

#### II-4 Suphan Buri Experimental and Training Center

(1) The activities achieved in Suphan Buri Training Center are highly appreciated since they could educate quite many number of trainees, and supplied basic information to the sub-projects. However, considering from the view point that the Suphan Buri Center should work as a driving power in training capable officials with practical knowledge on water management and in supplying useful information to the sub-projects, further efforts are needed.

(2) Trainees who took part in the training course prepared by the Suphan Buri Experimental and Training Center are mostly composed of officials including some farmers.

Further investigation should be carried out to know

- whether officials who completed the training course are engaged in the jobs useful for their learned know-how;
- whether their learned know-how is practicable in the field;
- whether the Center is informed of the problems that the participants encounter in the field so as to improve the contents of training Programs.

(3) Since quite a few number of the counterparts from both Mae Klong and Chao Phya Pilot Projects have undergone training at the Center so far, it is recommended that more emphasis should be placed on their training among other things. Thus, the Training Center can function as an integrated part of IADP.

### III. RECOMMENDATIONS

Judging from the evaluation results as derived from this term of survey on the Center and Sub-projects, it seems necessary to extend the project period by another three (3) years. Extension shall be for all the components, namely the Project Center and three (3) related Sub-projects, and the assignment period for each Expert dispatched be determined case by case depending on the work progress accomplished so far.

Major reasons for the said extension can be briefly described as follows:-

(1) The first integrated agricultural development project implemented under the category of Thai-Japan technical cooperation program, with which the Government of Japan intended to cooperate and contribute to the so-called irrigated agriculture development project executed by the Thai Government. Objectives of said project implementation were in finding out the most advantageous technical measure mainly in the field of on-farm development and in seeking better approach for higher agricultural production as the result. The Project is expected to be a good model for the similar natured technical cooperation programs to be implemented thereafter, and therefore, further strengthening of the on-going cooperation is desired.

(2) Those Thai Governments' officials concerned with the Project, in particular those engineers/specialists assigned in the fields, have recently been well aware of the purpose of the project, understood the roles to be assumed by themselves and could offer effective assistances to lead the project to an expected success. Other than the above, Agencies concerned of the Thai Government showed much interest in completing fully the on-going Project, for which request is made to the Government of Japan.

Hereafter, recommendations as to the common items, Project Center and three (3) Sub-projects after the extension of term are stated item by item.

### III-1 Common Items

Common items include equipment/machinery to be granted, training in Japan, local budget and so forth.

#### III-1-1 Equipment/machinery to be granted

- (1) Budget allocation among Sub-projects shall be further studied.
- (2) Equipment/machinery as obtained to date shall be commonly used depending on the necessity.
- (3) Emphasis shall be placed on supply of spare parts taking into account the future operation and maintenance.
- (4) Local procurement shall be encouraged when conditions would allow the case.
- (5) O & M program be further clarified.

#### III-1-2 Training in Japan

- (1) Higher priority should be given to those counterparts to the Japanese Experts.
- (2) Request form shall be sent to the Agencies concerned as early as possible.
- (3) Contents involved in training course shall be communicated earlier with full details.
- (4) In selecting the trainee, active participation in the Project after training shall be a primary condition.
- (5) Linking with the training in Japan, training program in the Suphan Buri Training Center shall be made up for those counterpart, related with the Mae Klóng and Chao Phya sub-projects.

#### III-1-3 Local budget

It shall be necessary to secure adequate amount of local budget

to assure smooth implementation of the Project in a further strengthened manner.

#### III-1-4 Holding of Joint Committee

At present, the Joint Committee is held once a year. To secure more smooth coordination among Agencies concerned with the Project, however, frequent meeting of lower level organization under the Committee shall be required so as to improve the coordination efficiency at the working group level.

#### III-2 Project Center

(1) The Project Center shall prepare and provide more data/information, mainly of technical aspects, based on the past accomplishments of Sub-projects towards effective agricultural development in the Lower Chao Phya River Basin and the Greater Mae Klong River Basin.

(2) Coordination work as related to the equipment and machinery to be granted and implementation of training in Japan shall be further strengthened.

(3) It is considered necessary to make an extension of cooperation program by three (3) years for the above 1).

#### III-3 Chao Phya Project

(1) All-out efforts by all Agencies concerned is required to complete the remaining works, especially the pumping station.

(2) Development plan for the southern part of the Project area is still not completed, and it is apprehended that the construction work might be substantially delayed. In this connection, meetings with the local farmers should be scheduled at an early date to discuss the development plan based on the new farming pattern to be introduced to the area.

(3) On-farm development in the northern part of the area is implemented applying the so-called intensive method. Taking the future application/

extension to the wider area in the same locality, however, introduction of somewhat extensive development, which can be constructed at lower cost, shall be studied for possible application. Even in this case, criteria for the development shall comply with the future introduction of large-scale farm machinery, main roads and canals.

(4) At present, planning, design, construction and O & M are carried out by different Divisions separately. Engineers in each Division also concentrate their work only in the scope of work assigned to themselves. For the effective implementation of the Irrigated Agriculture Development Project, however, education/training on various aspects related as wide as possible for the engineers shall be recommended.

(5) As regard to cultivation, experimental research on the following items shall be necessary.

- \* Integrated control on virus disease and damages by rats.
- \* Timing of drainage of residual water and possibility on harvesting by combine.
- \* Comparison on transplanting, broadcasting and transplanting by machine.
- \* Soil fertility conservation by applying fertilizer, organic material and lime.
- \* Effects of complete absence of rice for 1-2 months between dry and wet season cultures on the population of insects or rats.
- \* Adoption of "floating dwarf" rice varieties such as RD 17 and 19 to decrease the burden of excess water drainage during the wet season.

(6) In relation with the agricultural extension services, present task force be further strengthened in parallel with the progress in farm ditch rehabilitation works.

(7) Supplemental supply of farm machineries suited to the particular

soil condition prevailing in the area and proper guidance on the operation shall be necessary.

(8) Well-organized data collection and filing system shall be established so as not to lose/damage valuable data/information.

(9) It is considered necessary to make an extension of cooperation program by three (3) years for the above 1) - 8).

#### III-4 Mae Klong Project

(1) The Mae Klong Pilot Project is established to collect the technical, agricultural and the socio-economic information required for the land consolidation work and to establish the standard for agricultural development in Thailand based on the above information. In this context, various meetings and discussions should be held between both Governments, as well as the authorities concerned and farmers' association.

(2) This project is intended to demonstrate the intensive land consolidation in the No. 1 and the extensive land consolidation in the No. 2. In these two tracts, however, it is necessary to collect the technical data such as plot size, intensity of irrigation and drainage canals and extent of canal lining suitable for the future mechanized farming, which is expected to realize after 10 - 20 years, considering the farmers' economy.

(3) At present, planning, design, construction and O & M are carried out by different Divisions separately. Engineers in each Division also concentrate their work only in the scope of work assigned to themselves. For the effective implementation of the Irrigated Agriculture Development Project, however, education/training on various aspects related as wide as possible for the engineers shall be recommended.

(4) As regards to cultivation and experimental research, the following items shall be necessary.

- \* Countermeasures for lowered soil productivity as caused by continuous cropping of paddy.

\* Broadcasting method.

\* Control of damages by rats, various diseases and insects.

(5) As for extension services, strengthening of farmers' organization and guidances on water management and dry season cropping through said organization shall be necessary.

(6) It was confirmed that the Japanese technology can be fully introduced to be applied in the area for mechanized paddy farming. Aiming at expansion of farmers' organization, more effective utilization of farm machinery is to be realized.

(7) Well-organized data collection and filing system shall be established so as not to lose/damage valuable data/information.

(8) It is considered necessary to make an extension of cooperation program by three (3)-years for the above (1) - (7).

### III-5 Suphan Buri Experimental and Training Center

(1) In consultation with the Project Center, the Training Center shall formulate and provide possible training courses for those engineers/staff working at Chao Phya and Mae Klong sub-projects.

(2) Further investigation should be carried out to know

\* whether officials who underwent the training are engaged in the jobs useful for their learned know-how or not;

\* whether their learned know-how is practical in the field or not;

\* whether the center is informed of the problems that the participants encounter in the field so as to improve the contents of training Programmes or not.

(3) As regards to experimental research, the following subjects are needed to be studied.

\* Essential points of high yielding rice cultivation under intensive farming

- \* Integrated control of insects, rats and diseases.
- \* Effects of underdrainage coupled with improvement of soil physical properties.
- \* Water requirement and water management of paddy rice plants at each growth stage.

(4) It is considered necessary to make an extension of cooperation program by three (3) years for the above 1) - 3).



Appendix 1. Technical advice to M/P, F/S, D/D

ITEM	1976	1977	1978	1979	1980	1981
<b>Development Survey</b>						
1. The Greater Mae Klong River Basin						
a) Preliminary Survey for Master Plan Study		=====				
b) Master Plan Study (10/8 Final Report)			-----	-----	-----	
2. The West Bank Truct of the Greater Chao Phya						
a) Preliminary Survey for Feasibility Study						
b) Feasibility Study		=====				
c) Detail design						=====
3. The Kanphang Sen Project						
a) Preliminary Survey for Feasibility Study			=====			
b) Feasibility Study				=====		

## Appendix 2. Expert's assignment

### Project Center

Team Leader	Mr. M. Furuya	1977.8.31 - 1979.9.29
	Mr. J. Nakajima	1979.9.16 -
Agro-Economist	Mr. N. Inage	1978.3.30 - 1980.3.29
	Mr. H. Ohta	1980.7.31 -
Irrigation & Drainage	Mr. K. Miyamoto	1977.8.31 - 1980.8.30
	Mr. S. Tsuji	1980.8.15 -
Liaison officer	Mr. T. Endo	1977.8.31 - 1979.8.30
	Mr. H. Fukushima	1979.8.15 -

### Chao Phya Pilot Project

Land Consolidation	Mr. K. Kiyura	1977.10.31 - 1980.10.30
	Mr. T. Hongo	1981.4.7 -
Irrigation & Drainage	Mr. H. Ochi	1977.11.5 - 1980.11.4
	Mr. H. Nakashima	1980.11.1 -
Machinery	Mr. I. Yamazaki	1978.10.20 - 1981.10.19
Agronomist	Mr. I. Nanba	1978.10.20 - 1980.10.19
	Mr. S. Ishizaka	1981.1.31 -
Extension	Mr. N. Iguchi	1980.6.17 -

### Mae Klong Pilot Project

Land Consolidation	Mr. T. Miyazu	1978.11.2 - 1981.10.30
Irrigation & Drainage	Mr. T. Ohkubo	1978.11.2 - 1981.1.15
	Mr. Y. Matsuya	1981.1.8 -
Agronomist	Mr. K. Misawa	1979.12.15 - 1981.12.14

### Suphan Buri Experiment and Training Center

Agronomist	Dr. T. Sugawara	1978.8.31 -
	Mr. Y. Takashima	1980.3.25 -

**Short Term Expert**

<b>Execution Management</b>	<b>Mr. S. Yamada</b>	<b>1978.10.10 - 1979.6.18</b>
<b>Construction Design</b>	<b>Mr. T. Tohyama</b>	<b>1979.11.10 - 1980.2.7</b>
<b>Execution Management</b>	<b>Mr. O. Fukuda</b>	<b>1979.11.10 - 1980.6.16</b>
<b>Rice Milling</b>	<b>Mr. M. Tadokoro</b>	<b>1981.10.6 - 1981.11.15</b>

Appendix 3 Training in Japan

FISCAL YEAR	'77		'78		'79		'80		'81	
	R/D	Actual	R/D	Actual	R/D	Actual	R/D	Actual	R/D	Actual
STUDY TOUR	2	4	1	2	1	2	1	2	1	2
TRAINING	1	4	4	1	4	4	2	4	4	3
TOTAL	3	4	5	3	5	2	5	4	5	5

Appendix 4 Donated Machinery and Equipment

Item	Total		Chao Phya P/P		Mae Klong P/P		Suphanburi T/C		Project Center
	R/D	Actual	R/D	Actual	R/D	Actual	R/D	Actual	
Construction Machinery	587,686 (876,375X)	252,201 (876,375X)	135,485 ( - )	( - )	( - )	( - )	( - )	( - )	( - )
Agricultural Machinery	68,922.01 (3,146,515)	61,029 (211,750)	4,192.01 (2,924,165)	3,711 (10,600)	43	( - )	12,071 (162,510)	( - )	( - )
Agricultural Materials	8,801.75 (443,097)	5,379 (230,096)	3,379.75 (213,001)	( - )	( - )	( - )	( - )	( - )	( - )
Experimental Machinery	35,700.89 (521,643)	21,943 (11,300)	1,686.89 (347,835)	2,334.6 (213,600)	( - )	( - )	8,536 (105,000)	1,715 ( - )	( - )
Pumps	49,103.6 (213,600)	46,769 ( - )	2,334.6 (213,600)	( - )	( - )	( - )	( - )	( - )	( - )
Vehicles	22,012.4 (301,500)	7,306 (28,000)	4,433.4 (168,300)	( - )	( - )	( - )	( - )	( - )	( - )
Boat	1,328 ( - )	1,328 ( - )	( - )	( - )	( - )	( - )	( - )	( - )	( - )
Stationery	6,946.1 (415,112)	3,691 (86,300)	1,152.1 (58,800)	1,515 (242,361)	588 (47,651)	( - )	( - )	( - )	( - )
Others	11,249.752 ( - )	( - )	8,593.752 ( - )	( - )	( - )	( - )	( - )	( - )	( - )
Total	591,760.502 (5,917,844)	399,646 (1,423,821)	161,279.502 (3,925,901)	28,532 (520,471)	2,303 (47,651)	( - )	( - )	( - )	( - )

Remarks: Japanese ¥ unit: ¥1,000  
(Thai Baht) 1¥=10¥  
( ) なし 日本からの購送分  
( ) タイにおける現地調達分

2. ジョイント・コミティー・ミーティング資料

2-1. 第5回ジョイント・コミティー・ミーティング議事録

Minutes of the Fifth Meeting of Joint Committee on  
Technical Cooperation Between Thailand and Japan on  
the Irrigated Agriculture Development Project

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Date: 18 November 1981

Time: 10:30 - 12:00 hours

Place: Ministry of Agriculture and Cooperatives

Present:

- |   |  |
|---|--|
| 1. Mr. Chulanope Snidvongse<br>Na Ayudhya | Deputy Under-Secretary of State for<br>Agriculture and Cooperatives<br>- Chairman    |
| 2. M.L. Pilandh Malakul                   | Project Director - Member  |
| 3. Mr. Pinit Suvanajata                   | Deputy Secretary-General ALRO<br>- Member  |
| 4. Mr. Sutin Mulphruk                     | Project Manager (Chao Phya)<br>- Member  |
| 5. Mr. Winit Changsri                     | Project Manager (Suphanburi Experi-<br>ment Station and Training Center)<br>- Member |
| 6. Mr. Roongrueng Chulajata               | Project Manager (Mae Klong)<br>- Member  |
| 7. Mr. Paitoon Palayasoot                 | Project Coordinator - Member   |
| 8. Mr. Sutin Susila                       | DTEC Representative - Member   |
| 9. Mr. Vorasak Pakdee                     | DAE Representative - Member  |
| 10. Mrs. Wannee Ratanawaraha              | CPD Representative - Member  |
| 11. Mrs. Wanee Samphantharak              | LDD Representative - Member  |
| 12. Mr. K. Naitoh                         | Leader of Evaluation Team- Member  |
| 13. Mr. A. Kasai                          | JICA Director, Bangkok Office<br>- Member  |
| 14. Mr. J. Nakajima                       | Team Leader of IADP - Member   |
| 15. Mr. H. Fukushima                      | Liaison Officer (Project Center)<br>- Member   |

- |                      |  |
|----------------------|--|
| 16. Mr. S. Yoshida   | Member of Evaluation Team- Member      |
| 17. Mr. K. Hamamura  | Member of Evaluation Team- Member      |
| 18. Mr. O. Takahashi | Member of Evaluation Team- Member      |
| 19. Mr. K. Biyajima  | Member of Evaluation Team- Member      |
| 20. Mr. K. Tsuji     | Member of Evaluation Team- Member      |
| 21. Mr. K. Misawa    | Mae Klong Project - Member             |
| 22. Dr. T. Sugahara  | Suphanburi Training Center<br>- Member |
| 23. Mr. N. Iguchi    | Chao Phya Pilot Project - Member       |
| 24. Mr. Y. Matsuya   | Mae Klong Pilot Project - Member       |

Observers

- |   |   |
|---|---|
| 25. Mr. Vichai Srivarapongse              | Mae Klong Pilot Project                                   |
| 26. Mr. Chaicharat Rojananonda            | DAE   |
| 27. Mr. Vichien Sasiphapa                 | Suphanburi Training Center<br>(Assistant Project Manager) |
| 28. Mr. Osoth Chanvetch                   | Agronomist, Mae Klong Pilot Project                       |
| 29. Mrs. Orawan Lohitanonda               | Secretary (Japanese Expert)                               |
| 30. Mrs. Atchara Ruckchart                | " "   |
| 31. Miss Atchara Chaiyapinand             | CLCO  |
| 32. Miss Supotchanat Ruenea               | CLCO  |
| 33. Miss Savanee Isarankura<br>Na Ayudhya | NOAC  |
| 34. Mr. Kasem Prasutsangchand             | NOAC  |
| 35. Mr. S. Igarashi                       | Embassy of Japan  |
| 36. Mr. Y. Takashima                      | Suphanburi Training Center                                |
| 37. Mr. H. Nakashima                      | Chao Phya Pilot Project                                   |
| 38. Mr. H. Ohta                           | Project Center of IADP                                    |
| 39. Mr. T. Hongo                          | Chao Phya Project   |
| 40. Mr. Y. Noshiro                        | JICA Bangkok Office                                       |

1. The Chairman opened the meeting and extended a warm welcome to Mr. K. Naitoh and his Evaluation Team. He then asked Mr. Nakajima, the Resident Japanese Team Leader and Mr. Paitoon Palayasoot, Project Coordinator, to introduce members of the Japanese Delegation and the Thai Delegation respectively.
  
2. M.L. Pilandh Malakul, Project Director, addressed the meeting. On behalf of the project staff, he thanked the Evaluation Team and all the Japanese experts for their kind cooperation and services rendered to this project. He then reported on the progress of the project. Although this project has been underway only for a short period of time, good progress has been made because of the good cooperation between the Japanese Government and the Thai Government. He stated that project operations based on the Record of Discussions signed on 8 April 1977 by the Thai Government and the Japanese Government, for a period of 5 years, would terminate in 8 April 1982. The Project consists of three Sub-Projects as follows:

- 1) Chao Phya Pilot Project
- 2) Mae Klong Pilot Project
- 3) Suphan Buri Experimental Station and Training Center

The technical cooperation consists of three principal items namely, the dispatch of experts from Japan, machinery and equipment supplies, and fellowships for training of Thai counterparts.

The objective of this project is to carry out the irrigated agriculture development, especially on-farm development in the Greater Mae Klong area and in the Lower Chao Phya area, by establishing a pilot scheme. The project is also aimed at the improvement of physical infrastructure, agricultural techniques, agricultural extension and strengthening of farmers' organizations and other related activities which is necessary to increase production as well as farmers' income.

This project is deemed the initial step toward technical assistance for Irrigated Agriculture Development to be rendered by the Government of Japan. This project is now coming to an end. Generally speaking, the project has made good progress. However, in spite of the mutual efforts of all officials concerned, there are still some activities left to be

carried out. Therefore, the project should be extended for another period of time. The proposal for the extension of the project will be presented to the meeting as agenda 7.

3. Mr. K. Naitoh, Leader of Evaluation Team, addressed the meeting, saying that on behalf of the Mission, he would like to express his thanks for the warm welcome given to them. He stated that the ultimate objective of the project is to increase food production by raising the yield per unit area, and by increasing the double-cropping area. For this purpose, the project has been promoting on-farm development by land consolidation, constructing on-farm water distribution systems and drainage canals. In addition, experiments and testing in farming have been conducted, so that improved farming techniques can be extended to the farmers. The Project also intends to foster farmers' organizations in the project area. The project is making steady progress towards the target. However, he pointed out that there have been some delays of the works because of budgetary problems, institutional problems, a very few number of counterparts, delayed delivery of the equipment and machinery donated by the Japanese Government. Therefore, he is of the opinion that in view of the significance of the project, the suspension of the technical cooperation extended by the Japanese Government would affect very much the ultimate objectives of the Thai Government. This is not desirable to both the Governments. He then recommended that:

- 1) To attain the target of the project, the cooperation period of the project should be extended for about three years.  
But, experts' service periods may be shortened depending on their respective fields.
- 2) The administrative set up for the project should be strengthened, so that the project works can be carried out as scheduled.  
Full cooperation between the Thai counterparts and the Japanese experts will make it possible to attain the target.
- 3) To execute the project as designed, it is indispensable that the budget of the Thai side be appropriated and released at times required.

He further stated that the Mission is firmly convinced that the implementation of the project would make a great contribution to the agricultural development of Thailand.



4. Mr. A. Kasai, JICA Director, Bangkok Office, thanked both the Thai counterparts and the Japanese experts for their kind cooperation in successfully carrying out the project operation. He also stated that this good cooperation should be continued and emphasized the close cooperation between our two Governments.

5. The minutes of the fourth meeting held on 16 October 1980 were adopted after all the misprints were corrected.

6. Progress of works during October 1980 - September 1981, and implementation schedule for 1982.

#### 6.1 Chao Phya Pilot Project

Mr. Sutin Mulphruk, Project Manager, reported on the progress of project works and implementation schedule, (See document attached).

He discussed various problems as follows:

1. For construction, most of construction works started in 1979. Some of them are not finished yet due to shortage of Thai engineering technicians.
2. For machinery and equipment, there were shortages due to the delay of sea freight.
3. For budget, there was not enough Thai budget to fully operate the project activities.

Therefore, he opined that it is necessary to extend the cooperation period for three years because some activities have not completely reached the target as yet.

#### 6.2 Mae Klong Pilot Project

Mr. Rongrueng Chulajata, Project Manager reported on the progress of project works and implementation schedule. (Document distributed). He stated that 100% of intensive land consolidation works in Pilot No.1 covering an area of 240.0 ha. had been completed. About 56% of extensive land consolidation works in Pilot No.2 covering an area of 314.2 ha. out of the total area of 563.1 ha. had been completed. The remaining work will be carried out in 1982. Building construction was delayed because the cost of construction was higher than the budget appropriation. He further stated there were problems on construction, on bidding for

construction works and delays in delivery of machinery and equipment.

He requested an extension of Japanese assistance under this project as follows:

1. Management officials in various fields
2. Experts and training
3. Machinery and equipment

### 6.3 Suphan Buri Equipment Station and Training Center

Mr. Winit Changsri, Project Manager, reported on the progress of project works and implementation schedule. (See document attached). He stated that both short training courses and long duration training courses have been conducted at the Center. There were 1318 individuals who received the training. Research and experimentation has been undertaken to develop new techniques for irrigated agriculture development. He mentioned problems concerning the delays in construction of an administration building and a dormitory and insufficient counterpart budget from the Thai Government.

He also requested an extension of this project for three years.

7. Mr. Paitoon Palayasoot, Project Coordinator, discussed the need and justification for extending the project. (Document distributed - "Outline of Proposal for the Extension of the Thai Irrigated Agriculture Development Project"). He said that the Ministry of Agriculture and Cooperatives had already submitted a request for the extension of the project to the DIEC for further action.

The Meeting agreed that this project should be extended for another three years as outlined in the draft proposal.

The Chairman thanked Mr. Naitoh, Leader - of the Team, and others concerned for attending the meeting and expressed hope for further progress of the project.

The meeting was adjourned at 12:00 hours.

Savane Isarankura  
Rapporteur

Address by Mr.K.NAITO Leader of Evaluation Team

Mr. Chairman,

It is my great pleasure to express our heartfelt gratitude to you, the officials of Thai authorities, such as MOAC., RID., ALRO., DA., COLC. and DTEC, and the Japanese Experts for the warm welcome given to us.

On behalf of the Evaluation Team, I am very much honoured to make an address at this Joint Committee Meeting.

As you know, the ultimate objective of the Project is to contribute to the increase of the food production by raising the yield per unit average, and by extending the double cropping area in Thailand. For this purpose, the Project has been promoting on-farm developments by land consolidation, constructing terminal irrigation and drainage canals.

In addition, experiments and testing in farming have been conducted, so that improved farming techniques can be extended to the farmers. Besides, the Project intends to foster farmers' organizations in the Project area.

The period of the technical cooperation, as you know, is agreed to be 5 years by both Thai and Japanese Governments and this period is coming to an end soon. At this juncture of the cooperation, we are sent to this country to make evaluation on the Project.

We could observe the progress and performances of the works at the Project sites in collaboration with the Thai officials and the Japanese Experts. We could also exchange views with these people about the works and performances of the Project.

In a word, we can say that the Project is making steady progress towards the target. However, we have to point out that some delays of the works are found because of budget problem, institutional problem with a very few number of counterparts, delayed delivery of the equipment and machinery donated by the Japanese Government, etc..

In view of the significance of the Project as mentioned before, the suspension of the technical cooperation extended by the Japanese Government would affect very much the ultimate objective designed by the

Thai Government. This is not desirable to the both Governments.

Now, I am pleased to relate our recommendations on the Project as follows;

- 1) In order to attaing the target of the Project, the cooperation period of the Project should be extended for about 3 years.  
But, Expert's service period may be shortened depending on the field.
- 2) It is definitely necessary to strengthen the administrative set-up for the Project, so that the Project works can be carried out as scheduled: We regard the full cooperation between the counterparts and the Japanese Experts will make it possible to attain the target.
- 3) To execute the Project as designed, it is indispensable to secure the budget of the Thai side, and to get its timely release at the time when required.
- 4) The other recommendations were already expressed to each Sub-Project respectively.

Before we return to Japan, we would like to submit to you the Summary Report of the Mission.

Back in Japan, we also submit our findings to the Japanese Government on the data and materials which we could collect during our stay in Thailand.

We are firmly convinced that the implementation of the Project will make a great contribution to the development of the agriculture of Thailand.

Finally, let me express, again, our gratitude to you all, who gave us full cooperation to the Mission.

#### Outline of Proposal for the Extension of the Thai Irrigated Agriculture Development Projects

##### 1. Necessity of the extension of the Project

The reasons are as follows;

##### 1) to complete the remaining construction works

Remaining works:

Chao Phya Pilot Project: Land Consolidation:	98.3 ha
Secondary pumping Station:	3 places

Mae Klong Pilot Project: No.2 area, Land

Consolidation: 248.9 ha

ii) to continue the following co-operation activities for the success-fulness of the project and for the fulfillment of the R/D,

- Improving agricultural techniques
- Demonstration of improved agricultural techniques at model farms and conducting of trial farms
- Agricultural Extension and strengthening farmers' organization and co-operatives
- Water management at the farm level
- Training and agriculture researches

iii) to solve the existing problems

insects, diseases, water management, soil structure, etc.

## 2. Duration of the Cooperation

Three Years ( April 8, 1982 - April 7, 1985 )

## 3. Request for dispatch of Japanese experts

The number of Japanese experts is almost the same as at present but it may change depending on the progress of works.



11) Equipment and Machinery

Project	discription	amount	remarks
<u>Project Center</u>	Office stationary	300,000	
	Vehicle	200,000	
	<u>Sub-total</u>	<u>500,000</u>	
<u>Chaophya P/P</u>	Construction Machinery	900,000	
	Agri. Machinery	3,200,000	
	Agri. Materials	1,500,000	
	Experimental Machinery	400,000	
	Pump	400,000	
	Stationary	350,000	
	Vehicle	2,250,000	
	<u>Sub-total</u>	<u>11,000,000</u>	
<u>Mae Kloung P/P</u>	Agri. Machinery	3,000,000	
	Agri. Materials	1,000,000	
	Laboratory Equipment	500,000	
	Training & extension equipment	1,000,000	
	Office Equipment	500,000	
	Vehicles	500,000	
	Others	1,500,000	
	<u>Sub-total</u>	<u>10,000,000</u>	
<u>Suphan Buri T/C</u>	Agri. Machinery	3,681,000	
	Laboratory Equipment	2,998,000	
	Administration equipment	600,000	
	Vehicles	115,000	
	<u>Sub-total</u>	<u>7,394,000</u>	
	<u>Grand total</u>	<u>28,894,000</u>	

About: Request for an Extension of Expert Service

To : Director of DTEC

From : Record of Discussions between the Japanese Agricultural Survey Team and the Authorities Concerned of the Government of Thailand Concerning Technical Cooperation Project on the irrigated Agriculture Development in Thailand

According R/D between the Japanese Agricultural Survey Team and the Authorities Concerned of the Government of Thailand Concerning Technical Cooperation Project on the Irrigated Agriculture Development in 5 years will finish in April 8, 1982.

MOAC was informed from Director's Irrigated Agriculture Project, had discussed with 3 projects manager already. The Chao Phya P/P, the Mae Klong P/P, Suphan Buri T/C were opinion about treatment in period 5 years since April 8, 1977 to April 8, 1982, but it wasn't completed yet. For three reasons are operation the budget of three projects, the government of Thailand can't operated for Project in first year, the construction have some problem and the overall contract to construction and the machinery sent to late and some work didn't start to do.

In order that, the project will complete from purpose in R/D and wanted to support concerned locate project such as Lad Bua Luang consolidation project. ALRO will loan from OECF for start to do 76,000 rais and IADP in Greater Mae Klong P/P that got the loan from the World Bank so that the manager of the 3 sub-projects by the approval of the concerning division and the Japanese Experts of the Projects were unanimous to extend for the experts service for more 3 years that the details is in the enclosed draft of the proposal.

MOAC considered to approve of the extension of the experts service for IADP and also enclosed the extension form to manage the next procedure.

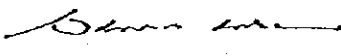




โดยมีวัตถุประสงค์สำหรับโครงการพัฒนาชุมชนชนบท (Rural Development) ซึ่งมีวัตถุประสงค์หลัก ดังนี้ ๑. เพื่อพัฒนา  
การบริการสาธารณสุขในชนบท ๒. เพื่อพัฒนาการศึกษาในชนบท ๓. เพื่อพัฒนาอาชีพของเกษตรกร  
ในชนบท R/D และเป็นการพัฒนาชุมชนชนบทให้มีความเจริญ ๔. เพื่อพัฒนาคุณภาพชีวิตของ  
เกษตรกรให้มีความสามารถสูงขึ้นและสามารถดำรงชีพในชนบท ๕. เพื่อพัฒนาคุณภาพชีวิต  
ของเกษตรกรให้มีความสามารถสูงขึ้นและสามารถดำรงชีพในชนบท ๖. เพื่อพัฒนาคุณภาพชีวิตของเกษตรกร  
ให้มีความสามารถสูงขึ้นและสามารถดำรงชีพในชนบท ๗. เพื่อพัฒนาคุณภาพชีวิตของเกษตรกร  
ให้มีความสามารถสูงขึ้นและสามารถดำรงชีพในชนบท ๘. เพื่อพัฒนาคุณภาพชีวิตของเกษตรกร  
ให้มีความสามารถสูงขึ้นและสามารถดำรงชีพในชนบท ๙. เพื่อพัฒนาคุณภาพชีวิตของเกษตรกร  
ให้มีความสามารถสูงขึ้นและสามารถดำรงชีพในชนบท ๑๐. เพื่อพัฒนาคุณภาพชีวิตของเกษตรกร  
ให้มีความสามารถสูงขึ้นและสามารถดำรงชีพในชนบท

คณะกรรมการโครงการฯ ขอเสนอให้ดำเนินการในส่วนนี้โดยมีวัตถุประสงค์เพื่อพัฒนาคุณภาพชีวิต  
ของเกษตรกรในชนบท

จึงขอเสนอให้คณะกรรมการฯ พิจารณาอนุมัติโครงการนี้โดยมีวัตถุประสงค์เพื่อพัฒนาคุณภาพชีวิต  
ของเกษตรกรในชนบท

ขอเสนอให้ดำเนินการในส่วนนี้  
  
นายสมชาย ใจดี ๑๒๓๔  
ผู้อำนวยการ หน่วยงาน  
จังหวัดนนทบุรี

สำนักงานโครงการฯ  
โทร. ๑๒๓๔-๕

2-2 プロジェクトの進捗と将来計画

Progress and Future Program  
Thai Irrigated Agriculture Development Project

November 18, 1981

contents

Chaophya Pilot project

Maeklong Pilot Project

Suphanburi Training Center

2-2-1 チャオピヤ・パイロット・プロジェクト

Progress and Future Program

October 1, 1981

The Chao Phya Pilot Project

## Chao Phya Pilot Project

### Progress Report for 1979 - 1981

#### 1. Civil engineering activities

##### 1.1 Land consolidation (northern area)

Area on force account	92.2 ha	1980	100%
Irrigation ditch	4.21 Km	"	"
Drainage ditch	2.46 Km	"	"
Road	4.37 Km	"	"

Construction cost 17,636.54  $\text{฿/ha}$

Area by contract	81.3 ha	1980	100%
Irrigation ditch	3.01 Km	"	"
Drainage ditch	2.59 Km	"	"
Road	3.17 Km	"	"

Construction cost 34,448.82  $\text{฿/ha}$

Area on force account	189.1 ha	1981	100%
Irrigation ditch	7.77 Km	"	"
Drainage ditch	5.44 Km	"	"
Road	8.09 Km	"	"

Construction cost 18,750  $\text{฿/ha}$

1.2 Polder dike construction 9.1 Km 1980 100%

1.3 Main canal 9.1 Km " "

1.4 Building lot filling up (4.67 HA) 30,000 m<sup>3</sup> 1980 "

##### 1.5 Pumping stations

Secondary station contract base 1980 "

force account base 1981 "

Main station contract base (1982)

##### 1.6 Trial farm

1.6.1 Farm construction 6.47 ha 1980 100%

1.6.2 Building construction 12 1981 "

1.6.3 Others (drying court, car wash  
court water supply, sewerage  
etc.) (1982)

2. Trial farm

(1) Dry season (Oct. 1979-1980)

Seed multiplication (RD.7)	21.8 rai
Trials	2.6 rai
Green manure	13.2 rai

	<u>general plot</u>	<u>trials</u>
Average yield	500 Kg/rai	200 Kg/rai RD.9 145 Kg/rai C-4-63 126 Kg/rai RD.7

(2) Rainy season

Seed multiplication (RD.7)	9.5 rai
Trials	3.6 rai
Green manure	13.2 rai
Cotton	1.9 rai

(2.1) Varietal trial

	<u>average yield</u>
RD.7	601.25 Kg/rai
RD.9	560.50 "
RD.11	454.25 "
C-4-63	615.50 "
Kaimenda	710.50 "

(2.2) Nursery duration trial

	<u>average yield</u>
25 days	492 Kg/rai
30 days	448 Kg/rai
35 days	412 "
40 days	544 "
45 days	391 "

(2.3) Fertilizer trial

	<u>average yield</u>
AH	603 Kg/rai
AS	511 "
AL	465 "
BH	545 "
BS	509 "
BL	448 "

Note: A Basal after transplanting  
 B Basal before transplanting  
 H 15 Kg. N  
 S 10 Kg. N  
 L 5 Kg. N

(3) Dry season rice (1981)

Seed multiplication RD-9 24.4 rai  
 Trials 0.6  
 Green manures 10.5

		<u>general plot</u>	<u>varietal trial</u>
Yields	maximum	965/rai RD-9	1,090/rai RD-23
	minimum	400 "	50 RD-7
	average	708 "	

See: Annex I

(4) Rainy season rice

Seed multiplication 17.8 rai  
 Trials 2.3  
 General plots and demonstration 2.61

3. Farmers field

(1) Dry season (Constructed area in 1980)

(1.1) Total area	1,073.5 rai	171.76 ha
Rice	1,007.0	159.52
Vegetable	36.3	5.8
Unutilize	30.2	4.8

(1.2) No. of farmers 81

(1.3) Average yield

RD-25	498 Kg/rai	3.1 t/ha
RD-9	398	2.49
Jetai-3	326	2.04
RD-7	282	1.76

Remarks: - RD-7 was heavily damaged by Ragged Stunt Virus.

- Most area suffered from shortage of irrigation water.

- The rice sown in the end of February and March were damaged by Ragged Stunt Virus.

(2) Rainy season (Whole area of inside of polder dike)

Area	2,238 rai	358.08 ha
No. of farmers	144	
Cultivation under proceeding		

Model Farm

No. of farms	3	
Area	16 rai	256 ha
Cultivation under proceeding		

(3) Accomplishment and future programs are in Annex III, IV, V.

Annex I

Scope of Trials in 1981

1. Dry season

- (1) Varietal trials
- (2) Fertilization trials
- (3) Comparison trial for planting methods
- (4) Organic matters application trials
- (5) Herbicide test

2. Rainy season

- (1) Varietal trials
- (2) Nursery duration trial
- (3) Planting season test
- (4) Spacing test
- (5) Comparison trial by planting methods
- (6) Organic matters application trials
- (7) Weeding trials
- (9) Fertilizer trials



## Annex II

Varietal Trial in Dry seasonChao Phya P.P. 1981

Variety	Yield/rai Kg.			% of outbreak of Ragged Stunt Virus		
	A	B	Average	A	B	Average
1. Kaimenda	834	462	648	68.2	58.0	63.1
2. C4 Garlon	766	444	606	68.0	73.0	70.5
3. C4 - 63	514	441	478	72.9	65.3	69.1
4. SPR 7343 - 18	663	617	640	43.7	39.0	41.4
5. SPR 7343 - 34	986	922	954	23.0	32.9	28.0
6. SPRLR 75001	986	972	978	8.0	4.6	6.3
7. SPRLR 76077	898	743	821	38.9	14.3	26.6
8. SPRLR 75004	1,033	1,035	1,034	4.6	3.0	3.8
9. BKNLR 75050 -9	792	703	747	53.1	28.2	40.7
10. BKNLR 75050 -58	924	697	811	18.3	31.4	24.9
11. BKNLR 75055	925	854	890	12.3	5.2	8.8
12. BKN 7150	849	774	811	5.8	5.2	5.5
13. BKN 7130	710	758	734	5.0	7.5	6.3
14. RD - 23	1,103	1,077	1,090	3.4	2.8	3.1
15. RD - 7				97.0	93.3	95.2
16. RD - 9	961	720	842	26.2	22.1	24.2

ACCOMPLISHMENT AND FUTURE PROGRAM FOR THE AGRICULTURE  
SUPPORTING SERVICES AT THE CHAO PHYA PROJECT

No.	Works	1977	1978	1979	1980	1981	1982	1983	1984	1985
I	Agri. Infrastructure Development									
	1. Land consolidation	80								
	- Farmer's field (457.2 ha.)					92.2 ha. (21.3ha.)	180.1ha	96.6 ha.		
	2. Polder dike	100	2.4km. 6.7km.							
	3. Pumping Station	45								
II	Trial farm construction	100								
	1. Farm construction	100	72 ha.							
	2. Building construction (12 Bldgs)	100								
	3. Facilities for buildings	0								
	- Electrification	0								
III	Machinery and Equipments	0								
	- Water supply	0								
	- Sewerage	0								
	4. Drying court & Car wash court	0								
	5. Others	0								

No.	Works	Accomplishment (%)	1977	1978	1979	1980	1981	1982	1983	1984	1985
IV	Activities of trial farm										
	1. Test and trials	10									
	2. Seed multiplication	25									
	3. Technical transfer										
	- Agronomical techniques	10									
	- Machinery techniques	5									
V	Supporting services										
	1. Model farmers	10									
	2. Preparatory cooperative										
	- Registration of cooperative members	90									
	- Credit preparation	30									
	- Water management group	0									
	- Machinery group	5									
	3. Coordination works	25									
	4. Technical extension	25									
	5. Farmer's training										
	- Intensive rice cultivation	25									
	- Water management	0									
	- Mechanized farming	5									
	6. Machinery service	5									

## Annex IV

### The Scope of Activities in Trial Farm

#### 1. Varietal trials and seed multiplication

- 1.1 Rice varietal collection
- 1.2 Trial tests for the collected rice varieties
- 1.3 Selection of the promising varieties
- 1.4 Seed purification and multiplication
- 1.5 Collecting and testing various kinds of upland crops

#### 2. Other trials

- 2.1 The best growing period
- 2.2 Fertilizer tests for economical farming
- 2.3 Weed control
- 2.4 Method of cultivation tests
- 2.5 Water management

#### 3. Control of insect and disease

- 3.1 Resistance varieties selection
- 3.2 Forecast the outbreak of disease and insect
- 3.3 To find out the suitable methods of controlling plant diseases and insects

#### 4. Cropping system

To find out the suitable cropping patterns.

- 4.1 Seasonal growing trials
- 4.2 Cropping pattern trials

Scope of Agricultural Extension Activities

1. Farmers' organization purpose

- 1.1 To carry out the rationalized water management and minimize the irrigation cost.
- 1.2 To supply regular, the agricultural materials.
- 1.3 To strengthen the technical extension services and training.
- 1.4 To promote the joint using of farm machinery.
- 1.5 To establish the agricultural financing and saving system for farmer.
- 1.6 To promote the marketing and agricultural credit source.

2. Cooperation of the authorities concern

- 2.1 Department of Agricultural Extension
- 2.2 Department of Cooperative Promotion
- 2.3 Department of Agriculture

3. Technical extension

- 3.1 To extend the new techniques which were developed in trial farm to model farmers, COF and extension agents.
- 3.2 To carry out training course for farmers at trial farm and their fields.
- 3.3 To demonstrate new techniques and new promising varieties at the field of model farmers.
- 3.4 To multiply the foundation seed at model farmer's field and supply them to the farmers in project area.
- 3.5 To promote the joint meeting for agricultural extension at trial farm, in order to discuss the result of extension activities as well as the future plan.

2-2-2. メクロン・パイロット・プロジェクト

Progress and future program

Oct. 10, 1981

Mae Klong Pilot Project

Progress Report for 1979 - 1981

1. Civil engineering activities

1.1 Land Consolidation

Pilot No. 1

Description	Quantity	Year of completion	% of accomplishment
Area	36.9 ha	1979	9.4
	116.8 ha	1980	39.0
	240.0 ha	1981	100.0
<b>Total</b>	<b>393.7 ha</b>		
Irrigation ditch	19.7 km.		
Drainage	17.4 km		
Road	28.3 km.		
Cost of construction ¥20,300/ha			
Reduction rate of farm land 5.9%			

Pilot No. 2

Description	Quantity	Year of completion	% of accomplishment
Area	314.2 ha	1981	56.0
	(248.9 ha)	(1982)	(100.0)
Irrigation ditch	12.8 km.	1981	
Drainage	7.5 km.	1981	
Road	8.6 km.	1981	
Cost of construction / ha			
Forced account ¥12,500			
Contract ¥17,200			
Reduction rate of farm land			

1.2 Trial Farm

Description	Quantity	Year of completion	% of accomplishment
Farm construction	6.4 ha	1979	100
Building lot construction	3.5 ha	1979	100
Building construction	15 Bldg.	1981	100
Electric supply system		1981	100
Water supply system		1981	100
Sewerage		1981	100
Others (Drying court, flag pole, garden arrangement etc.)		(1982)	20

## 2. Agricultural supporting services

### 2.1 Farmers field

#### - Dry season paddy -

	<u>Year</u>	<u>1980</u>	<u>1981</u>
Entire farmers		16	53
Cultivating farmers		8	42
Area of cultivable		36.8 ha	146.24 ha
Area of planted		17.8 ha	101.99 ha
Proportion of planting		40.0%	69.74%
Production		73.0 ton	384.41 ton
Yield (kg/ha)			
		<u>Trans planting</u>	<u>Direct sowing</u>
Average	4,125	3,983	3,641
Highest	6,100	6,250	5,000
Lowest	1,325	2,750	1,750
Model farm			
No. of model farm		1	
Area of cultivated		2.40 ha	
Production		10.92 ton	
Yield			
Transplanting		5,000 kg/ha	
Direct sowing		3,650 kg/ha	

#### - Wet season paddy -

	<u>Year</u>	<u>1980</u>	<u>1981</u>
<u>Pilot No. 1</u>			
Entire farmers		53	143
Cultivating farmers		53	143
Area of cultivable		151.6 ha	367.8 ha
Area of planted		151.6 ha	367.8 ha
Paddy		151.6 ha	357.9 ha
Sugar cane		0	7.9 ha
Proportion of planting		100.0%	100.0%
Production		500.4 ton	—
Yield (kg/ha)			
Average		3,301	—
Highest		4,593	—
Lowest		2,083	—



Year	1980	1981
<u>Pilot No. 2</u>		
No. of farmers	-	153
Area of planted	-	305.96 ha
Paddy	-	226.88 ha
Sugar cane	-	39.68 ha
Proportion of planted	-	100%

Remarks:- 1.) The production has been estimated by crop cutting survey

2.) Wet season crop in 1981 is under way

## 2.2 Trial farm

- Seed multiplication rice culture -

Variety	Area (ha)	Production (kg)	Yield (kg/ha)
<u>1979 Wet season</u>			
RD-7	1.52	7,420	4,881
RD-9	0.46	2,520	3,938
RD-11	1.28	5,560	4,744
Total	3.44	15,500	
<u>1980 Dry season</u>			
RD-7	2.08	7,280	3,500
RD-9	1.45	4,480	3,090
Total	3.53	11,760	
<u>1980 Wet season</u>			
RD-7	3.86	17,430	4,561
RD-9	0.92	4,200	4,565
RD-11	1.10	3,780	3,436
Total	5.88	25,410	
<u>1981 Dry season</u>			
RD-7	3.00	13,427	4,464
RD-9	0.49	2,200	4,435
RD-11	0.54	2,277	4,429
Total	4.043	17,906	
<u>1981 Wet season</u>			
RD-7	}		
RD-21			
RD-23			
RD-25			
Under growing			

Remarks:- 1980 dry season paddy

During the period of boosting to ripening the plants suffered from shortage of water due to improvement of irrigation canal and road in the Trial Farm

- Applicability trial

Several kind of applicability trial has been conducted since 1980 wet season up to date

- Demonstration

Intensive and mechanized farming, double rice cropping, water management and so on have been demonstrated

Accomplishment and future program on the Mae Klong Pilot Project

No.	Description	Accomplishment (%)	October 7, 1981													
			1977	1978	1979	1980	1981	1982	1983	1984	1985					
1	Civil engineering activities															
	1. Land consolidation															
	1.1 Project No.1	100														
	1.2 Project No.2	56														
	1.3 Collection of data	70														
	1.4 Making a criteria	20														
	1.5 Final report	0														
	2. Trial Farm															
	2.1 Farm construction	100														
	2.2 Farm improvement	100														
	2.3 Building lot construction	100														
	2.4 Building construction	100														
	2.5 Electrification	100														
	2.6 Water supply system	70														
	2.7 Sewerage	100														
	2.8 Others	0														
	3. Water management															
	3.1 Water management group	40														
	3.2 Water management program	0														
	3.3 Training	0														

No.	Description	Accomplish- ment (%)	1977	1978	1979	1980	1982	1982	1983	1984	1985
2	Machinery and equipment		0								
3	Agronomical activities										
	1. Trial Farm (See: proposal annex I)										
	1.1 Applicability test	30									
	1.2 Seed multiplication	30									
	1.3 Handling and maintenance of agricultural machinery	30									
	1.4 Demonstration of mechanized farming etc.	10									
	1.5 Cropping system	10									
	1.6 Data collection and analysis	40									
	1.7 Final report	0									
	2. Agricultural extension (See: proposal annex II)										
	2.1 Model farms										
	2.2 Farmers organization	20									
	2.3 Crop cutting survey	30									
	2.4 Data collection and analysis	30									
	2.5 Final report	0									
	3. Farmers training (See: proposal annex I)										
4	Personnel (See: proposal 5.3 Staff required)										
5	Experts and fellowships (See: proposal 6 Assistance requested)										
6	Residence construction for staff										
			0	4,348,5	7,929,4	6,929,3	(4,560,0)	(4,000)	(4,000)	(2,000)	
			(X 1,000)								

2-2-3. スハンプリ訓練センター

**Progress and future program**

**Nov. 1, 1981**

**Suphanburi Training Center**

## 1. Background and Present condition

By the agreement between Thai and Japanese government in technical cooperation on the Irrigated Agriculture Development Project (IADP), the Suphan Buri Experiment and Training Center is one of the three sub-projects has implement the original proposed by Department of Agriculture (Thailand) and the Japan International Cooperation Agency (Japan) since April 8, 1977.

In accordance with Record of Discussion, Suphan Buri Experiment and Training Center will take responsible in supporting of technical know how for crop production, multi cropping system and farm management techniques to the whole project area and training of Thai government officers in charged who works in Irrigated area through out the Kingdom of Thailand.

So far, the activities of Suphan Buri Experiment and Training Center are as follows.

### 1.1 Construction work

	Year completion
1.1.1 Training Center Office	1978*
1.1.2 Dormitory	1980**
1.1.3 Expert house	1980**

\* Granted Aid by Japanese Government, cost 120,000,000 Yen.

\*\* Thai Government Budget, cost 2,200,000 baht.

### 1.2 Training Activities

The first batch of 40 trainees was started in two weeks training course on "Rice cultivation techniques in Irrigated area" from July 16 1979. Since then different courses of training has been done by the Center up to the end of November are; one Long term (4 months) course, 8 times 2 weeks course, 11 times short course, 7 times Special course and 8 seminars. The number of trainees are 1318 in total.

	<u>Course</u>	<u>Duration</u>	<u>Number</u>
1.2.1	Long term course		
1)	Crops cultivation technique and Integrated farming	3rd Aug.--27 Nov. 1981	33
1.2.2	2 weeks course		
1)	Rice cultivation technique	16--27 Jul. 1979	40
2)	Cropping system	17--28 Dec. 1979	39
3)	Integrated farming	14--25 Jan. 1980	32
4)	Rice cultivation technique	14--25 Apr. 1980	40

<u>Course</u>	<u>Duration</u>	<u>Number</u>
5) Rice cultivation technique	12--23 May. 1980	33
6) Integrated farming	15--26 Dec. 1980	45
7) Rice cultivation technique	9--20 Mar. 1981	31
8) Rice cultivation technique	8--19 Jun. 1981	36
		<u>sub.296</u>
<b>1.2.3 Short course</b>		
1) Experiment result analysis by computer	5-6 Feb. 1980	15
2) Integrated farming	18--20 Mar. 1980	46
3) Introduction to computer programing and utilisation	16--17 Jun. 1980	12
4) Advance computer programing	23--24 Jul. 1980	9
5) Cropping system analysis	6--10 Oct. 1980	10
6) Cropping system analysis	20--24 Oct. 1980	10
7) Experiment design and computer analysis	19--20 Nov. 1980	29
8) Introduction computer programing and utilization	21--22 Jan. 1981	12
9) Introduction computer programing and utilization	27--28 Jan. 1981	15
10) Advance computer programing	22--23 Apr. 1981	11
11) Advance computer programing	28--29 Apr. 1981	11
		<u>sub.180</u>
<b>1.2.4 Special course</b>		
1) Modern germinated sowing rice cultivation	3rd Dec. 1980	97
2) " " "	8-9 Dec. 1980	66
3) " " "	5-6 Jan. 1981	68
4) " " "	7-8 Jan. 1981	60
5) " " "	12--13 Jan. 1981	74
6) " " "	14--15 Jan. 1981	67
7) " " "	12--13 Feb. 1981	48
		<u>sub.480</u>
<b>1.2.5 Meeting Seminar</b>		
1) Water management	25--26 Oct. 1979	45
2) New varities	26--27 May. 1980	35
3) Germinated sowing on rice	4 4 Jun. 1980	45
4) Special lecture	4-6 Jun. 1980	18
5) Germinated sowing on rice	9 Jun. 1980	50
6) Home economy	28--29 Oct. 1980	71
7) Land consolidation	2-6 Mar. 1981	40
8) Water management	22--27 Mar. 1981	25
		<u>sub.329</u>
<b>Grand total</b>		<b>1,318</b>

### 1.3 Research works

The research works has been carried out by researchers of Training Center, in cooperation with Japanese experts as follows -

#### 1.3.1 1979

- 1) Experiment of different mat soil and fertilizer for box seedling.
- 2) Effect of different planting time on growth and yield of RD 7.
- 3) Comparison of yield of different planting dates by transplanter.

#### 1.3.2 1980

- 1) Effect of underground drainage on the growth and yield of rice.
- 2) Intensive cultivation technique on rice.

#### 1.3.3 1981 Dry season

- 1) Investigation of yield components for intensive rice cultivation.
- 2) Different kinds of nursery and density on rice.
- 3) Different density pre-trial on rice.
- 4) Effect of underground drainage and carbon husk in soil crack on rice
- 5) Multiple cropping on paddy field.

#### 1.3.4 1981 Wet season

- 1) Effect of different transplanting time on rice yield.
- 2) Effect of seedling densities and nitrogenous fertilizer rate on the growth and yield of transplanted rice.
- 3) Economical study on split application which refers to different rates of nitrogenous fertilizer on the growth and yield of transplanting rice.
- 4) Comparison of rice yield on rates and time of nitrogenous fertilizer which refers to different cultivation methods.
- 5) Rice varieties trail by Latin square design on germinated direct broadcasted rice.
- 6) Rice varieties trail by R.C.B.D. on germinated direct broadcasted.
- 7) Effect of potassium fertilizer and fertilizer application time on germinated direct broadcasted rice.
- 8) Effect of weed control on different rates of nitrogenous and seed rates to the growth and yield of germinated direct broadcasted rice.



Annex 1.

Future plan of Training 1982 - 1985

Item	Suphan Buri Training Center.				
	Agreement 1st year 1982	Agreement 2nd year 1983	Agreement 3rd year 1984	Agreement 3rd year 1985	train
1. Long term course (4 months)					90
1) Crops cultivation techniques and integrated farming.	(30)	(30)	(30)	(30)	
2. Two weeks course					240
1) Rice cultivation techniques.	(40)	(40)	(40)	(40)	120
2) Integrated farming.					
3. Short course (one week)					45
1) Micro computer programming	(15)	(15)	(15)	(15)	30
Primary course	(10)	(10)	(10)	(10)	120
Advance course	(5)	(5)	(5)	(5)	120
2) Crop protection.	(40)	(40)	(40)	(40)	120
3) Water management					
4. Special course					360
1) Modern germinated direct sowing rice.	(60)	(60)	(60)	(60)	120
2) Straw mushroom cultivation	(40)	(40)	(40)	(40)	120
					1,245

Annex 2.

Future plan of Experiments 1982 - 1985

Item	Supphan Buri Training Center.				
	Agreement 1st year 1982	Agreement 2nd year 1983	Agreement 3rd year 1984	Agreement 3rd year 1985	Report.
Rice cultivation trials					
Transplanting					
Different spacing.					Report.
Effect of compost.					
Rates of fertilizer.					
Different transplanting time.					
(Cooperative trial)					
Transplanter					
Different spacing.					Report.
Rates of fertilizer.					
Yield components trial.					
Germinated direct sowing					
Different of fertilizer level and seed rates.					Report.
Yield components trial.					
Multi cropping					
Multi cropping cultivation.					Report.

Suphan Buri Training Center

Schedule from December 1981 ~ March 1982.

No.	Curriculum	1981		1982	
		Dec.	Jan.	Feb.	Mar.
1	Special course Azolla as nitrogen source for paddy.	*			
2	Short course Utilizing and programing in computer			*	
3	2 weeks course Rice cultivation techniques in irrigated area. Integrated farming in irrigated area.		*	*	*

Remarks

1. Special course
  - Azolla as nitrogen source for paddy. (50 persons)  
(7 ~ 9 December 1981)
2. Short course
  - Utilizing and programing in computer. (10 persons)  
(22 ~ 26 February 1982)
3. 2 weeks course
  - 1) Rice cultivation techniques in irrigated area. (40 persons)  
(15 ~ 26 March 1982)
  - 2) Integrated farming in irrigated area. (40 persons)  
(11 ~ 22 January 1982)
  - 3) Integrated farming in irrigated area. (40 persons)  
(8 ~ 19 February 1982)

2-3. 第4回ジョイント・コミTEE・ミーテイング議事録  
 Minutes of the Fourth Meeting of Joint Committee on  
 Technical Cooperation Between Thailand and Japan on the  
 Irrigated Agriculture Development Project

Date: 16 October 1980

Time: 10.00 - 12.00 hours

Place: Ministry of Agriculture and Cooperatives

Present:

- |                               |  |            |
|-------------------------------|--|------------|
| 1. Mr. Kangwan Devahastin     | Deputy Under-Secretary of State for<br>Agriculture and Cooperatives        | - Chairman |
| 2. M.L. Pilandh Malakul       | Project Director   | - Member   |
| 3. Mr. Roongrueng Chulajata   | Manager of the Mae Klong Pilot Project                                     | - Member   |
| 4. Mr. Sutin Mulphruk         | Manager of the Chao Phya Pilot Project                                     | - Member   |
| 5. Mr. Vichien Sasiprapa      | Assistant Manager of Suphan Buri<br>Experiment Station and Training Center | - Member   |
| 6. Mr. Paitoon Palayasoot     | Director, Central Land Consolidation<br>Office                             | - Member   |
| 7. Mr. Pairoj Polprasid       | Director, Foreign Agricultural<br>Relations Division                       | - Member   |
| 8. Mr. Vorasak Pakdee         | DAE Representative   | - Member   |
| 9. Mrs. Wannee Ratanawaraha   | CPD Representative   | - Member   |
| 10. Mrs. Wannee Samphantharak | LDD Representative   | - Member   |
| 11. Mr. Surayuth Kungsadan    | DIEC Representative  | - Member   |
| 12. Mr. Pornarong Siriyothin  | Central Land Consolidation Office  | - Member   |
| 13. Mr. S. Sato               | Head of Mission  | - Member   |
| 14. Mr. H. Wada               | Member of Mission  | - Member   |
| 15. Mr. K. Nishimura          | Member of Mission  | - Member   |
| 16. Mr. N. Matsuda            | Member of Mission  | - Member   |
| 17. Mr. Y. Kitano             | Director of JICA, Bangkok  | - Member   |
| 18. Mr. K. Hisawa             | Mae Klong Project  | - Member   |

- |                      |  |          |
|----------------------|--|----------|
| 19. Mr. T. Sugahara  | Suphan Buri Experiment and Training Center | - Member |
| 20. Mr. J. Nakajima  | Project Center                             | - Member |
| 21. Mr. M. Fukushima | Central Land Consolidation Office          | - Member |
| 22. Mr. H. Ochi      | Agricultural Land Reform Office            | - Member |

Observers

- |                               |   |
|-------------------------------|---|
| 23. Mr. Preecha Donsakul      | Central Land Consolidation Office       |
| 24. Mr. Apichart Amatavaragul | LDD                                     |
| 25. Mr. Vichai Srivarapongse  | Mae Klong Pilot Project                 |
| 26. Miss Savanee Isarankura   | Foreign Agricultural Relations Division |
| 27. Mr. Princha Ketsumpao     | " "                                     |
| 28. Mr. Kasem Prasutsangchan  | " "                                     |
| 29. Mr. Y. Takashima          | Suphan Buri Rice Experiment Station     |
| 30. Mr. T. Okubo              | Mae Klong Pilot Project                 |
| 31. Mr. S. Tsuji              | Project Center                          |
| 32. Mr. I. Yamazaki           | Chao Phya Pilot Project                 |
| 33. Mr. N. Iguchi             | " "                                     |
| 34. Mr. H. Ohta               | Project Center                          |
| 35. Mr. S. Igarashi           | Embassy of Japan                        |

1. The Chairman opened the meeting and extended a warm welcome to Mr. S. Sato and his party. Then Mr. Sato was invited to address the meeting.

2. Mr. Sato, Leader of Japanese Mission, addressed the meeting, saying that on behalf of the Mission, he would like to express his sincere gratitude for the kind cooperation rendered by the Thai officials concerned.

The project operations had been carried out jointly by the Ministry of Agriculture and Cooperatives of Thailand and JICA and had now entered the latter half of the project duration. The project began on 8 April 1977.

The objectives of the Mission at this stage were:

- a. Grasping problems pertaining to the project operation and finding its solution.
- b. Discussion future operation plan.
- c. Grasping technical problems and finding its solution.

As a whole, the project had been well proceeded. However, in spite of the mutual efforts of all officials concerned, there were still several problems involving management as well as techniques. Although those problems were complicated and difficult to be solved, those obstacles had to be removed gradually and as early as possible, so that the objectives of the project could be achieved.

In this regard, the Mission was expecting good results from this Committee Meeting for the future of the Project.

Finally, he expressed his thanks for the warm welcome.

3. Adoption of the minutes of the third meeting held on 26 October 1979.

Mr. Pairoj Polprasid corrected page 4, No. 4.2.3 paragraph 2 from "193 million baht" to "81.845 million baht"

The minutes were then adopted.

4. Mr. Paitoon Palayasoot, Project Coordinator, briefed the Meeting on the principal activities, organization and functions of the Irrigated Agriculture Development Project, (document distributed). He reported that project operations based on the R/D signed on 8 April by the Government of Thailand and the Government of Japan, for a period of 5 years, consisted of three principal items of Japanese technical cooperation; namely, a team of 14 experts, certain machinery and equipment, and a number of fellowships for Thai counterpart personnel for training in Japan.

He described the organization and functions of the Project. The purpose of the Project was to undertake irrigated agriculture development especially on-farm development in the Lower Chao Phya Basin and the Greater Mae Klong Basin. The Project consisted of the following:

4.1 A Project Center, located at the Central Land Consolidation Office which served as the headquarters of the Project.

4.2 Three Sub-Projects

4.2.1 Chao Phya Pilot Project covered an area of about 500 ha. (trial farm 10 ha.), located in Praya Banlu sub-district, Lat Bua Luang district, Ayutthaya Province. The Agricultural Land Reform Office was responsible for the construction of on-farm facilities, with the assistance from the Japanese technical cooperation. The Government of Japan budget was about 38.8 million baht.

4.2.2 Mae Klong Pilot Project which was divided into 2 parts i.e., first, the Mae Klong Pilot Project No. 1 consisting of an area of about 400 ha (trial farm 10 ha.), located in Maungehum and Bangnai sub-districts, The Muang district, Kanchanaburi Province, and secondly the Mae Klong Pilot Project No. 2 consisting of an area of about 500 ha., was located in Taklamen sub-district, Tha Maka district, Kanchanaburi Province. The Royal Irrigation Department was responsible for the construction work, with assistance from the Japanese technical cooperation. The Government of Japan budget was about 21.6 million baht.

4.2.3 Suphan Buri Experimental Station and Training Center was Located in Rua Yai sub-district, Muang district, Suphan Buri Province. The functions of the Experimental Station and Training Center were to conduct experiments and training on improved agricultural techniques for successful implementation in the pilot areas and their vicinity on the Irrigated Agriculture Development Project. The Government of Japan budget was about 14.5 million baht.

This Project was deemed as the initial steps towards the Technical Assistance on Irrigated Agriculture Development rendered by the Government of Japan to the Thai Government.

Later, the Government of Japan had extended the Technical Assistance in this field to various project activities, e.g., Mae Klong River Basin Master Plan Study, Kam Phaeng Saen Feasibility Study, Mae Wang-Kew Lon Feasibility Study, and Petchaburi Feasibility Study. Besides the said project activities, additional assistance from the Government of Japan had been received, for trial farm constructions in the project areas of the Chao Phya Sub-Project and Mae Klong Sub-Project starting from 1979 and 1980 respectively, under the Pilot Infrastructure Development Programme.

5. Progress of Works and Implementation Schedule for 1981, (document distributed).

5.1 Suphan Buri Experiment Station and Training Center.

Mr. Vichien Sasiprapa reported on Suphan Buri Experiment station and Training Center as follows:

5.1.1 Training

During FY 1980, the Training Center held four times of two weeks training course and four times of special course of 2 - 3 days. As the Training Center did not offer dormitory or cafeteria facilities during this fiscal year, the working committee of the Department of Agriculture had, therefore, decided that a short course of 2 weeks and a special course of 2 - 3 days be provided instead of a long term course of 4 - 5 months.

a) 2 week training course

- 1) Cropping system in irrigated area, held during 17 - 28 December 1979, 39 trainees.
- 2) Integrated farming in irrigated area, held during 14 - 25 January 1980, 32 trainees.
- 3) Rice cultivation techniques in irrigated area, held during 14 - 25 April 1980, 40 trainees.
- 4) Rice cultivation techniques in irrigated area, held during 12 - 23 May 1980, 33 trainees

The total number of trainees was 144.

b) 2 - 3 day special training course

- 1) Experimental design and data analysis by computer, held during 5 - 6 February 1980, 15 trainees.
- 2) Modern farming in irrigated area, held during 18 - 20 March 1980, 46 trainees.
- 3) Introduction of computer programming and utilization, held during 16 - 17 June 1980, 12 trainees.
- 4) Advanced of computer programming and utilization, held during 23 - 24 July 1980, 9 trainees.

The total number of trainees was 82.

The grand total number of trainees of both training courses was 226.

#### 5.1.2 Research works

By cooperation between the Japanese experts and their Thai counterparts, the Training Center had undertaken two experiments concerning improvement of rice yield by means of underground drainage and intensive technique in rice cultivation. The first experiment was for the intensive cultivation technique for increasing rice yield, while the second was for the effect of underground drainage on the growth and yield of rice.

#### 5.1.3 Technical Support to the Organizations

Training Center provided technical knowledge to Chao Phya and Mae Klong sub-projects on crops cultivation techniques, seeds supply, as well as on experimental design and data analysis. Also technical advice on nursery preparation technique for Japanese rice transplanter and testing of transplanting machine was given to Agriculture Cooperative of Thailand.

#### 5.1.4 Seminar

In 1980, the Training Center had either arranged or cooperated with other agencies concerned for meeting and technical seminars as follows:

- 1) Water utilization in agriculture, held during 25 - 26 October 1979, 45 persons attended.
- 2) Screening of promising lowland rice varieties for central plain, held during 26 - 27 May 1980, 35 persons attended.
- 3) Modern germinated seed rice cultivation in large scale on the farmers' field, held on 4 June 1980, 45 persons attended.
- 4) Technique of growing rice by germinated seed rice cultivation method, held on 9 June 1980, 50 persons attended.

#### 5.1.5 Visitors

In FY 1980, 41 groups of foreign experts, officers, students and farmers visited Suphan Buri Experiment and Training Center, of which the total number of visitors was 990, excluding farmers who came to buy seeds as well as to request for technical services.



### 5.1.6 Construction

In FY 1980, the Training Center received a budget for the construction of a dormitory for 40 trainees at the cost of 1,800,000 baht, and two houses for experts at the cost of 200,000 baht each. The construction started on 10 May 1980, and was completed on 30 September 1980, being the end of the 1980 fiscal year. In 1981 fiscal year, budget had been appropriated for furnishing the said buildings, such as beds, mattresses, lockers, etc.

### 5.1.7 Plan of Training Programme in FY 1981

The Center planned to offer short course and special course of training as follows:

#### 1) Short course (2 weeks)

- a) Rice cultivation technique in irrigated area would be held in March and June 1981
- b) Integrated farming in irrigated area would be held in December 1980

#### 2) Special course (1 - 5 days)

- a) Cropping System (in cooperation with IDRC) was held during 6 - 10 and 20 - 24 October 1980.
- b) Germinated seed rice cultivation techniques would be held in April, May and June 1981.
- c) Computer (Utilization and Programming) would be held in November 1980, January and April 1981.

## 5.2 Hae Klong Pilot Project

Mr. Roongrueng Chulajata reported on the project as follows

### 5.2.1 Progress of works for 1979 - 1980

#### a) Land consolidation

Pilot No. 1, 153.6 ha out of the total area of 392.1 ha had been completed, which was 39%.

Trail Farm, the total land area of 9.9 ha had been completed, which was 100%.

Pilot No. 2 would be undertaken by JICA this year.

**b) Building construction**

13 buildings would be under construction, starting from the beginning of November 1980, and would be completed within 200 days, including the installation of electricity and water supply.

**c) Farming**

1) Land consolidation work in farmers field had been completed.

Results of paddy crop production were:

1st paddy crop planted in an area of 36.8 ha., the yield was 127 ton or 3.45 ton per ha.

2nd paddy crop planted in an area of 178 ha, the yield was 73 ton or 4.12 ton per ha.

3rd paddy crop planted in an area of 153.6 ha, the result was not yet known.

2) Trial Farm

1st Wet season of paddy crop, experimented with three varieties of paddy namely, RD-7, RD-9 and RD-11 in an area of 1.52 ha., 0.64 ha., and 0.28 ha., respectively; the yields were 4.8 ton per ha., 3.9 ton per ha., and 4.3 ton per ha., respectively.

1st Dry season of paddy crop, experimented with two varieties of paddy namely, RD-7 and RD-9 in an area of 2.08 ha. and 1.45 ha. respectively; the yields were 3.5 ton per ha. and 3.09 ton per ha. respectively.

2nd Wet season of paddy crop, experimented with three varieties of paddy namely, RD-7, RD-9 and RD-11 in an area of 4.53 ha., 0.88 ha., and 0.43 ha., respectively; the result was not yet known.

Paddy yield in the first dry season was low because of the shortage of water, labourer and lack of equipment.

**5.2.2 Work schedule for 1980 - 1981 was as follows:**

**1) Land consolidation**

a) Pilot area No.1

- Force account 625 Rai (100 ha.)

b) Pilot area No.2

- Pilot infrastructure 1,250 Rai (200 ha.)

- Force account 438 Rai (70 ha.)

2) Building construction and others at Trial Farm

a) - 13 Buildings 1,385 m<sup>2</sup>

- Management office

Machinery shed

Others

b) Electrification system

c) Water supply system

- Irrigation water

- Drinking water

3) Trial Farm

a) Rice cultivation for seed multiplication

- Dry season rice

- Wet season rice

b) Upland corn cultivation

- Mung bean

- Soy bean

- Sweet corn

- Green manure

c) Experimental work of rice

- Crop rotation

- Variety and fertilizer

- Effect of green manure for rice yield

- Herbicide effect for rice cultivation

- Insecticide effect for rice cultivation

4) Pilot area after completion of land consolidation work

a) Rice cultivation

- Dry season paddy 960 Rai

- Wet season paddy

Pilot area No. 1 1,585 Rai

Pilot area No. 2 1,688 Rai

Total 3,273 Rai

b) Agricultural supporting service

- Model Farm

- Water management group

Pilot area No. 1     2  
Pilot area No. 2     2

c) Extension work

5) Budget

a) Land consolidation	2,970,000 ♂
b) Building construction	5,220,000 ♂
c) Miscellaneous	576,000 ♂
d) Expert expense	974,000 ♂
Total	<u>9,740,000 ♂</u>

5.2.3 Problems were as follows

- 1) Shortage of budget
- 2) Shortage of equipment and man-power
- 3) No definite agency assigned to be responsible for working on the irrigation water to the completed land consolidation area.
- 4) The office materials and equipment needed for the farmers training, which would be held at management office of Trial Farm.

5.2.4 Requirement of machineries and equipment for 1980 - 1981 were as follows:

- Agricultural machineries

Farm tractor, Power tiller, Rice transplanter, Sprayer - combine harvester, grain dryer, Rice mill, Vertical-pump and others.

- Laboratory equipment

- Equipment for training and extension

Movie projector, Video tape system, Sound system and others.

5.3 Chao Phya Pilot Project

Mr. Suthin Mulphruk reported on the progress of project works. The works were divided into 3 parts namely, civil works, agricultural works and trial farm operation. The civil works consisted of land consolidation, polder dike construction, main canal construction, filling up building lots, crushed stone pavement in Trial Farm, main pumping station construction,

secondary pumping station construction, buildings and expert lodging, land consolidation, water supply system, electricity supply system, sewage system, drying court, car wash court, secondary pumping station, road and bridge, laterite paving.

Agricultural works consisted of rice variety comparison test, rice mat-seedling experiment, field test of harvesting machines, mechanized cultivation of sweet corn, field test of paddy field land preparation, investigation on building drawings.

Mr. Yamazaki reported on the Trial Farm operation which experimented on growing rice, mung bean, croton, sesbaria, water hyacinth, sweet corn, and cotton on various plots of land.

Mr. Suthin Mulphruk then reported on the problems concerning agriculture and extension by saying that the Office of Agricultural Land Reform lacked experienced agronomists and extension workers to work on this project. The project implementation had been undertaken, but progress had been rather slow.

The Chairman stated that this handicap had to be rectified in order to receive good cooperation from various Departments concerned, not only for this project but also for other projects as well. He would take the matter for consideration at the Ministerial level meeting.

## 6. Information from the Japanese Mission was as follows:

### 6.1 Provision of equipment and machinery for FY 1980.

The budget for equipment and machinery to be provided by the Japanese Government for FY 1980 was about 100 million yen. 30% - 40% of the said budget would be spent for the purchase in Thailand. The remaining sum would be for the purchase in Japan. Those equipment and machinery from Japan would be shipped stage by stage, the first shipment would be dispatched at the end of December this year, the second shipment at the end of January 1981 and third shipment at the middle of February 1981.

Water treatment had already arrived at Bangkok Port.

The budget for FY 1981 would be planned in accordance with the request from the Thai Government.

### 6.2 Training for the counterpart officials

For FY 1980, two counterpart officials were already received by JICA for a short study tour. The remaining two were expected to be received

upon request from the Thai Government.

As for FY 1980 JICA had already received request from the Thai side. The number of trainees to be received by JICA would be notified to the Thai side later.

### 6.3 Dispatch of Japanese Experts

The successors to those experts who were going to leave Thailand after terminating their service term were recommended and would be dispatched as soon as possible.

Some of the experts whose service term would be terminated very soon were to be extended upon request from the Thai Government.

Mr. Nakashima, the successor to Mr. Ochi, was to be dispatched on 1, November 1980.

Both experts on water management and extension would not be dispatched in this fiscal year. The Mission would recommend them after their return to Tokyo.

## 7. Recommendations from the General Meeting

The Chairman briefed the meeting on two requests as follows:

7.1 Request for the fund to set up a Programme to Supply Agricultural Consumptive Items to the Farmers.

7.2 Request for Pilot Infrastructure Development Programme in 1981 covering a certain acreage of about 160 ha. of the remaining area of about 270 ha. of the Mae Klong Pilot Project No. 2 in order to complete this Pilot Project in 1982 which would be the last year of the cooperation on this project.

The Japanese Mission stated that they would submit these two requests to the Ministry of Agriculture and Ministry of Foreign Affairs in Tokyo.

The Chairman thanked the Japanese Mission for their kind support and cooperation.

The meeting was adjourned at 12:00 hours.

Savanee Isarankura

Rapporteur

### 3. 栽培関係アンケート結果

#### 1. 栽培技術上の問題点

問題の重要性と解決の見通しについて知りたい。

##### 問題解決の段階

- 不：不可能。
- 始：とりくみ開始。
- 中：試験中。
- 見：解決の見込みあり。
- 済：解決済。
- 既：既に普及している。

##### 問題の重要性

- ◎：非常に重要
- ：重要
- △：緊急の問題ではない
- ×：とり上げる必要がない

#### 1) チャオビア・サブプロジェクト

##### (i) かんがい排水、ほ場整備関係

項 目 ( 備 考 )	問題の重要性	問題解決の段階
1 用水の確保 ( 農家ほ場の用水路は勾配が1/5000であり末端まで水が届かない。 )	△	中
2 効果的水管理 ( 細かなことはタイ人の気質としてどうかと思われる。 )	○	始
3 ローテーションの間隔 ( 水が切れると窒素の消費がはげしいのではないかとと思われる。 )	△	始
4 場の均平度 ( 実に不良であり、早く施工したところほど悪い。 )	◎	始
5 区画の大きさ ( 巾が50mと広すぎてスピードスプレーヤーが真中にとどかず使いにくい。 )	△	始
6 田畑輪換 ( 地力の消耗を考えると何年にか一作やるべきと思われる。 )	○	始

- 7 畑地かんがい ○ 始  
 (従米の農家のやっている方法が良さそう。ちょっと水が多くかかると浸害が起る。ただし日本のスプリンクラーをきめ細かくやれば良いかも知れない。)
- 8 暗渠排水の効果 △ 不  
 (まず効果なし。)
- 9 強酸性の矯正 △ 始  
 (タイの石灰は効くかどうか疑問視されているが、もし効くとしても多量にやらねばなるまい。根腐防止など根を健全にするにはけい酸石灰を考えた方がよい。ただし、タイにあるかどうか。)
- 10 重粘質土壌の改良 ◎ 不  
 (緑肥作物、粗大有機物の施用と排水との関係で考える要あり。)
- 11 水路の保守 × 見  
 (2) 栽培関係
- 1 新品種の導入 ◎ 済  
 (ラギット抵抗性とツングに抵抗性が相反するので出る。オールマイティの品種が必要だが難しい。)
- 2 種子の更新 △ 見  
 (混種が多いので採種には神経を使う。農家は獲れたものを全部売るから、新種子を買いたいのが本音。)
- 3 短期苗代(薄播き) ○ 始  
 (苗取りから農夫に仕込む要あり。良苗の意義は近代品種にはあるようである。)
- 4 並木植、浅植 △ 始  
 (これはタイ式ではだめなことなので、人間教育が問題。分けつと穂数と登熟の関供。)
- 5 直播 ○ 見  
 (施肥方法の問題もあるが、タイでは発芽、初期生育がよく、日本よりやり易くかなり多収。)
- 6 二期作 ◎ 済  
 (病虫害、ネズミ害が大問題である。他に細かいこともあるが、日本式にやれば多収が得られる。)
- 7 施肥 ○ 見  
 (経済的な養用量、施肥時期の試験が必要。)
- 8 除草 △ 見  
 (農家は深水、大苗で問題なし。サターンG 1回散布でよさそうだが、植生をみて薬剤を変える要あり。稲刈取後に雑草が繁茂し、鋤込むと田植後の赤枯が問題。)
- 9 病害 ◎ 中



(病害の発生は予想できないので困る。最近、葉しょう腐敗病が多くなった。)

- 10 虫害 ◎ 中  
(虫害の発生も予想が困難。トビイロウンカが少いと思ったら、ニカメイチュウが多く発生した。)
- 11 鼠害、鳥害 ◎ 始  
(ネズミが大問題。ネズミのすみ家を少なくすることが必要。トアイアルファーム位は恒久的なラットフェンスが必要。)
- 12 農薬の使用 ○ 中  
(経済的な使用量が問題。淡水魚への影響を考える要あり。)
- 13 雨期の収穫作業 ◎ 始  
(従来の穂刈式だと問題はないが、機械収穫では地耐力との関係で大問題。)
- 14 労力 △ 始  
(賃金は安い、作業能率がよくない。除草などは絶対両手を使わない。)
- 15 緑肥作物の効果 ○ 始  
(セスパニアを蒔きこんだ圃場で、土壌物理性よくなった。)
- 16 租大有機物の投入 ○ 始  
(稲わらについて試験している。)
- 17 石灰の施用 △ 始  
(どれだけ根腐れ防止と健全な稲になるか不明)

### (3) 作目別の問題

- 1 短稈高収品種 ◎  
(多肥、浅水、正条植にしないと効果が上らない。不時出穂の問題あり。)
- 2 在来長稈品種 △  
(栽培しにくい。特定地域の特定障害に対する品種として考えたい。)
- 3 マングビーン ○  
(発芽直後、水に弱い。)
- 4 クロタラリア 記載なし
- 5 セスパニア ○  
(発芽直後、水に弱い。発芽が不揃い。発芽の促進を考えるべきだ。)
- 6 スイートコーン ○
- 7 棉 記載なし
- 8 玉ねぎ "

- 9 ほてい葵 記載なし
- 10 アゾラ ”

(4) 農業機械関係

- 1 耕起 ○ 始  
 (乾けばコンクリート、湿れば糊状となる土 であるので田畦である。)
- 2 代掻 ○ 始  
 (車輪のアタッチメントが問題。)
- 3 機械移植 △ 中  
 (代かき状態と鋤床層の破壊状況が問題。)
- 4 収穫(バインダー、コンバイン) ○ 始  
 (地耐力が問題で、水管理とも関連するが、耕起、代かき、機械刈取りは総合して考え、いずれも鋤床層を荒してはよくない。)
- 5 脱穀、乾燥、調整 △ 済  
 (割れ米が多い。)
- 6 精米 × 済
- 7 地耐力 ○ 始  
 (水管理と関連して早期落水がどこまで登熟を阻害するか、どの点で折り合えるかが問題。表面水の除去、均平度も関連する。)
- 8 畑作物栽培の機械化 ○ 始  
 (チャオビアの土壌では容易なことではない。大型機械で耕起すると碎土ができず大変である。)

2) メクロン・サブプロジェクト

(i) かんがい排水、ほ場整備関係

- 1 用水の確保 ○ 始  
 (地区の位置および用水確保のための明確な対策が不十分であった。)
- 2 効果的水管理 ○ 始  
 (どこまで農民自身でできるか疑問である。)
- 3 かんがいローテーションの間隔 ○ 始  
 (上記と同様。)
- 4 ほ場の均平度 ○ 済  
 (過去の凹凸もほとんど解消された。)

- |    |  |   |   |
|----|--|---|---|
| 5  | 区画の大きさ<br>(農民自身使い易いよう仮畦畔で対応している。)                  | ○ | 済 |
| 6  | 田畑輪換<br>(ほ場条件は一応整ったが、畑作物で稲に代るものがあるだろうか。サトウキビは可能か?) | △ | 不 |
| 7  | 畑地かんがい<br>(サトウキビで行われており、結果はよいように思う。)               | ○ | 中 |
| 8  | 暗渠排水の効果<br>(投資をするまでの余裕はない。)                        | × | 不 |
| 9  | 強酸性の矯正<br>(問題となる程ではないと思う。)                         | △ | 済 |
| 10 | 重粘質土壌の改良<br>(人工的には難しいと思う。)                         | △ | 始 |
| 11 | 水路の保守<br>(農民自身の参加はなかなか難しい。)                        | ◎ | 始 |

(2) 栽培関係

- |    |              |   |   |
|----|--------------|---|---|
| 1  | 新品種の導入       | ◎ | 済 |
| 2  | 種子の更新        | ◎ | 済 |
| 3  | 短冊苗代(薄まき)    | × |   |
| 4  | 並木植, 浅植      | × | 済 |
| 5  | 直播           | ◎ | 済 |
| 6  | 二期作          | ◎ | 済 |
| 7  | 施肥           | ◎ | 済 |
| 8  | 除草           | ◎ | 済 |
| 9  | 病害           | ◎ | 済 |
| 10 | 虫害           | ◎ | 済 |
| 11 | 鼠害, 鳥害, カニの害 | ◎ | 中 |
| 12 | 農薬の使用        | ◎ | 済 |
| 13 | 雨期の収獲作業      | ◎ | 済 |
| 14 | 労力           | ◎ | 済 |
| 15 | 緑肥作物の効果      | ○ | 始 |
| 16 | 粗大有機物の投入     | △ | 不 |
| 17 | 石灰の使用        | × |   |

(3) 作目別の問題

1	短秆高収品種	◎	済
2	在来長秆品種	◎	済
3	マングビーン	○	始
4	クロタラリア	○	始
5	セスバニア	○	始
6	棉	×	
7	玉ねぎ	×	
8	ほてい葵	×	
9	アゾラ	×	

(4) 農業機械関係

1	耕起	◎	済
2	代掻	◎	済
3	機械移植	◎	済
4	収穫(コンバイン)	◎	済
5	脱穀, 乾燥, 調整	◎	済
6	精米	△	始
7	地耐力	◎	済
8	畑作物栽培の機械化	○	見

3) スハンブリ・訓練センター

1	用水の確保	×	済
2	効果的水管理	×	不
3	かんがいローテーションの間隔	×	不
4	ほ場の均平度	×	不
5	区画の大きさ	×	不
6	田畑輪換	◎	中
	(2年に1回緑肥栽培必要。毎年2作ずつ続けていくと収量が落ちるようである。)		
7	畑地かんがい	○	中
	(畦間かんがいによっている。スプリンクラーの節水試験を予定している。)		
8	暗渠排水の効果	○	中
	(効果があるようであるが、経済性からみて疑問あり。重粘土のため下部浸透が十分でない。)		

9	強酸性の矯正	×	不
10	重粘質土壌の改良 (緑肥栽培, 堆肥施用を考えている。)	○	始
11	水路の保守	×	済
(2) 栽培関係			
1	新品種の導入	◎	済
2	種子の更新	◎	済
3	短冊苗代(薄播き)	○	中
4	並木植, 浅植	○	済
5	直播	◎	中
6	二期作	◎	中
7	庵肥	◎	中
8	除草	△	中
9	病害	◎	始
10	虫害	◎	始
11	鼠害, 鳥害	◎	始
12	農薬の使用	◎	始
13	雨期の収穫作業	×	不
14	労力 (機械化体系の確立。農業機械専門家が必要。)	◎	中
15	緑肥作物の効果	◎	始
16	租大有機物の投入	◎	始
17	石灰の使用	×	不
(3) 作目別の問題			
1	短稈高収品種	◎	既
2	在来長稈品種	×	不
3	マングビーン	○	中
4	クロタラリア	×	不
5	セスパニア	◎	始
6	スイートコーン	○	中
7	棉	×	
8	玉ねぎ	×	

9 ほてい葵			×
10 アブラ			×
(4) 農業機械関係			
1 耕起			×
2 代掻			×
(農業機械専門家に研究してもらいたい。)			
3 機械移植			○
4 収穫(コンバイン)			○
5 脱穀, 乾燥, 調整			○
6 精米			○
7 地耐力			×
8 畑作物栽培の機械化			○
(機械専門家にやってもらいたい。)			

## II 水稻の収量水準

試験ほ場のレベルで、現在、確実にとれる単収(穂, t/ha)はどれくらいか。

### (1) チャオピア・サブプロジェクト

5 t/ha (R D 21, 23)

### (2) メクロン・サブプロジェクト

乾季作 4.5 t/ha 雨期作 4.0 t/ha

### (3) スハンプリ・訓練センター

5 t/ha

## III 試験ほ場の条件

### 1) チャオピア・サブプロジェクト

#### (1) 整備を要する事項

##### a) ほ場

レベルリングが必要。1枚のほ場で30cm位の高低あり。タイ人には均平の意識がなく、このことでどれだけ叱ったかわからない。専門家が弾頭指揮して怒るのもこれが主である。特に試験区において。

畦畔の整備。雨が降っても道路を通れるようにラテライトを敷くこと。

b) 資材

日本に比べてないものが多く困るが、それよりも雨期に道路事情が悪化し、肥料、農薬の搬入困難なのが困る。農場運営に必要な細かい資材、栽培試験のナベ、カン的なものがない。当初の設計調達者の経験を疑う。

c) カウンターパート

意図が全くない。技術移転は0に等しい。栽培は農場運営の柱であるので、延長が決った時点で交換すべきである。

d) 労力

エバ・チームが来るというので人夫は今年はあるようである。

e) 組織と運営

改善されつつあるが、上で考えているようには下の方は意識がない。労働者を監督する体制が悪く、インスペクター（現場監督）が職務を果たしていない。

(2) 専門家の活動に必要な環境

a) 居住

現場エキスパートロッジは未完成で、停電が多く（9月は7日、10月は5日）、本も読めず、蒸し風呂の部屋で寝ることになり、疲れはなおらない。土水は塩分1380ppmで使用不可。水浴しても石けんがとけず、体がべたつく。炊事婦も使えず、朝昼晩、近所のバラックの食堂で不衛生極まりない食事をしている。栽培の専門家だけがどうして苛酷な生活をさせられるのか時々疑問に感じる。

b) 交通

極不良。雨がちょっと降っても走行困難。スノーチェーンをまいても滑る。バンコックに真夜中に帰り着いたこともある。試験ほ場に行くのにボートに乗らねばならないが、ボート料が高くて（1回250バーツ）、現地業務費が不足する。

c) 情報の入手

なし。時々、普及の専門家からもらう程度。

d) タイ関係機関の協力

熱研の人に病虫害の診断を頼むとタイ農業局の病虫部の人に来てくれる。普及の方は普及局と連絡をとって良くやっているが、栽培の方は農業局稲作部との連携が全くない。トライアルファームを稲作部に移管するか、稲作部が半分ぐらいタッチしてくるよう主張してみたが、セクトがあつてだめである。ALROは土木屋と法律家の局であつて、農事試験をやっても評価してくれる人はいない。

## 2) メクロン・サブプロジェクト

### (1) 整備を要する事項

#### a) ほ場

細部を除きほぼ完成した。

#### b) 資材

特殊資機材を除き、1981年末までには充足される見込み。

#### c) カウンターパート

大卒1名が出張で配属されているだけ。経歴、能力は劣悪。

#### d) 労力

ほぼ充足されている。

#### e) 組織と運営

組織の計画だけはあるが、何時実現されるかは不明(プロポーザル参照)。ほとんどの運営は事実上日本人専門家によってなされている。

### (2) 専門家の活動に必要な環境

#### a) 居住

極めて劣悪で専門家が家族と生活できる条件下にない。専門家によって住居の改装がなされた。

#### b) 交通

問題はない。

#### c) 情報の入手

容易である。

#### d) タイ側関係機関の協力

グレートメクロンプロジェクトの各機関の協力は中分がない。普及、協同組合局の出身機関の組織は極めて弱体で、十分な協力は期待できない。スハンブリ試験および訓練センターの協力は中分ない。

## 3) スハンブリ・訓練センター

### (1) 整備を要する事項

#### a) ほ場

なし

#### b) 資材



緊急を要する資材が多く、現地業務ではままた不足する。あらかじめ分っている資材は供与機材費で購入している。

c) カウンターパート

大学出身者でエリートに属する。現地作業に専ら農夫を使用するが、アシスタントが必要であり、要求しているが無理であろう。現地業務費が充分あれば、これをあてたいが不足しているのでできない。

d) 労力

試験場の人夫を借りている。農繁期にはまわらないことがある。

e) 組織と運営

まず最初日本人専門家が設計案を作りタイスタッフと協議し、タイ側の要求もおりこんでいる。試験とりまとめは現在のところ、専門家がやっているが、1981年雨期より一部カウンターパートにやらせることにした。

(2) 専門家の活動に必要な環境

a) 居住

水道の設備が十分でなく、風呂もない。最少限、温水シャワーの設置を、JICAに要望する。

b) 交通

公用車または自家用車にてバンコックへ行っている。

c) 情報の入手

必要があれば農業局の該当部に言えばもらえる。また年報も逐次来ている。年1回外国人エキスパートの発表会が開催されている。

d) タイ側関係機関の協力

常に緊密に連絡しており、必要があれば全面的に協力してくれる。またTARC(熱研)の専門家にしばしば助言をおおいでいる。


#### 4. タイ灌溉農業開発計画・討議議事録

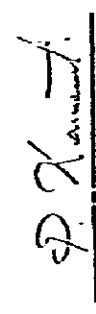
##### 4 -- 1. タイ灌溉農業研究計画・討議議事録

ON THE RECORD OF DISCUSSIONS BETWEEN THE JAPANESE AGRICULTURAL SURVEY TEAM AND THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF THAILAND CONCERNING TECHNICAL CO-OPERATION PROJECT ON THE IRRIGATED AGRICULTURE DEVELOPMENT IN THAILAND

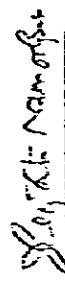
The Japanese Agricultural Survey Team, organized by the Japan International Cooperation Agency and headed by Hisako Nakahara, visited Thailand from February 13 to April 15, 1977, for the purpose of formulating concrete co-operation plans for the Technical Co-operation Project on the Irrigated Agriculture Development which will be carried out with the Chao Phya Pilot Project, the Mae Klom Pilot Project and the Suphan Buri Rice Experiment Station and Training Center for the Irrigated Agriculture Development on its course. During its stay in Thailand, the team exchanged views with the authorities concerned of the Government of Thailand on the necessary measures to be taken by both Governments to successfully implement the Technical Co-operation Project on the Irrigated Agriculture Development in Thailand. The team also conducted necessary survey for the implementation of the Project. As a result of the exchange of views and survey, both parties agreed to recommend to their respective Governments to carry out the matters referred to in the Record of Discussions.

Bangkok, April 8, 1977

  
Mr. Hisako Nakahara  
Head of the Japanese Agricultural Survey Team  
Japan International Cooperation Agency

  
Mr. Prasit Namsorn  
Under-Secretary of State  
Ministry of Agriculture and Cooperatives

In the presence of

  
Mr. Prasit Namsorn  
Director-General  
Department of Technical and Economic Cooperation

##### RECORD OF DISCUSSIONS

I. (1) Both Governments will co-operate with each other in implementing the Technical Co-operation Project on the Irrigated Agriculture Development in Thailand (hereinafter referred to as "the Project") with the Chao Phya Pilot Project, the Mae Klom Pilot Project and the Suphan Buri Rice Experiment Station and Training Center for the Irrigated Agriculture Development (hereinafter referred to as "the Suphan Buri Station") on its course. The Project aims at contributing to the promotion of land consolidation, the improvement and extension of agricultural production technology, the development and strengthening of farmers' organization and other related activities which will be necessary for increase of rice yield and expansion of multi-cropping area.

(2) The Project will be implemented in accordance with the Master Plan as stipulated in Annex I.

(3) The Project will be implemented under the supervision and direction of the Project Director referred to in VIII.

(4) The Project will be implemented in accordance with the annual operational work plan to be formulated annually by the Joint Committee referred to in II.

The annual plan will be submitted to the authority concerned of both Governments for their approval.

II. (1) In accordance with laws and regulations in force in Japan, the Japanese authorities concerned will take necessary measures to provide at their own expense the services of the Japanese experts as listed in Annex II through the normal procedures under the Colombo Plan Technical Co-operation Scheme.

(2) The Japanese experts referred to in (1) above and their facilities will be granted in Thailand the privileges, exemptions and benefits as less favorable than those accorded to experts of their countries working in Thailand under the Colombo Plan Technical Co-operation Scheme.

III. (2) In accordance with laws and regulations in force in Japan, the Japanese authorities concerned will take necessary measures to provide at their own expense such equipment, machinery, implements, vehicles, tools, spare parts and other materials required for the implementation of the Project as listed in Annex III through the normal procedure under the Colombo Plan Technical Co-operation Scheme.

(2) The articles referred to in (1) above will become the property of the Government of Thailand upon being delivered a.i.f. to the Thai authorities concerned at the ports of disembarkation, and will be utilized exclusively for the implementation of the Project in consultation with the Japanese Team Leader referred to in Annex II.

IV. (1) A part of the goods referred to in III (1) may be rented at reasonable rates to farmers in areas to be certified after mutual consultations between the authorities concerned of both Governments and a part of consumable items such as fertilizers, agricultural chemicals, etc. may also be transferred at reasonable prices to the farmers in the above-mentioned areas.

(2) The proceeds from such rentals or transfers will be used exclusively for the implementation of the Project in accordance with laws and regulations in force in Thailand.

(3) The provisions of (1) and (2) above will be applied in accordance with the annual operational work plan referred to in I (4) above, and there will be close consultations between the Japanese Team Leader referred to in Annex II and the Thai Project Director referred to in Annex IV as regards their application.

V. (1) In accordance with laws and regulations in force in Japan, the Japanese authorities concerned will take necessary measures to receive the Thai personnel engaged in the Project for technical training or study tour in Japan through the normal procedures under the Colombo Plan Technical Co-operation Scheme.

(2) The Government of Thailand will take necessary measures to ensure that the knowledge and experience acquired by the Thai personnel mentioned in (1) above through technical training and study tour in Japan may be utilized effectively for the implementation of the Project.

VI. The Government of Thailand will take necessary measures to provide at its own expense:

(1) the services of the Thai counterparts and other personnel as listed in Annex IV;

(2) land and buildings as listed in Annex V as well as incidental facilities;

(3) supply or replacement of equipment, machinery, implements, vehicles, tools, and spare parts, and any other materials necessary for the implementation of the Project other than those provided by the Japanese authorities concerned under III (1);

(4) suitably furnished housing accommodations for the Japanese experts and their families;

(5) transportation facilities and the grant of the travel allowance for the Japanese experts for the official travel within Thailand.

VII. The Government of Thailand will take necessary measures to meet:

(1) expenses necessary for transportation within Thailand of the articles mentioned in III (1) as well as for the installation, operation and maintenance thereof;

(2) all running expenses necessary for the implementation of the Project;

(3) duties, duties, internal taxes and any other charges, imposed in Thailand in respect of the articles referred to in III (1).

VIII. The Government of Thailand will appoint the Project Director who will be responsible for the administration and implementation of the Project, and the Japanese experts will provide practically technical guidance and advice for the implementation of the Project.

X. The Government of Thailand shall undertake to bear claims, if any arise, against the Japanese experts engaged in the project resulting from, occurring in the course of, or otherwise connected with, the discharge of their official functions in Thailand, except for those claims arising from willful misconduct or gross negligence of the Japanese experts.

XI. There will be close consultation between the Japanese experts and the officials concerned of the Government of Thailand for the smooth promotion and effective implementation of the project. For this purpose, a Joint Committee will be established as specified in Annex VI. The Joint Committee will meet at least once a year.

XII. For the successful implementation of the project, both Governments will consult with each other when deemed necessary.

XIII. The period of the technical co-operation mentioned in this Record of Discussions will be five (5) years from the date of signature and co-operation thereafter will further be consulted between the authorities concerned of both Governments.

#### Annex I. Master Plan of the Project

The Project consists of the Project Center and three sub-projects, namely Chao Phya Pilot Project, Mae Klong Pilot Project and Expertise and Training Project, in order to promote the Irrigated Agriculture Development Plan in an integrated and effective manner.

##### 1. The Project Center

The Project Center will be established in Bangkok and will function as the headquarter.

The activities of the Center are as follows:

- (1) To give necessary technical advice for planning and implementation of the Irrigated Agriculture Development Plan in the Lower Greater Chao Phya Basin and the Greater Mae Klong Basin, centering around the pilot areas in respective Basins;
- (2) To conduct managerial and coordinating works in order to promote smooth and effective implementation of three sub-projects.

##### 2. The Chao Phya Pilot Project

The Chao Phya Pilot Project of about 500 ha for agricultural development of the flood irrigation area will be set up in Tambol Phraya Bant, Amphor Lat Sun Larak, Samut Prakan, Ayutthaya.

##### 3. The Mae Klong Pilot Project

The Mae Klong Pilot Project (No. 1) of about 400 ha and the Mae Klong Pilot Project (No. 2) of about 300 ha will be set up in Tambol Maungchue and Banmai, Supor Tin Kung, Changwat Nakhonburi and in Tambol Toilaen, Amphor Phrahal, Changwat Kanchanaburi respectively for agricultural development by means of multi-cropping.

The activities of the Pilot Projects mentioned in 2 and 3 above are as follows:

Annex III. List of Specialists

Category	Field
1. Team Leader	
2. Experts and associated experts	Irrigation and Drainage Land Consolidation Agricultural Economy Agricultural Machinery Agronomy Extension Water Management
3. Liaison Officer	

Note: 1. Team leader, a land consolidation expert, an agricultural economy expert and a liaison officer will be attached to the Project Center.

2. A sub-leader will be nominated from among experts in each sub-project.

3. The number of long term experts including a few associated experts to be dispatched concurrently will not exceed 20 persons in total.

4. Some additional short term experts in the fields mentioned above as well as others may also be dispatched when necessity arises.

(2) To plan and execute the improvement works of agricultural physical infrastructure, such as field rearrangement, farm roads, irrigation and drainage facilities and empoldering dikes (as required in Chao Phya), in each pilot area;

(3) To advise on technical matters to farmers in the pilot areas and staff concerned for effective water management;

(4) To conduct trials with improved agricultural techniques of rice cultivation mainly at the trial farms of about 10 ha;

(5) To provide training and guidance to farmers in the pilot areas and their vicinities on improved agricultural techniques;

(6) To introduce and demonstrate improved agricultural techniques at a few model farms which will be collected in the pilot areas;

(7) To foster and strengthen farmers' organizations for water management, joint co-operative activities for distribution of agricultural materials, collection and forwarding of agricultural products and other activities necessary in the pilot areas including their vicinities when necessity arises.

The implementation of the Mae Hong Pilot Project (No. 2) will be of extensive nature.

4. Experiment and Training Project

The activities of the Suphan Buri Station located in Tambol Kua Yoi, Amphoe Huang, Changwat Suphan Buri are as follows:

To conduct experiments and training on improved agricultural techniques for the successful implementation of the Irrigated Agriculture Development in the pilot areas and their vicinities.

The experiment mentioned above will be primarily carried out by the Government of Thailand and the trainees will be agriculture officers and staff concerned.

Annex III. Articles to be provided by the Government of Japan

1. Construction machinery and equipment, including pumps and their accessories, and their spare parts.
2. Agricultural machinery and implements and their spare parts.
3. Fertilizer and agricultural chemicals.
4. Machines and tools for repair work.
5. Equipment, instruments, tools, their spare parts and other materials for experiment.
6. Equipment and materials for public utilities.
7. Vehicles and motor boats.
8. Teaching materials including audio-visual aids.
9. Other necessary equipment, tools, and materials to be mutually agreed upon for the effective implementation of the Project.

Annex IV. List of Thai Counterpart Officials and Other Personnel

Category	Field
1. Project Director	Irrigation and Drainage
2. Counterpart Officials	Land Consolidation
	Agricultural Economy
	Agricultural Machinery
	Agroonomy
	Extension
	Water Management
3. Clerical and Service Employees	
4. Laborers	

Note: Thai experts will be posted as counterparts to Japanese experts.

Annex V. Land and Buildings

Annex VI. Composition of the Joint Committee

Chairman Under-Secretary of State NOAC

Japanese Side

1. Team Leader
  2. Experts designated by Team Leader
  3. Liaison Officer
  4. Representative of JICA
- Thai Side
1. Project Director
  2. Project Managers from RID  
CICO  
ALRO  
DA
  3. Coordinator from Foreign Relations Div., NOAC
  4. Representatives of DAS, DCP, DLD, JFEC Budget Bureau and NERDD

Note: An official of the Embassy of Japan may attend the meeting of the Joint Committee as an observer if necessary arisen.

Abbreviations:

- (1) NOAC = Ministry of Agriculture and Cooperatives
- (2) RID = Royal Irrigation Department
- (3) CICO = Central Land Consolidation Office
- (4) ALRO = Agricultural Land Reform Office
- (5) DA = Department of Agriculture
- (6) DAS = Department of Agricultural Extension
- (7) DCP = Department of Co-operatives Promotion
- (8) DLD = Department of Land Development
- (9) JFEC = Department of Technical and Economic Cooperation
- (10) NERDD = National Economic and Social Development Board
- (11) JICA = Japan International Cooperation Agency

1. Project Center

Buildings

- a. Project Director's room
- b. Team Leader's room
- c. Office room
- d. Working room
- e. Store room
- f. Meeting room
- g. Garage
- h. Others

2. Each Pilot Project

(1) Land

- a. Land for trial farm
- b. Land for building

(2) Buildings

- a. Offices including lecture room and meeting room
- b. Sheds for machinery and equipment
- c. Storehouses for farming materials
- d. Fuel storages
- e. Workshop
- f. Garage
- g. Management office for trial farm
- h. Housing for staff
- i. Guest house
- j. Others

3. Experiment and Training Project

Buildings, farms and other facilities attached to the Saphan Puri Station.

I. IMPLEMENTATION AGREEMENT

Thai side : Ministry of Agriculture and Cooperatives  
Japanese side : Japan International Cooperation Agency

II. PROJECT STAFF

The Project staff will consist of Japanese experts and Thai counterpart personnel to be attached to the Project Center and other three sub-projects. It must be noted that activities of the Project are mainly carried out by the Thai counterpart personnel with assistance of Japanese experts.

III. PROVISION FOR THE IMPLEMENTATION

A. Implementation Schedule

The construction work of the Project will be implemented generally in accordance with schedule as shown in Annex 1.

The Japanese experts to be stationed in the Project will be assigned in accordance with the schedule as indicated in Annex 2.

B. Transfer of Personnel to Thailand

The Japanese experts will discharge their duties in accordance with the Grand Group of reference as attached in Annex 3.

IV. TRAINING AND STUDY TOUR IN JAPAN

The training and study tour in Japan for Thai personnel will be carried out along the schedule as indicated in Annex 4.

V. EQUIPMENT AND SUPPLY FROM JAPAN

The equipment and machinery will be provided in accordance with the provisional list of equipment as shown in Annex 5.

Manchok  
April 11, 1977

Made by Mr. Michio Nakamura  
Leader of the Japanese Agricultural  
Survey Team

TENTATIVE IMPLEMENTATION PROGRAM

TO THE RECORD OF DISCUSSIONS

CONCERNING TECHNICAL CO-OPERATION PROJECT

ON THE INDICATED AGRICULTURE DEVELOPMENT IN THAILAND

BETWEEN

MINISTRY OF AGRICULTURE AND COOPERATIVES

GOVERNMENT OF THAILAND

AND

JAPAN INTERNATIONAL COOPERATION AGENCY



Annex 1. Tentative Construction Schedule

Annex 2. Appointment Schedule of Experts (\*)

I. Chao Phya Pilot Project (ann. 10)

1. Field Office and Trial Farm  
Starting in late 1977  
Complete in 1979
2. Polder Dike  
Starting in early 1979  
Complete in 1979
3. Pumping Station  
Main Station  
Irrigation Stations  
1979 and 1980  
1979 and 1983
4. Land Consolidation Works  
Starting in early 1980  
Complete in 1982

II. Nam Hong Pilot Project

1. Field Office and Trial Farm  
Starting in late 1978  
Complete in early half 1979
2. Land Consolidation  
Starting in early 1979  
Complete in 1982

Note: In Japanese Fiscal Year: starting April & ending next March

Speciality	Fiscal Year				
	1977	1978	1979	1980	1981-1982
1. Project Center					
a. Team Leader					
b. Agr. Economist					
c. Land Consolidation Expert					
d. Liaison Officer					
2. Chao Phya Pilot Project					
a. Land Consolidation Expert					
b. Irrigation and Drainage Expert					
c. Agricultural Machinery Expert					
d. Agronomist					
e. Extension					
f. Water Management					
3. Nam Hong Pilot Project					
a. Land Consolidation Expert					
b. Irrigation and Drainage Expert					
c. Agronomist					
d. Extension					
4. Surhan Buri Station					
a. Agronomist					
b. Agronomist					
c. Extension					

(\*) Subject to change in accordance with the progress of project implementation.

Annex 2 Broad Terms of Reference for Experts

A. Team Leader:

1. To represent the Team of Japanese Experts and to maintain close contact and consultations with Thai authorities concerned;
2. To coordinate the activities of the Japanese experts to be assigned to the Project and to promote its smooth and effective implementation; and
3. To offer comments and advice to Thai officials concerned on matters related with the Project and other agriculture development in the Lower Greater Chao Phya and the Greater Mae Hong Son.

B. Land Consolidation Experts (Thailand Center):

1. To assist the Team Leader and to represent him when the necessity arises;
2. To consult with, and advise to other land consolidation experts to be stationed in each sub-project on layout, design criteria, implementation program and other related matters in land consolidation and irrigation and drainage development;
3. To offer comments and advice to Thai officials on matters related with land consolidation and others in and around the Project areas.

C. Agricultural Technicians (Thailand Center):

1. To assist the Team Leader in the fields of Agriculture in general and agricultural economics relating to the Project and the development of its vicinities;
2. To collect and analyze the data and information on improvement to be achieved by the Project;
3. To carry out agricultural economic surveys in and around the Project areas, together with Thai and other Japanese experts, and to make proposals for improvement of crop operations and rural life; and
4. To assist Thai and other Japanese experts in (economic) evaluations or improvement trials in the Project and of other projects in the vicinities.

D. Agricultural Technicians (Cambodia Center) and Other Personnel:

1. To formulate, in consultation with Thai counterparts, the design criteria for irrigation and drainage development and for land consolidation suited to the conditions of the Project areas, and to assist Thai counterparts in the preparation of designs;
2. To assist Thai counterparts in the preparation of Project implementation, including: preparation of schedule, specifications, cost estimates and tender documents;
3. To assist Thai counterparts in project implementation activities such as construction supervision, construction management and management of construction machinery;
4. To formulate, in consultation with Thai officials and other experts, the standard water management procedures, and to train the concerned staff with them with necessary modifications for better application to individual site conditions; and
5. To offer classes of in-service training to Thai field staff during the course of operation.

E. Agricultural Technicians and Agricultural Machinery Experts:

1. To study, with Thai counterparts, the existing cropping patterns, farming practices and operations in the Project areas and to formulate proposals for improvement;
2. To carry out trials at field farms on improved farming methods and demonstrate them at model farms to be selected in the Project areas;
3. To participate in the training to be implemented at the Dugha and other, and to train agricultural officers and other personnel in accordance with the basic plans in the Project, including in addition to others and management of agricultural machinery;
4. To provide, together with Thai counterparts, extension services to the farmers in the Project areas and their vicinities.

ANNEX 2 Remaining and Study Tour in Yaman (\*)

(Unit : person)

	1977	1978	1979	1980	1981
1. Study tour (about 2 weeks)	2	1	1	1	1
2. Training (about 1 to 3 months)					
Irrigation and Drainage		1	1		
Land Consolidation		1	1	1	
Agricultural Sociology			1		
Agricultural Machinery			1		1
Agronomy				2	
Agricultural Extension		1		1	1
Water Management		1		1	2
Others	1**			1	
<b>Total</b>	<b>3</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>

(\*) This training program is subject to changes in accordance with the progress of project and annual country allotment of trained.

(\*\*) Water Resources for Agriculture

5. To study, with their counterparts, on farmers' group activities/ organizations concerned with farming operations, use of agricultural machinery, processing and marketing, credit systems, etc., and to advise the beneficiaries of the project and others concerned on ways and means for improvement of such group activities, including promotion and guidance for formation of integrated farmers' cooperatives and for initial operation of such organizations.
6. To gather field data and information on farm operations for scientific evaluation of the project; and
7. To offer opportunity of in-service training to their counterparts.

Annex 2. Details of the Terms of Reference for individual experts will be finalized through further consultations between the parties.

3. Terms of Reference for short term experts to be dispatched by Japanese authorities will be prepared separately, when the necessity arises.

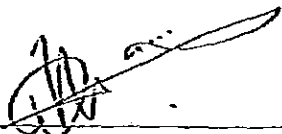


4-3. タイ灌溉農業開発計画・協力期間延長討議議事録  
THE RECORD OF DISCUSSIONS ON EXTENSION OF THE  
PERIOD OF THE TECHNICAL COOPERATION PROJECT ON  
THE IRRIGATED AGRICULTURE DEVELOPMENT IN THAILAND

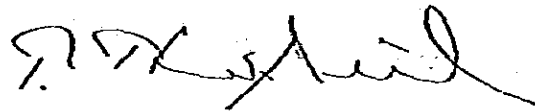
The Japan International Cooperation Agency (hereinafter referred to as "the JICA"), in view of the recommendations made by the Japanese Evaluation Team which conducted the evaluation survey from 7 November to 22 November, 1981, had a series of discussions through its Bangkok Office represented by Mr. Akira Kasai, with the authorities concerned of the Government of Thailand, with regard to the extension of the period of the Technical Cooperation Project on the Irrigated Agriculture Development in Thailand (hereinafter referred to as "the Project") based on the Record of Discussions which was signed at Bangkok on 3 April, 1977, and will be terminated on 7 April, 1982.

As a result of the said discussions, the JICA and the authorities concerned of the Government of Thailand agreed to recommend to their respective governments that the term of the aforementioned technical cooperation being implemented on the basis of the Record of Discussions will be extended until 31 March, 1985, in order to fulfill the anticipated targets of the Project.

March 16, 1982



Akira Kasai  
Resident Representative,  
JICA Bangkok Office.



Thalerng Tharongnavasavat  
Under-Secretary of State,  
Ministry of Agriculture and  
Cooperatives.

in the presence of



Apilas Osatananda  
Director-General,  
Department of Technical and  
Economic Cooperation.









