

EVALUATION REPORT
OF
THE PLANT PROTECTION PROJECT
(PHASE I - EXTENSION)

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JUNE, 1985

JAPAN INTERNATIONAL COOPERATION AGENCY

国際協力事業団

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CONTENT

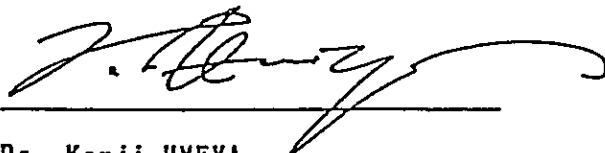
1. Outline of the Plant Protection Project (ATA-162)	*
2. Outline of the Food Crop Protection Project (the Second Phase of ATA-162)	*
3. The Record of Discussion on Extension of the period of the Technical Cooperation for the Plant Protection Project (ATA-162)	3
4. Tentative schedule of implementation of the Japanese Cooperation for the Plant Protection Project (ATA-162)	4
5. Note of understanding of the Joint Evaluation on the Plant Protection Project (ATA-162)	9
6. Summary Report of the Joint Evaluation on the Plant Protection Project (ATA-162)	10
7. Provisional Framework of the Future Project	30

3. THE RECORD OF DISCUSSIONS ON EXTENSION OF
THE PERIOD OF THE TECHNICAL COOPERATION
FOR THE PLANT PROTECTION PROJECT (ATA-162)

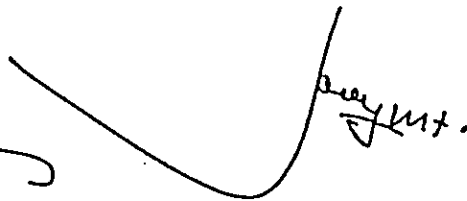
Upon the recommendations made by the Japanese Evaluation Team which conducted the evaluation survey from January 17 to 27, 1985, the Japanese Project Consultation Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency and headed by Dr. Kenji UKEYA visited the Republic of Indonesia from May 21 to 27, 1985, and had a series of discussion with the authorities concerned of the Republic of Indonesia concerning the extension of the period of the technical cooperation for the Plant Protection Project based on the Record of Discussions which was signed on June 18, 1980, and will be terminated on June 17, 1985.

As a result of discussions, the team and the authorities concerned of the Government of Indonesia agreed to recommend to their respective Governments to extend the technical cooperation for the above-mentioned Project until March 31, 1987 in order to attain the anticipated objectives of the technical cooperation.

Jakarta, May 24, 1985



Dr. Kenji UKEYA
Leader,
Japanese Project Consultation Team
Japan International Cooperation
Agency

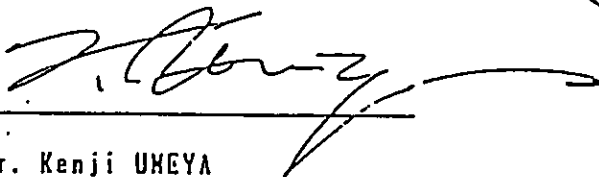


Dr. Ir. Sadji Partoatmodjo
Director of Food Crop Protection
Directorate General of Food Crop
Agriculture,
Ministry of Agriculture

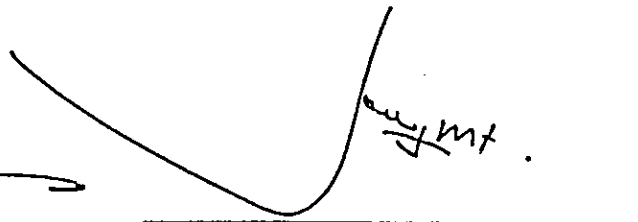
4. TENTATIVE SCHEDULE OF IMPLEMENTATION OF
THE JAPANESE TECHNICAL COOPERATION FOR
THE PLANT PROTECTION PROJECT (ATA-162)

The Japanese Project Consultation Team headed by Dr. Kenji UMEYA and the Indonesian authorities concerned have jointly exchanged views on the project activities and formulated the Tentative Schedule of Implementation of the Japanese technical cooperation for the Plant Protection Project (ATA-162) as annexed hereto.

This has been formulated in connection with the Master Plan to the Record of Discussions signed at Jakarta, on May 24, 1985 on condition that the necessary budget will be allocated for the implementation of the Project and the Schedule is subject to change within the framework of the Record of Discussions when necessity arises in the course of the implementation of the Project.



Dr. Kenji UMEYA
Leader, Japanese Project
Consultation Team
Japan International Cooperation
Agency



Dr. Ir. Sadji Partoatmodjo
Director of Food Crop Protection
Directorate General of Food Crop
Agriculture,
Ministry of Agriculture

ANNEX 1a. STUDY ACTIVITIES OF THE TECHNICAL COOPERATION

Item	Place	Year			Remarks
		1985	1986	1987 3/31	
<p>1. Brown Planthopper.</p> <p>1) Study on biotype problem of brown planthopper.</p> <p>2) Study on brown planthopper ecology under the established surveillance, forecasting and control scheme.</p>	<p>Pasarminggu - Central Office Jatisari (Forecasting Center) Bogor - Biological Laboratory</p>	←	-----→	-----→	
<p>2. Green Rice Leafhopper and Tungro Disease.</p> <p>Study on epidemiology of green rice leafhopper and RTV, and their control</p>		ditto	←	-----→	-----→
<p>3. Pesticide analysis.</p> <p>1) Study on analysis and properties of pesticide formulation.</p> <p>2) Study on the methodology of pesticide residues analysis in agricultural crops.</p>	<p>Pesticide Laboratory at Pasarminggu</p>	←	-----→	-----→	

ANNEX 1b. STUDY ACTIVITIES OF THE TECHNICAL COOPERATION

Item	Place	Year			Remarks
		1985	1986	1987 3/31	
<p>4. Utilization of computer system for food crop protection.</p> <p>1) Quantitative analysis of field data on pest ecology.</p> <p>2) Filing and processing the information necessary for pest management.</p>	Pasar Minggu - Central Office				
<p>5. Rice diseases.</p> <p>1) Study on epidemiology and control of major rice diseases.</p> <p>2) Study on theory and model of controlling the diseases including variety rotation.</p>	Pasar Minggu - Central Office Jatisari (Forecasting Center) Bogor - Biological Laboratory				
<p>6. Palawija diseases and insect pests.</p> <p>Study on ecology and control of major pests of palawija.</p>	ditto				
<p>7. Rodents.</p> <p>Study on ecology and control of rodents.</p>	ditto				

ANNEX II. JAPANESE CONTRIBUTION

Item.	Year	1985	1986	1987 3/31	Remarks
<p>1. Assignment of Experts.</p> <p>1) Long-term Assignment</p> <p>(1) Leader</p> <p>(2) Entomologist</p> <p>(3) Entomologist (Plant pathologist)</p> <p>(4) Liaison Officer (Entomologist)</p> <p>2) Short-term Assignment.</p> <p>(1) Agro-chemist (pesticide)</p> <p>(2) Entomologist</p> <p>(3) Plant pathologist</p> <p>(4) Zoologist (Rodents)</p> <p>(5) Others</p> <p>2. Acceptance of Trainees</p> <p>3. Provision of equipment, Machinery, and Materials.</p>		<p>←-----→</p> <p>←-----→</p> <p>←-----→</p> <p>←-----→</p> <p>←-----→</p>			<p>Several personnel a year.</p> <p>Assignment of Experts in the field of "Others" shall be studied by the Joint Committee.</p> <p>Several personnel a year</p>

ANNEX III. INDONESIAN RESPONSIBILITIES


Item	Year	1985	1986	1987 3/31	Remark
<p>1. Assignment of Indonesian Counterparts and Other Personnel.</p> <p>1) Project Leader</p> <p>2) Counterpart Personnel</p> <p>(1) Entomologist (s)</p> <p>(2) Plant pathologist (s)</p> <p>(3) Agro-chemist (s) (Pesticide)</p> <p>(4) Zoologist (Rodent)</p> <p>(5) Others</p> <p>3) Laboratory assistants</p> <p>4) Administrative Personnel</p> <p>(1) Administration</p> <p>(2) Accounting</p> <p>5) Other Necessary Supporting Staff</p>		←	←	←	
<p>2. Land Building and Facilities.</p> <p>1) Central Office and Laboratories, Pasarminggu</p> <p>2) Observatory Laboratory, Jatisari (Forecasting Center)</p> <p>3) Laboratories, CRIF (=CRIA) - Bogor</p> <p>4) Experimental farm land, Jatisari</p> <p>5) Store-house for equipment, machinery and other materials</p> <p>6) Garages</p> <p>7) Other necessary land and buildings</p>		←	←	←	
<p>3. Allocation of Running Expenses</p>		←	←	←	

5. NOTE OF UNDERSTANDING OF
THE JOINT EVALUATION ON
THE PLANT PROTECTION PROJECT (ATA-162)

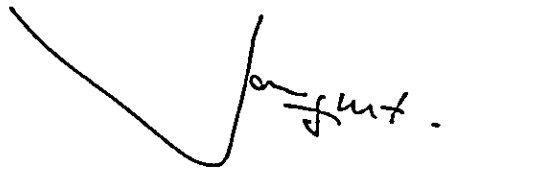
With four more months before the termination of the cooperation period for the Plant Protection (ATA-162) on March 31, 1987 as stated in the Record of Discussions (signed on May 24, 1985 in Jakarta), the Japanese Evaluation Team organized by the Japan International Cooperation Agency and headed by Dr. Kenji UMEYA, visited the Republic of Indonesia from November 16 to November 29, 1986 to carry out an overall review and evaluation of the project performances during the extended period together with the Indonesian Evaluation Team head by Dr. Ir. Sadjı Partoatmodjo. Both evaluation teams agreed to convey to their authorities concerned the results of their studies and recommendation referred to in the Summary Report of the Joint Evaluation on the Plant Protection Project (ATA-162) attached herewith.

Jakarta, the Republic of Indonesia

November 27, 1986



Dr. Kenji UMEYA



Dr. Ir. Sadjı Partoatmodjo

Leader

Leader

The Japanese Evaluation Team

The Indonesian Evaluation Team

b. SUMMARY REPORT OF THE JOINT EVALUATION
ON THE PLANT PROTECTION PROJECT (ATA-162)

I. INTRODUCTION

With a view of minimizing rice yield losses caused by insect pests and diseases in Indonesia, the Plant Protection Project ATA-162 (hereinafter referred to as "the Project") started on June 18, 1980 in accordance with the Record of Discussions. With five years of the cooperation period, the Project carried out activities such as (1) improvement of forecasting method at national level, (2) ecological studies on improving surveillance technology, (3) physiological and ecological studies on forecasting and (4) analysis of pesticide, in order to promote capabilities of controlling rice insect pests and diseases in Indonesia.

In January, 1985, evaluation studies were carried out concerning the above-mentioned Project activities by the Japanese and Indonesian Joint Evaluation Team. They concluded that they would recommend their respective Governments to extend the technical cooperation period of the Project for about 1 year and 9 months until the end of March in 1987 for fulfilling the anticipated objectives.

The Project extended based on the Record on Discussions signed on May 24, 1985 (hereinafter referred to as "R/D") for the purpose of establishing forecasting and control technologies with emphasis on further studies on ecology and physiology of key pests of rice and palawija crops, and on pesticide analysis. The Project also started studies on ecology and control of key pests in the North Sumatera and Bali to solve actual problems occurring in Indonesia.

Activities of the Project included the transfer of technology through sending Japanese experts, accepting Indonesian counterparts for training in Japan and supplying of equipments to the Republic of Indonesia.

The Government of Japan, through the Japan International Cooperation Agency (hereinafter referred to as "JICA"), dispatched the Evaluation Team to the Republic of Indonesia for the technical cooperation for the Project over the period of November 16 to 29, 1986. Corresponding with this, the Government of the Republic of Indonesia organized a survey team in order to jointly conduct evaluation studies with the Japanese Team. The results of the evaluation will be reported to the both Governments.

II. OBJECTIVES OF EVALUATION

The Evaluation was conducted with following objectives:-

1. to review the results obtained in the Project so far since June 18, 1985 prior to the termination of the R/D on March 31, 1987.
2. to discuss the possibilities of future measures to be taken after the termination of the Project and accordingly make recommendations to the respective Governments.

III. METHODOLOGY OF EVALUATION

Evaluation was carried out from November 16 to 27, 1986 by the Joint Evaluation Team, which consisted of the Japanese Team and the Indonesian Team. The Joint Evaluation Team visited and discussed with the following organizations.

1. Organizations in charge of the Project: -
Directorate of Food Crop Protection,
Directorata General of Food Crop Agriculture,
Ministry of Agriculture
2. Organizations for conducting the activities: -
 - 1) Central Office at Pasarminggu
 - 2) Observatory Laboratory at Jatisari
 - 3) Pesticide Laboratory at Pasarminggu
 - 4) Biological Laboratory at BORIF, CRIFC in Bogor
 - 5) Food Crop Protection Center I in Medan
 - 6) Food Crop Protection Center VII in Denpasar

Evaluation was conducted according to the R/D and the Tentative Schedule of Implementation (hereinafter referred to as "TSI") concerning the study activities and the Project management.

IV RESULTS OF EVALUATION

The Joint Evaluation Team recognized that the activities of intensive studies through technical cooperation, based on the TSI have been progressively implemented, and approved that the objectives of the Project in the extension period have been achieved.

However, there are still many problems to be solved in developing and implementing the pest management system. Outbreak and shifting of biotypes of the brown planthopper, outbreak of vira diseases transmitted by the leaf- and plant-hoppers, pesticide residue in agricultural crops, outbreak of rats, and the increase of occurrence of rice diseases, such as sheath blight and blast, are among the problems. The key

pests attacking the palawija crops, mainly soybean, have been known to cause serious problems. In order to solve those problems, it is necessary to study the population dynamics of the key pests for the purpose of taking appropriate control measures based on economic injury level.

On the other hand, the Pests Forecasting Center on the national level and the Food Crop Protection Centers, Field Laboratories are now under construction through the General Grant Aid by the Government of Japan for developing networks of forecasting and surveillance of the pests occurrence in main food crops areas in Indonesia. The networks will support and strengthen the Indonesian agencies concerned to apply control measures. In relation to this programme, technical guidance would be expected for its smooth operation.

Taking these aspects into consideration, the Joint Evaluation Team recognized the necessities and importance of future technical cooperation.

Details of the evaluation results are as follows:-

1. Study Activities

Study activities of the technical cooperation were indicated in the TSI signed on May 24, 1985. The items were: -

1) The Brown Planthopper

Study on biotype and ecology under the established surveillance, forecasting, and control scheme.

2) The Green Rice Leafhopper and Tungro Disease

Study on epidemiology of the green rice leafhopper and RTV, and their control.

1) The Brown Planthopper (BPH)

BPH is one of the major rice insect pests. Intensive studies on cause of outbreak and biotype nature of BPH have been carried out with emphasis on the prevalence of virulent biotypes and genetic properties of biotypes in relation to the change of rice varieties. Studies on population monitoring and population dynamics of BPH in North Sumatera and West Java have been achieved. It was clarified the basic pattern of population buildup, spatial distribution pattern, construction of life table, key factor affecting hopperburn density, operating mechanism of natural enemies, and forecasting model with parameter initial generation and some natural enemies. Utilization of insect growth inhibitor (insectistatics) was demonstrated in farmers' fields and succesful results for control of BPH were obtained. Further studies are needed to develop the control of BPH in the following points; strengthening of surveillane system, new identification method of biotypes, and construction of forecasting model by utilizing the computer.

2) The Green Rice Leafhopper and Tungro Diseases

Intensive studies have been carried out on the following aspects; epidemiology of rice tungro virus (RTV), analysis of the surveillane data and prediction of RTV outbreak by monitoring its vector densities, amount of virus source, and areas planted with susceptible cultivars and stages of rice and population dynamics of vectors. Detail studies on morphological aspects of species belonging to the genius Nephotettix were made.

However, further studies have to be conducted with special surveillance of tungro in relation to areas infested, rice stage and cultivar composition, and population densities of vectors at the RTV infested areas. The serological technique for the test of viruliferous vector individuals is also needed to develop RTV forecasting method.

3) Pesticide Analysis

Oxytetracycline in citrus fruit, diflubenzuron in swamp water, and Zineb in tomato etc. were successfully analyzed by guidance of the Japanese experts. Pesticides registered officially were sampled and active ingredient of these pesticides were analyzed in case that methodology was established, i.e. methylation method.

Maintenance of equipments donated by this Project is well managed for utilization of pesticide formulation and residue analysis.

Further studies on actual degradation and residue of pesticide chemicals in tropical agro-ecosystem, establishment of analytical method for new chemical compounds of pesticides, and minimizing the rate of deterioration of pesticides are needed. Setting of reasonable standards for physical property of pesticide formulation is advisable.

4) Utilization of Computer System for Food Crop Protection

The data obtained in field surveillance have been filed using the SMART of the office computer (NEC system 100/85) which is installed at Pasarminggu. The data filing is still continuing due to a great

number of the surveillance data stocked at the Central Office. The data collected by the pest observers since September in 1985 were already filed in the computer.

The programming by BASIC was demonstrated in utilization of personal computer. Some application programmes for personal computer were mastered by the guidance of the Japanese experts. The data base of pesticides was constructed. Then, registration and management of pesticides have been efficiently done. The following functions such as filing and collection of data, table making, and printing were established. The analysis of surveillance data has to be made.

5) Rice Disease

(1) Sheath blight

Sheath blight is a serious disease in the plain of Sumatera and Java. Symptoms are detected on from the lower leaf-blades and sheaths to the flag leaf and its sheath, that may cause 10 to 30% of yield loss and deteriorate the quality of grains. In the survey from January to February in 1986, percentages of the number of fields where percentage of the diseased hill was beyond 60% were 65% in Lampung and 36% in West Java. Introduction of the cultivars which have a short stem-length and rich tillers causes the severe outbreak.

(2) Blast disease

Severe damage by blast disease occurs in the area located at more than 100m high above the

sea-level, especially Sulawesi and Bali. In various places of Sumatera, Java, Kalimantan, Sulawesi and Bali, seedling blast was detected in the nursery bed. It is wellknown that there are races of the blast fungus which are specific to the cultivars. In the survey from April to May in 1985, the existing races were able to attack the IR-line and the Indonesian cultivar.

(3) Panicle blight

Some of the causal agents of panicle blight are determined to be Helminthosporium sp., Cercospora sp., Alternaria sp., in addition to Pyricularia oryzae, although the pathogenicity test is needed. In some cases, these pathogens were isolated from the same necknode.

(4) Withering by unknown agent

Helminthosporium sigmoidium was the causal factor which induced the wilting and withering of rice plants in Purwakarta area.

(5) Bacterial diseases

In some areas, leaf blight is caused by Xanthomonas campestris pv. oryzae (the causal agent of bacterial leaf blight) and oryzicola (the causal agent of bacterial leaf streak). There was a case that both bacteria attacked the same leaf and two different types of symptoms appeared.