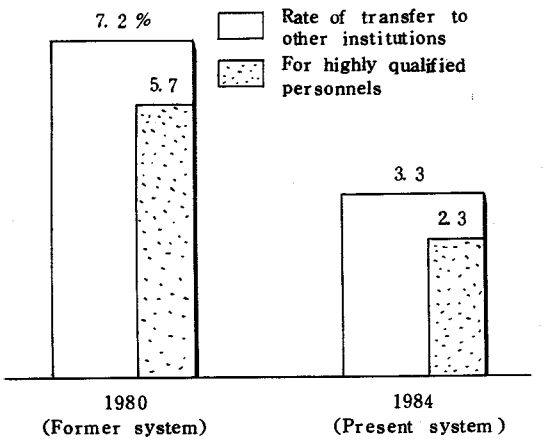


Fig. Ⅲ-2. Rate of transfer to other institutions.

(Fig. III-3). Increasing publications is partly due to the triennial evaluation of the scientists research activities.

In addition, the better qualified researchers have been recruited. Researchers were employed by open competition before the system renewed, but now they are chosen by personal applications and their fittness to the specific field of research.

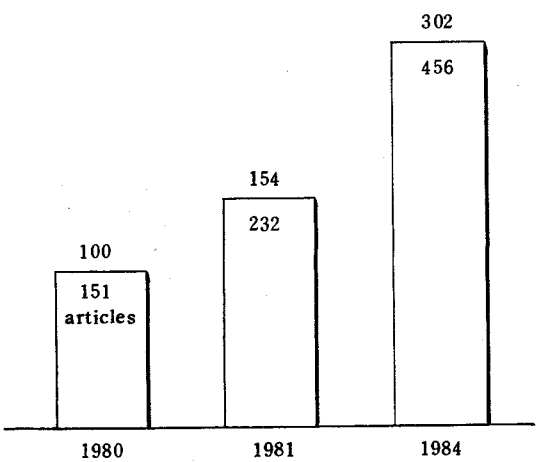


Fig. Ⅲ-3. Number of research papers published in the scientific.

Fig. III-4 shows that most of the researchers who employed after 1981 have already some research experiences during the graduate studies for the Master's degrees. The improved quality of RDA scientists is reflected in that 89 scientists are lecturing in the universities in 1984 comparable to that of 53 scientists in 1979 (Fig. III-5).

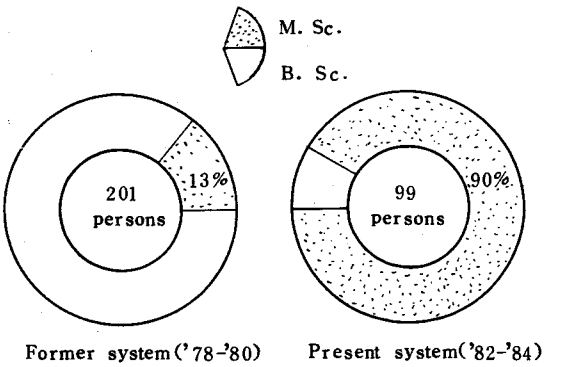


Fig. Ⅲ-4. Academic background of the newly employed researchers.

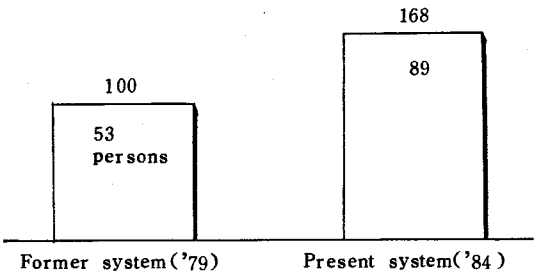


Fig. Ⅲ-5. Number of researchers lecturing in agricultural colleges.

Various efforts such as domestic and oversea trainings are also emphasized to improve the capability of scientists.

Long term trainings in abroad include graduate studies and one year on-job trainings. Short term trainings are several months mission oriented trainings. The funds for the training are provided by Korean government, host countries or international institutes. Fig. III-6, shows the increasing trends of domestic funds to train our scientists. During the last decade, training in foreign countries have been dramatically increased but was funded mostly by international institutes or host countries.

Due to the reduced foreign funds since 1981, domestic funds have been continuously increased and half of them were trained by the funds in 1984, but more domestic funds are required agricultural research to introduce the advanced technologies into agricultural researches.

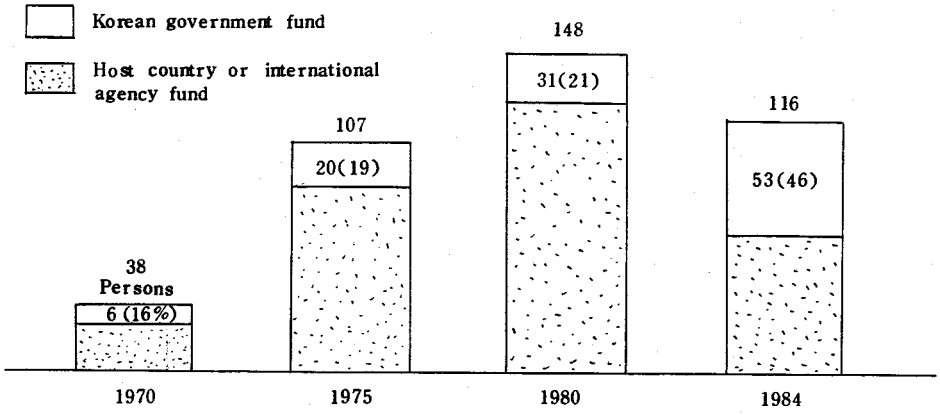


Fig. Ⅲ-6. Oversea training of researchers.

RDA provides various extensive trainings for English and computer, which are one or two months of short term program. English training course has been opened since 1970, and the participants reached over 700 in 1984 (Table III-2). Also, extensive 6 months training course is provided to newly employed researchers in both basic and specialized fields.

Table Ⅲ-2. English training as the principal foreign language for researchers

Year	'70 -'75	'76 -'80	'81 -'84	Total
Number of trainees	277	214	241	732

In addition, many of the RDA researchers are enrolled to the universities for M.S. or Ph.D. degrees. We have a institutional cooperative system between RDA and universities, conducting joint researchers, providing RDA lecturers to universities and training RDA researchers in universities now, 170 researchers are enrolled for Ph.D. and 115 are for M.S. degrees in 24 graduate schools of the universities.

Due to the continuous efforts to improve the quality of researchers and scientists, about 56 percent of RDA research personnels got his M.S. and about 13 percent got his Ph.D. degrees in Korea and abroad by 1984 (Table III-3). Within next few years, 80 percent and more of the RDA research personnels are expected to get M.S. or higher degrees in their field of research.

Table Ⅲ-3. Academic background of researchers

Degree	Number of researchers	Percentage
Ph. D.	135	13
M. Sc.	560	56
B. Sc.	138	14
Others	171	17
Total	1, 004	100

INSTITUTIONAL AND INTERRELATIONAL DEVELOPMENT

To achieve the goals of the RDA, self-suffiency of the major crops and improvement of farm income by development of the modernized agricultural technology, the most reseraches are focussed on technical innovation for high and stable productivity and for advanced farming to support the agricultural policy and extension services as well as to progress agricultural sciences. Cooperation and inter-disciplinary work among research institutions and extension services are strongly required.

Fig. IV-1 shows the process of research programming. The first step for a project is to collect extensive information on agricultural problems from the Ministry of Agriculture and Fisheries, extension services and sometimes directly from farmers and other researchers. The research proposals are submitted to the Institutional Cooperation Committee which consists of researchers in specialization, professors in national agricultural colleges and universities, extension workers and administration personnels. The responsibility of the committee is evaluation on validity of research objec-

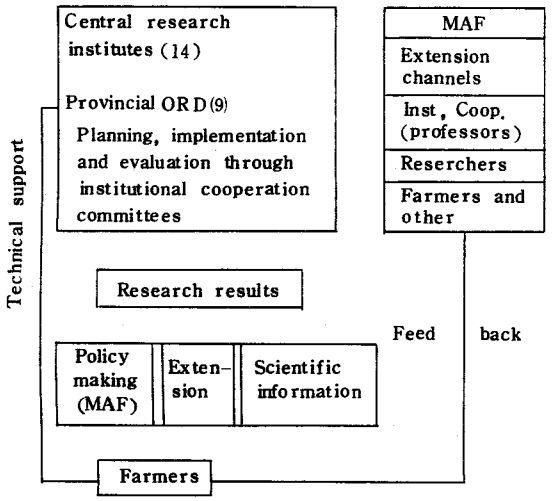


Fig. Ⅳ-1. Processing diagram of planning, evaluation and utilization of research programs.

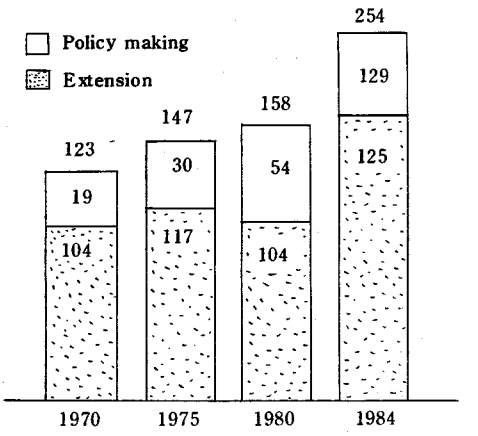


Fig. Ⅳ-2. Number of projects recommnded for policy decisions and extension services.

tives, approaching methodology, scientific value and economical feasibility. The committee meetings are organized according to speciality of the field and normally held on late January for summer crops, sericulture and live-stocks, and mid August for winter crops. The approved researches are conducted in annual basis. The procedure and results of the research are evaluated by the committee at least twice. The interim evaluations are made in the middle of year to support any difficulties involved in the course and final evaluation at the end of the year for termination.

The research results are used for three purposes; supporting agricultural policy decision, extension service activities and scientific information. The necessary recommendation for policy making is officially submitted to the Ministry of Agriculture and Fisheries through the Research Bureau in the RDA headquarter. The new technology for on-farm level is disseminated to farmers through the Dissemination Bureaus in headquarter or in regional provincial ORDs having the nationwide extension service channels. The number of projects recommended for policy making and extension services have been increased annually (Fig. IV-2).

Extension specialists are always aware of the research programs in the research institutes and experimental stations cooperating researchers. The information collected by extension workers during the service activity is feeded back to new research development.

The research projects are classified into the 9 major fields upon specialization as listed in Table IV-1. The research fields cover varietal development of the staple food crops, improvement of practical cultivation technology, improvement and control of plant environments, farm machinery, sericulture, livestock and veterinary science. The major targets are summarized as improving productivity and quality of the agricultural products, increasing efficiency of farming and agricultural works.

Since the cooperative works among the research institutes and experimental stations are desirable, the 5 important subjects are selected as the interdisciplinary

Table Ⅳ-1. Major agricultural research fields

Reserach fields	Major Targets
Varietal improvement of staple food crops	Productivity, quality, and resistances for disease and insect pests
Improvement of practical methods	Productivity and stability
	Labor and energy saving
Soil and fertilizer management	High productive soils
	Efficiency of fertilizer application
Disease and insect pests	Resistance Integrated control
Agricultural chemicals	Efficacy and safety
Fruits and vegetables	Year-round supply, Stable production
Farm mechanization	Small machineries
Sericulture	Substitutive feeds
Livestock and forage	Feeding efficiency
	Grassland upgrading
Veterinary science	Diagnosis and treatment

projects and the team leaders were nominated to coordinate the research performance efficiently. For an example, the 12 research institutions with the 47 experiments were participated in the project on application of power transplanting of rice (Table IV-2).

Table Ⅳ-2. Interdisciplinary research projects (1984)

Projects	Institutes involved	Number of experiments
Quality improvement of high yielding rice varieties	3	16
Application of power transplanting of rice	12	47
Year-round supply of vegetables	11	21
Upgrading of glasslands	8	12
Farming system development	10	26

Recently, the application of bio-technology on agriculture draw much attention as a potential tool to innovating agricultural science. The RDA organized special research project under the interdisciplinary efforts concentrating on tissue cultures to develop virus free potato and garlic, anther culture of rice, monoclonal antibody for livestock diseases, isolation, culture and fusion of protoplasts for developing new high yielding with good quality and resistance to adverse environments, fertilized egg transfer for rapid multiplication of cows, exploration and conservation of useful germplasms and basic research in plant and micro-organisms such as creating gene library, useful vector system, transformation techniques, and recombinant DNA, etc.

Bio-technology research projects (1984)

1. Virus free plant production
   o Potato, Garlic
2. Anther culture of rice
3. Development of monoclonal antibody
   o Diagnosis of livestock diseases
4. Non-spored oyster mushroom development
5. Fertilized egg transfer in cows
6. DNA recombinant researches in micro-organism

The fund for the interdisiplinary researches and maintenance of genetic resources were more than 1 million dollars in 1984 and 58.1 percent was allocated to the bio-technology project. It will be doubled in 1985 to enforce the researches (Table IV-3).

The research institutes and experimental stations provide technical supports and training of extension

Table Ⅳ-3. Special funds for the targeted researches (1984) (Unit : 1,000 $)

Bio-technology	Maintenance of genetic resources	Interdis-ciplinary researches	Total
625,713	31,180	430,830	1,077,723

workers to maximize efficiency of knowledge transfer. The number of researchers served for technical assistant in 1984 was 2,072 man-days. One half of the total serve was on disease and insect pest control or livestock and medical treatment (Fig. IV-3). Services on mushrooms and upland industrial crops are increasing, reflecting recent tendency of rapid development of high income technology. The research institutes and experimental stations also open intensive training courses to farmers and extension service workers. More than 10 thousand key farmers including farming successors and village leaders were directly trained by researchers (Fig. IV-4). Two different regular courses were opened to extension workers, which were the 1-week basic and professional trainings and the 5-months special intensive one for newly employed extension workers. The courses were classified upon speciality of the field. Extension workers cooperate researchers to participate interdisciplinary works on demonstration farms (Table IV-4). The purpose of the demonstration farming is to show

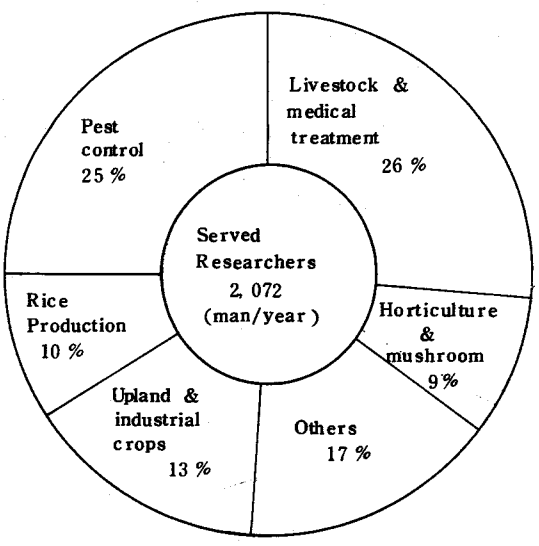


Fig. Ⅳ-3. Technical support to farmers by research staffs (1984).

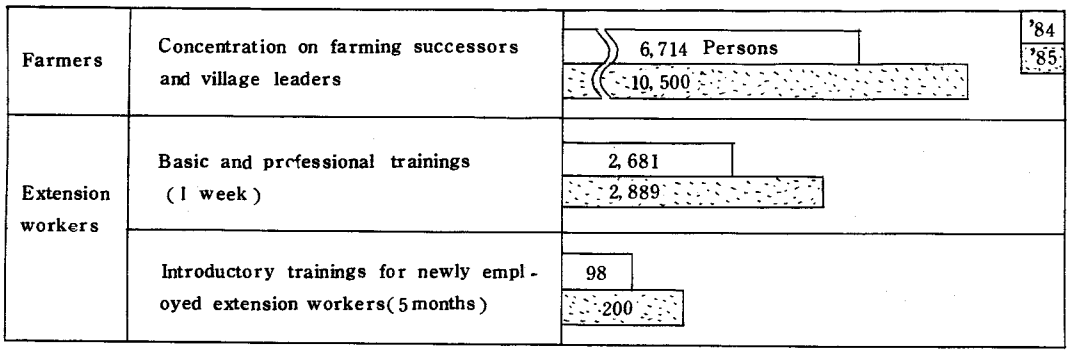


Fig. Ⅳ-4. Training for farmers and extension workers provided by research institutions.

Table Ⅳ-4. Number of demonstration farm(1985)

Staple food grain	Upland crops	Industrial crops	Vegetables and fruits	Others *
5, 158	1, 079	1, 025	872	3, 493

* Others include mushrooms, sericulture and livestock.

farmers the advanced agricultural techniques or varieties developed by research groups illustratively and to prove how much the new techniques or varieties are beneficial in comparison with the conventional ones.

IMPACT OF AGRICULTURAL RESEARCHES AND THEIR DISSEMINATION ON FARM LEVEL—SELECTED CASES—

Genetic improvements and agricultural technology developments made by research organizations and the effective dissemination of the research results to the farmers through well organized extension channels contributed significantly in recent advance in Agriculture and Economy of Korea.

Development and dissemination of high yielding rice variety "Tongil" is one of the most successful program ever we have achieved. The success had been a triger in the other field of research and extension works in RDA. Among the numerous successful programs achieved, four examples will be discussed.

1. Rice variety improvement

Rice is the most important grain crop in Korea. Research and extension works on rice have been very extensive over decades to keep on self-sufficiency. Since the development "Tongil", objectives of rice

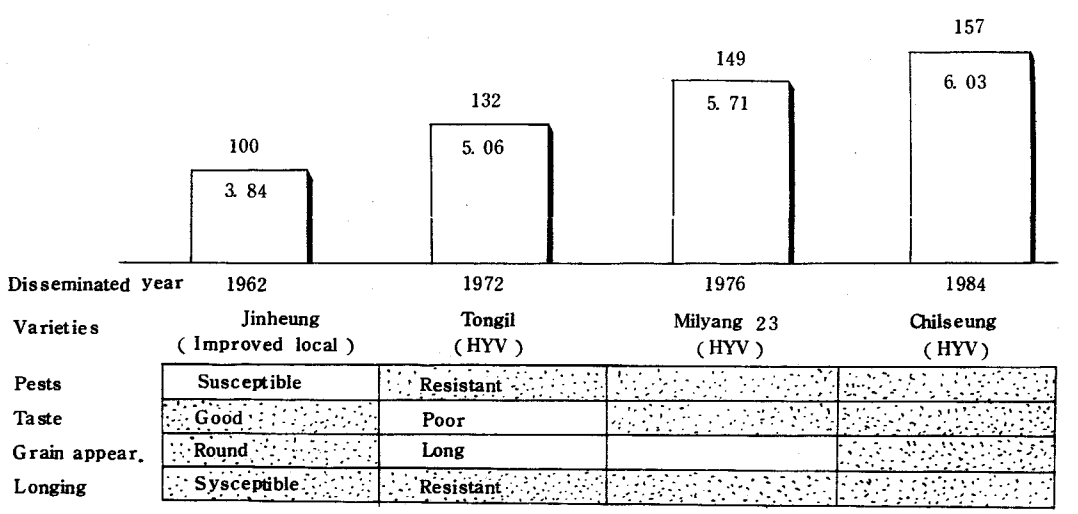


Fig. Ⅴ-1. Improvement of productivity and quality in rich varieties.

breeding have been on multiple pest resistance and improved grain quality in addition to high productivity. "Chilseung", new rice variety recommended in 1984 is very high yielding, and has excellent grain quality to Koreans, lodging and pest resistance (Fig. V-1)

As shown in Fig. V-2, rice yield was dramatically increased in 1970's by the introduction of high yielding rice varieties. Since then the productivity of rice, both high yielding and local varieties, has been steadily increased. Last year milled rice yields averaged 4.6MT/ha reaching 5.7 million tons of national milled rice production, which is sufficient for domestic consumption.

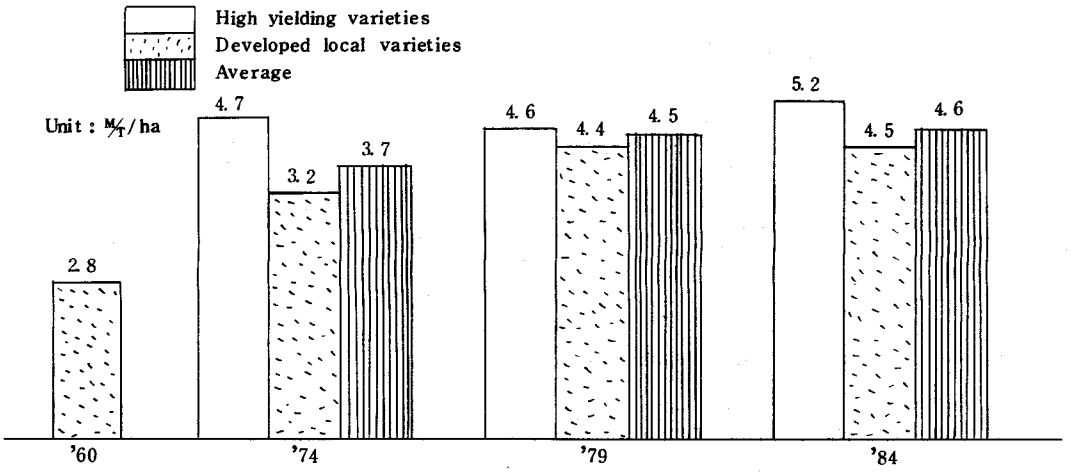


Fig. V-2. Effect of rice varieties improvement in national level.

2. Sesame production

Achievement of self-sufficiency in sesame is a good example showing contribution of an improved cultural technique to crop production. Vinyl mulching on sesame field was found beneficial by increasing soil temperature and soil moisture and reducing needs. Sesame yields were more than doubled in nationwide demonstration farms ranging from 64 percent to 223 percent yield increase (Fig. V-3). Vinyl mulching on sesame field has become popular to the farmers within the very short period, and self-sufficiency could be achieved in 1984. Sesame production is expected to increase in this year with the expansion of the innovative technique,

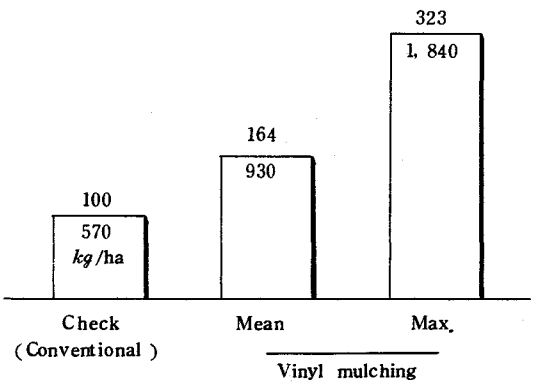


Fig. V-3. Vinyl mulching effects of sesame at demonstration farms.

Table V-1. Contribution of research and extension works to sesame production

Year	1980	1981	1982	1983	1984	1985(Goal)
No. of demonstration farms	270	360	350	350	350	800
Yield (kg/ha)	600	670	910	960	1, 010	1, 200
Area planted high yield varieties (%)	10	30	50	60	65	80
Portion of vinyl mulching (%)	-	10	45	73	89	98
Amounts of import (M/T)	16, 900	12, 100	5, 000	10, 000	8, 000	- (Self sufficiency)

fulfilling the demands for favorite sesame oil (Table V-1).

3. Oyster mushroom production

In addition to efforts to increase food production, scientists are working also on the other fields to improve farmers' income.

Oyster mushroom is expensive, but was not popular for farmers due to heavy investment needed in purchasing timbers for culture medium, difficulties in cultivation, and low productivity. By developing better varieties and new techniques growing the mushroom on rice straw with ease, productivity was almost doubled with greatly reduced capital investment. As shown in Table V-2, oyster mushroom production is dramatically increased, and now thousands of farmers are joined to grow and make good profits growing the mushroom.

Table V-2. Oyster mushroom production

Year	1972	1976	1980	1984
Variety	Native	N 2-3	Sacheol	N 202
Culture medium	Woods	Rice straw (raw)	Rice straw (decomposed)	Rice straw (decomposed)
Yield (kg/m^2)	6.8	9.3	11.3	12.9
Area cultivated (ha)	2.3	5.3	28.4	198.0
Total production (MT)	158	491	3,208	25,500

* Expected income per 330 m^2 $ 4,630.

4. Grassland development in progress

Korea has 953,000 ha of available hilly lands that can be reclaimed to grasslands (Table V-3). National long term grassland development program is in progress. Total of 24,000 ha of grasslands were developed in recent 3 years and this program is to make use 900,000 ha of ineffectively utilized lands to meat production.

Table V-3. Prospect of reclamation of hilly lands

(Unit : 1,000 ha)

Mountainous and hilly area	6,568
Reclaimable area	953
Grass lands developed	
before '81	51
'82-'84	24

For this program, Ministry of Agriculture and Fisheries, Rural Development Administration, and National Agricultural Cooperative Federation cooperate with administrative, technical and financial supports. Researchers of RDA are responsible for the search for better grassland development technologies and breeding of better grass feeding animals adoptable to the hilly areas. Fig. V-4 shows a stepwise way of developing

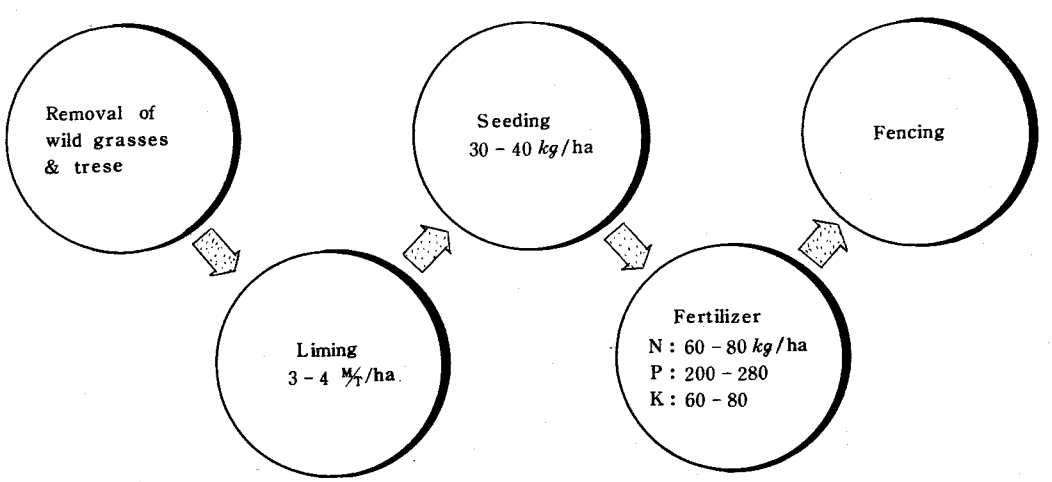


Fig. V-4. Grassland establishment by over-sowing on the newly developed slope lands.

grasslands by direct over-sowing method.

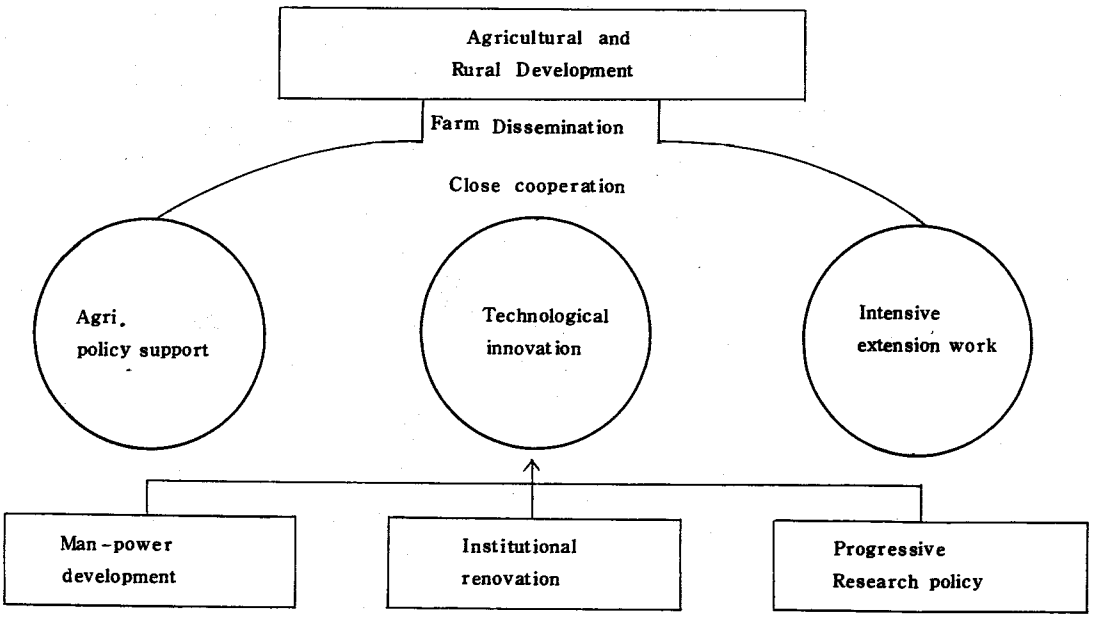
The author wishes to express appreciation to Drs. M.N. Chung, Y.S. Chung, and Y.D. No for their helpnesses in the writing of this paper. Particular acknowledgement is due to S.K. Chung and N.H. Song for their data collection and analysis.

CONCLUSION

Development of small farm economy depends mainly on interrelated three factors. These include technological changes and innovations, appropriate government agricultural policies, and supportive social institutions. But the generation and transmission of scientific and technical knowledge are most important with regard to agricultural growth in Korea, as innovations emerge in science and technology.

Continuous man-power development, institutional responsiveness and flexibility on the dynamics of agricultural growth, and collaborative research implementation for the targeted projects have induced technological break-through in Korea, and intensive and systemetic technology dissemination by extension workers and scientists have successfully resulted in great increase of agricultural products. The Rural Development Administration which is the main institute for agricultural research and extension is produce of those results. It may be the most important factor for agricultural development that who initiate it, How to do it, and How much to be supported by related agencies.

However, special considerations about agricultural research and dissemination are required for sustaining agricultural growth in Korea. The use of resources for agricultural research and extension must be justified in terms of the value of the new technology of new knowledge that they produce and diffuse. The target policy variables continuously emphasized include: more investment for physical and human capital; institutional improvement in order to balance producer and consumer interests more effectively.



摘 要

農業은 여러가지 要因들의 綜合的인 推進結果에 依하여 開發 내지는 發展되고 있지만 農業技術의 革新과 이의 農家普及이 農業開發의 根源的인 課題라고 할 수 있다.

韓國은 그 동안 先進國에서 遂行한 研究結果의 直接活用, 共同研究, 研究方法 및 研究體制의 應用等의 過

程을 거쳐 우리 스스로가 農事技術開發 能力을 빠른 時日內에 培養 蓄積하게 됨으로써 70年代의 綠色革命으로 代表될 수 있는 技術革新과 部分的이나마 世界水準에 達하는 農業科學 및 營農技術水準을 가져오게 되었다. 따라서 本 硏究는 韓國 農業技術開發의 中樞的 役割을 擔當하고 있는 農村振興廳에 對한 硏究組織體制, 硏究方法等을 紹介함과 同時에 어떻게 農事技術革新에 寄與하고 있는가를 檢討하였기에 그 結果를 다음과 같이 要約하였다.

1. 韓國의 農事試驗硏究事業은 主穀의 自給이라는 當面 目標를 빠른 時日內에 達成하기 爲하여 主穀爲主 및 中央單位 硏究의 集中化(豫算, 人員等)로 一貫되어 왔으나 國民所得 增大에 따른 消費 性向의 變化에 能動的으로 對處하기 爲하여 主穀以外 成長 農作物의 技術革新에도 均衡있는 豫算과 人力을 配分하고 있다.

2. 農業科學技術의 發展은 硏究機關 및 技能의 擴大, 硏究室 制度의 導入等에 依한 專門化 硏究 傾向을 助長하여 왔으며 分野間의 協力에 依하여 解決되어야 할 課題에 對하여는 課題中心의 硏究 責任者를 通한 大型課題 硏究制度를 導入하여 遂行함으로써 專門分野間의 連繫性 卽 相互補完, 補充 및 共同硏究等을 遂行하여 왔으나 組織 및 機能 또는 硏究員間의 協助 體制에 보다 柔軟性을 附與하기 爲하여는 制度上의 補完이 繼續됨이 바람직하다.

3. 그 동안 農村振興廳은 國內 訓練의 强化, 補酬體制改善等으로 硏究員의 資質을 向上시켜 全硏究員中 70%상당이 碩士以上의 學位를 所持하게 되었으며 89名이 大學에 出講하고 있다. 特히 1981年에 施行된 單一號俸制의 導入은 職級의 單純化(硏究士, 硏究官)을 기하여 資質높은 硏究員의 新規 確保를 容易하게 하였으며 一般 및 技術職보다 有利한 硏究官의 補酬制度는 硏究官의 離職을 減少시켰고(離職率 7.2% → 3.3%), 發表論文의 量에 있어서도 150%以上 增加되는等 여러 面에서 士氣昂揚의 效果를 나타내고 있으나 보다 自發的이고 積極的인 試驗硏究 遂行, 試驗硏究 過程에서의 柔軟化, 硏究士의 處遇等에 對하여는 繼續的인 改善 發展이 必要하다고 보여 진다.

4. 各 試驗場, 硏究所에서 試驗硏究된 結果는 體系的인 過程을 거쳐 農政施策에 反映하고 技術指導를 通하여 農民에게 迅速하게 普及되고 있으며 農業技術은 그 對象인 農民에게 普及 利用되므로써 生命力을 갖게 됨에 따라 그동안 蓄積된 基礎硏究의 土臺위에 應用爲主의 硏究도 活發히 遂行되어 施策建議와 指導事業反映資料가 70年度 123件에서 84年度에는 254件으로 增加 現象을 보여 農事試驗硏究가 農業 發展에 核心的인 役割을 하고 있다. 特히 高度 技術을 要하는 營農指導는 指導員 및 農民을 對象으로 하여 專門硏究 機關의 訓練과 硏鑽會에 加擔하거나 또는 硏究員이 直援農家圃場에서 支援토록 함으로써 硏究員과 指導員 및 農民間에 一體感을 造成하고 營農 問題點의 現場 確認으로 硏究 課題 反映等을 自律的으로 造成될수 있게 하였다.

5. 農村振興廳에서 主導한 農業技術革新은 農業 全般에 걸쳐 그 發展에 크게 寄與하였으며 水稻 多收系品種의 改良 및 普及을 通한 主穀의 自給達成 비닐革命으로 代表될수 있는 참깨等 所得作目의 비닐밀칭栽培技術 確立에 依한 劃期的 增產, 우량버섯 品種開發 및 省力栽培技에 依한 버섯栽培農家의 所得增大와 겉뿌림草地 造成 技術 開發 普及等 그 事例는 어느 곳에서나 皮膚로 느껴지고 있다.

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