JOINT EVALUATION ON THE COOPERATION FOR INCREASING RICE PRODUCTION IN INDONESIA

MARCH 1986

JAPANESE AND INDONESIAN EVALUATION TEAM

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SUMMARY

1. Objective of the Evaluation

The objective of the evaluation is to evaluate the cooperation in the field of rice production, which includes "the Cooperation for Increasing Rice Production (hereinafter referred to as "the Cooperation")" under the Umbrella System between Indonesian Government and Japanese Government. The results of evaluation will be utilized as significant information for the study of the future cooperation.

Under the Cooperation, some projects have just come into the initial stage and it takes a longer term for the project to bring the impact and effect to the each field. Since the evaluation of the impact of the Cooperation is difficult at this stage, evaluation is concentrated in the progress of the Cooperation and the Umbrella System.

2. Background of the Cooperation

When the former Japanese Prime Minister Suzuki visited Indonesia in January 1981, it was declared in his statement that the cooperation for increasing food production would be one of the major fields of the economic and technical cooperation to Indonesia. The Record of Discussions on the Cooperation was signed in July 1981, in which the framework of the Cooperation was stipulated. It showed that the duration of the cooperation would be 5 years and priority areas were the following 5 fields and 8 provinces.

Priority fields;

- multiplication and distribution of improved seeds,
- strengthening of crop protection,
- regional application trial and extension of agricultural technology,
- irrigation,
- improvement of post harvest treatment and processing

Priority provinces;

Aceh, South Sumatra, Lampung, West Java, Central Java, East Java, South Kalimantan, South Sulawesi

Being concentrated in the above 5 fields and 8 provinces, the integrated cooperation system, which is called "the Umbrella System", has been carried out under the close linkage between technical and economic cooperation. The 5 years-period of the cooperation will be terminated at the end of March, 1986.

3. Progress of the Cooperation

The progress of the cooperation by field by type of cooperation is shown as follows.

(1) Multiplication and distribution of improved seeds

Technical cooperation

- development survey	1 project	¥113 million
- indvidual expert	1 person	24 M/M
- training in Japan	4 persons	4 M/M

Economic cooperation

- food production assistance (2KR)		
(1982,83,84,85)	4 projects	¥1,162 million
- loan assistance	1 project	¥3,000 million

(2) Strengthening of crop protection

Technical cooperation

- development survey	1 project	¥ 73 million
- project type	1 project	¥563 million
- training in Japan	22 persons	106 M/M

Economic cooperation

- food production assistance (2KR)		
(1983,85)	3 projects	¥2,319 million
- general grant aid	2 projects	¥2,506 million
(1985)		

(3) Regional application trial and extension of agricultural technology

Technical cooperation

- development survey	1 project	¥19 million

(4) Irrigation

Technical cooperation		
- development survey	5 projects	¥992 million
- individual expert	21 persons	400 M/M
- training in Japan	23 persons	31 M/M
Economic cooperation		
- food production assistance (2KR)		
(1985)	3 projects	¥2,172 million
- general grant aid	1 project	¥ 760 million
- loan assistance (E/S)	5 projects	¥3,185 million
- loan assistance (construction)	2 projects	¥12,836 million

(5) Improvement of post harvest treatment and processing

Technical cooperation		
- development survey	1 project	¥223 million
- training in Japan	11 persons	24 M/M
Economic cooperation		
- food production assistance (2KR)		
(1982,84,85)	8 projects	¥5,757 million
- loan assistance	1 project	¥5,800 million

(6) Others

A: Water Management		
Economic cooperation		
- food production assistance (2KR)		
(1985)	1 project	¥134 million
B: Agricultural Mechanization		
Economic cooperation		
- General grant aid (1985)	1 project	¥1,749 million

(7) Advisor

Technical cooperation		
- individual expert	2 persons	40 M/M

Remarks: Year mentioned as fiscal year

4. Present Conditions of Demand and Supply of Rice in Indonesia

In Indonesia, significant amount of rice was imported for a long period in the past. During the 1970s, volume of the imported rice corresponded to more than 10% of domestic consumption (total of domestic production and import). In 1980, volume of the imported rice was 2 million tons which corresponded to about 10% of 22 million tons of domestic rice consumption and 5% of total value of imported goods. Therefore, the Government of Indonesia gave top priority for the achievement of the rice self-sufficiency in each Five Year Development Plan.

During the period of the Third Five Year Development Plan (1979/80-1983/84), the Japanese cooperation for increasing rice production started as the Umbrella System. Meanwhile rice production increased sharply from 17,870 thousand tons/year in 1979 to 24,010 thousand tons/year in 1983. Rice production was realized to exceed the target production in the Plan.

In 1984, rice production increased remarkably and rice self-sufficiency was achieved. The National Logistic Agency (Badan Urusan Logistik;BULOG), which has a role for distribution of rice, held 3,500 thousand tons of stock in November, 1985. The stock was about 10% of the total consumption, for which it is still within the range of appropriate stock.

Future population growth is projected as 2% per annum during the period of the Fourth Five Year Development Plan, and also annual growth rate of per capita rice consumption is estimated to be 1.17% in the plan period. Therefore, towards maintaining rice self-sufficiency, it should be required to increase the rice production to meet the future demand for food, to improve the quality of rice, and to reduce the losses in production and post harvest stages.

5. Evaluation on the Cooperation for Increasing Rice Production

(1)Effects on increasing rice production

. Rice self sufficiency was attained as a whole in Indonesia during the period of the Cooperation. However, it is difficult to evaluate quantitatively the contribution of the Cooperation for this success in the form of impact by the Cooperation to rice production increase.

. Impacts by the Cooperation are expected in respective fields, such as increase of yield in the field of improved seeds, decrease of losses caused by pest and disease in the field of crop protection, increase of rice planting area in the fieled of irrigation and decrease of quantity and quality losses in the field of post harvest. Furthermore, accelerated effect is expected through the integration of cooperation of all fields concerned.

(2)Evaluation for the Umbrella System

. The Government of Indonesia has recognized the efficiency and necessity of integrated system of various types of cooperation. In this aspect, the Umbrella System is to meet the development policy of the Government of Indonesia.

. Various agencies of both Governments could have smooth and timely communication and reach mutual understandings of implementation of the Cooperation, through periodical discussions for the Cooperation such as Annual Consultation Meeting and Working Level Consultation Meeting.

. In Indonesia, the Working Committee was formulated among the agencies concerned, headed by Director of Bureaul of Planning, Ministry of Agriculture, and the Umbrella System was promoted through discussions and smooth communication through the Committee.

Furthermore, each implementation agency could have a convenience to explain to the Ministry of Finance and BAPPENAS for financing, under the framework of the Cooperation.

. As goals and measures were clarified in the respective fields of increasing rice production under the Umbrella System, the Embassy of Japan and JICA office could utilize those information as a guidline of promotion of cooperation.

. The advisor promoted the mutual understandings among the relevant agencies and personnel concerned and coordinated the all fields of the Cooperation.

. Japanese agricultural cooperation was concentrated to the field of increasing rice production during the period of the Cooperation.

. It was common understanding among the donor countries, international organizations as well as in Indonesian Government that the cooperation on the increasing rice production would be intensively implemented by Japan,.

(3) Evaluation of each field

1) Multiplication and distribution of improved seeds

Based upon the results of the Feasibility Study on the Rice Seed Production and DistributionProject, equipment was supplied under 2KR. However the equipment have not yet fully used due to the delay of institutional arrangement of the agencies to which equipment was supplied. As to the assistance by loan, loan agreement for Rice Seed Production and Distribution Project was already signed in February 1985. However, the project is not yet effected due to a delay of the implementation precedure and preparation of local fund, etc.

2) Strengthening of Crop Protection

Based on the result of Feasibility Study on Crop Pest Surveillance and Forecasting, construction of Pest Forecasting Centre and supply of equipment and fertilizers for plant protection brigades have been implemented through general grant aid and food production assistance under the heading "Strengthening of Plant Protection Services" which is cooperated as project type technical cooperaion and general grant aid (Plant Protection Project). The Plant Protection Project has progressed, and the supplied equipment and fertilizers were used suitably whenever the occurrence of pest and disease was encountered.

3) Regional application trial and extension of agricultural technology

In this field, long term survey was completed and a meeting was held between both Governments in August 1983. However no project in this field has been implemented due to a change of policy from the implementation of cooperation in this field to strengthening of the existing Agricultural Development Centre (ADC).

4) Irrigation

Projects in this field have favourably progressed as follows.

a. Development studies were conducted for almost all projects in this field and many projects by the loan, such as engineering services for Upper Komering Irrigation Project and Bila Irrigation Project and construction for Riam Kanan Irrigation Project, were taken up as a continuation of the development studies which were conducted before initiation of the Cooperation. However, in recent years in some loan projects the disbursement has been delayed due to a shortage or delay of preparation of local funds. It is required that the local funds will be effective to use for the earlier implementation of the projects in the future.

b. Riam Kanan irrigaion project was implemented under general grant, and the projects under food production assistance are also being implemented.

5) Improvement of post harvest treatment and processing

Based on the development survey, "Study on Post Harvest Losses", L/A was signed in March 1984 for Post Harvest Agricultural Equipment. Under the food production assistance, equipment was provided to KUD and P.T. PERTANI and utilized in an effective manner.

6) Other fields

In the other fields, E/N of 2KR for water management was signed. And for agricultural mechanization, survey for project type technical cooperation was conducted and the E/N for general grant aid was signed.

7) Advisor

Advisor is working effectively as a coordinater among the agencies concerned for the implementation of the programme and the project of the Cooperation.

6. Conclusions

(1) Under the Umbrella System, some projects have just come into the initial implementation stage and it takes a longer term for the project to show the impact and effect. The progress and performance of the Cooperation is favorable and it is confirmed that the Cooperation is making a step toward achieving rice self-sufficiency.

In order to realise the potential effects of the on-going projects in the future, it is requied to overcome the difficulties and to improve the system for continous promotion by both Governments and also to integrate with the new projects under preparation. The projects which are still at the stage of planning should also be implemented as soon as possible.

(2)a. From the viewpoint of the planning, the umbrella System has worked out effectively as framework to promote the cooperation smoothly at the stage of project preparation. However, coordination among the programme amd the project in some fields of cooperation has not been proceeded in a sufficient level without a common guideline for project implementation due to a lack of the integrated master plan whic will provide a systematic strategy of all fields of cooperation.

b. From the viewpoint of the implementation system, the Umbrella System was effective before the implementation of each project. i.e. at the preparatory and planning stages of proposl of the development plan and the budget to the Ministry of Finance and BAPPENAS. The implementation system should be organised to add more functions for coordination and feedback at the stage of implementation in order to maximise the effects by the Cooperation.

(3) Agricultural development policy and measures are being different in Java Island and the outer area of Java. In the long run the priority of development in Java will be shifted from agriculture to other sector which can bring a higher value added on the effective use of water and land resources, and therefore rehabilitation and more effective use of the existing facilities are more emphasized in agricultural sector than the expansion of agricultural land. On the other hand, in the outer land of Java the development of of the infrastructure and expansion of the agricultual land are expected mainly for the increasing of rice production to solve the regional imbalance of rice supply and demend.

Effective measures of integration should be developed for the future cooperation of agricultural development, being considered in regional characteristics of each development area from the viewpoint of natural, technical and socio-economic aspects.

(4)a. Under food production assistance (2KR), cooperation projects have been implemented in the fields of improved seeds, crop protection, irrigation and post harvest. However, in some cases the supplied equipments are not properly utilized due to delay in institutional arrangement, lack of training for operators and lack of spare parts.

b. In order to maximize the effects of expert services, it is important to clarify a role of each expert in the whole project, and to promote the better communication among experts and agencies concerned.

1. Introduction

1.1 Objective of the Evaluation

The study aims to evaluate the cooperation toward the field of rice production which includes "the Cooperation for Increasing Rice Production" in Indonesia, with a view to indicate a direction and a framework of future cooperation.

1.2 Outline of the Evaluation

(1) The study includes data collection, field survey and analysis in Japan and in Indonesia, and discussion between the officials concerned in both Governments.

(2) For the study, Japanese Government dispatched the evaluation team to Indonesia in November, 1985, and discussed the result of the study in March, 1986.

1.2.1. Collection of data and information

(1) In Japan

a. Policies and achievement of the Japanese Cooperation to Indonesia
b. Policies and achievement of bilateral cooperation by other donors and multilateral aid to Indonesia
c. Change of policies and executing system of Japanese cooperation between pre- and post- of "the Cooperation for Increasing Rice Production" to Indonesia
d. Reports, data and information related to the projects for increasing rice production

(2) In Indonesia

1) Policies in Agriculture and Rice Production in

Indonesia

a Policies and programmes of the relevant agencies related to rice production increase under the Five Year Development Plans (I-IV) of Indonesia
b Food Crop Sufficiency Programme

2) Information of executing system of "the Cooperation for Increasing Rice Production" in Indonesia side

a Master Plan for Increasing Rice Production
b Criteria of Project screening for the request for Japanese cooperation
c Executing system of "the Cooperation for Increasing Rice Production"

3) Data and information in each project in "the Cooperation for Increasing Rice Production"

a Implementation programme and report of each project
b Progress and results of each project
c Problems of each project in request and implementation

4) Data and information of Agriculture and Rice Production in Indonesia

a Utilization of facilities, equipment and materials provided in the past Japanese cooperation
b Extension of agriculture technology introduced in the past Japanese cooperation to farmers
c Production and yield of rice

1.2.2. Analysis and evaluation

Data and information collected in 1.2.1. above will be analyzed and evaluated in the following points of view.

(1) Evaluation of Japanese cooperation in the field of rice production

1) Background of Increasing Rice Production

As the background of increasing rice production, the socio-economic conditions and agricultural development conditions would be clarified.

a Position of agricultural sector and rice production in the Five Year Development Plans (I to IV) of Indonesia
b Development policies of agricultural sector
c others

2) Characteristics and roles of the Japanese cooperation in the filed of rice production

Including the cooperation in the field of rice production, characteristics and roles of the Japanese cooperation will be clarified and evaluated in comparison with the other bilateral and multilateral cooperation.

(2) Evaluation of the Umbrella System which was employed in "the Cooperation for Increasing Rice Production"

Contribution of the "Umbrella System" to the improvement of the cooperation will be clarified and evaluated.

a. Concentration of Japanese cooperatin in the rice

production field in Indonesia

b. Establishment of systematic implementation programme and cooperation programme in major fields

c. Inter-relationship between the technical and the economic cooperation of Japan

d. Contribution of the "Umbrella System" to improvement of the executing system of cooperation in both governments

e. Effects and problems of the "Umbrella System" in request and implementation stage

f. Others

(3) Evaluation of progress of "the Cooperation for Increasing Rice Production" in the Five Major Fields and in the Eight Selected Provinces

a. Progress of the cooperation in each field and in each Province

b. Utilization of facilities, equipment and materials provided in each field and in each Province

c. Attainment of the cooperation in each field and in each Province

d. Constraints in the cooperation in each field and in each Province

e. Others

2. National Development Plans and Present Conditions of Agricultural Development

2.1. Policies and Priorities in the National Development Plans

2.1.1. Policies, Priorities and Achievement in the Past Development Plans

Indonesian national development is based upon the Five Year Development Plan (Rencana Pembangunan Lima Tahun; REPELITA). The First Fire Year Development Plan was started in 1969/70, and the Third Fire Year Development plan was terminated in 1983/84.

Duration of the past plans is shown as follows.

First Five-Year Development Plan (REPELITA I) : 1969/70-1973/74

Second Five-Year Development Plan (REPELITA II) : 1974/75-1978/79

Third Five-Year Development Plan (REPELITA III) : 1979/80-1983/84

(1) First Five Year Development Plan (REPELITA I)

The First Five Year Development Plan was established as the first national plan under President Soeharto, with the purpose to recover from economic depression and political/social disorder caused during the previous years.

Development goals are shown below;

- to satisfy the demand for food and clothing,
- to improve the infrastructure,
- to fill the housing shortage,
- to increase employment opportunities, and
- to promote mental welfare.

In order to control inflation and to maintain

economic stabilization, President Soeharto put top priority on the agricultural sector, notably to increase food production, and to improve the balance of payment by reducing the import of food.

The plan also aimed to encourage the export of plantation crops, to increase the income level and to promote the industrial sector by increasing production of agricultural chemicals, fertilizer, cement and other agricultural inputs.

Agriculture was given top priority followed by manufacturing, mining and infrastracture there were expected to be developed along with the agricultural development.

Macroeconomic indicators were planned as follows:

Economic growth	: 5% per annum
Population growth	: 2.5% per annum
Income growth	: 2.5% per annum

From macroeconomic stand point, actual economic growth was 7.7% per annum in real terms over the planned rate. It shows that target of economic growth was achieved in real terms.

(2) Second Five Year Development Plan

The Second Five Year Development Plan was established based upon the achievement of the previous development plan, and aimed at higher growth than the previous plan during the plan period.

In addition during the plan period more effort will be directed to the solution of problems which were not solved in the previous plan. These problems

not solved in the previous plan. These problems are; increasing employment opportunities, expanding business opportunities, equitable distribution of the benefits of development, efforts to correct the discrepancies in the market structure, acceleration of economic growth in the provinces, transmigration and other social problems.

The targets were set as follows:

- The availability of better quality food and clothing,
- The availability of building material and other required facilities,
- Expansion and improvement of the infrastracture,
- More equitable distribution of welfare benefits, and
- Increase of employment opportunities.

In order to achieve these targets, extensive development efforts were needed in all sectors while certain requirements had to be met such as national stability, adequate financing, etc.

Table 2-1 shows target and actual figure of production growth rate by sector. Target of annual growth rate of national production was set at 7.5% which was 2.5% higher than the previous plan. In manufacturing, transportation and communication, construction and mining, target growth rates were to be higher than that of the national production. On the contrary, that of agricultural sector which is the most important sector, was lower than that of the national level.

In national production, annual growth rate was

In general, targeted economic growth was achieved. Actual results by sector were summarized as follows.

Exceeding the target : Transportation and communication, Construction

Nearly equal to the target: Manufacturing

Below the target : Mining
Agriculture

Actual growth rate of agricultural sector was 0.8% lower than the target, and it lowered the national economic growth, because it was a major sector which corresponded to about 40% of GDP in 1973.

Table 2-1 Target and Actual Annual Growth Rate of Production by Sector

Sector	Target	Actual	Balance	(unit %)
Agriculture	4.6	3.8	-0.8	
Mining	9.0	4.8	-4.2	
Manufacturing	13.0	12.7	-0.3	
Construction	9.2	11.1	1.9	
Transportation and Communication	10.0	11.3	1.3	
Others	7.6	8.4	-0.8	
Total Production	7.5	6.9	-0.6	

Source: The Second Five Year Development Plan
Statistical Yearbook of Indonesia

(3) Third Five Year Development Plan

Major issues, such as regional development, protection of the economically weak, development of cooperatives, food production, transmigration, housing, education, health and medical, were not solved in the previous development plans. Therefore, the main tasks of the Third Five Year Development Plan were

improvement of living standard, technology and social welfare, and the following three items were described as development principles;

- equalization of distribution of development benefits and equilibrium of development,
- high rate of economic growth, and
- sound and dynamic national stability.

Economic development was the top priority in the Third Five Year Development Plan through the continuation and strengthening of economic development measures which were at a higher priority in development policy of the previous plan. However, the plan emphasized to equalize the distribution of benefits from the development and to achieve the national stabilization for national development.

Especially in equalization of development, the following items were emphasized.

- Equality in filling demand, especially clothing, food and housing
- Equality in educational and medical opportunities
- Equality in income distribution
- Equality in employment opportunities
- Equality in business opportunities
- Equality in participation opportunities for development
- Equality in regional distribution of development
- Equality in opportunities for fairely treatment

Table 2-2 shows planned and actual production increase ratio by sector. Economic development was the top priority among three principal development strategies. National production growth rate was set at 6.5% per annum that was considered potential natural resources, educational and technology level and financial resources. During the Plan period,

population growth rate was estimated to be 2.0% per annum through family control. In order to achieve these targets, rapid growth was expected not only in agricultural sector but also in other sectors. In agricultural sector, it was the urgent need to achieve food self-sufficiency.

Actual growth rate of national economy was 6.0% per annum which was 0.5% lower than the target. The results of each sector were shown as below.

Agriculture	: Exceed the target
Construction	: Equal to target
Mining	: Below the target
Manufacturing	: Below the target
Transportation and Communication	: Below the target

Agricultural sector, the most important sector in national ecomony, achieved the targeted growth rate, but its share was lowered from 32.0% to 29.9%. However, the higher growth rate of agricultural sector contributed to achieve the national economic growth.

Table 2-2 Planned and Actual Annual Growth Rate of Production by Sector (unit: %)

Sector	Planned	Actual	Balance
Agriculture	3.5	4.3	0.8
Mining	4.0	2.2	-1.8
Manufacturing	11.0	8.6	-2.4
Construction	9.0	9.3	0.3
Transportation and Communication	10.0	7.7	-2.3
Others	8.1	7.9	-0.2
Total Production	6.5	6.0	-0.5

Source: The Third Five Year Development Plan.
Statistical Yearbook of Indonesia, 1984.

2.1.2. Policies and Priorities in the Current Development Plan

Current development plan, which is the Fourth Five Year Development Plan (Rencana Pembangunan Lima Tahun IV: REPELITA IV), covers the period from April, 1984 to March, 1989. This plan does not succeed the previous plans, but sets out its specific objectives, priorities and policy directions with a view to maintain the momentum of development while at the same time preparing ground for future sustained development.

This plan has attempted to employ macroeconomic models guidance for its broad quantitative estimates. This has enabled the plan to take a better account of the existing interdependencies and interrelations among variables as well as among sectors, with a view to obtaining a better consistency in the planned microeconomic aggregates.

In this plan, objectives,priorities and policy directions are set not only based upon the Guidelines of State Policy adopted by the People's Consultative Assembly in 1983, and the evaluation of achievement in the previous plans, but also on the outlook of less favourable world economic conditions.

The purposes of this plan are summarized in following 2 items:

- to ensure at least a minimum growth rate that provides increase in per capita income and assures an equitable distribution of income, and
- to lay a sound foundation for future development.

Among these purposes, the priority is still on economic growth as indicated in the previous plans, though greater emphasis is directed to human resources development such as education, health, manpower, clean-water supply, nutrition, housing and human settlement.

Table 2-3 shows target of annual growth rate of each sector. During the plan period, average annual growth rate of national economy was planned to be 5.0%. Average annual growth rate of population was estimated as 2.0%. As a result of this average annual growth rate of per capita income will be equivalent to 3.0%. The foreign exchange prospects are likely to be a major constraint on the economic performance of the country during the plan period.

The agricultured sector, with 3.0% planned growth rate, is expected to support efforts to consolidate a sustainable food self-sufficiency of the country as well as to accelerate the industry and exports. Manufacturing sector was planned to show the highest growth rate among all sectors and this sector is expected to be a leading sector of growth during the five years and beyond.

Table 2-3 Planned Growth Rate by Sector

unit: %

	Planned Growth Rate	Share 1983/84	Share 1988/89
Agriculture	3.0	29.2	26.4
Mining	2.4	7.4	6.6
Manufacturing	9.5	15.8	19.4
Construction	5.0	6.3	6.3
Transportation and Communication	5.2	6.0	6.0
Others	5.0	35.3	35.3
Total	5.0	100.0	100.0

Source: The Fourth Five Year Development Plan

2.2. Development Policies of Agricultural Sector in the National Development Plans

2.2.1. Agricultural Development Policies and Achievement in the Past Development Plans

(1) First Five Year Development Plan

Major development targets of agricultural sector are to increase farmers' income, to improve living standard and to increase employment opportunity through the increase of rice production for self-sufficiency. For the increase of rice production, the following policies are raised adopted.

- Intensification through new technology such as improved seeds, fertilizer and agricultural chemicals.
- Expansion of area planted through rehabilitation and development of irrigation facilities.
- Realization of appropriate rice price through rationalization of Government purchasing price.
- Improvement of law and land possession system
- Development and extension of agricultural education system
- Expansion of agricultural credit system.

Among the policies mentioned above, a higher priority was directed to rehabilitation and development of irrigation system. During the plan period, paddy planted area was expected to increase by 1,700 thousand ha, which was planned to be achieved through the development of irrigation facilities. Intensification of rice production through new-techology, is also closely related to education, extension and agricultural credit, and these were implemented by BIMAS/New BIMAS and INMAS. BIMAS/ New BIMAS includes credit system by government fund for extention of high yield varieties, fertilizer, and

agricultural chemicals. In INMAS, fertilizer and agricultural chemicals were supplied to farmers. Since 1970/71, maximum and minimum prices of rice has been set in order to rationalize marketing system of rice. The government intervened in the free market to control rice price through purchasing and selling of rice at the market.

The target and actual production of rice are shown in Table 2-4. The paddy planted area was planned to be 7.6 million ha in 1969 and to be 9.3 million ha in 1973 with an increase of 22.4% during the Plan period. Intensification area, such as BIMAS/New BIMAS, was planned to increase from 34.1% to 43.0% of total area during the plan period, and yield per ha was expected to increase from 1.38 tons/ha to 1.66 tons/ha.

Annual production target of rice was realized in the first three years, but did not reach the target in the next two years.

Table 2-4 Planned and Actual Rice Production during the Period of the First Five Year Development Plan

		1969	1970	1971	1972	1973
Planned						
Intensification Area	(1,000 ha)	2,590	2,900	3,150	3,480	4,000
Non-intensification Area	(1,000 ha)	5,010	5,060	5,170	5,280	5,300
Total Rice-planting Area	(1,000 ha)	7,600	7,960	8,320	8,760	9,300
Unit Yield	(tons/ha)	1.38	1.43	1.51	1.58	1.66
Total Rice Production	(1,000 tons)	10,520	11,430	12,520	13,810	15,420
Actual						
Total Rice Production	(1,000 tons)	12,249	13,140	12,520	13,183	14,607

Source: The First Five Year Development Plan
Statistical Yearbook of Indonesia

(2) Second Five Year Development Plan

During the period of the previous plan, rice production increased by 4.4% per year on an average. However, it could not meet the increase in rice demand. In the Second Five Year Development Plan, agriculture continued to as a top priority. Development in the production of food, industrial and export materials turned out by agricultural sector would continue to bring a very significant influence on price stabilization and the development of the stock of raw materials as well as the foreign exchange earnings of the state.

In the field of food crop production, mainly in rice production, the following basic policies were promoted;

- to increase rice production through expansion of the intensification,
- to strength the activities of leaders,
- to increase the supply of superior seedings,
- to complete and to expand a credit system for farmers,
- to perfect the system of supply and distribution and to increase the spread of retailers for such production inputs, and
- to step up the provision of production infrastructure.

In order to bring the maximum benefit as far as possible from the existing irrigation networks, responsibility for operation and maintenance was planned to be transferred from the public to the private sector.

Introduction of new superior varieties of rice

increases its yield and shorter the growth period. For the purpose of extension of new superior varieties, it was planned that demonstration be carried out by exemplary farmers or farmer's contact officers who had received intensive guidance from the agricultural extension office.

Although high priority was given to increase the domestic production of fertilizer, import of fertilizer would continue. The number of fertilizer retail shops was planned to be increased to ensure the smooth supply of fertilizer to the farmers.

The branches of the bank were planned to be established at village level for the financial support in order to encourage the intensification.

Table 2-5 shows the planned and the actual rice production during the period of the Second Five Year Development Plan. The rice-planting area was planned to be 8,982 thousand Ha in the last year of the Plan, which was 6.1% higher than 8,464 thousand Ha in the first year of the Plan. The ratio of intensification area was planned to grow from 51.1% in 1974 to 67.7% in 1978, and rice yield per ha was planned to increase from 1.83 tons/ha in 1974 to 2.09 tons/ha in 1978.

Actual production increased constantly from 15.3 million tons in 1974 to 17.5 million tons in 1978, and it corresponds to 96.7% of production target of rice during the plan period.

Table 2-5 Planned and Actual Production of Rice during the Second Five Year Development Plan

	1974	1975	1976	1977	1978
Plan					
Intensification Area (1,000 ha)	4,326	4,666	5,095	5,544	6,082
Non-intensification Area (1,000 ha)	4,138	3,864	3,504	3,192	2,854
Total Rice-planting Area (1,000 ha)	8,464	8,530	8,599	8,736	8,982
Unit Yield (tons/ha)	1.83	1.89	1.96	2.03	2.09
Total Production (1,000 tons)	15,032	15,633	16,383	17,235	18,183
Actual					
Total Production	15,276	15,183	15,845	15,786	17,525

Source: The Second Five Year Development Plan
Statistical Yearbook of Indonesia 1984

(3) Third Five Year Development Plan

In the Third Five Year Development Plan, agricultural sector continued to be the top priority, and main purpose was to increase agricultural products, such as foods, export materials and raw materials for manufacture. Especially, rice production did not reach the target in the previous plans, and it was continued to be given high priority in the rice production measures. The basic measures were placed on intensification and expansion of the rice planting area. The following policies were pointed out to meet this purpose.

1) Production and distribution of superior seeds
   - To encourage seed distribution from seed center and seed farmers
   - To extend these seeds to the irrigated area
   - To train extension workers

2) Guidance in the use of fertilizers
   - To select the suitable fertilizer for each agricul-

tural land
- To extend not only chemical fertilizer but also organic fertilizer

3) Promotion of crop protection
- To select pest-resistant variety
- To train in the application method of agricultural chemicals
- To organize the crop protection brigades

4) Campaign for enlightenment
- To promote communal use of irrigation canal
- To guide processing, storing and using of agricultural products and improvement of nutrition for women

5) Expansion of the irrigated area
- To develop the new irrigated paddy field of 350 thousand ha
- To improve the irrigated area of 536 thousand ha as a continuation of previous plan
- To develop swamp area of 536 thousand ha

Table 2-6 shows planned and actual rice production during the plan period. With regard to total rice planting area, the actual area was almost the same as the planned area during 1979 to 1981, but actual harvested area decreased in 1982 and it could not recover to target level by 1983. However, owing to the significant increase in yield, total production increased from 178.7 million tons in 1979 to 240.1 million tons in 1983 exceeding the target level.

Table 2-7 shows planned and actual production of secondary crop.

Table 2-6 Planned and Actual Rice Production during the Period of the Third Five Year Development Plan

		1979	1980	1981	1982	1983
Planned						
Intensification Area	(1,000 ha)	5,223	5,541	5,971	6,184	7,220
Non-intensification Area	(1,000 ha)	3,662	3,524	3,324	3,116	2,705
Total Rice-planting Area	(1,000 ha)	8,885	9,065	9,295	9,600	9,925
Unit Yield	(tons/ha)	2.02	2.03	2.04	2.05	2.07
Total Production	(1,000 tons)	17,940	18,442	18,995	19,688	20,574
Actual						
Area Harvested	(1,000 ha)	8,803	9,005	9,381	8,988	9,102
	(%)	(99.1)	(99.3)	(100.9)	(93.6)	(91.7)
Unit Yield	(tons/ha)	2.03	2.24	2.37	2.54	2.63
	(%)	(100.5)	(110.3)	(116.2)	(123.9)	(127.1)
Total Production	(1,000 tons)	17,872	20,163	22,286	22,837	24,006
	(%)	(99.6)	(109.3)	(117.3)	(116.0)	(116.7)

Source: Evaluation on the Development of Food Crop Agriculture in EPELITA III, Book II, 1983.
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Table 2-7 Planned and Actual Secondary Crop Production during the Period of the Third Five Year Development Plan

Unit:1,000 tons

	Maize		Cassava		Sweet Potato		Soy beans		Peanuts	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Act.	Plan	Actual
1979	3,203	3,605	13,632	13,750	2,686	2,194	631	679	459	434
1980	3,577	3,993	14,308	13,773	2,976	2,077	681	652	496	469
1981	3,657	4,509	14,949	13,300	3,321	2,093	736	703	530	474
1982	4,092	3,234	15,676	12,987	3,624	1,675	791	521	559	436
1983	4,200	5,094	17,340	12,229	4,039	2,044	852	568	604	475

Source: Evaluation on the Development of Food Crop Agriculture in PELITA III, Book II, 1983
Statistical Year Book of Indonesia 1984

2.2.2. Agricultural Development Policy in the Current Development Plan

(1) Development Policy on Agricultural Sector

The following major objectives were specified for the agricultural development in the Fourth Five Year Development Plan:

- to increase agricultural production to meet domestic requirements for food and industry.
- to increase export,
- to increase farmers' income,
- to create new employment opportunity
- to promote more balanced distribution of business opportunities,
- to support regional development, and
- to promote transmigration activities.

It is also stipulated that agricultural development which includes the development of food crops, fisheries, animal husbandary, plantation and forestry, will be escalated through intensification, diversification and rehabilitatin programmes in an integrated, synchronized and balanced manner which at the same time ensures that natural resources and the environment will be safeguarded and preserved.

Agricultural development programmes will also be integrated with the regional and rural development programmes. In particular, for matters relating to land, effective control of the utilization, holding, ownership, and transfer of land rights will be maintained and stepped up in accord with the principles of equitable distribution.

Along with the abovementioned government policies,

participation of farmers/fishermen through farmers/ fisherman groups and rural cooperative units will be enhanced. At the same time large agricultural companies will be encouraged to assist small holders in the development.

Planned production of food crops is shown in Table 2-8. Rice production is planned t increase by 4.1% per annum. The other food crops, except sweet potato, are planned to increase at higher rate than that of rice. The priority of these secondary crops in food production has been raised, especially for soybeans, peanuts and green beans which are expected highest increasing ratio.

In order to achieve the target production, the following programmes were prepared.

(a) Extension and quality improvement in the areas under the Special Intensification Programme (INSUS)
(b) Intensification, diversification and rehabilitation of marginal lands and infertile areas through the Special Operation Programme (OPSUS).
(c) Extension and quality improvement in the intensification areas of the newly developed area (new rice field and transmigration areas).

Table 2-8 Planned Production of Food Crops during the Period of the Fourth Five Year Development Plan

unit: 1,000 tons

	1984	1985	1986	1987	1988	Growth Rate
Rice	24,701	25,781	26,867	27,736	28,624	4.06%
Maize	5,412	5,694	5,993	6,308	6,656	5.14%
Cassava	14,702	15,403	16,145	16,919	17,756	6.08%
Sweet Potato	2,257	2,331	2,401	2,482	2,564	2.82%
Peanuts	536	580	621	671	724	8.70%
Soy beans	783	885	1,003	1,086	1,179	15.24%
Green beans	204	231	261	298	340	16.13%

Source: Policy and Operational Actions of the Development of Food Crop Agriculture in the PELITA IV

(2) The Programme for the Increase of Rice Production

Table 2-9 shows target production of paddy during the period of the Fourth Five Year Development Plan. Rice planted area is planned to increase from 9,179 thousand ha in 1984 to 9,726 thousand ha in 1988, intensification area is planned to be 84.4% of total rice planted area in 1984 to 95.0% in 1988. During the period of the first three Five Year Development Plans, farmers showed high interest to introduce new technology through extension of intensification method which was supported by BIMAS and INMAS. Intensification programme will be continued from the previous plans to the Fourth Five Year Development Plan and intensification is planned to be carried out mainly for rice production area.

During the period of the Fourth Five Year Development Plan, yield of rice is planned to increase from 2.69 tons/ha in 1984 to 2.94 ton/ha in 1988 corresponding to 15.9% of growth rate of yield during these five years.

The major constraints against rice production increase are the poor irrigation and drainage network. In the Fourth Five Year Development Plan, the following programmes are prepared relating to development of irrigation and drainage network system.

. Development of new irrigation network: 600 thousand ha
. Rehabilitation of existing irrigation network : 360 thousand ha
. Development of small irrigation canal: 720 thousand ha
. Development of swamp area : 460 thousand ha
. Improvement of river system : 500 thousand ha

In the Fourth Five Year Development Plan, the concentration in the programme for rice production was changed from previous plans. In the Fourth Plan priority in water use is focused on irrigation in rural area and on domestic use and industrial use in urban area. Furthermore in the previous plans, agricultural development

policy was mainly concentrated on the field of rice production, but now, conversion to secondary crops is promoted on the agricultural land which is not suitable for rice production due to shortage of water supply. Priority area for new expansion of paddy field and for the new development irrigation system is not in Java Island which has reached already the limit of development of agricultural land, but in outer area which has a wide potential area to be developed. With regard to development of irrigation system, priority was placed on the rehabilitation of the existing irrigation facilities and development of small irrigation canal in communal level, for which only a smaller amount of investment cost is required and it required shorter term of construction compared with development of huge dam.

Table 2-9 Planned Rice Production during the Period of the Fourth Five Year Development Plan

	1984	1985	1986	1987	1988
Intensification Area (1,000 ha)	7,747	8,747	8,403	8,865	9,240
Non-intensification Area (1,000 ha)	1,432	1,287	1,146	772	486
Total Area (1,000 ha)	9,179	9,360	9,548	9,637	9,726
Unit Yield (ton/ha)	2.69	2.75	2.81	2.88	2.94
Total Production (1,000 tons)	24,701	25,781	26,867	27,737	28,624

Source: Policy and Operational Actions of the Development of Food Crop Agriculture in the PELITA IV

(3) Change of Agricultural Development Strategy

1) Increase of kinds of Priority Crop

Self-sufficiency of rice was the most important target in previous development plans, and self-sufficiency was achieved in 1984/85. At present, rice production is surplus, and farmers' economy has deteriorated to the declining of rice price.

Even though the conditions occured as mentioned above, Indonesian Government has still kept the first priority on rice production, but the Government aims

to achieve self-sufficiency of food crops which includes secondary crops (palawija) such as soybeans, maize and peanuts as well as rice.

2) Change of Priority in Region

Increase of kinds of priority crop has relation to change of priority provinces. The greater part of population concentrates in Java Island. In Java, cultivated land has been developed up to the nearest land to the top of mountain, and it causes land errosion. Therefore, potential area to be developed for new paddy field is very limited in Java. Paddy also requires more irrigated water than secondary crops and horticulture, and water requirement in non-agricultural sector, such as domestic water supply industry, is expanding. In Java, effective water use is the basic policy for the land and water resources development, priority measures for irrigation are not for new development of irrigation system but for rehabilitation of the existing irrigation facilities and for strengthening of water management in Java Island. Further in the area which is not advantageous for rice production, introduction of secondary crops and horticulture is to be promoted.

According to the population projection by National Statistical Bureau and Committee for Family Planning, it is expected that population will increase rapidly until 2,000. In order to maintain self sufficiency of rice, it is required to develop new paddy field. Only outer areas of Java and Bali have still potential lands to be developed for the new paddy field. In these outer areas population density is very low and the developed area for agricultural land is only limited. Government has the policy to promote transmigration from Java and Bali to these outer areas. In outer areas, development level of infrastructure is still poor, and large amount of investment is required for the land development before the implementation of the transmigration. At

present, some projects are implemented for the development of the new irrigation system.

Selection of priority crops depends on the natural, technical and socio-economic conditions of each province. Especially Indonesian Government intends to promote to change the crops from rice to secondary crop in areas with inferior irrigation system.

3) Requirement of Integrated Development

In order to increase rice production, there are various requirements such as extension of high yield varieties, input of chemical fertilizers and agricultural chemicals, introduction of agricultural machine and utilization of irrigated water. Effect on the production by introduction of these inputs will not be maximized by introduction of each input separately but through the integrated and combined method of these inputs.

According to "Policy Options and Strategies for Major Food Crops, April, 1983, World Bank", the contribution inputs to rice production increase is summarized as follows.

a. Individual Effect	:	25%
Modern Varieties	:	5%
Fertilizers	:	4%
Irrigation	:	16%
b. Joint Effect	:	75%
Total	:	100%

Even though there are some assumptions for contribution of each input, it is promised that rice production increase will be brought by joint effect of various agricultural inputs.

2.3. Present Conditions of Agricultural Development

2.3.1. Position of Agriculture in National Economy

(1) Gross Domestic Product (GDP) and Value Added of Agricultural Sector

Table 2-10 shows GDP and value added by sector. In 1983, the DGP was realized to be 12,842 billion Rp., of which agriculture sector was 29.9%; commerce sector, 17.4%; manufacturing sector, 15.1%; public services sector, 9.2% and mining sector, 7.4%.

During 1979 and 1983, a share of agricultural sector in the GDP has decreased, but agricultural sector has still the largest share in GDP. The shares of commerce, manufacturing and government services sector increased, while the share of mining sector declined due to fall of oil export caused by drop of international oil price. Share increase of public service sector and decrease the share of mining sector are the major factors that caused the deterioration in the public finance.

Table 2-11 shows value added by sub-sector in agricultural sector. In 1983 the total value added of agricultural sector was 3,845 billion Rp., of which food crops shared 62.7%; non-food crops, 12.6%; plantation crops, 7.5%; animal husbandry, 6.3%; forestry, 5.3% and fisheries, 5.6%. Food crops sub-sector highly contributed to the growth of agricultural sector. This maximum share and its increase are attributed to the increase in rice production.

Table 2-10 GDP by Sector (at 1973 Constant Price)

Unit : billion Rp.

	1979	1980	1981	1982	1983
Agriculture	3,255	3,424	3,593	3,669	3,845
Mining	1,046	1,034	1,069	939	956
Manufacturing	1,395	1,704	1,877	1,900	1,942
Electricity,Gas and Water Supply	68	77	89	105	113
Construction	562	639	720	757	804
Commerce	1,681	1,851	2,042	2,158	2,240
Transportation and Communication	559	609	676	716	752
Bank	179	207	231	258	276
Real Estate	306	335	358	377	400
Public Service	805	971	1,075	1,114	1,176
Other Service	304	311	318	326	334
Total	10,164	11,169	12,054	12,325	12,842

Source: Statistical Year Book of Indonesia 1984

Table 2-11 Value Added by Sub-sector in Agricultural Sector (at 1973 constant price)

Unit : billion Rp.

	1979	1980	1981	1981	1983
Food Crops	1,908	2,073	2,261	2,294	2,412
	(58.6)	(60.5)	(62.9)	(62.5)	(62.7)
Non-food crops	402	416	429	459	484
	(12.3)	(12.1)	(11.9)	(12.5)	(12.6)
Plantation Crops	231	232	243	285	287
	(7.1)	(6.8)	(6.8)	(7.8)	(7.5)
Animal Husbandry	201	212	219	230	241
	(6.2)	(6.2)	(6.1)	(6.3)	(6.3)
Forestry	337	305	245	196	203
	(10.4)	(9.0)	(6.8)	(5.3)	(5.3)
Fishery	174	182	193	204	216
	(5.3)	(5.3)	(5.4)	(5.6)	(5.6)
Total	3,255	3,424	3,593	3,669	3,845
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Source: Statistical Year Book of Indonesia 1984

(2) External Trade of Agricultural Products

In the Indonesian external trade oil export owns big share, but recent years, the oil export has been decreasing due to fall in the international oil price.

As to import, it has been increasing sharply from 1980 to 1982. However it dropped slightly in 1983 and sharply decreased in 1984. Imported value of food was about 10% of total import in 1980 and 1981, 6.4% in 1982 and 6.9% in 1983. The import of food, notably plant food, declined sharply in 1984. The main reason for reduction of food import is a cut of rice import owing to the significant increase of rice production in the country.

Table 2-12 External Trade

Unit: Million $

	1980	1981	1982	1983	1984
Export	23,950	25,164	22,328	21,145	21,887
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
Oil	17,784	20,668	18,407	16,153	16,018
	(74.3)	(82.1)	(82.4)	(76.4)	(73.2)
Import	10,834	13,272	16,853	16,351	13,882
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
Foods	1,285	1,356	1,074	1,134	
	(11.9)	(10.2)	(6.4)	(6.9)	
Balance	13.116	11,892	5,469	4,794	8,005

Source: Statistical Year Book of Indonesia 1984

Table 2-13 Export and Import of Foods

	1 9 8 3		1 9 8 4	
	1,000 tons	Million$	1,000 tons	Million $
Animal Foods	87	123	99	105
Plant Foods	3,392	878	2,423	609
Processed Foods, Liquor, Tabaco	440	267	382	154

Source: Indikator Ekonomi, Augustus 1985

Table 2-14 Rice Production and Import

	Rice Production		Rice Inport		Total	
	1,000 tons	%	1,000 tons	%	1,000 tons	%
1980	20,163	94.4	1,196	5.6	21,359	100.0
1981	22,286	98.1	437	1.9	22,723	100.0
1982	22,837	97.8	507	2.2	23,343	100.0
1983	24,006	94.9	1,300	5.1	25.306	100.0
1984	25,825	100.0	0	0.0	25,825	100.0

Source: Jakarta Post, 16th Nov., 1985

(3) Supply and Demand of Agricultural Production

Table 2-15 shows food balance in 1983. In order to meet the domestic food demand, large amount of rice and wheat were imported. Wheat is always imported to meet the demand because it is not able to be produced in Indonesia, while self-sufficiency in rice was achieved in 1984. Rice has the biggest demand followed by cassava, maize, sweet potato and wheat.

As nutritioned intake, rice is the important staple diet by volume, calorie and protein. Maize is the second important sources of calorie followed by beans, coconuts and cassava. Rice and wheat are superior food, and other food are inferior, from the above mentioned view points. Hence the price elasticity and income elasticity of rice consumption are high, and the share of rice in the staple food increases with the increase in income. The per capita rice consumption of 131 kg/year in 1980 increased to 147 kg/year in 1983. Therefore, domestic demand for rice will be increase with the population increase.

Table 2-15 Food Balance in 1983

Unit : 1000 tons

	Food Supply Balance					Comestic Consurption				
	Production	Stock	Import	Supply	Export	Total	Feed	Seed	Processing	Loss	Food
Wheat			1,739	1,739		1,739			1,739		
Wheat flour	1,252	66	5	1,191	-	1,191	-	-	-	-	1,191
Paddy	35,237	-	-	35,237	-	35,237	-	-	-	1,903	-
Rice	21,905	491	1,172	23,566	-	23,566	-	-	-	589	22,977
Maize	5,095	29	28	5,094	18	5,074	305	81	335	254	4,081
Maize for food	285	-	-	285	-	284	-	-	-	-	285
Sweet potato	2,044	-	-	2,044	-	2,055	51	-	-	204	4,081
Cassava	12,229	-	-	12,299	748	11,481	230	-	637	1,493	9,121
Tapioca	82	-	64	146	2	144	-	-	-	-	144
Sago	89	-	0	84	-	89	-	-	-	-	89

Source: Food Balance Sheet in Indonesia 1983

Wheat for Processing (1,739 thousand tons) x 0.72 = Wheat flour production (1,252 thousand tons)

Note: Paddy for processing (32,211 thousand tons) x 0.68 = Rice production (21,905 thouand tons)

Table 2-16 Per Capita Nutrituion Intake in 1983

	Consumption Kg/year	Consumption g/day	Calorie Cal/day	Protein g/day	Fat g/day
Wheat Flour	7.62	20.88	73	2.36	0.31
Rice	146.93	402.58	1,473	25.77	3.22
Maize	26.10	71.51	250	6.51	3.00
Maize for Food	1.82	4.99	6	0.20	0.06
Sweet Potato	11.50	31.51	30	0.28	0.09
Cassava	58.33	159.81	157	1.12	0.16
Tapioca	0.92	2.52	9	0.03	0.01
Sago	0.57	1.56	6	0.02	0.00
Sugar	12.60	34.52	126	0.04	0.13
Beans and Coconuts	18.98	51.99	207	7.98	15.67
Fruits	30.87	84.59	39	0.50	0.23
Vegitables	17.34	49.49	17	0.90	0.15
Meat	3.11	8.53	19	1.45	1.49
Egg	1.49	4.08	7	0.53	0.49
Milk	3.88	10.63	6	0.34	0.38
Fish	10.44	28.61	19	3.36	0.57
Vegetable Oil	5.19	14.23	138	0.07	15.37
Animal Oil	0.11	0.30	2	0.00	0.29
Total			2,584	51.46	41.62
Plant			2,531	45.78	38.40
Animals			53	5.68	3.22

Source: Food Balance Sheet in Indonesia, 1983

2.3.2. Present Conditions of Agriculture

(1) Agricultural Labours and Number of Farm Households

1) Agricultural Workers

Table 2-17 shows total population and number of agricultural workers. The ratio of population engaged in agricultural sector has slightly decreased, though more than half were still engaged in Agricultural sector in 1983.

Table 2-18 shows number of workers by sector in major island.

The ratio of agricultural labour to total labour force in major island in 1982 is shown below.

Major Islands	Percentage
Sumatra	67.1%
Java	48.4%
Kalimantan	65.7%
Sulawesi	60.8%
Others	67.4%
Total	54.8%

Java showed the lowest ratio though it had half of the total labour force involved in agricultural sector, while Sumatra and Kalimantan had two thirds of total labour force.

2) *Number of Farm Households*

In Indonesia, there were 19,505 thousand farm households in 1983; of which 84% were engaged in planting rice and secondary crops, and 43% in horticulture. Rice Farmers were concentrated in provinces of Aceh, South Sumatra, Lampung, West Java, Central Java, East Java, South Kalimantan and South Sulawesi.

Java Island which is densely populated has 60% of the total farm households in the country while in the other areas that are sparsely populated there are potential for agricultural development. Therefore, transmigration is encouraged and promoted from Java and Bali to outer area, such as Lampung Province which has long history of transmigration and agricultural development.

Table 2-17 Total Population and Economically Active Population

(Unit : thousand)

	Total		Economic Activity Population		
	Total	Agriculture	Total	Agriculture	Percentage of Agriculture
1979	145,579	86,899	49,700	29,667	59.7%
1980	148,033	87,125	50,568	29,762	58.9%
1981	150,520	87,388	51,360	29,818	58.1%
1982	153,032	87,641	52,159	29,871	57.3%
1983	155,564	87,883	52,963	29,921	56.5%

Source: 1980-1983 Trade Yearbook, FAO

Table 2-18 Economically Active Population by Major Islands in 1982

(Unit : 1,000)

	Sumatra	Java	Kalimantan	Sulawesi	Others	Total
Agriculture Foresty and Fishery	6,957	18,048	1,810	2,030	2,748	31,593
Mining	83	235	27	12	33	391
Manufacturing	619	4,535	242	310	316	6,022
Electricity,Gas and Water Supply	12	42	2	3	3	62
Construction	286	1,538	91	100	132	2,146
Commercial	1,145	6,418	240	341	410	8,554
Transportation and Communication	263	1,291	68	107	68	1,796
Bank and Real Estate	14	89	3	4	4	113
Public Service	977	5,074	275	432	367	7,125
Others	0	-	-	-	0	-
Total	114	37,270	2,757	3,339	4,080	57,803

Source: Statistical Year Book of Indonesia 1984

Table 2-19 Number of Farm Households by Province

(Unit : 1,000)

	Number of Farm Households in 1983			Population Density in 1980 Person/Km^2
	total	Rice and Secondary Crops	Horti-culture	
Aceh	397	314	88	47
South Sumatra	568	437	186	45
Lampung	724	638	236	139
West Java	3,551	3,082	1,422	593
Central Java	3,589	3,014	1,856	742
East Java	3,976	3,289	1,618	609
South Kalimantan	319	286	106	55
South Sulawesi	801	673	325	83
Others	5,579	4,615	2,454	-
Total	19,505	16,348	8,291	77

Source: Statistical Year Book of Indonesia 1984
Agricultural Census 1983

(2) Land Utilization

Table 2-20 Agricultural Land in 1981

(Unit : 1,000 ha)

	Paddy Field	Dry Field	Shifting Cultivation	Total	Percentage of Agricultural Land
Aceh	283	329	107	719	13.0
South Sumatra	344	230	154	728	7.0
Lampung	158	248	203	609	18.3
West Java	1,190	705	228	2,123	45.9
Central Java	1,015	779	12	1,806	52.8
East Java	1,198	1,086	12	2,296	47.9
South Kalimantan	319	139	73	531	14.1
South Sulawesi	563	563	252	1,378	18.9
Others	2,126	2,550	1,612	6,298	4.2
Total	7,196	6,629	2,653	16,478	8.6

Source: Statistical Year Book of Indonesia 1984

Table 2-21 Paddy Field in 1983

(Unit: 1,000 ha)

	Irrigated	Rain Fed	Others	Total	Irrigated ratio to Paddy Field	Irrigated ratio to total Agricultural Land
Aceh	167	223	41	431	38.7	18.9
South Sumatra	65	41	350	456	14.3	5.9
Lampung	99	45	27	171	57.9	11.9
West Java	881	309	17	1,207	73.0	40.2
Central Java	668	349	6	1,023	65.3	36.1
East Java	884	295	20	1,199	73.7	37.0
South Kalimantan	29	156	192	377	7.7	4.5
South Sulawesi	280	282	3	565	49.6	21.0
Others	1,154	907	455	2,516	45.9	11.6
Total	4,227	2,607	1,111	7,945	53.2	20.0

Source: Agricultural Census 1983

(3) Production of Major Foods

Table 2-22 Production of Major Foods

(Unit : 1,000 tons)

	1979	1980	1981	1982	1983
Rice	17,872	20,163	22,286	22,837	24,006
Maize	3,605	3,993	4,509	3,234	5,094
Cassava	13,750	13,773	13,300	12,987	12,229
Sweet Potato	2,194	2,077	2,093	1,675	2,044
Peanuts	424	469	474	436	475
Soy Beans	679	652	703	521	658

Source: Statistical Year Book of Indonesia 1983

Table 2-23 Harvested Area of Major Foods by Province in 1981

(Unit : 1,000 ha)

	rice	Maize	Cassava	Sweet Potato	Peanuts	Soy Beans
Aceh	257	3	3	1	11	23
South Sumatra	365	5	18	5	10	3
Lampung	290	64	77	2	7	38
West Java	1,944	64	183	43	69	31
Central Java	1,415	607	312	28	112	171
East Java	1,517	1,243	423	38	135	395
South Kalimantan	321	5	6	1	5	1
South Sulawesi	598	323	24	7	49	11
Others	2,675	641	342	150	110	137
Total	9,382	2,955	1,388	275	508	810

Source: Cost Structure of Farms Paddy and Lalawya 1981

Table 2-24 Production of Major Foods by Province in 1983

(Unit: 1,000 tons)

	Rice	Maize	Cassava	Sweet Potato	Peanuts	Soy Beans
Aceh	607	5	45	16	10	28
South Sumatra	775	20	183	45	13	5
Lampung	679	132	834	19	6	16
West Java	5,290	148	1,755	412	73	22
Central Java	4,189	1,315	2,811	249	102	94
East Java	4,793	2,068	3,159	247	128	276
South Kalimantan	492	9	59	11	11	1
South Sulawesi	1,508	459	237	62	33	9
Others	5,673	940	3,146	983	100	117
Total	24,006	5,095	12,229	2,044	476	568

Source: Statistical Year Book of Indonesia 1984

2.3.2 Present Condition of Rice Production

(1) Rice Production

Table 2-25 Harvested Area of Rice by Province

(Unit: 1,000 ha)

	1979	1980	1981	1982	1983
Aceh	257	220	257	256	256
South Sumatra	355	351	365	362	419
Lampung	244	273	290	300	324
West Java	1,806	1,859	1,945	1,798	1,832
Central Java	1,292	1,339	1,415	1,321	1,313
East Java	1,398	1,429	1,518	1,474	1,485
South Kalimantan	310	298	321	303	294
South Sulawesi	591	594	598	509	573
Others					
Total	8,803	9,005	9,381	8,988	9,102
Wet and Paddy	7,675	7,824	8,191	7,873	7,940
Upland paddy	1,128	1,181	1,191	1,115	1,161

Source: Statistical Year Book of Indonesia 1984

Table 2-26 Rice Production by Province

(Unit: 1,000 tons)

	1979	1980	1981	1982	1983
Aceh	488	454	568	590	607
South Sumatra	575	594	642	658	775
Lampung	409	466	533	595	679
West Java	3,987	4,485	4,955	5,053	5,290
Central Java	2,813	3,521	3,917	3,926	4,189
East Java	3,569	4,156	4,678	4,795	4,793
South Kalimantan	488	500	535	503	492
South Sulawesi	481	1,223	1,373	1,261	1,508
Others	5,063	4,765	5,086	5,456	5,673
Total	17,872	20,163	22,286	22,837	24,006

Source: Statistical Year Book of Indonesia 1984

Table 2-27 Yield Per Ha of Rice by Province

(Unit: tons/ha)

	1979	1980	1981	1982	1983
Wet land Paddy					
Aceh	1.95	2.11	2.26	2.36	2.43
South Sumatra	2.93	2.97	2.01	2.08	2.12
Lampung	2.20	2.26	2.42	2.59	2.79
West Java	2.27	2.50	2.63	2.89	2.99
Central Java	2.21	2.67	2.81	3.02	3.25
East Java	2.62	2.99	3.16	3.34	3.32
South Kalimantan	1.65	1.76	1.74	1.73	1,75
South Sulawesi	2.02	2.11	2.35	2.54	2.69
National Average	2.19	2.43	2.57	2.74	2.84
Upland Paddy	0.95	0.95	1.02	1.10	1.19
Total	2.02	2.23	2.37	2.54	2.63

Source: Statistical Year Book of Indonesia 1983

(2) Expansion of Irrigated Area

Table 2-28 Irrigated Area

(Unit: 1,000 ha)

	Technical System	Semi-technical System	Simple System	Total
1969	1,558	1,349	683	3,590
1970	1,642	1,322	698	3,662
1971	1,665	1,060	1,010	3,735
1972	1,765	986	1,059	3,810
1973	1,925	931	1,030	3,886
1974	2,013	971	979	3,963
1975	2,253	1,006	812	4,071
1976	2,345	1,044	742	4,131
1977	2,447	1,053	837	4,337
1978	2,468	1,113	839	4,420
1979	2,452	1,080	851	4,382
1980	2,429	1,175	812	4,416
1981	2,492	1,210	988	4,690
1982	2,527	1,527	690	4,894
1983	2,605	1,540	790	4,935
1984	2,800	1,275	843	4,948

Source: Jakarta Post, 16th Nov., 1985

(3) Tendency of Rice Price and Conditions of Trade

In 1984 Indonesia achieved self-sufficiency in rice, and stock of rice has increased. This had led to decline in price of rice since April, 1984. The farm gate price of paddy has been declining gradually since beginning of 1985. The rice trade has been further deteriorated by rising cost of living and price of agricultural inputs.

Since January, 1984 secondary crops have maintained constant price level while the price of vegetables and fruits have been rising. The rice farmers have been affected by the deterioration of economic conditions.

Table 2-29 Price Index and Trade Condition of Farmers (1976 = 100)

	Consumer Price Index of Rice	Farm Gate Price Index						Farmers' Expenditure Index			Trade Conditions
		Paddy	Secondary Crops	Vegitables	Fruits	Non-food Crops	Total	Living Costs	Production Costs	Total	
1977	104	111	116	103	129	112	114	108	105	107	107
1978	112	120	117	109	147	121	122	115	110	113	108
1979	138	143	129	131	175	134	143	136	120	131	109
1980	161	161	157	149	206	141	164	164	136	155	106
1981	180	172	166	169	234	151	178	188	152	176	101
1982	201	193	185	218	263	157	201	208	168	195	103
1983	241	233	255	277	326	214	255	253	205	238	107
1984. 1	283	227	269	406	381	348	289	293	229	273	106
7	244	229	270	370	383	350	286	294	230	273	105
8	244	228	266	361	384	332	283	295	229	274	103
9	246	231	267	353	383	329	283	294	232	274	103
10	247	232	263	358	379	325	282	295	232	275	102
11	247	237	258	391	379	312	286	295	234	275	104
12	254	248	255	396	384	306	292	300	236	280	104
1985. 1	250	253	252	413	396	299	296	307	238	285	104
2	234	239	262	423	398	260	290	307	244	287	101
3	221	232	264	454	409	265	292	309	246	288	101
4	205	218	267	447	412	251	285	310	251	291	98
5	203	214	268	453	415	247	284	310	253	292	97
6	206	208	269	488	426	253	288	315	255	296	97

Source: Indikator Ekonomi, August 1985

Note: Trade Conditon = $\frac{\text{Farm Gate Price Index}}{\text{Farmers' Expenditure Index}} \times 100$

(4) Rice Price Stabilization Policy of BULOG

The National Logistics Agency (Badan Urusan Logistik: BULOG) was established for stabilization of supply and price of rice. DOLOG was established as branch office of BULOG in each Province.

When there was deficit in rice production, BULOG imported rice and bought paddy from farmers through Cooperative Village Unit (Koperasi Unit Desa: KUD) at supported price by the Government. Since 1984, import of rice was stopped but the purchase of paddy from farmers has been increasing. This has increased 1,420 thousand tons in March, 1984, 2,500 thousand tons in March, 1985, and 3,500 thousand tons in November, 1985.

Many farmers are willing to sell paddy to BULOG because the supported price is higher than the market price. However BULOG buys only one third of paddy production because of financial constraint and storage problem. BULOG has storage for one million tons of paddy, and it entrusts the surplus paddy to private storages. Owing to these problems of storage and finance, BULOG cannot purchase sufficient paddy for price stabilization of rice.

3. Basic Concepts and Inplementation System of the Cooperation for Increasing Rice Production

3.1. Summary of Record of Discussion

When the former Japanese Prime Minister Suzuki visited to Indonesia in January, 1981, the Prime Minister expressed the intention that increasing food production would have priority in the Cooperation to Indonesia. Later, several meeting were held, and reconnaissance survey were carried out. As a result Record of Discussion on Cooperation for Increasing Rice Production in Indonesia was signed in July, 1981, in recognition of the significance for food self sufficiency and social development.

Under this cooperation for increasing rice production, a new cooperation system, Umbrella System, was applied in order to integrate the approaches in many fields, such as from rice production to processing and marketing of rice.

In the R/D, the following five (5) fields were specified for promotion;

- multiplication and distribution of improved seeds,
- strengthening of crop protection,
- regional application trial and extension of agricultural technology,
- irrigation, and
- improvement of post harvest treatment and processing.

In implementing the cooperation, the following eight (8) provinces were selected in principle.

Aceh, South Sumatra, Lampung, West Java, Central Java, East Java, South Kalimantan and South Sulawesi.

The duration of the cooperation would be five years starting from fiscal year 1981.

The framework of cooperation was as follows.

(1) Multiplication and distribution of improved seeds

1) Objective

The objective of cooperation in this field is to improve, as part of the seed production system presently being elaborated by the Indonesian government, the production system for foundation and stock seends promoted by the Indonesian government, and the treatment and processing system of commerical seeds.

2) Contents

The provinces to be considered with priority in this field are Aceh, South Sumatra and Lampung.

a. Establishment of seed farms for the productuion of foundation and stock seeds
b. Establishment of seed treatment and processing centers .
c. Establishment of seed storage facilities
d. Transfer of technology through dispatch of Japanese experts to Indonesia and acceptance of Indonesian trainees in Japan

(2) Strengthening of crop protection

1) Objective

Rice pest damages due to the introduction of high yielding varieties and the extension of large-scale cultivation with a single variety are posing serious problems. To cope with the problems, the rice pest forecasting program and the effective rice pest control system based on data from the forecasting program should be developed. As to the rice pest forecasting system, the Japanese government will cooperate with the Indonesian government to strengthen the program actually promoted by the latter and also the development of rice pest forecasting techniques.

On rice pest control, as self-reliant system on the part of farmers is to be basically promoted and strengthened. In areas

where cooperatives have developed, the rental system of agricultural materials and equipment by cooperatives is to be strengthened, while in other areas, crop protection brigades are to be strengthened.

2) Contents

a. Development of rice pest forecasting techniques through Plant Protection Project

b. Establishement and strengthening of rice pest forecasting field laboratories and rice pest observatory units

c. Provision of rice pest control materials, equipment and chemicals for lease by cooperative
(This is to be mainly promoted in three Java provinces)

d. Provision of materials and equipment for strengthening crop protection brigades
(This is to be promoted in the provinces other than these mentioned in c.)

e. Transfer of technology through dispatch of Japanese experts to Indonesia and acceptance of Indonesian trainees in Japan.

(3) Regional application trial and extension of agricultural technology

1) Objective

To systematize agricultural technology for increasing rice productivity developed in experiments and research institutues so as to meet regional requirements and deseminate such technology to farmers is one of the most imprtant subjects to be considered under this cooperation. Therefore, the structure, the functions, the mechanism and other aspects of organizations (hereinafter referred to as Agricultural Development Center (ADC) and the like) in charge of carrying out regional application trials and the extension of agricultural technology must first of all be studied. Based upon the result of such study, the feasibility of establishing these organizations and the possibility of conducting technical cooperation will be examined.

2) Contents

a. Dispatch of Japanese advisers to Indonesia to cooperate on defining the structure, the functions, the mechanism an other aspects of ADC and the like and acceptance of Indonesian trainees in Japan.

b. Establishment of facilities which will carry out the demonstration and the systematization of extension techniques.

c. Technical cooperation in a certain number of the facilities mentioned above.

(4) Irrigation

1) Objective

Irrigation projects contribute to the extensification of rice cultivation through the efficient management of limited water resources as well as to its intensification by enabling to introduce high yielding techniques such as high yeilding varieties and use of fertilizers. It is important to conceive and implement irrigation projects from medium and long-term viewpoints.

2) Contents

a. Identification of suitable projects

b. Development surveys on the identified projects annually

c. Construction of irrigation and related facilities on the basis of the results of the development surveys

d. Transfer of technology through dispatch of Japanese experts to Indonesia and acceptance of Indonesian trainees in Japan.

(5) Improvement of post-harvest treatment and processing

1) Objective

Crop losses through post harvest treatment and processing are estimated in some cases to reach as much as twenty percent of production. This is considered due to inadequare handling techniques and to inefficient treatment and processing machinery in addition to the lack of treatment and processing facilities. Hence the examination of these losses, and studies for improvement measures will be carried out together with the improvement of treatment, processing and storage facilities managed by individual cooperatives and BULOG with a view to reducing these losses.

2) Contents

a. Surveys for the examination of the causes of the losses and for improvement measures

b. Development of post-harvest treatment, processing and storage facilities of coopertives

c. Development of storage facilities of BULOG

d. Transfer of technology through dispatch of Japanese experts to Indonesia and acceptance of Indonesian trainees in Japan.

(6) Other fields

In addition to the five fields proposed above which are to receive primary emphasis, such fields as crop insurance, promotion of farmers' organization, and water management may be considered as areas for the cooperations, if necessary, in order to stablize the production and to expand rice cultivation in future.

3.2 Master Plan for Rice Self Sufficiency in Indonesia

Directorate General of Food Crop Agricuture, Ministry of Agriculture formulated the Master Plan for rice self sufficiency. It is summerized as follows.

PROJECT DIGEST

1. Project title : RICE SLEF SUFFICIENCY PROGRAM

2. Location : Aceh, South Sumatra, Lampung, West Java, Central Java, East Java, South Kalimantan, South Sulawesi (8 provinces).

3. Executing agency : Directorate General of Food Crop Agriculture

4. Objectives : To increase rice production with a view to enabling Indonesia to achieve self sufficiency in rice in the earliest possible future.

5. Project description : According to the R/D of July 1, 1981 the programme covers 8 provinces in the fields of:

   1) Seed Production and Distribution

   2) Plant Protection

   3) Trial and Extension

   4) Irrigation

   5) Post Harvest

   After Tokyo Consultation Meeting in September 20-22, 1982 the additional fields are:

   1) F/S on Farm Trial (Trial and Extension)

   2) Agricultural Mechanization

   3) Crop Insurance

6. Implementation time : 1983/1984-1987/88 (5 years)

7. Project cost : Total cost excluding Trial and Extension:

   - ¥ 19.2 billion
   - Rp 54.8 billion

   Detailed specification attached

8. Amount proposed for commitment: ¥ 19.2 billion and Rp 54.8 billion

9. Related to T/A : ATA-165, ATA-207, ATA-220, ATA-259, ATA-235

10. Stages of project preparation :
   - F/S on Seed Production and Distribution (ATA-165), Post Heavest (ATA-207), and Plant Protection (ATA-259) have been done already.
   - Water Management
     The physical construction of the Riam Kanan Pilot Scheme will be finished by the end of March 1983 under the Japanese Government General Grant. The proposed field will be the continuation of the Pilot Scheme.
   - Trial and Extension
     The project will be formulated cooperatively with the coming Japanese mission.

3.3. Implementation System

3.3.1. Implementation System on Japanese Side

Under the cooperation, the Japanese Embassy in Indonesia, and the Ministry of Foreign Affairs and Ministry of Agriculture, Forestry and Fishery in Japan actively supported during the implenentation stage. Ministry of Foreign Affairs moved to establish mutual cooperation and cordial relationship between both Governments under the cooperation. The Ministry of Agriculture, Forestry and Fishery initiated with the purpose to apply their technical knowhow, and establish working group in order to analyse agricultural condition and to made investigation with technical matter.

3.3.2. Implementation System in Indonesian Side

In Indonesia there are many agencies related to increasing rice production, because under the cooperation there are various activities in many provinces. The Ministry of Agriculture coordinates the activities under the Umbrella System.

Furthermore, Working Committee was formed for screening and controling the projects. The members of the committee are Directorate General of Food Crops Agriculture, Ministry of Agriculture, Directorate of Irrigation, Ministry of Public Works, Ministry of Cooperatives, BULOG, Director Bureau of Technical Cooperation and National Development Planning Agency (Badan Perencanaan Penbangunan Nasional: BAPPENAS).

Master Plan for the Rice Self Sufficiency Programme was formulated by this Committee with assistance of Japanese advisor. Projects were selected from the Master Plan and cooperation was requested in annual meeting between both Governments.

3.4. Government Consultation

3.4.1 Annual Consultation Meeting

In a general way, Annual Consultations are held for technical cooperation, grant aid and loan. Besides these, since the signing of the R/D both sides have agreed to hold a regular meeting to review the progress of the cooperation as well as to discuss concrete annual cooperation plans taking into consideration the relevant financial condition of both sides and further to revise as necessary the framework of cooperation.

The Government Consultation was held once in a year. Four (4) such Government Consultations have already been held The first Annual Consultation was held in 1981, the second was held in June 1982 in Jakarta, the third was held in June 1983 in Jakarta and the fourth was held in August 1984 in Jakarta.

3.4.2 Working Level Consultation Meeting

The consultation was held between the government official concerned with the implementation of the programme and the Embassy of Japan. This consulation was held twice a year. 6 Working level consultations have already been held.

- The first Bi-Annual Consultation was held in 1982 in Tokyo
- The second was held in March 1983 in Jakarta
- The third was held in October 1983 in Jakarta
- The fourth was held in March 1984 in Jakarta
- The fifth was held in October 1984 in Jakarta
- and the sixth was held in March 1985 in Jakarta

4. Progress of the Project Implementation

4.1. Summary of the Progress

Field	Number of Projects	Amount (million yen)
Seed Production and Distribution	8	4,306
Crop Protection	6	3,469
Regional Application	1	19
Irrigation	17	21,044
Post Harvest	11	11,796
Others	3	468
Total	46	37,156

note 1): Based upon data from July 1981 to October 1985

2): Grant - E/N Base

Loan - L/A Base

4.2. Progress in Each Field

4.2.1. Progress in the Field of Multiplication and Distribution of Improved Seeds

(1) Cooperation Projects and Programmes

Type of Assistance	Project Title	Period of Implementation	Amount Assistance (¥ million)	Progress of Cooperation
T.A.	1. Feasibility Study on The Rice Seed Production and Distribution Project (ATA-165) (3 provinces)	1981/82	113	- The Study was conducted in 1981/82 - The final report was submitted in November 1982
T.A.	2. Individual expert (1) for Seed Production	March '84-March '86	26	The expert has arrived in Indonesia March 1984 for two years assignment
T.A.	3. Individual expert (1) for seed certification	-	PM	- Form A1 individual expert of seed certification in the aspect of seed pathological approach/seed borne diseases, has been submitted on July, 1985 - Follow up is still waited
P.A.	4. Rice seed production and distrubution project (OECF Loan-IP-291) 3 provinces	1985/86 1990/91	3,000	- Loan agreement was signed on February 15, 1985 - Under preparation of implement plan and consultant selection - Local currency still under process
F.G.1981/82	5. Strengthening of seed farm (11 provinces)	1982/83	300	The assistance had been completed
F.G.1982/83	6. Seed processing unit (North Sumatra and West Java)	1983/84	400	The assistance had been completed
F.G.1983/84	7. The rice seed production and distribution project a. Strengthening Seed Farm b. Seed Control and Certification service c. Central Seed Cold Storage d. Seed Processing Unit	1984/85	 101 13 13 145	- Exchange of Note was signed on 28 april, 1984. The equipment is still stored in sea port due to shortage of handling cost.
F.G 1985/86	8. Strengthening Stapel Food Seed and Processing Centre	1986/87	190	- Proposal was submitted to Japanese Government on November 1985 - Exchange of note was signed on December 1985
T.A	9. Training in Japan		1	- 2 persons were trained

(2) Details of Each Project

Cooperation projects and programmes contribute to increasing rice production as follows.

1) Development/improvement of the function and the role of seed institution (BS-FS, FS-SS)

a. 2KR, Food Grant Aid 1981/82 (Strengthening of Seed Farm)

Location : 11 provinces in Sumatra, Java, Kalimantan, Sulawesi and West Nusa Tenggara

Cost : Foreign Currency - ¥300 million (5.)
Local Currency - Rp.165 million

Components : Irrigation facilities, transportation equipment/Motor boat, Plant cultivation equipment, Seed Processing Unit

Agencies : Rice BBI/BBU - 23
Secondary crops BBI/BBU - 20
Horticulture BBI - 12
BPSB (Seed supervision and certification centre) - 4

Status of Implementation : Completed

b. 2KR 1983/84 (1) (Seed Processing Unit)

Location : Aceh, South Sumatra, Lampung and West Nusa Tenggara

Cost : Foreign Currency - ¥145 million (7d.)

Components : Equipment

Agencies : BBI/BBU

Status of Implementation : Completed

c. 2KR 1983/84 (2) (Seed Control and Certification Service)

Location : 11 provinces

Cost : Foreign Currency - ¥13 million (7b.)

Components : Equipment Supply

Agencies : BPSB

Status of Implementation : The equipment was still stored in the sea port due to shortage of handling cost

2) Establishment of Seed Processing Unit

a. Feasibility Study on the Rice Seed Production and Distribution Project (ATA-165)

Objectives : To prepare a comprehensive plan to develop and to distribute rice seed

Cost : Foreign Currency - ¥113 million (1.)

Study Area : Aceh, South Sumatra and Lampung

Status of Implementation : Study was carried out in 1981 and 1982. Final report was submitted in November 1982.

b. 2KR 1982/83 (Seed Processing Unit)

Location : North Sumatra and West Java

Cost : Foreign Currency - ¥400 million (6.)
Local Currency - Rp.125 million

Components : 3 seed processing units

Status of Implementation : Equipment will be installed after completion of building construction

c. 2KR 1983/84 (Strengthening Seed Farm)

Location : Aceh

Cost : Foreign Currency - ¥101 million (7a.)
Local Currency - Rp.50 million

Components : Seed Processing Unit

Agency : PT Pertani

Status of Implementation : This unit is still in the process of clearance from seaport.

d. 2KR 1985/86 (Strengthening Staple Food Seed and Processing Centre Equipment)

Location : North Sumatra, West Sumatra, West Java, Central Java, East Java and South Sulawesi

Cost : Foreign Currency - ¥190 million (8.)

Components : Equipments for Seed Processing Centre

Status of Implementation : E/N was signed on December 1985

e. Loan

Location : Aceh, South Sumatra and Lampung

Cost : Foreign Currency - ¥3,000 million (4.)
Local Currency - Rp.6,700 million

Components : To establish 11 seed processing centre

Agencies : Perum Sang Hyang Sery in Lampung
PT Pertani in South Sumatra

Status of Implementaion : This project was implemented based upon the Feasibility Study mentioned above. L/A was signed in February, 1985. This project has not been implemented yet to unavailability of local cost financing. Proposal to obtain this local cost has been submitted by the Ministry of Agriculture to the Ministry of Finance and BAPPENAS for approval.

3) Establishment of Cold Storage Facilities

a. 2KR 1983/84 (Central Seed Cold Storage)

Location : Jakarta

Cost : Foreign Currency - ¥13 million (7c.)

Components : Equipment for seed transit storage with cold storage.

Status of Implementation : This equipment was still stored in the warehouse of sea port due to shortage of handling cost.

4) Transfer of technology through provision of Japanese exp rts and training in Japan

a. Expert Services

Status of Implementation : One expert in seed production was dispatched to Indonesia in March, 1984 and worked for 2 years. Proposal for one expert in seed certification was submitted in July 1985.

Cost : Foreign Currency - ¥25 million (2.)

b. Training in Japan

Status of Implementation : Trained in Japan in 1982/83

Cost : Foreign Currency - ¥1 million (9.)

4.2.2. Progress in the Field of Strengthening of Crop Protection

(1) Cooperation Projects and Programmes

Type of Assistance	Project Title	Period of Implementation	Amount Assistance (¥ million)	Progress of Cooperation
T.A.	1. Feasibility Study on Crop Pest Surveylance and Forecasting(ATA-259)	1981/82	73	- The Study was conducted in 1981/82 - The final report was submitted in October 1982
T.A.	2. Extension strengthening of Plant Protection	June '85-March '87	563	- On going Project - Project Consultation Team was dispatched in June 1985 and the project was extended up to March 1987
F.G. 1982/83	3. Plant Protection Brigades (Through in Indonesia)	1983/84	1,800	- The assistance had been completed
F.G. 1984/85	4. Establishment of New Crop Protection Brigades	1985/86	134	- Exchange of Note (E/N) has been signed on March 18, 1985 - This Food Grant is available until March 31, 1986
F.G. 1985/86	5. Pesticide Supply for Crop Protection Brigades	1986/87	385	- Proposal was submitted to Japanese Government on October, 1985 - Exchange of Note was signed on December, 1985
G.G. 1984/85	6. Equipment Supply for Rice Pest Forecasting and Control Project	1985/86	445	- Exchange of Notes was signed on April 26, 1984 - Tender was conducted on September 1985
G.G. 1985/86	7. Pest and Deseage Forecasting and Control Project (ATA-389) - (9 provinces)	1986/87	2,061	- Minutes of discussion was signed on June 29, 1984 - The Basic Design Team was dispatched from September to October 1985 - The Exchange of Note was signed on February, 1986
T.A.	8. Training in Japan		69	- In total, 22 person were trained

(2) Details of Each Project

Cooperation projects and programmes contribute to increasing rice production as follows.

1) Development of technique for forecasting pest and disease of rice through Plant Protection Project

a. Feasibility Study on Crop Pest Surveilance and Forecasting

Objective : To prepare a plan for the establishment of a nationwide network for plant protection

Study Area : Aceh, South Sumatra, Lampung, West Java, Central Java, East Java, South Kalimantan and South Sulawesi

Cost : Foreign Currency - ¥73 million (1.)

Status of Implementation : The study was conducted in 1981 and 1982. Final report was submitted in October 1982.

2) Development and Improvement of Pest Forecasting Laboratory and Field Supervision

a. Strengthening of Plant Protection Services (ATA-162)

Location : West Java

Cost (Excluded Training) : Foreign Currency - ¥563 million (2.)
Local Currency - Rp.330 million

Contents : Project type technical cooperation

Status of Implementation : R/D of this project was signed in June, 1980. Since the cooperation for increasing rice production was implemented, this project was included under the Umbrella System. According to the R/D, the period was 5 years, but it was expanded to be terminated on March 1987. This project includes expert services, training in Japan and equipment supply.

b. General Grant 1984/85

Location : West Java

Cost : Unknown (7.)

Components : Construction of Pest Forecasting Centre

Status of Implementation : This project was proposed based on the result of the preliminary study by Japan and Master Plan conducted by ADB. This project has not been agreed yet by the Government of Indonesia.

3) Provision for equipment and pesticide to control pest and diseases of rice

a. General Grant Aid 1984/85

Location : North Sumatra, West Sumatra, South Sumatra, Lampung, West Java, Jakarta, Central Java, East Java, South Kalimantan, and South sulawesi

Cost : Foreign Currency - ¥445,000 thousand (6.)
Local Currency - ¥52,234 thousand

Agencies :
. Directorate of Plant Protection, and Pesticide Laboratory in Jakarta
. Plant Protection Centres - 7
. Observatory Laboratory in 7 provinces
. Pesticide Laboratory in Surabaya

Components : Equipment Supply for Rice Pest Forecasting and Control Project

Status of Implementation : E/N was signed in April, 1985. The implementation is expected in 1985/86.

4) Provision for equipment and pesticide to enhance the Plant Protection Brigade

a. 2KR 1982/83 (Plant Protection Brigade)

Location : Whole Indonesia

Cost : Foreign Currency - ¥1,800 million (3.)

Component : Mistblowers, Pesticides and Unit of Eradication Equipment

Status of Implementation : Completed

b. 2KR 1984/85 (Establishment of New Plant Projection Brigade)

Location : Whole Indonesia

Cost : Foreign Cost - ¥134 million (4.)
Local Cost - ¥30 million

Component : Mistblower and pesticides for establishment 6 units of new Plant Protection Brigades and to develop the existing one.

Status of Implementation : E/N was signed in March 1985

c. 2KR 1985/86 (Pesticides Supply for Crop Protection Brigades)

Location : Aceh, North Sumatra, West Sumatra, Riau, Jambi, Lampung, West Java, Central Java, Yogyakarta, East Java, Bali and South Sulawesi

Cost : Foreign Currency - ¥385 million (5.)

Components : Pesticides

Status of Implementation : E/N was signed on December 1985

5) Transfer of Technology through provision of Japanese experts and training for the Indonesian personnel in Japan

a. Experts

Status of Implementation : At present there are 7 Japanese experts working on long term basis and 15 experts on short term basis. In the future there will be 5 additional short term experts.

b. Training

Status of Implementation : 1981/82 - 6 persons, 22.5 M/M
1982/83 - 4 persons, 24 M/M
1983/84 - 7 persons, 30 M/M
1984/85 - 5 persons, 29.5 M/M

Cost : Foreign Currency - ¥69 million

4.2.3. Progress in the Field of Regional Application Trial and Extension of Agricultural Technology

(1). Cooperation Projects and Programmes

Type of Assistance	Project Title	Period of Implementation	Amount Assistance (¥ million)	Progress of Cooperation
. T.A.	Food Crop Agricultural Development Centre (FCADC)	1983/84	19	- The long term survey and Preliminary Discussion had been carried out for two months in 1983 - The draft of TOR was not accepted by Bappenas, because there is not clear picture of the institutional status of Agricultural Development Centre (ADC) - New proposal will be submitted on the future cooperation

(2) Details of Each Project

1) Provision for Japanese experts who will formulate the structure, function, mechanism and other aspects of Agricultural Development Centre

a. Long-term survey

Status of Implementation : The survey was conducted in June - August 1983. Draft terms of reference for the project was formulated.

b. Preliminary Study

Status of Implementation : Based on the draft terms of reference, a discussion was held. The project would be in the form of Technical Assistance and General Grant.

c. Contact Mission

Status of Implementation : Note of Understanding on the implementation plan for 1983/84 was signed in April 1984.

2) Provision for facilities required for demonstration and extension activities

a. Food Crop Agricultural Development Centre

Status of Implementation : An arrangement concerning the overall organization aspects, the responsibility for trial, dissemination of information and extention still need to be formulated. Indonesia cancelled the proposal for this project at the eight consultation meeting between both Governments which was held on August 1984. Substitute institutions are being improved by self-help of Indonesia Government.

4.2.4. Progress in the Field of Irrigation

(1) Cooperation Projects and Programmes

Type of Assistance	Project Title	Period of Implementation	Amount Assistance (¥ million)	Progress of Cooperation
T.A.	1. Individual experts (6) for Irrigation Projects	1981/85	79	- 6 experts are working as individual expert in Jakarta, Bandung and Banjar masin.
T.A.	2. Pre Feasibility Study on North Banten Kopo Cikande, Corenang Irrigation Scheme (BTA-86)	1982/83	106	- The Feasibility Study Report was submitted at the end of 1984
T.A.	3. Feasibility Study on Karian Dam, West Java	July '84-July '85	189	- Construction stage expected to be implemented through Loan
T.A.	4. Photogrammetry Mapping for Land Reclamation, Negara River Basin, South Kalimantan	July '83-March '86	530	- Feasibility Study for Negara River Basin as well the irrigation Development in Amuntai area need to be done on the follow up of this project
T.A.	5. Feasibility Study on Widas Flood Control, East Java	July '84-	167	- The progress report was submitted at the end of March 1985
F.G. 1983/84	6. Ground Water Development	1984/85	869	Completed
F.G. 1984/85	7. Rehabilitation of Swampy Area	1985/86	743	- Exchange of Note was singed on March 18, 1985 - Tender was conducted on September
F.G. 1985/86	8. Swampy Area Development and Rehabilitation	1985/85	560	- Proposal was submitted to the Japanese Government on October 1985 - Exchange of Note was signed December 1985
LOAN	9. Bila Irrigation Project (Engineering Service)	1983/86	550	Preparing for contract
LOAN	10. Upper Komering River Basin Development Project (Engineering Service)	1983/88	1,180	- Execution of Detail Work
LOAN	11. Langkeme Irrigation	1982/85	320	- Detail Design Work was completed March 1985 - Construction stage is implemented by Loan
LOAN	12. Krueng Aceh Irrigation (Engineering Service)		330	- On going
LOAN	13. Upper Solo and Madium River Flood Control Project (Engineering Service)		805	- On going
LOAN	14. Riam Kanan Irrigation	1983/89	8,636	- Under preparation of consulting service
G.G.	15. Riam Kanan Pilot Scheme	1982/83	760	- Completed
LOAN	16. Langkeme Irrigation	1985/90	5,200	- As follows up of project No.11
T.A.	17. Training in Japan		20	- In total, 23persons were trained.

(2) Details of Each Project

Cooperation projects and programmes contribute to increasing rice production as follows.

1) To identify and evaluate which project activities are feasible or not

a. North Banten Kopo, Cikande, Corenang Irrigation Scheme

Location	: West Java
Cost	: Foreign Currency - ¥106 million (2.)
Contents	: Pre F/S on KCC Irrigation Scheme (9,000 ha)
Status of Implementation	: Pre F/S was carried out in 1982/83. This study was next stage of Master Plan for Water Resource Development in North Banten, conducted by JICA.

b. Kalian Dam

Location	: West Java
Cost	: Foreign Currency - ¥189 million (3.)
Contents	: F/S
Status of Implementation	: This study was terminated on March 1985, as next stage of the Master Plan for Water Resource Development in North Banten, conducted by JICA.

c. Widas Flood Control and Irrigation

Location	: East Java
Cost	: Foreign Currency - ¥167 million (5.)
Contents	: F/S (Irrigation area : 18,200 ha)
Status of Implementation	: On going. This study will be terminated on June 1986.

d. Photogrametry Mapping for Nagara River Basin

Location	: South Kalimantan
Cost	: Foreign Currency - ¥530 million (4.)
Status of Implementation	: On going. The work will be terminated on March 1986. The work is conducting to facilitate irrigation development. Total area is 12,800 sq. km in upper and lower areas of Negara River.

2) To conduct surveys for irrigation development as a next step of the result of identification and evaluation

a. Bila Irrigation Project

Location	: South Sulawesi
Cost	: Foreign Currency - ¥550 million (9.)
Component	: Engineering Service Loan
Status of Implementation	: Engineering service including detailed design was terminated. Construction is still waiting for OECF's agreement on the consultant appointed. This project is next stage of M/P and F/S conducted by JICA.

b. Upper Komering Irrigation Project

Location	: South Sumatra
Cost	: Foreign Currency - ¥1,180 million (10.)
Component	: Engineering Service Loan
Status of Implementation	: Engineering Service, including detailed design, is now carried out. It will be terminated in 1987/88. This project is implemented as next stage of F/S done by JICA.

c. Langkeme Irrigation Project

Location	: South Sulawesi
Cost	: Foreign Currency - ¥320 million (11.)
Component	: Engineering Service Loan

Status of Implementation : Start of this work is waiting for appointment of consultants recommended by OECF. This project is followed as next stage of M/P and F/S conducted by JICA.

d. Krueng Aceh Irrigation Project

Location : Aceh

Cost : Foreign Currency - ¥330 million (12.)

Component : Engineering Service Loan

Status of Implementation : The study is now carried out and it would be completed in 1985. This project is a further step of F/S conducted by UK.

e. Upper Solo and Madium River Flood Control Project

Location : Central Java

Cost : Foreign Currency - ¥805 million (13.)

Component : Engineering Service Loan

Status of Implementation : The Study is now carried out and it will be completed in 1985.

3) To construct irrigation network and facilities, as result of surveys

a. Riam Kanan Irrigation Project

Location : South Kalimantan

Cost : Foreign Currency - ¥8,636 million(14.)
(Loan)
Foreign Currency - ¥760 million (15.)
(General Grant)

Component : Loan for construction
Water management of foundation and agricultural extension activities

Status of Implementation : E/N of loan was signed on September 1983. This project is followed up to F/S by JICA and will be implemented together with General Grant.
Also engineering service had been completed under OEFC loan.

c. Langkeme Irrigation Project

Location : South Sulawesi

Cost : Foreign Currency - ¥5,200 million (16.)

Component : Construction (Loan)

Status of : This project follows to Engineer Service Loan (2 c.)

d. Ground Water Development (2KR 1983/84)

Location : East Java

Cost : Foreign Currency - ¥869 million (6.)

Component : 5 units of Truck Mounted Drilling Rig and 1 unit of long Mall Drill.

Status of Implementation : Completed

e. Rehabilitation of Swampy Area (2KR 1984/85)

Location	: South Sumatra, Lampung and South Kalimantan
Cost	: Foreign Currency - ¥743 million (7.)
Component	: Dragline and water and soil testing equipment
Status of Implementation	: E/N was signed on March 1985.

4) Technology transfer from experts, up-grading and training for executing personnels in Japan

a. Experts

Status of Implementation	: 6 Japanese experts are working.
Cost	: Foreign Currency - ¥79 million (1.)

b. Training

Status of Implementation	: 1981/82 - 10 persons, 10 M/M 1982/83 - 7 persons, 15 M/M 1984/85 - 6 persons, 6 M/M
Cost	: Foreign Currency - ¥20 million (17.)

4.2.5. Progress in the Field of Post Harvest Treatment and Processing

(1) Cooperation Projects and Programmes

Type of Assistance	Project Title	Period of Implementation	Amount Assistance (¥ million)	Progress of Cooperation
T.A.	1. The Feasibility Study on Food Losses after Harvesting (ATA-207)	1981/82	223	- The study was conducted in 8 provinces. The result of the survey has been submitted in November '82
F.G.1981/82	2. Pre and Post Harvest Facilities at KUD level	1982/83	1,100	- Completed
F.G.1983/84	3. Development for Post Harvest Services at Cooperatives level (24 provinces)	1982/83	1,700	- Completed
F.G.1983/84	4. The Improvement of Post Harvest Facilities at Farmer level	1984/85	271	- Completed
F.G.1984/84	5. Strengthening of Processing Facilities for Cooperatives (at KUD) (ADB areas and Non ADB areas)	1984/85	636	- Completed
F.G.1984/85	6. Improvement of Pre and Post Harvest Technology of of Food Production at the Village Cooperatives Unit level			
	a. Ex ADB areas	1985/86	400	- Exchange of Note was signed on March 18, 1985
	b. Transmigration area	1985/86	405	- Tender was conducted on Sept. '85
F.G. 1984/85	7. Integrated of Rice Processing Facilities	1985/86	135	- Exchange of Note was singed on March 18, 1985 - Tender was conducted on June '85
F.G.1985/86	8. Improvement Rice Processing	1985/86	520	- Proposal was submitted to Japanese Government on Oct. '85 - Echange of Note was signed on Dec. '85
F.G.1985/86	9. Improvement of Pre and Post Harvest Equipment at KUD level	1985/86	590	- Proposal was submitted to Japanese Government on Oct.'85 - Exchange of Note wwas signed on Dec. '85
LOAN	10. Supply of Post Harvest Agricultural Equipment to KUD	1984/89	5,800	- Loan agreement signed on March 8, 1984 - Contract with consultant was signed on Nov. '85
T.A.	11. Training in Japan		16	- In total, 11 persons were trained in Japan

(2) Details of Each Project

Cooperation projects and programmes contribute to increasing rice production as follows.

1) Survey to know the cause of losses and its improvement

a. Study on Post Harvest Losses

Location : Detailed survey was conducted in Aceh, West Java, South Sulwesi and South Kalimantan. General Study was carried out in South Sumatra, Lampung, Central Java and East Java, in addition to above 4 provinces surveyed in detail.

Cost : Foreign Currency - ¥217 million (1.)

Status of Implementation : S/W was signed on June 1981. The study was completed in 1981/1982. Final report was submitted in November 1982. Indonesian Government formulated Master Plan based upon the results of this study.

2) Improvement of post harvest handling, processing and storage facilities

a. 2KR 1981/82 (Pre and Post Harvest Facilities at KUD Level)

Location : 16 provinces

Cost : Foreign Currency - ¥1,110 million (2.)

Components : Tractors and Rice Milling Units

Agency : KUD

Status of Implementation : Completed

b. 2KR 1982/83 (Development of Post Harvest Service at Cooperative Levels)

Location : 24 provines

Cost : Foreign Currency - ¥1,700 million (3.)

Component : Rice processing unit

Agency : KUD

Status of Implementation : Completed

c. 2KR 1983/84 (1) (Strengthening of Processing Facilities for Cooperatives)

Location : ADB area and Non-ADB area

Cost : Foreign Currency - ¥636 million (5.)

Component : Rice milling unit and facilities

Agency : KUD

Status of Implementation : Completed

d. 2KR 1983/84 (2) (The Improvement of Post Harvest Facilities of Farmer Level)

Cost : Foreign Currency - ¥271 million (4.)

Component : Improvement of post harvest facilities

Agency : KUD

Status of Implementation : Completed

e. 2KR 1984/85 (1) (Improvement of Pre and Post Harvest Technology of Food Production at Cooperative Level in Ex-ADB Area)

Location : ADB areas - West Java, East Java, Bali, North Sumatra and South-east Sulawesi

Cost : Foreign Currency - ¥400 million (6 a.)

Component : Rice milling unit, Water pump, Spare parts and others

Agency : KUD

Status of Implementation : E/N was signed on March 1985. Tender was conducted on September 1985.

f. 2KR 1984/85 (2) (Improvement of Pre and Post Harvest Technology of Food Production at Cooperative Level in Transmigration Area)

Location : Transmigration area

Cost : Foreign Currency - ¥405 million (6 b.)

Component : Rice milling unit and others

Agency : KUD

Status of Implementation : E/N was signed on March 1985. Tender was conducted on September 1985.

g. 2KR 1984/85 (3) (Integrated of Rice Processing Facilities)

Location : Bali, West Nusa Tenggara, South Sulawesi, East Java, Central Java and West Java

Cost : Foreign Currency - ¥385 million (7.)

Component : Rice Milling Unit

Agency : PT Pertani

Status of Implementation : E/N was signed in March 1985

h. 2KR 1985/86 (Improvement of Rice Processing)

Location : West Java, Central Java, East Java, Bali

Cost : Foreign Currency - ¥520 million (8.)

Component : Rice Milling Units and other Facilities

Agency : PT Pertani

Status Implementation : E/N was singed in December 1985

i. 2KR 1985/86 (Improvement of Pre and Post Harvest Equipment at KUD Level)

Cost : Foreign Currency - ¥590 million (9.)

Component : Pre and Post Harvest Equipment

Agency : KUD

Status of Implementation : E/N was signed in December 1985

j. OECF Loan

Location : West Java, Central Java, East Java, D.I. Yogyakarta, Bali, West Nusa Tenggara and South Sulawesi

Cost : Foreign Currency - ¥5,800 million (10.)
Local Currency - Rp.59,925 million

Component : Providing post harvest equipment and consulting service for providing equipment

Agency : KUD

Status of Implementation : L/A was signed in August 1984. Contract with consultant was signed in November 1985.

3) Technological transfer from Japanese expert and training

Status of : 1981/82 - 4 persons, 8 M/M
1982/83 - 3 persons, 4 M/M
1983/84 - 2 persons, 6 M/M
1984/85 - 2 persons, 6 M/M
In addition to this during the implementation of the Study on Post Harvest Losses, 27 personnels were given practical training in verification of post harvest losses.

Cost : Foreign Currency - ¥16 million (11.)

4.2.6. Progress in Other Fields

(1) Cooperation Projects and Programmes

Type of Assistance	Project Title	Period of Implementation	Amount Assistance (¥ million)	Progress of Cooperation
T.A./G.G.	1. Agricultural Mechanization - Centre for Development of Appropriate Agricultural Engineering Technology (ATA-220)		1,749	- Preliminary Survey was conduvted on June, 1985. - Basic Design Team was dispatched on July and August 1985. - Final Draft of Basic Design was dispatched on November,1985. - The exchange of note (E/N) was signed on February, 1986.
F.G. 1984/85	2. Water Management Rural Irrigation Development	1985/86	134	- Exchange of Notes (E/N) has been signed on March 18, 1985 - This Food Grant is available until March 31, 1986
T.A.	3. Induvidual experts (3) for Rural Irrigation		P.M.	- Form A.L of induvidual experts (3) of Rural Irrigation has been submitted on 1985 - Follow up is still waited
T.A./G.G.	4. Riam Kana Pilot Scheme (ATA-234)	1986/87	334	- The Government of Japan consider after 1986 - Decision is still waited

(2) Details of Each Project

1) Agricultural Mechanization

a. Centre for Development of Appropriate Engineering Technology (ATA-220)

Location : Jakarta

Component : General Grant for Construction
Project Type Technical Cooperation

Status of Implementation : E/N for general grant was signed on February 1986.

2) Water Management

a. Riam Kanan Pilot Scheme (ATA-324)

Location : South Kalimantan

Cost : Foreign Currency - ¥334 million (4.)

Component : General Grant
Technical Assistance

Status of Implementation : The proposal was discussed on the 8th Annual Consultation Meeting in August 1984.

b. Equipment for Rural Irrigation Development (2KR, Food Grant Aid 1984/85)

Location : North Sumatra, Lampung, West Java, Central Java, East Java, Bali, South-east Sulawesi

Cost : Foreign Currency - ¥134 million (2.)

Component : Machinery and water and soil tester equipment

Status of Implementation : E/N was signed on March 1985.

c. Expert

Status of Implementation : The request for 3 experts on the rural irrigation had been submitted in May 1984.

3) Crop Insurance

a. Pilot Project of Crop Insurance (ATA-235)

Status of Implementation : The proposal was cancelled in the 8th Annual Consultation Meeting on August 1984, because

it was not supported by existing related institution and fund required.

b. Expert

Status of Implementation : The request had been submitted to the Japanese Embassy.

4.2.7. Progress of Advisors

Type of Assistance	Project Title	Period of Implementation	Amount Assistance (¥ million)	Progress of Cooperation
	Expert service - Individual expert for advisor on Rice Self-Sufficiency Programme	Dec. '84- Dec. '86	P.M.	- On going - Mr. Etsuro Kagai, the Successor Mr. Isao Suzuki arrived in December 1984 for 2 years

Status of Implementation : One advisor was engaged as a programme advisor since 1982 to October 1984, and another advisor was dispatched in December 1984 for a duration of 2 years.

5. Evaluation

5.1. Evaluation of Increased Rice Production

5.1.1. Present Conditions of Demand and Supply of Rice in Indonesia

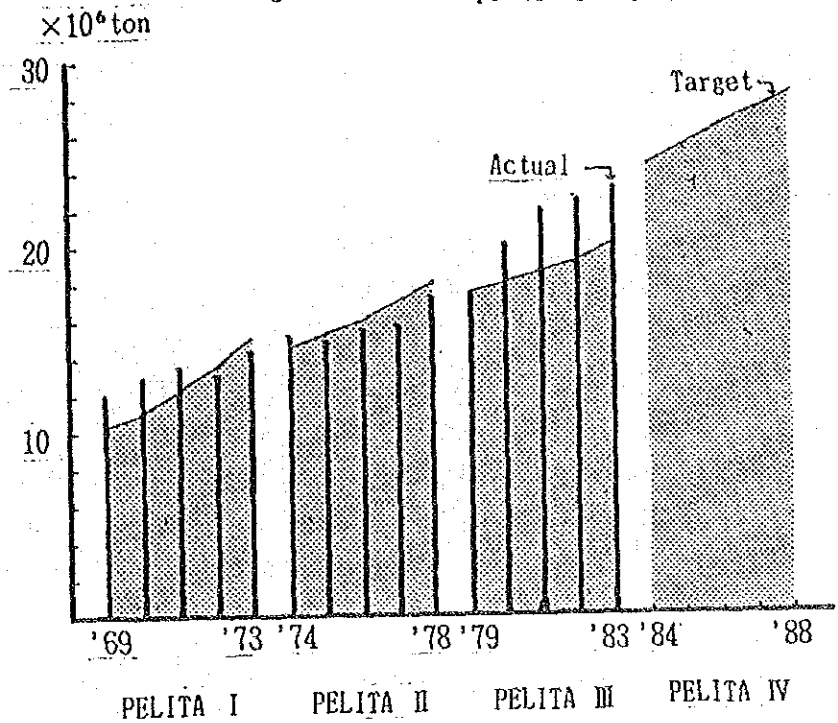
In Indonesia, significant amount of rice was imported for a long period in the past. During the 1970s, volume of the imported rice corresponds to more than 10% of domestic consumption (total of domestic production and import). In 1980, volume of the imported rice is 2 million tons which correspond to about 10% of 22 million tons of domestic rice consumption and to 5% of total value of imported goods. Therefore, the Government of Indonesia gave top priority for the achievement of the rice self-sufficiency in the each Five Year Development Plan.

During the period of the Third Five Year Development Plan (1979/80-1983/84), the Japanese cooperation for increasing rice production started as the Umbrella System. Meanwhile rice production increased sharply from 17,870 thousand tons/year in 1979 to 24,010 thousand tons/year in 1983. Rice production was realized to exceed the target production in the Plan.

In 1984, rice production increased remarkably and rice self-sufficiency was achieved. The National Logistic Agency (Badan Urusan Logistik;BULOG), which has a role for distribution of rice, hold 3,500 thousand tons of stock in November, 1985. The stock is about 10% of the total consumption, for which it is still within the range of appropriate stock.

Future population growth is projected as 2% per annum during the period of the Fourth Five Year Development Plan, and also annual growth rate of per capita rice consmption is estimated to be 1.17% in the plan period. Therefore, towards maintaining rice self-sufficiency, it should be required to increase of rice production to meet the future demand for food, to improve the quality of rice, and to reduce the losses in production and post harvest stages.

Target and actual production of rice



Source: PELITA I～IV, Statistical Yearbook of Indonesia

5.1.2. Effects of Increased Rice Production

Rice self sufficiency was attained as a whole in Indonesia during the period of the Cooperation. However, it is difficult to evaluate quantitatively the contribution of the Cooperation for this success in the form of impact by the Cooperation to rice production increase.

Impacts by the Cooperation are expected in respective fields as follows.

- Multiplication and distribution of improved seeds
  increase of yield
- Strengtheneing of crop protection
  decrease of losses caused by pest and disease
- Irrigation
  increase of rice planting area
- Improvement of post harvest treatment and processing
  decrease of quantity and quality losses

Furthermore, accelerated effect is expected through the integration of cooperation of all fields concerned.

5.2. Evaluation of Each Field

5.2.1. Multiplication and Distribution of Improved Seed

(1) Progress Evaluation

The cooperation in this field, has been conducted mainly in 3 provinces, i.e., Aceh, South Sumatra and Lampung, and other major provinces will be developed under the cooperation of IBRD. But the cooperation was conducted widely in and out of 3 provinces mentioned above.

1) Development/improvement of the function and role of seed institution (BS-FS, FS-SS)

In the rice seed production system of Indonesia, the Seed Production Centre in Bogor functions as a national centre, and BBI (BS to FS and SS) and BBU (FS to SS) are regional centres of each province.

All cooperation to BBI and BBU were carried out under Food Production Assistance (2KR). Equipment supplied under 2KR 1981/82 and 1982/83 were distributed to each BBI/BBU, however during the installation there were some problems from the viewpoint of effective utilization of the equipment.

2) Establishment of seed processing unit

FS, produced at BBU regional centre,are supplied to seed production farmers producing ES. The ES are distributed to farmers through seed processing centre, which are managed by Perum Sang Hyang Seri and PT Pertani.

Cooperation for seed processing centre were in the form of 2KR and Loan. 2KR 1982/83 and 1983/84 were already completed, and 2KR 1985/86 is now under preparation. Loan project was prepared as next step of F/S which was conducted by JICA, and the L/A was signed in February 1985.

Loan project is for the development of 11 seed processing centres in Aceh, South Sumatra and Lampung, but this project has not been implemented yet, due to unavailability of local cost from the Government of Indonesia in the form of Government Capital Sharing.

3) Establishment of cold storage facilities

This cooperation was implemented as a part of 2KR 1983/84. The equipment including cold storage facilities were provided for seed transit storage but these are still in the warehouse of Tranjung Priok port due to shortage of handling cost.

4) Transfer of technology through provision of Japanese experts and training in Japan

One expert has been working since March 1984, and two (2) persons were dispatched to Japan for training in 1982.

(2) Problems

Some problems arose during the implementation of the project, particularly under 2KR. The main reasons for the inefficient utilization of equipment are specified below:

a. Part of the equipment received at the project site was in the form of incomplete component or there were some delays in shipping and consequently the equipment could not be properly utilized.

b. Only small portion of the seed processing equipment was utilized. Some of the causes are as follows:

   i) Shortage of building space to assemble the equipment and as a result only a small portion of the equipment was assembled.

   ii) BBI/BBU did not need to utilize the equipment due to many factors under as production of small quantity of seed of many varieties and difficulty in cleaning the seed processing equipment.

   iii) High operational cost compared to traditional method which required small quantity of seed production and less operational cost.

   iv) Lack of skill training or experience of the operator.

   v) Lack of spare parts in the project site or in the country.

c. Most of the seed storage facilities (dehumidifier, ventilator and vacuum cleaner) cannot be utilized due to unavailability of electricity and the equipment requires special building design. On the other hand, the generator made available in the project site cannot be operated due to unavailability of operational cost.

d. Lack of maintenance of the equipment at BBI/BBU cuased further deterioration. This situation got even worse by the shortage of storage facilities because of the unavailability of construction cost. As a result the equipment can break down even before its use.

Major constraint commonly pointed out between 2KR and loan projects is as unavailability and quick release of local budget. Particularly for a loan project, Rp. 6.7 million is needed as local cost on loan amount is ¥3 billion. The Indonesian Government has not agreed to release the budget and a proposal to obtain this local cost has been submitted by the Ministry of Agriculture to the Ministry of Finance and BAPPENAS for approval.

(3) Conclusion

As to problems on local financing, it is expected to be allocated in the budget of Indonesian Government.

For the efficient utilization of equipment supplied by 2KR, the following factors should be taken into consideration.

. In order to determine the type, quantity and capacity of equipment which are really needed, surveys should be conducted with respect to the actual conditions of the BBI/BBU.

. The equipment selected should be easy to operate and spare parts should be available in Indonesia.

. When equipment is supplied, training should be conducted by supplier, manufacturer or expert. In-service training is also needed for operators of equipment already supplied.

. The equipment that is not utilized due to inappropriate commodity should be reallocated to other site where it could be put to use.

5.2.2. Strengthening of Plant Protection

(1) Progress Evaluation

In this field Eight (8) provinces that are priority areas of the cooperation for increasing rice production are evaluated.

Projects in this field are assisted mainly by Japan, and equipment required was supplied mainly through the General Grant Aid and Food Production Assistance (2KR).

1) Development of technic for forecasting pest and disease of rice through Plant Protection Project

Feasibility study (ATA-259) was carried out to prepare a plan for the establishment of nationwide network, and the final report was submitted in October 1982. The cooperation for plant protection was conducted based on the results of the F/S.

The implementation of the next stage of the F/S had been planned to be conducted by loan initially, however, it was later changed to General Grant. A team to carry out basic design was dispatched in September 1985 in accordance with the minutes signed in June 1984.

2) Development and Improvement of Pest Forecasting Laboratory and Field Supervision

Strengthening of Plant Protection Services (ATA-162) was implemented based on the Record of Discussion signed in June 1980, before the commencement of the Cooperation for Increasing Rice Production. However, since the record of discussion on the

Cooperation for Increasing Rice Production was signed, this project has been implemented under the framework of the Cooperation for Increasing Rice Production. The duration of the project was 5 years, and it was extended to March 1987.

Remarkable progress has been achieved in developing the forecasting and controlling technology in particular with regard to Brown Planthopper, Rice Gall Midge, Rice Stem Borers, Tungro Virus diseases and Rice Blast Diseases. Equipment supplied in the project is well operated and technology transfer to Indonesian personnel is progressing smoothly.

3) Provision for equipment and pesticide to control pest and disease of rice

Supply of equipment for rice pest forecasting and control project was proposed as a result of the recommendation outlined in the F/S (ATA-259). This project will be implemented on General Grant basis, however it has not been started yet.

4) Provision for equipment and pesticide to enhance the Plant Protection Brigade

Under 2KR, equipment and pesticide was supplied mainly outside of Java Island. 2KR 1982/83 was already completed and 2KR 1984/85 is still in progress.

5) Transfer of technology through provision of Japanese experts and training to the Indonesian personnel in Japan

Both activities relating to experts and training are progressing well under the technical cooperation on Strengthening of Plant Protection Services (ATA-162).

(2) Problems

The cooperation in this field progressed well and obtained good results; however there are still some technical difficulties. The use of agricultural chemicals in the tropical agriculture has influenced the ecological system adversely. In the extension of high yield varieties, technical constraints such as retrogradation of pest resistance and unusual occurence of pest and diseases were encountered. The followings are problems existing in plant protection system.

. Lack of systematic organization in Indonesia, specifically shortage of warehouses for equipment and pesticides.

. When unusual pest and diseases occur, the required equipment and pesticides are not always available readily.

. Developing the forecasting and controlling technology is only limited to pest and diseases.

. Existing cropping pattern is not always advantageous to plant protection, selection of variety and period of growing.

(3) Recommendation

The study on forecasting and controling of pest and diseases has progressed appreciably; however basic study should be further expanded to technical problems.

The following factors should be considered for the problems existing presently in plant protection system.

. Systematic organization should be developed on nationwide.

. Equipment and pesticides should be readily available for immediate use when outbreak of pest and disease occurs.

. For prevention of pest and disease, cultivating system that is also as effective as the use of agricultural chemicals should be improved being taken into consideration biological control system. Technical training for farmers should be strengthened along with the extension of technology and plant protection.

5.2.3. Regional Application Trial and Extension of Agricultural Technology

(1) Progress Evaluation

In this field long term survey was conducted in 1983, and thereafter the project did not progress. The Indonesia Government improved the institutions substituted outside the Umbrella System.

(2) Problems

There is still the need for the formulation of an arrangement concerning the overall organization aspects, the responsibility for trial, and dissemination of information and extension.

(3) Conclusion

On the Indonesian side, reorganization in this field should be implemented. In the proposal for future cooperation, institutional and technical aspects of the project implementation should be considered before submission by the Government of Indonesia.

5.2.4. Irrigation

(1) Progress Evaluation

Only Riam Kanan Pilot Scheme was implemented under General Grant and the other projects are still under preparation as feasibility study or implementing stage including engineering service. Under 2KR, equipment was supplied for ground water development and rehabilitation of swampy area.

Development of irrigation has a long preparatory stage, and hence its effect is only expected in future.

(2) Problems

Priorities in irrigation development have changed based upon the achievement in rice self-sufficiency. Priority area where new irrigation facilities will be developed is in outer area of Java. In Java, rehabilitation of the existing facilities and effective utilization of water resources will be promoted.

(3) Conclusion

The completion of the study and its subsequent stage should be implemented soon. Framework for future cooperation should be formulated taking into consideration the priority change in irrigation development.

5.2.5. Improvement of Post Harvest Treatment and Processing

(1) Progress Evaluation

According to the Study on Post Harvest Losses (ATA-207) conducted by JICA, 2.3 to 8.3% of rice are lost after harvesting in the surveyed area, such as Aceh, West Java, South Kalimantan and South Sulawesi. Post harvest treatment and processing is needed to be improved urgently.

1) Survey on the cause of losses and its improvement

Based upon the results of Study (ATA-207) mentioned above, the Government of Indonesia prepared a Master Plan for joint cooperation in this field.

2) Improvement of post harvest handling, processing and storage facilities

The following equipment was supplied for KUD under 2KR 1981/82, 1982/83 and 1983/84:

- rice milling unit, 0.5 ton/day : 49 units
- rice milling unit, 1 " : 216 "
- rice million unit, 3 " : 75 "
- digital moisture tester : 235 "
- high accuracy moisture tester : 28 "
- other post harvest equipment : 59 "

The equipment is operating effectively even though there are some common problems in 2KR, such as lack of spare parts and lack of training and skill operators.

In the loan project a loan agreement of 5,800 million yen to supply post harvest agricultural equipment to KUD was signed in March 1984. This kind of project is expected to be effective in increasing the income of KUD and individual farmers.

3) Technology transfer from Japanese expect and training to Indonesian personnel

In each year two (2) to four (4) persons were dispatched to Japan for training.

(2) Problems

The capacity of post harvest treatment and processing does not meet the increase in rice production, and the gap is gradually widening even though the supply of equipment is increasing.

The following are the problems encountered under this cooperation.

. Difficulty in getting spare parts.
. Lack of training to operators.
. Difficulty in getting local fund, specially for KUD cooperation, as a result some of the equipment have not been installed.
. Shortage of rice storage facilities both quantitatively and qualitatively due to increase in rice production.

(3) Conclusion

Since the Study on Post Harvest Losses (ATA 207) has been completed, the circumstances surrounding the field of post harvest have changed due to achievement in rice self-sufficiency. In future cooperation,new Master Plan in this field is needed based upon rice self-sufficiency. The following should be considered in future cooperation.

. In order to realize more efficient use of equipment supplied under the cooperation, after care and maintenance including the availability of spare parts, arrangement of instruction mannuals written in English or Indonesian and training to operators should be considered.
. Buildings where the supplied equipment would be installed, should be constructed with local budget without any delay.
. Storage facilities should be improved urgently to meet the surplus stock due to increased rice production.

5.2.6. Other Fields

(1) Progress Evaluation

Irrigation facilities were supplied only for water management under 2KR, and General Grant and Project Type Technical Assistance relating to agricultural mechanization are still under preparatory stage. However in crop insurance no project has been initiated.

(2) Problems

The scope of cooperation has not been cleared.

(3) Conclusion

In future cooperation, framework should be clarified at early stage through discussions between both Governments.

6. Evaluation of Umbrella System

6.1 Characteristics of Umbrella System

The Cooperation for Increasing Rice Production under the Umbrella System aimed at increasing the efficiency of cooperation in priority fields and provinces in order to achieve rice self-sufficiency in accordance with the Record of Discussion signed in July 1981.

Annual Consultation Meeting and Working Level Consultation were held between both the Governments to review the progress of the cooperation. A Japanese advisor was dispatched to review and promote the cooperation.

In Indonesia a Working Committee has been formed to coordinate the project preparation and monitoring, while in Japan Inter-agency Meeting was held whenever coordination was needed. In other respects, the process on the cooperation was as same as other projects.

Types of cooperation are as shown below.

Technical Cooperation
- Development Survey
- Project Type of Technical Cooperation
- Expert Service
- Training in Japan

Grant Aid
- General Grant Aid
- Food Production Assistance

Loan

The cooperation for increasing rice production has been conducted under a combination of various types of cooperation to increase the efficiency. The Government of Indonesia has recognized the efficiency and necessity of integrated system of various types of cooperation. In this aspect, the Umbrella System is introduced to meet the development policy of the Government of Indonesia. The Japanese agricultural cooperation

was concentrated in the field of increasing rice production during the period of the Cooperation.

It was a common understanding among the donor countries, international organizations as well as the Indonesian Government that the cooperation in the increasing rice production would be intensively implemented by Japan.

6.2 Effects of Institutional Aspects

Under the Umbrella System, the effects of institutional aspects with implementation are as shown below.

- As goals and measures were clarified in the respective fields of increasing rice production under the Umbrella System, the Embassy of Japan and JICA office could utilize these information as a guideline for promotion of cooperation.

- Various agencies of both Governments could have smooth and timely communication and reach mutual understanding on the implementation of the Cooperation through periodical discussions such as Annual Consultation Meeting and Working Level Consultation Meeting.

- In Indonesia the same recognition among the agencies related to the Cooperation was obtained through strengthening of communication and coordination among the fields.

- In Indonesia each implementing agency could have the opportunity to explain to the Ministry of Finance and BAPPENAS for financing under the framework of the Cooperation.

- The advisor promoted mutual understanding among the relevant agencies and personnel concerned, and also coordinated all the fields of the Cooperation.

6.3 Combination of Technical Cooperation and Economic Cooperation

In the fields of multiplication and distribution of improved seeds, strengthening of crop protection and irrigation, both the technical cooperation and economic cooperation have been progressing smoothly. In the field of strengthening of crop protection specifically, a combined cooperation has resulted favorably on the technology transfer and utilization of equipment, and led to implementation of project type technical cooperation.

In the field of improvement of post harvest treatment and processing, economic cooperation has progressed; however it did not get to technical cooperation. In the field of regioned application trial and extension of agricultural technology, cooperation has not been initialed in technical cooperation or economic cooperation due to institutional problems in Indonesia.

In the field of irrigation, sometimes the delay of loan disbursement is mentioned. This delay is due to the problems on the Indonesian side which should be solved them.

In the 2KR the equipment is not always utilized effectively and in future a combination of food grant aid and technical cooperation should be taken in to consideration.

6.4 Combination Among the Fields

The cooperation for increasing rice production under the umbrella system should produce effective results through systematic coordination among the fields.

In the past cooperation, the relationship between seed production and crop protection were recognized as one. The cooperation for regional application, that is a key factor for coordination of each field, has not been initialed and hence the effects of the cooperation has not been observed.

6.5 Efficiency of the Cooperation

Problems related to the on-going projects and future cooperation were discussed in Annual Consultation Meeting and Working Level Consultation Meeting. The projects under the umbrella system have progressed effectively and smoothly in comparism to projects outside the umbrella system.

The priority fields and priority provinces were set. In the preparation of proposal and implementation of cooperation both the governments concentrated on the efficiency of cooperation.

However, the degree of concentration was different in each field. The cooperation in the fields of irrigation and improvement of post harvest treatment and processing have tendency to be disolved.

The actual cooperation has been proposed and implemented on project basis and it included sometimes fields and provinces which were outside the priorities. It is assumed that effects of cooperation may be reduced by bottleneck in other field that should be solved by other cooperation.

Therefore, package system (Master plan) should be considered in future.

6.6 Effects of the Cooperation

Effects of the cooperation under the umbrella system are evaluated in each field for each type of cooperation, and in combined cooperations. At present quantitative evaluation is difficult, as many projects cooperated under the umbrella system are still in the preparation stage and the effects are expected only in the future.

However, the implementation of the cooperation under the umbrella system was evaluated to be effective and smooth.

7. Conclusions

(1) Under the Umbrella System, some projects have just come into the initial implementation stage and it takes a longer term for the project to show the impact and effect. The progress and performance of the Cooperation is favorable and it is confirmed that the Cooperation is making a support toward achieving rice self-sufficiency.

In order to realise the potential effects of the on-going projects in the future, it is requied to overcome the difficulties and to improve the system for continous promotion by both Governments and also to integrate with the new projects under preparation. The projects which are still at the stage of planning should also be implemented as soon as possible.

(2)a. From the viewpoint of the planning, the umbrella System has worked out effectively as framework to promote the cooperation smoothly at the stage of project preparation. However, coordination among the programme amd the project in some fields of cooperation has not been proceeded in a sufficient level without a common guideline for project implementation due to a lack of the integrated master plan which will provide a systematic strategy of all fields of cooperation.

b. From the viewpoint of the implementation system, the Umbrella System was effective before the implementation of each project, i.e. at the preparatory and planning stages of proposl of the development plan and the budget to the Ministry of Finance and BAPPENAS. The implementation system should be organised to add more functions for coordination and feedback at the stage of implementation in order to maximise the effects by the Cooperation.

(3) Agricultural development policy and measures are being different in Java Island and the outer area of Java. In the long run the priority of development in Java Island will be shifted from agriculture to other sector which can bring a higher value added on the effective use of water and land resources, and therefore rehabilitation and more effective use of the existing facilities are more emphasized in agricultural sector than the expansion of agricultural land. On the other hand, in the outer land of Java

the development of of the infrastructure and expansion of the agricultual land are expected mainly for the increasing of rice production to solve the regional imbalance of rice supply and demend.

Effective measures of integration should be developed for the future cooperation of agricultural development, being considered in regional characteristics of each development area from the viewpoint of natural, technical and socio-economic aspects.

(4)a. Under food production assistance (2KR), cooperation projects have been implemented in the fields of improved seeds, crop protection, irrigation and post harvest. However, in some cases the supplied equipments are not properly utilized due to delay in institutional arrangement, lack of training for operators and lack of spare parts.

b. In order to maximize the effects of expert services, it is important to clarify a role of each expert in the whole project, and to promote the better communication among experts and agencies concerned.

ANNEX 1

MEMBER LIST

MEMBER LIST

Indonesia Side

Dr. Wardoyo	- Junior Minister for Increase of Food Product, Ministry of Agriculture
Dr. Soetatwo Hadiwigeno	- Director of Bureau of Planning, Ministry of Agriculture
Dr. Shaedi Wiraalmadja	- Director General of Food Crop Agricultural, Ministry of Agriculture
Dr. Sihombing	- Director for Food Crops Production Development, Ministry of Agriculture
Mrs. Soelbijati Soebroto	- Director of Food Crop Programme, Ministry of Agriculture
Dr. Budiman	- Directrate General of Food Crop Agriculture
Dr. Soejatomiko	- Directrate General of Food Crop Agriculture
Mr. Tri Wibowo	- Directrate General of Food Crop Agriculture
Mr. Hardjanto	- Directrate General of Food Crop Agriculture
Mr. I. Wayan Sidhya	- Bureau of Planning, Ministry of Agriculture
Mrs. Emilia	- Bureau of Foreign Cooperation, Ministry of Agriculture
Mr. S. Sihotang	- Directrate General of Food Crop Agriculture
Mr. Christ Ngajiono	- Directrate General of Irrigation, Ministry of Public Works
Mr. Bani Suyar	- Directrate General of Food Crop Agriculture
Mrs. Hilma	- Directrate General of Food Crop Agriculture
Mr. Iswan Asam	- Directrate General of Food Crop Agriculture
Mr. Muchlizar	- Directrate General of Food Crop Agriculture
Mr. Siswanto	- Directrate General of Food Crop Agriculture
Mr. Sutarto	- Directrate General of Food Crop Agriculture

Japanese Side

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Mr. T. Yoshitake	- Official, Development and Cooperation Division, Economic Cooperation Bureau, MFA
Mr. S. Tsuchiya	- Assistant Director, International Cooperation Division, Economic Bureau, MAFF
Mr. T. Taniguchi	- Director, Agricultural Extension Division, Tokai Reagional Agricultural Administration Office, MAFF
Mr. Y. Ohkawa	- Head, Development Division, Agriculture Forestry and Fisheries Planning and Survey Department, JICA
Mr. S. Sasaki	- Staff, Planning Division, Planning Department, JICA
Mr. T. Kusano	- President, System Science Consultants Inc. (SSC)
Mr. T. Inoue	- Deputy Director, Planning Division, SSC
Mr. H. Mori	- Staff, Planning Division, SSC

2). Embassy of Japan

Mr. S. SUZUKI	- First Secretary

3). JICA Office

Mr. Y. SASAKI	- Assistants Resident Representative
Mr. M. SATO	- Assistants Resident Representative

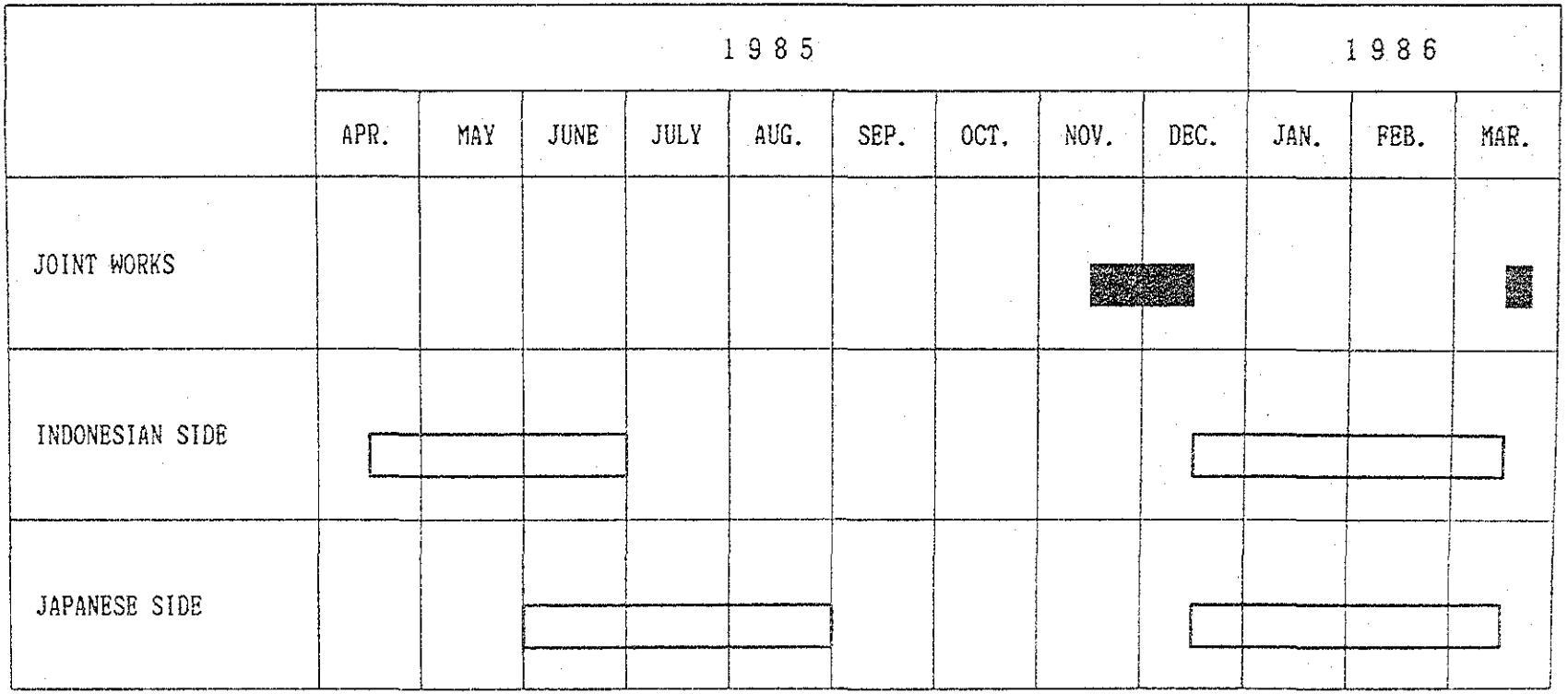
4). JICA Experts

Mr. E. KAGAI	- Advisor, Rice Self-Sufficiency Programme
Mr. S. NASU	- Team Leader, Plant Protection Project

ANNEX 2

STUDY SCHEDULE

WORK SCHEDULE



ANNEX 3

PRIORITY PROVINCES

PRIORITY PROVINCES