

表 2 - 6 水稲 2 期作標準経営規模労働力需給バランス

(単位：人日)

項 目	1 月	2 月	3 月	4 月	5 月	6 月	7 月	8 月	9 月	10 月	11 月	12 月	計
1. ha 当り労働力必要量													
(1) 乾期直播栽培	2.0 2.4 2.6	0.9 0.5 1.8	2.5 2.7 1.4	0.5 0.3 0.7	10.9 10.7 0.3	1.9 1.9 1.9	2.0 2.4 2.6	0.9 0.5 1.8	2.5 2.7 1.4	0.5 0.3 10.7	10.9 10.7 0.3	1.9 1.9 1.9	55.9
(2) 雨期直播栽培						2.5	2.5 7.6 11.8	11.9 7.1 0.7	2.0 2.7 2.5	1.2 0.3 5.6	11.0 10.7 5.4		85.5
(3) 雨期移植栽培													
2. 標準規模労働力必要量													
(1) 乾期直播栽培 (3.2ha)	6.4 7.7 8.3	2.9 1.6 5.8	8.0 8.6 4.5	1.6 1.0 3.4	34.9 34.2 1.0	3.0 3.0 3.0	3.2 3.8 4.2	1.4 0.8 2.9	4.0 4.3 2.2	0.8 0.5 17.2	17.4 17.1 0.5	6.1 6.1 6.1	179.0
(2) 雨期直播栽培 (1.6ha)						4.0	4.0 12.2 18.9	19.0 11.4 1.1	3.2 4.3 4.0	1.9 0.5 9.0	17.6 17.1 8.6		89.3
(3) 雨期移植栽培 (1.6ha)													136.8
計	6.4 7.7 8.3	2.9 1.6 5.8	8.0 8.6 4.5	1.6 1.0 3.4	34.9 34.2 21.0	3.0 3.0 7.0	7.2 16.0 23.1	20.4 12.2 4.0	7.2 8.6 6.2	2.7 1.0 26.2	35.0 34.2 9.1	6.1 6.1 6.1	405.1
3. 供給													
4. 不足労働力				12.2 12.9 12.2			1.1				13.0 12.2		

(注) 1 / 戸当り労働力供給 2.5 人とする。 2.5 人 / 戸 × 10 日 × 85% = 22.0 人日

2 / 不足する労働力

図 2-4 チャオピアパイロット地区稲作暦

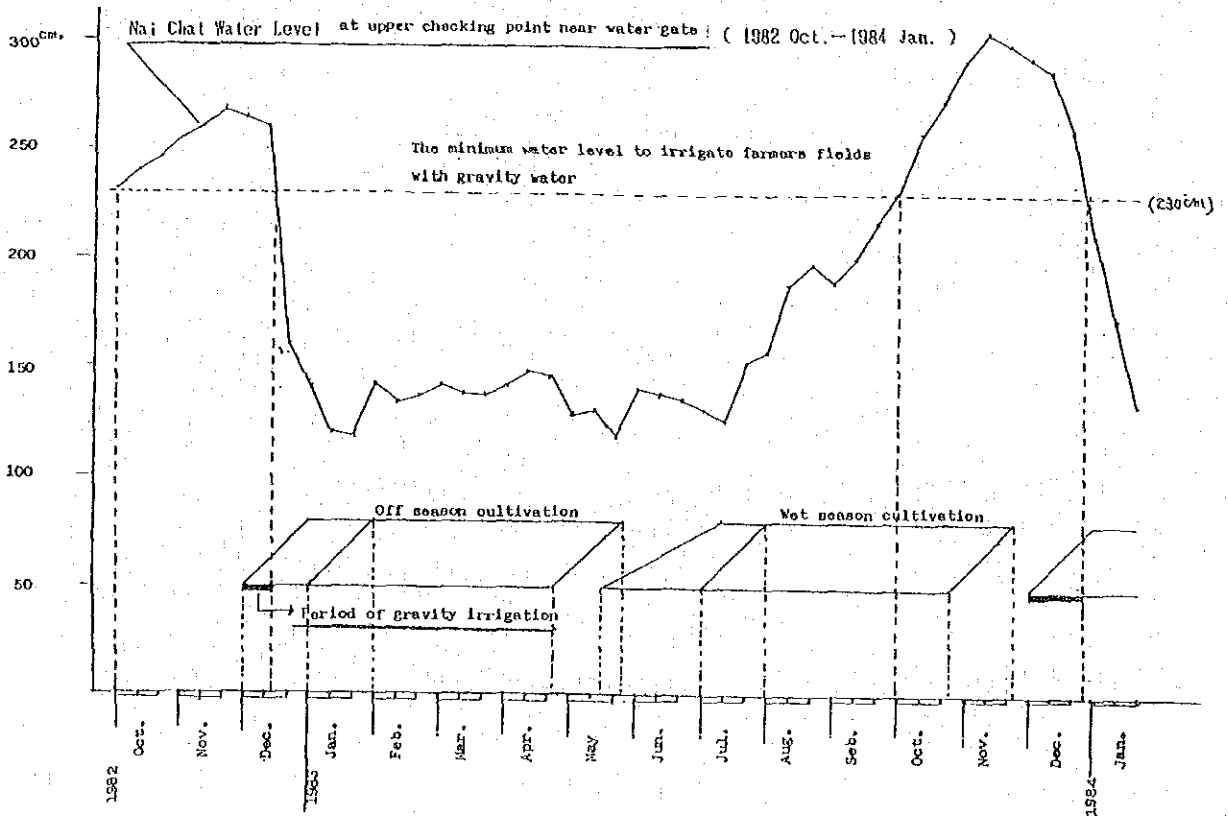
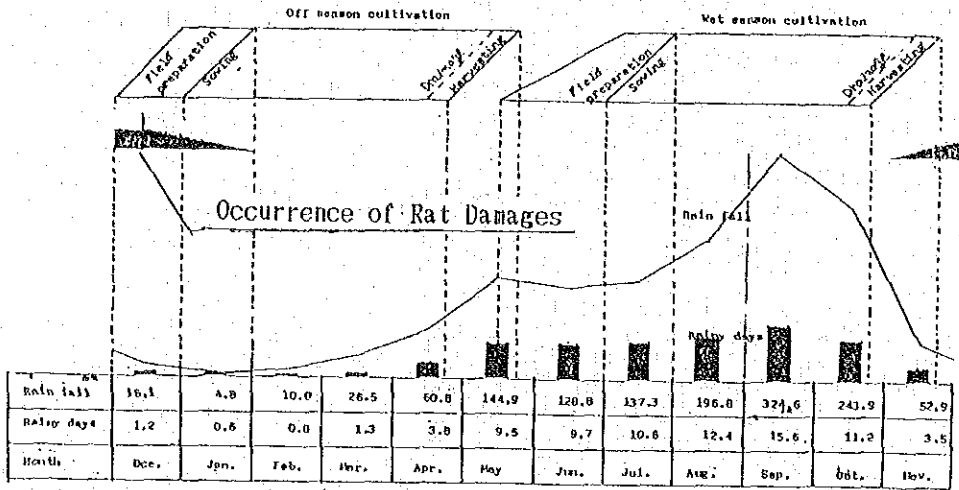


図 2-5 水稻湛水直播栽培・作付体系（トラクター使用機械化一貫体系）

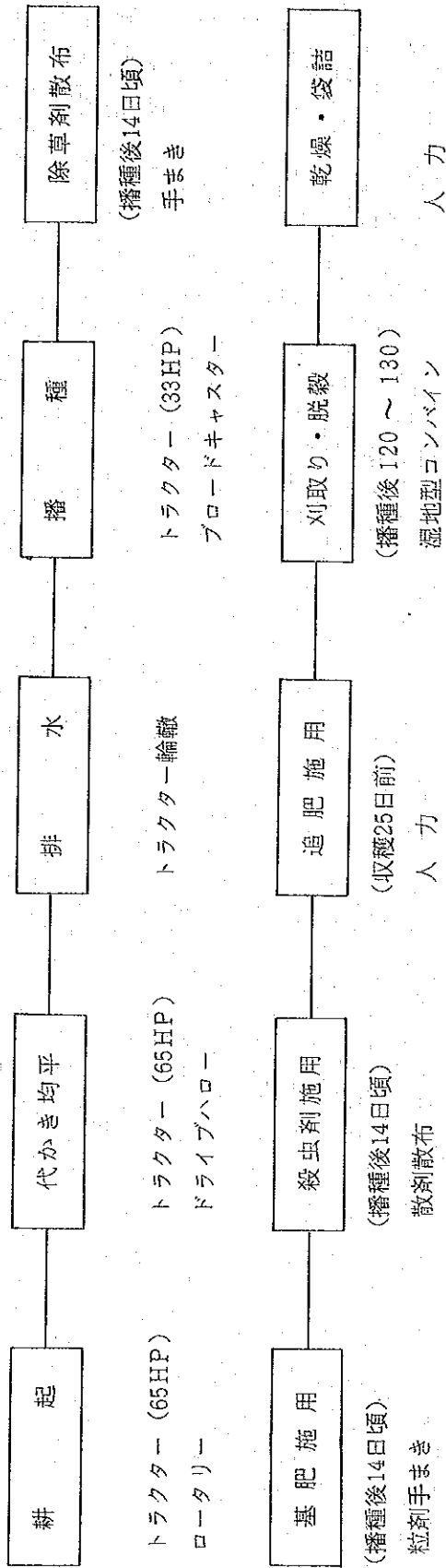
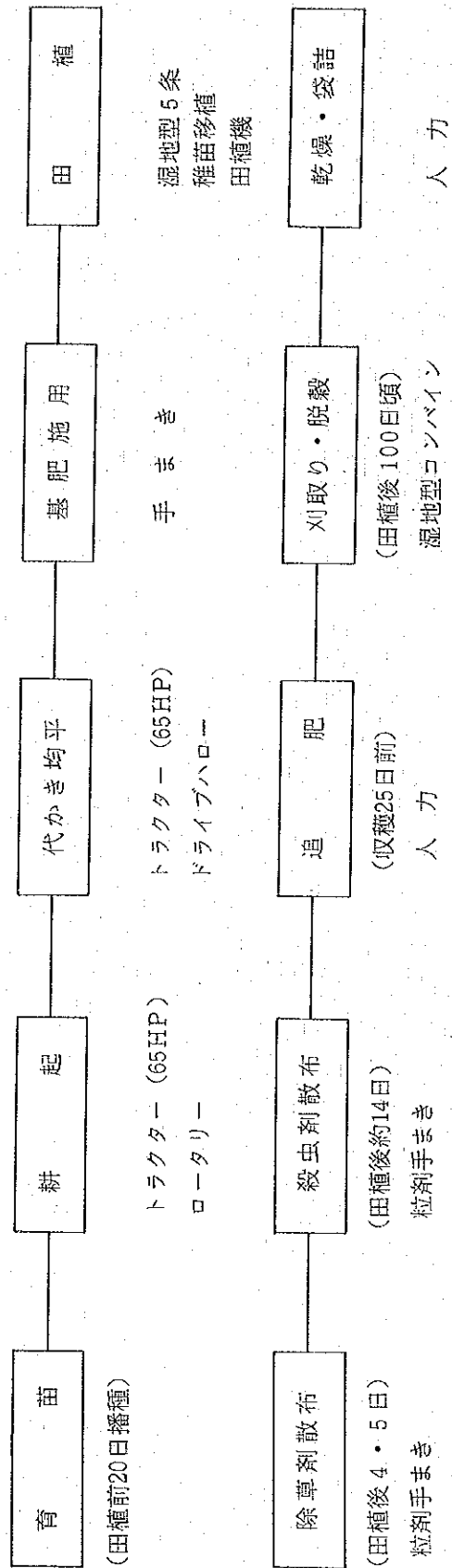


図 2-6 水稻移植栽培作付体系（トラクター・使用機械化一貫体系）



## 第5章の引田文献

- 1 国際協力事業団：タイ国における稲作作業に関する調査報（第1部）1983
- 2 国際協力事業団：タイ国チャオピヤ川西岸地区かんがい農業開発計画調査報告書
- 3 I A D P : Progress Report of Farm Machinery O  
Operation in Chao phya pilot project, 1984
- 4 R I D : Chao Phraya - Meklong Basin Study, 1979
- 5 M O A C : Agricultural Statistics of Thailand  
Crop year, 1982/83
- 6 国際協力事業団：タイかんがい農業開発計画エバリエーションチーム報告書
- 7 国際協力事業団：タイかんがい農業開発計画巡回指導チーム報告書

<付属-1> 英文現地レポート

JOINT EVALUATION REPORT  
ON  
THE IRRIGATED AGRICULTURE DEVELOPMENT PROJECT  
IN THAILAND

THE THAI AND JAPANESE JOINT EVALUATION TEAM

NOVEMBER 1984

BANGKOK

FORWARD

In pursuance of the activities under the revised Record of Discussions signed in April 1982, in which was agreed to extend the three-year cooperation period, the Japanese Evaluation Team headed by Mr. Shigetaka Taniyama visited Thailand from 21st October to 4th November, 1984.

Japan International Cooperation Agency and Ministry of Agriculture and Cooperatives of the Thai Government organized the Joint Evaluation Team to carry out a fact-finding survey and to conduct an evaluation through inspection and visiting the Project Center and the three project sites: Chao Phya Pilot Project, Mae Klong Pilot Project, and Suphan Buri Experiment and Training Center, focusing especially on the Project's performance during the extended period of three years.

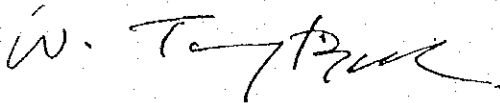
Detailed discussions have been made many times in the joint meetings with the relevant officials and the counterpart officials including Japanese experts assigned to the Project.

Following these observations and discussions, the final report was jointly made, herewith to submit the Joint Committee meeting held on November 2, 1984. In the report, the recommendations derived from the result of this survey activities were put for the future understandings as well as reference.

Both Team Leaders, lastly, feel thankful to the Thai and Japanese staff concerned in cooperation with this evaluation work.

Bangkok

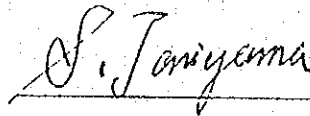
November, 1984.



Worwate Tamrongtanyalak

Team Leader

The Thai Evaluation Team



Shigetaka Taniyama

Team Leader

The Japanese Evaluation Team

MEMBERS LIST

Thai Evaluation Team

Name	Assignment	Present Position
Worwate Tamrongtanyalak	Leader	Director, Research & Planning Div., Agricultural Land Reform Office
Soodchai Tamyung	Irrigation and Drainage and Agricultural Machinery	Large Project Construction Div. Royal Irrigation Dept.
Kovit Thuamsangiem	Irrigation and Drainage and Agricultural Machinery	Central Land Consolidation Office
Ratri Piromvong	Agricultural Extension	Office of Agricultural Economics
Suvimon Preecha	Agricultural Extension	Office of Agricultural Economics
Charoen Khaoparisuthi	Agronomy	Planning & Technical Div. DOA

Japanese Evaluation Team

Name	Assignment	Present Position
Shigetaka Taniyama	Leader & Irrigation and Drainage	Director, Project Planning Div. Planning Dept. Ministry of Agriculture, Forestry and Fisheries
Kenichi Aoki	Agronomy & Agricultural Ext.	Specialist on Rice Cultivation, Agriculture Div. Fukui Prefectural Govt.
Eitaro Mitoma	Coordination	Project Officer, Agricultural technique Cooperation Div. JICA
Yasumori Hasegawa	Agricultural Machinery	Chief Engineer, Overseas Dept. Sanyu Consultants Inc.

Schedule summed-up

Oct.22 Japanese Evaluation Team made a courtesy call to Japanese Embassy, JICA, DTEC, ALRO, MOAC, RID, and DA.

Oct.23 Japanese Team heard from Japanese Experts.

Oct.24 Mini-meeting with chairmanships of Project Director was held.

Oct.25 Joint Evaluation on the Mae Klong Pilot Project was made.

Oct.26 Joint Evaluation on the Suphanburi Training Center was made.

Oct.27 Joint Evaluation on the Chao Phya Pilot Project was made.

Oct.29 & 30 Joint discussion meeting among the Joint Team members, Japanese experts and Thai counterparts was held.

Oct.31 Draft Report was made.

Nov.1 Final Report was made.

Nov.2 8th Joint Committee was held

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## 1. Introduction

In accordance with the revised Record of Discussions signed in April, 1982 between the Government of Thailand and the Government of Japan, the Project has since then been implemented for over two and a half years.

The ultimate objective of the Project is ever to contribute to the increase in food production by raising the rice yield per unit acreage and by extending rice double cropping area in the Project commanding areas, as is stated in the original Record of Discussions starting in April, 1977.

Following the results and recommendations of the first evaluation conducted in November, 1981, the both Governments agreed to extend the cooperation period for three years in order to successfully accomplish its targets.

According mainly to the three-year plan, this time, the Joint Evaluation Team made an effort to conduct an evaluation survey and to summarize the recommendations respectively.

The general view of the Joint Team is that the Project has made a remarkable progress toward its completion regardless the fact that some of immaturities can be found especially in terms of agricultural extension, cultivation and farm mechanization.

Therefore the further effort to approach the original targets of the Project should be made by the both Governments though it may have its own constraints.

## 2. Implementation of the Project

### 2-1. Project Center

The main functions are to manage and coordinate the activities of the respective sub-projects and to support them for their smooth implementation, while the main functions of the sub-projects are to undertake the direct works, such as construction of the necessary project facilities, field trials for crops, agricultural extension, training farmers, and so on. The main activities are as follows;

- 1) To discharge its duties as control center of the three sub-projects in order to achieve their objectives,
- 2) To propagandize the Project with the Thai officials concerned,
- 3) To give necessary technical advice for planning and implementing the irrigated agriculture development plan, such as in the Lower Chao Phya Basin (OECF) and in the Greater Mae Klong Basin (World Bank),
- 4) To grant fellowship for counterparts training in Japan,
- 5) To offer convenience to the missions/persons that will be dispatched by the Government of Japan,
- 6) To demand stop-gap aids to the JICA headquarter, and
- 7) To collect data in cooperation with the Thai officials concerned.

### 2-2. Chao Phya Pilot Project

#### 2-2-1 Irrigation and Drainage

- 1) Water management with data collection, operation and maintenance, and so on,
- 2) Land consolidation work,
- 3) Trial farm works,
- 4) Building lot area improvement, and
- 5) Other laboratory works.

#### 2-2-2 Agronomy

- 1) Trials and tests, i.e. direct sowing, mechanized rice double cropping,
- 2) Training for high-yield rice techniques, and
- 3) Supporting activities for farmers with demonstrations.

#### 2-2-3 Agricultural Extension

- 1) Farmers organizations, i.e. cooperative group, water management group,
- 2) Technical extension including training, demonstration,

- 3) Coordination between farmers and authorities concerned, and
- 4) Surveys of farmers' economic conditions.

2-2-4 Agricultural machinery

- 1) Establishment of the most effective and economical method of mechanized work by using several combinations of machines,
- 2) Training of operation, maintenance for the machineries,
- 3) Advice and service to the farmers, and
- 4) Collection of the necessary data for the motor pool plan.

2-3. Mae Klong Pilot Project

2-3-1 Irrigation and drainage

- 1) Land consolidation work, Pilot No.1, Pilot No.2,
- 2) Technical report with data collection, and
- 3) Water management by setting up a draft water management program.

2-3-2 Agronomy

- 1) Seed multiplication,
- 2) Demonstration of double rice cropping, mechanized farming, multi-cropping systems,
- 3) Experiments on varieties (N level),
- 4) Training of farmers, and
- 5) Technical report with data collection.

2-3-3 Agricultural extension

- 1) Organization of farmers' group, i.e. water user, mechanization and a study group,
- 2) Technical extension, intensive coaching to the model farmers,
- 3) Other activities, i.e. seed renewal, crop cutting survey, evaluation of extension activities, and
- 4) Data collection, provision of pamphlet and guide book.

2-4. Suphanburi Experiment and Training Center

- 1) Training of officers, students and farmers in several courses,
- 2) Experiment on intensive transplanting rice cultivation and on intensive 4-germinated direct sowing cultivation techniques.

### 3. Evaluation

#### 3-1 Project Center

In general, the Project Center has accomplished satisfactorily the major functions described in the three-year plan. Monthly meetings were held at the Project Center in order to create closer relationships and coordination among the sub-projects and Thai and Japanese concerned agencies. Procurements of equipment and machineries although were delayed at the early stage, they can be delivered on time to meet the project plan at later stage. Sufficient number with adequate contents publications were printed in order to introduce the sub-projects to the both Governments officials concerned. Relevant trainings in Japan for Thai counterparts were also organized. In addition, the Project Center has been conducting socio-economic studies in Mae Klong and Chao Phya sub-projects in order to assess the impact of the Project.

#### 3-2 Mae Klong Pilot Project

##### 3-2-1 Irrigation and drainage

1) Although the intensive method of land consolidation was carried out in the Mae Klong No.1 from 1979 to 1981, there were some unirrigable areas and the rehabilitation work was made in the dry season of 1984. Irrigation water can be supplied to every field at present, and there is no problem in maintenance of the irrigation facilities.

2) The remaining construction area of 236.6 ha in the Mae Klong No.2 was completed under extensive method of land consolidation in 1982. Although there were a few unirrigable area, minor rehabilitation work has solved this problem. It is found that the O&M has worked well in this area and the farmers can get closely together to meet the goal of the Project.

3) Regarding water management, necessary measures, such as planning, training and extension work, have been carried out. Consequently the transfer of technology on this aspect has been progressed among the RID staff and farmers in the Project area.

4) The data concerning land consolidation, i.e. design drawings, unit price lists and beneficial farmers' socio-economic situations, have been successfully collected. Therefore, it is expected that these data would be very much helpful in writing the final technical report.

### 3-2-2 Agronomy

The agricultural demonstration center has played the core of applied research, seed multiplication and extension service on rice farming in the Mae Klong pilot project. It has established recommendations on rice double croppings in a year for the Mae Klong area based on the results of experiments and observations. The recommendations on safety and low cost rice farming have been diffused to the farmers through agricultural extension services. The center is the main source of RD-variety seeds (RD-23 at present), and distribution of the seeds to the farmers made possible the rice double croppings and contributed to the yield increase. It has also demonstrated the integrated mechanization of rice farming.

As the result, the rice yield was greatly increased from single cropping of 2.2 tons per hectare per year before starting the project to double cropping with the maximum of 8-9 tons per hectare per year. It was also reported that, under good management practices, rice yield was about 8 tons per hectare in dry season and about 6 tons per hectare in wet season. The yield components of RD-23 at the yield level of 5 tons per hectare are as follows:

Planting method	No. of panicles per m <sup>2</sup>	No. of grains per panicle	% of filled grains	1,000 grain weight (gm)
Direct sowing	400	65	70	28
Transplanting	350	80	65	28

### 3-2-3 Agricultural Extension

In pilot project No.1, 21 water user associations were organized in 1982 and they were further re-organized into 5 associations in 1984. In pilot project No.2, there are 2 water user associations and 18 sub-groups under the associations. Water fee of 70 Baht and 40 Baht per rai per year is collected from the pilot project No.1 and No.2, respectively. They are utilized for repair and maintenance of terminal irrigation facilities.

Meetings of the study group on paddy production has been conducted monthly at pilot project No.1 and No.2. Agricultural extension offices of Tha Muang and Tha Maka districts, Cooperative Promotion Department's Mae Klong office and other government agencies have participated in the meetings. In 1984, a total of 181 farmers in pilot project No.1 and 401 farmers in

pilot project No.2 attended the meeting. The meeting has contributed to the diffusion of appropriate rice farming techniques to the farmers

Assistance to the model farmers and the distribution of "Mae Klong Farming News" are useful methods of agricultural extension. Most of the model farmers produced more than 4 tons per hectare per cropping season or 8.7-10.8 tons per hectare per year. The Farming News has been published monthly since January, 1984, and distributed to the farmers and Government agencies concerned.

Introduction of rice double croppings together with appropriate techniques has contributed to the improvement of farmers' living standard. Differences in rice yields between the pilot project No.1 (intensively land consolidated area) and No.2 (extensively land consolidated area, however, have not significantly been observed.

#### 3-2-4 Farm Mechanization

The integrated mechanization system of rice cultivation has been demonstrated for both transplanting and direct sowing methods. The demonstration will contribute to the transfer of technology in farm mechanization although it might not be possible to introduce the full mechanization system directly at this time.

### 3-3 Chao Phya Area Pilot Project

#### 3-3-1 Irrigation and drainage

1) The main construction works during the extended three-year period were completed as follows;

The main pumping station in September, 1982, 2 secondary pumping stations in March, 1983 and rehabilitation work on land-levelling in July, 1983 were completed by ALRO itself. However, it is surely needed that some parts of the polder dike and the farm roads should be maintained by laterite pavement to facilitate the transportation of farm inputs and outputs.

2) At present the shortage of water for land preparation has forced the use of the block irrigation system. It is recommended that there should be further effort to develop mutual cooperation within each rotation block although the orders among rotation blocks as well as along irrigation ditches have been established. Furthermore, it is understood that various surveys on pumping capacities, daily water requirement of a single plot, conveyance efficiency, etc. have been carried out in order to solve the water shortage.

### 3-3-2 Agronomy

Introduction of RD-23 rice variety, which has good resistance against brown plant hopper, contributes to minimize the problem of Rice Ragged Stunt Virus - one of the biggest limiting factors of rice production in the area.

As the result, together with other efforts, rice yield has been increased through both direct sowing and transplanting methods.

Rice yield of around 5 tons per hectare per season has been achieved and standard rice cultivation calendar on recommended practices has also been prepared.

The yield components of RD-23 at 5t/ha level in Chao Phya Pilot Project is determined as follows.

Planting Method	No. of Panicle per m <sup>2</sup>	No. of grains per panicle	% of filled grains	1000 grains weight (gm)
Direct Sowing	370	70	70	28
Transplanting	210	125	70	28

Seed multiplication and distribution as well as demonstration of promising varieties conducted at Trial Farm contribute to increase rice yield at farmer's level. Actually, RD-23 covered nearly 100% of farmer's field in 1984.

Since wet season in 1984, agronomic trials have been managed mainly by Thai staff, however, some additional technical supports seem to be still needed.

### 3-3-3 Agriculture Extension

- 1) Economic situation of the farmers in the project has been improved after double croppings of rice were introduced. The amount of debt carried by farmers has tended to decrease in the area.

The land reform cooperatives organized in 1980 consist of 4 groups with 170 members. Though they are still at the early stage, the main activities carried out are;

Joint purchase of agri-inputs, joint selling of agri-products and supporting services of farm machinery for the members. The water management group was initially organized in October, 1982, then re-organized in October, 1983 and separated from cooperative's work.

Regarding water management, several problems, such as irrigation water shortage, taking water from drainage canal, have still been found.

Water charge of ¥ 80 per rai/season (30 kg of rice at the initial stage) is collected after harvesting. The activities of water users' groups are satisfactory at present. However, further supports for strengthening the groups are still needed.

- 2) Technical guidance for farmers on steady and cost saving rice production techniques has been carried out following the scheduled plan.

Training, demonstration, preparatory works for compiling of technical booklets and crop cutting survey of farmer fields have successfully been conducted mainly by the counterparts.

Field rat problem in the project area has been reduced by the effective collaboration of DAE (planting time adjustment, submergence, and timely application of poison bait)

Crop surveyance information has been provided to the farmers in the collaboration with DAE in forecasting the occurrence of insects and diseases through field observation and counting of insects flying to light traps.



- 3) Coordination among concerned government agencies such as DAE and DA has been well conducted.

Farmers economic survey has been carried out in the project and the data are being tabulated at present.

#### 3-3-4 Farm Mechanization

- 1) The fact that the integrated mechanization system of rice cultivation has been established successfully under unfavorable conditions, will significantly contribute to the agricultural development not only in the Pilot Project but also in the vicinity. Despite the extension period was too short to accomplish the target of establishing the appropriate mechanization system, the appreciable effort extended by the Japanese experts and Thai counterparts have been made on the improvement of paddy cage wheels. In addition, various trials have been conducted in order to obtain necessary data for the selecting machinery suitable for the specific conditions.
- 2) Since there are considerable areas in the Pilot where the land levelling work had recently been finished, most data on the field operation efficiency of the machinery were collected from the fields where the soil surface conditions were uneven and not favorable for introducing machinery. Practically, after intensive method of land consolidation, it takes some years to improve soil surface condition. However the data collected in the improved fields are essential to establish the most applicable mechanization system.
- 3) The training of personnel concerned with publication of manuals have been conducted properly about the operation, maintenance and repairing of the procured machineries except for the swamp type combine harvester which was recently procured.

- 4) In regard to the advice and consultation on the collective use of farm machinery, various methods of contract-base machinery services managed by the established agricultural cooperative have been promoted. The machinery services have been made, for an example, in the area of about 60 to 80 hectares per year within the pilot area for land preparation. This activity is worth appraising since it is the first case of collective use of farm machinery as an activity of the cooperative work.
- 5) The procured machinery and equipment under the Pilot Project are well maintained. Arrangement has been made to procure spare parts for about two years' use after the termination of the extended technical cooperation.

#### 3-4 Suphan Buri Experiment and Training Center

- 1) Various kinds of trainings have been carried out at the Training Center regarding rice and crop cultivation techniques, Japanese language, computer programmings and integrated farming system for Thai officials, farmers concerned and students.

The above mentioned trainings have shown great contribution for the agricultural development of Thailand.

- 2) Agronomic techniques on transplanting rice cultivation have been formulated based on the results of the experiments.

Cooperative research on direct sowing rice cultivation has been planned, and conducted at three sub-projects in order to improve production techniques.

- 3) A number of supporting and information services, such as quality seeds supply, translation of technical papers, introduction of modern rice farming techniques and computer programming have been done for the other sub-projects and the agricultural agencies concerned in the last years.

#### 4. Recommendation

The activities of the Project have initially had common objectives of extending rice double cropping system through land consolidation works and of formulating pilot models for the development in respective sub-project areas with consideration of its own regional and development characteristics.

It is strongly hoped that the pilot models not only be operated and maintained properly but vitalized by applying the results derived from the experiments and tests to the other parts of Thailand, in correspondance with natural and socio-economic conditions.

It is also desirable for the Thai Government to trace the project functions and for both governments to conduct an evaluation survey some years later.

Conclusively, it is recommended that technologies transferred to the counterparts and the donated equipment be fully utilized in a good manner among each organization.

Judging from the results of this evaluation survey, it will be expected to have a great effect and influence derived from the Project around the areas, if the proper operation and maintenance are continued.

In this fields of agronomy, agricultural extension and farm mechanization in the Chao Phya Pilot Project, however, there are still some immaturities seen.

#### 4-1 Project Center

The Project Center office and the Joint Committee will be closed at the time when the Project is ending following 8 years cooperation. At this time, it is finishing the coordination work among the departments concerned, which is the main job of not only the Project Center itself but also of the Joint Committee. This means that the exchange of information on land consolidation in Thailand among the departments may be weakened.

It is therefore desired that there will be some coordination work concerning land consolidation including design, construction, farming practices and mechanization, under leadership of the agencies concerned.

#### 4-2 Mae Klong Pilot Project

##### 4-2-1 Irrigation and Drainage

- 1) It may be required that further studies on the economic aspects of water management, farm practices and mechanization should place emphasis on the comparisons of the two different land consolidation methods.
- 2) Although the technology on water management is found to be developed in the area, it is necessary that consensus among the officials as well as the farmers themselves towards better water management should be developed so that the water users' groups could be better organized and strengthened.

##### 4-2-2 Agronomy

There are some problems or risks after the introduction of rice double croppings. How to maintain soil fertility is the important matter to be considered. Returning rice straw to paddy field is recommended in addition to the application of adequate amount of fertilizer. Tests should also be conducted on applying some organic fertilizer, i.e. legume, azolla. Planting one variety in wide area should be avoided because it faces the risk of crop failure due to insects, diseases and/or weather. It is recommended that RD-23 be planted 60-70 percent of the area and other RD-varieties for the rest in dry season. On the other hand, RD-varieties should be planted 60-70 percent and local varieties for the rest in wet season. Weed also becomes a problem associated with continuous

rice cropping. It is recommended that direct sowing for dry season and transplanting for wet season be applied. More precise puddling work and herbicide application are necessary to minimize weed problem.

#### 4-2-3 Agricultural Extension

There are some aspects to be considered in the future. Although water user associations and study groups on paddy production are organized in the pilot project areas, further efforts of mutual cooperation among government agencies concerned and farmer leaders would be necessary for strengthening the farmers organizations and improvement of full time farmers situations. In addition to the extension activities done at present, more direct method of agricultural extension work, such as field observation with farmers, is recommended.

#### 4-2-4 Farm Mechanization

The countermeasures to make maximum utilization of the procured machinery and equipments of the project have to be taken, not only for demonstration and training but also for other purpose, for instance, the trial of the collective use of the machinery by agricultural cooperatives with certain lending standard.

### 4-3 Chao Phya Pilot Project

#### 4-3-1 Irrigation and Drainage

- 1) It is found that there are some faults at farm-inlets and turn-outs which cause water losses. Therefore, it is required that the repair and maintenance of wooden gates of both farm inlets and turn-outs be made in order to assure equal water distribution during puddling periods; moreover, the dikes along lateral canals should be maintained in order to prevent them from water losses.
- 2) The above-mentioned works may bring about better rotation practices designed at the beginning. Therefore, it is necessary that organizing of water users' groups should be systematically carried out by ALRO.

#### 4-3-2 Agronomy

It is still too early to conclude that steady high production level of rice will be ensured from now on even the yield has been increased since the last 2 years.

The reasons are :

- 1) Depending on single variety causes risk against pests, diseases or natural calamities. So as to minimize the risk, some other promising varieties should be selected and introduced.
- 2) Soil fertility of paddy field will be decreased in the long run due to continuous double cropping of rice cultivation.

Though the effects of green manure crop (sesbania) have been observed at the trial farm, practical green manure crop cultivation seems to be difficult for implementation at this stage.

It is desirable to incorporate rice straw with paddy soil without burning and to apply chemical fertilizer to maintain soil fertility.

- 3) Mainly because of economic reasons, control measures against insect and pest are not intensively done. Thus, diseases and insect such as rice blast, rice leaf roller, rice thrips and others tend to occur and cause yield reduction.

Effective control measures should be studied through forecasting of occurrence, and wasteful application of fertilizer should be avoided.

- 4) Weed is another problem especially in direct sowing. Occurrence of new type of weeds have been observed after double croppings were introduced.

The rotation of direct sowing in dry season and transplanting in wet season is recommendable when weeds adversely affect the production.

Careful puddling, levelling and water management with effective use of herbicide will minimize the weed problem though some types of weeds may be difficult to control by the existing control measures.

Some technical assistances are still required for technological transfer on the subject of applied agronomic research and varietal selections.

#### 4-3-3 Agricultural Extension

As necessity of farmers organization has been recognized by the farmers themselves in accordance with the increasing full-time farmers, guidance and cooperation of CPD (Cooperative Promotion Department) are absolutely needed to strengthen the present co-operatives.

Guidance and training for extension workers should also be strengthened. It is hoped that control measures or systems on plant protection will be improved through forecasting of occurrence.

#### 4-3-4 Farm Mechanization

- 1) As a model of mechanization system to be applied in the pilot area, the integrated mechanization system of rice double cropping has almost been completely established. It is considered that further studies have to be made to confirm the modification and applicability of the mechanization systems.
- 2) In order to fulfill the above recommendations, ALRO should conduct investigations on the following items:
  - Data collection on the field operation efficiency of machinery for the matured field condition in the land consolidation area,
  - Further data collection machinery costs based on the above data,
  - Comparative study on economic viability between the established mechanization system of rice cultivation and the conventional rice cultivation system,
  - Revision of the rating standard on the trafficability of machineries in various soil bearing capacity, and recommendation on proper water management to maximize the operation efficiency of machineries.
- 3) Appropriate numbers of staff have to be appointed to conduct the above mentioned investigations.
- 4) The rice mill procured by the project is properly maintained by the mechanics. However, it is not yet fully utilized. Proper measures for the maximum utilization have to be introduced accordingly.

4-4 Suphanburi

Continuous efforts on training program with sufficient budgetary support for the future are needed in order to strengthen and to carry out effective trainings.



< 付属 - 2 >

チャオピアパイロットプロジェクト  
農家調査（普及効果測定調査）の中間報告

はじめに

農家経済調査は、1982年に、ほ場整備完了と同時に第1回目が行われた。これは、JICAの普及効果測定調査事業として実施し、基礎的データを集収したベンチマーク調査であった。チャオピア・メクロン両地区内外の農家を対象として総数249戸の農家が調査され、地区内外の農家の状況を比較したが、ほ場整備完了が間もないこともあって、確かな差は、現れなかった。

今回調査も前回調査の方法等を踏襲して行ったもので、調査そのものは終了しているものの、その集計作業の一部は、終わっていない。よって、エバリュエーションに特に必要なアイテムだけをプロジェクト地区内の調査から選びその結果を報告するものである。また、地区外との比較するものではなく、前回調査結果と今回調査結果の比較検討したものを報告する。

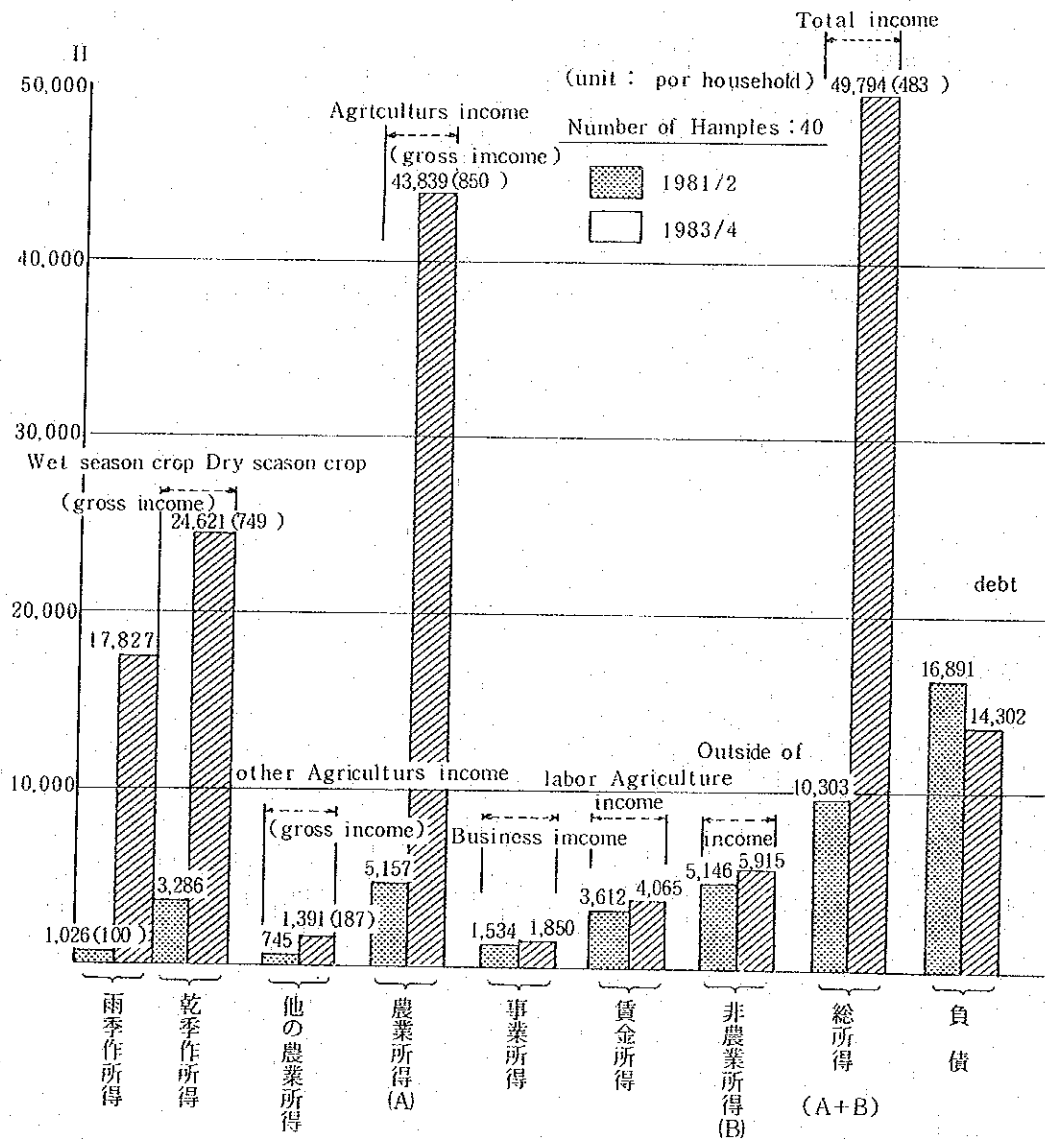
比較検討のメルクマールとして ①農業所得と非農業所得並びに負債の増大、②農業生産の増大、③農業機械化の展開 ④生産資材の投入量の変化 ⑤生活水準の向上 の以上5項目をとり上げる。

### 1. 農業所得と非農業所得並びに負債

下図は、調査農家40戸を一戸当たり平均に直した農業所得、非農業所得及び負債を図示したものである。これによると

- (1) 雨、乾季作の伸びにより農業所得は8.5倍に急増した。
- (2) 非農業所得は微増に留まった。
- (3) 結果として、総所得は、4.85倍に膨大した。
- (4) 負債残高も減少し、1981/2年では総所得の1.64倍あったものが、1983/4年では、0.28倍に留まり、借金の重圧は、減少したといえる。

The Fruit of the Project



農家一戸当りの米作による農業所得（総収益より 流動費，借地代，雇用労費を引いたもの）は，次表のとおりである。

年	雨 季 作		乾 季 作	
	1 戸 当 平 均	1 ライ 当 り	1 戸 当 平 均	1 ライ 当 り
1981/2	1,323 円	123 (n=31) 円	3,762 円	202 (n=36) 円
1983/4	17,827	1,022 (n=40) 円	24,621	1,243 (n=40) 円

一戸当りでは，雨季作で13.5倍，乾季作で6.5倍の伸びを示している。1ライ当りでは，前者が，8.3倍，後者が6.1倍の伸びとなっている。

## 2. 農業生産の増大

前回と今回調査のライ当り収量の差を比較したのが，下表である。

year	wet season yield			dry season yield		
	mean	S.D.	n	mean	S.D.	n
1981/2	kg/rai 243 (100)	kg/rai 119	28	kg/rai 321 (100)	kg/rai 115	31
1983/4	641 (264)	128	40	728 (227)	99	40

これによると，雨期作については，2.64倍増え，乾季作については，2.27倍増大した。標準偏差（S.D）を比べると雨季作については，少し増加したが，平均そのものが上昇しているので，各農家間の収量の差は少なくなっており，安定化していると言える。1981/2年のサンプル数が少ないのは，収量皆無及び極少については，オミットしたからである。

特に，乾季作については，かんがい設備の完備，指導の徹底化により，農家間の生産性のばらつきは，少なくなっている。



#### 4. 生産資材の投入

いくら収量が伸びても、それに見合うコストをかけて、ネットの収益が伸びなければ、成功したとは言えない。

下表は、雨季乾季別、労賃を除く流動費の内訳である。1981/2年調査では、雨季作にライ当たり494B、乾季作に568B、後者に593B増加し、率ではそれぞれ18%及び4%の伸びとなっている。

注目すべきは、種子と肥料代の減少である。プロジェクト側の指導徹底化の目安となる標準偏差は次のとおりである。

Table - 6

	種 子 代		肥 料 代	
	雨 季	乾 季	雨 季	乾 季
1981/2	24.08	36.88	137.43	135.22
1983/4	9.05	7.74	50.56	60.51

但し、単位rai当りの費用の標準偏差平均が減少しているとはいえ、標準偏差の減少つまり、農家間のそれら資材の投入量のバラつきの減少は著しい。

Table - 5 - 1 雨季作の流動費

Unit : B /rai

wet season	machine rental	fuel	repair	seed	fertilizers	chemicals	Total
1981/2	13 (2.6)	49 (10.0)	0 (0)	65 (13.1)	271 (54.6)	98 (19.8)	494 (100)
1983/4	83 (14.2)	48 (8.2)	22 (3.8)	58 (9.9)	220 (37.6)	154 (26.3)	585 (100)

( ) = %

Table - 5 - 2 乾季作の流動費

Unit : B /rai

dry season	machine rental	fuel	repair	seed	fertilizers	chemicals	Total
1981/2	17 (3.0)	59 (10.4)	0 (0)	70 (12.3)	307 (54.0)	115 (20.2)	568 (100)
1983/4	84 (14.2)	46 (7.8)	12 (2.0)	58 (9.8)	230 (38.8)	163 (27.5)	593 (100)

( ) = %

## 5. 生活水準の向上

生活水準のメルクマールとして耐久消費財の保有を取上げる。

農家の保有している耐久消費財に次のような点数を与えた。

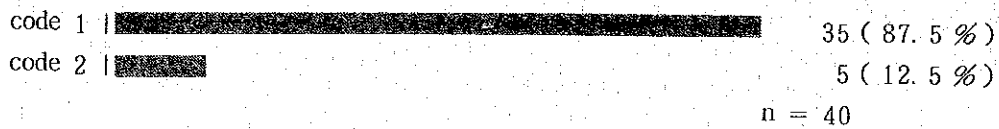
自転車=1, 扇風機=1, ラジオ=1, ラジオカセット=2, 白黒テレビ=2, 炊飯器=2,  
ミシン=2, バイク=3, ガステーブル=3, 冷蔵庫=4, 発電器=4, カラーテレビ=5,  
小型トラック=8

これをもとに, Code 1は0~4点, Code 2は5~8点, Code 3は9~12点, Code 4は13点以上とした。

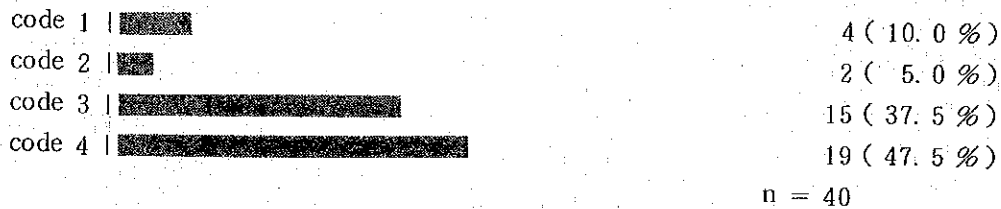
下図は, 両調査の結果をグラフ化したものである。

fig 3

11 : degree of consumer durables 1981/2



11 : degree of consumer durables 1983/4



前回調査では, code 3, 4 つまり9点以上がなかったが, 今回は, 上方ヘシフトし, 13点以上が半数を占めるに至っている。因い, 前回では, ラジオ (35戸), 白黒テレビ (7戸), 扇風機 (9戸), ミシン (6戸) という具合に, かなり低いレベルであった。

参考資料 1 専門家作成による報告書リスト (延長3ヶ年)

プロジェクトセンター

written by Mr. J. Nakajima, Team Leader

チーム・リーダー: 中 島 淳一郎

1. Outline of IADP
2. Progress Report of IADP (phase-1)
3. Fundamental Survey for water management
4. Study Matters on Land Consolidation in Thailand
5. A Questionary as to On-farm Development in Thailand
6. Irrigation and Land Consolidation in Thailand and Outline of Thai Agriculture

Written in the extended period

	Size	Page
1. Thailand and Japan: a comparison (E)	A-4	51P
2. Runoff Analysis for the Resettlement Project of KHAO LAEM DAM (E)	A-4	94P
3. Some Comments on Irrigation Planning at the ChaoPhya Pilot Project (E)	A-4	15P
4. On Research for farm Water Management (E)	A-4	10P
5. Experimental Water Management at the MaeKlong Pilot Project (E)	A-4	61P
6. Study on Slope failure while Constructing the main pumping station at the ChaoPhya Pilot Project (E)	A-4	7P
7. Explanation of Automatic Control system of the Main Pumps for the ChaoPhya Pilot Project (E)	A-4	3P
8. Curriculum of Water Management Training (E)	A-4	38P
9. Progress Report on IADP in the Extended Period (Project Center) (E & T)	A-4	26P
10. タイ国の圃場整備事業 (J)	A-4	95P
11. タイ国に於ける水田用水量について (J)	A-4	179P
12. タイ国に於ける水管理の現況と問題点 (J) (技術者連絡会議報告書に収録済)	A-4	62P
13. チャオピア川下流西岸地区と圃場整備事業 (J)	A-4	90P
14. メクロン川右岸地区に於ける圃場整備事業の比較的考察 (J)	A-4	40P
15. グレーター・チャオピア・プロジェクトの概要 (J)	A-4	46P
16. グレーター・メクロン・プロジェクトの概要 (J)	A-4	67P
17. タイ国のかんがい事業とその維持管理について (J)		on going
18. チャオピア・パイロット・プロジェクトのフォローアップについての ALROの要請について	A-4	111P

Project Center

written by Mr. H. Takama, Liason Officer,

高 間 英 俊

	Year	Size	Page
1. Simulation of farm income under uncertainties of rice price and yield.		A-4	E,4
2. Economical optimum point of application of GLM for rice cultivation	1983, 8	A-4	E,4
3. Optimum point of application of fertilizer for rice cultivation	1983, 5	A-4	E,3

チャオピヤ・パイロット・プロジェクト

the ChaoPhya P/P

written by Mr. M. Fukuda, Irri. & Drainage

福 田 守

	Year	Size	Page
1. Observation of Irrigation from No. 2 Pump at ChaoPhya Pilot Project	1983, 10	A-4	E,12

the ChaoPhya P/P

written by Mr. T. Shibata, Agronomist,

柴 田 寿 夫

	Year	Size	Page
1. Summary of the Agronomic Trials in West Season 1983, Conducted at Trial Farm of ChaoPhya Pilot Project	1983, 11	A-4	E,33
2. Summary of the Agronomic Trials and Seed multiplication program in Dry Season 1983-1984, Conducted at Trial Farm of ChaoPhya Pilot Project	1983-1984	A-4	E,T



the ChaoPhya P/P

written by Mr. N. Iguchi, Agro-extension,

井 口 尚 樹

	Year	Size	Page
1. Program for Dry Rice Cultivation in pilot project area	1980, 12	A-4	E,6
2. Study Report, Preparatory Survey for the First Dry Season Rice Cultivation in the Irrigated Agricultural Development Project. The Pilot Project, Lad Bua Luang District, Ayuttaya Province	1981, 2	A-4	E,8
3. Study Report of Ragged Stunt Virus Control	1981, 4	A-4	E,11 T,13
4. Report of Extension works for Dry Season in CPPP	1981, 8	A-4	E,9
5. Farmer's Management Survey Report of ChaoPhya Pilot Project	1982, 5	A-4	E,95
6. Direct Sowing Cultivation Plan for Wet Season Rice 1982	1982, 7	A-4	E,5 T,6
7. Crop Cutting Survey Report of Dry Rice Cultivation in ChaoPhya Pilot Project	1983, 7	A-4	E,8
8. Extension Report of Dry Season Rice Cultivation 1984	1984, 8	A-4	E,9

The ChaoPhya P/P

written by Mr. M. Numata, Agro-machinery,

沼 田 正 道

	Year	Size	Page
1. Mechanics' and Drivers' handbook	1983, 4	A-4	E,15 T,23
2. Proper handling and maintenance manual for Battery	1983, 4	A-4	E,11 T,13
3. Adjustment of the number of seedling and maintenance manual of Transplanter	1983, 10	A-4	T,7
4. Guide line for maintenance and trouble shooting of Agricultural machinery	1983, 10	A-4	E,30 T,34
5. How to handle Tractor for good soilpreparation on rice cultivation	1983, 11	A-4	T,1
6. Proper handling and maintenance manual for Transplanter	1984, 4	A-4	E,38 T,36
7. Operation manual for Combine Harvester	1984, 5	A-4	T,71
8. Tentative Judgement of trafficability of Soil	1984, 6	A-4	E,7 T,6
9. Relation between the time of drainage and the trafficability of soil for using Combine Harvester	1984, 6	A-4	E,2

メクロン・パイロット・プロジェクト

the MaeKlong P/P

written by Mr. K. Hisamoto, Irri. & Drainage

久本和博

	Year	Size	Page
1. Summary of Irrigation and Drainage - The MaeKlong P/P	1983, 9	A-4	E, 11
2. MaeKlong Pilot Project No. 1 地区に於ける問題点について	1983, 9	A-4	J, 96
3. The Experimental Water Management at MaeKlong Pilot Project	1983, 9	A-4	E, T, 35
4. The Investigation about the Reason for Un-irrigable Area	1983, 9	A-4	E, 34
5. The MaeKlong Pilot Project, Summary (Irrigation and Drainage)	1984, 7	A-4	E, 16
6. The Improvement Plan of MaeKlong Pilot Project No. 1 (Lining Q $0.048m^3/sec$ , Earth Ditch Q $0.048m^3/sec$ )	1983, 10	A-4	E, 68
7. The Improvement Plan of MaeKlong Pilot Project No. 1 (Earth Ditch)	1983, 10	A-4	E, 70
8. The Improvement Plan of MaeKlong Pilot Project No. 1 (The final plan)	1983, 11	A-4	E, 70
9. The Improvement Work of MaeKlong Pilot Project No. 1 (The Result of Improvement, Cost of Improvement work, Construction Progress Report, Others)	1984, 4	A-4	E, 110
10. Pumping data of MaeKlong Pilot Project No. 1	1983-1984	A-4	E,
11. Water Measurement Data at MaeKlong Pilot Project No. 2	1983-1984	A-4	E,
12. Rotational Irrigation Schedule in MaeKlong Pilot Project No. 1	1984, 7	A-4	E, 50

the MaeKlong P/P

written by Mr. K. Misawa, Agronomist,

三 沢 和 人

	Year	Size	Page
1. Report of the Paddy Cultivation in the Dry Season, 1982	1982, 9	A-4	E,51
2. Report of the Paddy Cultivation in the Rainy Season, 1982	1983, 3	A-4	E,84
3. Report of the Paddy Cultivation in the Dry Season, 1983	1983, 12	A-4	E,93
4. Interim Report of the Paddy Cultivation in Wet Season, 1983	1984, 4	A-4	E,69
5. Farm Management Program for Dry Season Crop, 1982	1982, 1	A-4	E,28
6. Farm Management Program for Wet Season Crop, 1982	1982, 7	A-4	E,25
7. Farm Management Program for Dry Season Crop, 1983	1983, 1	A-4	E,28
8. Farming Program, Wet Season, 1983	1983, 7	A-4	E,33
9. Farming Program, Dry Season, 1984	1984, 1	A-4	E,41
10. Farming Program, Wet Season, 1984	1984, 7	A-4	E,32
11. Report on Agriculture Development Program for Resettlement of Khao Laem Dam	1982, 8	A-4	E,14
12. Summary of Agricultural Statistics of Thailand, Crop year 1981/82;	1984, 1	A-4	E,41
Source: 1. Center for Agricultural Statistics Office of Agricultural Economics, MOAC.			
2. Agricultural Demonstration Center, MaeKlong P/P, IADP.			
13. Conclusion of Water requirement work, 1975-1983 Water requirement research branch, RID.	1984, 5	A-4	E,15

Under Writing

1. Report of Practical Water Management	1984, 9	A-4	E
2. Report of the Paddy Cultivation in the Dry Season	1984	A-4	E
3. Mechanized broadcasting rice culture	1984	A-4	E
4. Double Rice Cropping and Low Temperature Injury	1984	A-4	E
5. Mechanized Raising of Seedling and Transplanting	1984	A-4	E

the MaeKlong P/P  
 written by Mr. M. Tomitaka, Agro-extension,  
 富高元徳

	Year	Size	Page
1. MaeKlong Farming News	1984, No. 1-9	A-4	E,T,59

Under Writing

1. Report of Practical Water Management Experiment in Dry Season, 1984	1984, 9	A-4	E
2. Extension - Effect Research Program Report	1984	A-4	E
3. MaeKlong Farming News	1984, No. 10-12	A-4	E,T

スパンブリートトレーニングセンター  
 1982-1984

Suphan Buri Training Center

菅原哲二郎

1. Experiment report 1979-1983	Tetsujiro Sugahara	1984. 8,	E-167
2. Experiment report 1981	Vichien Sasi prapa	1982. 7,	T- 69
3. Practical report 1981	Vichien Sasi prapa	1982. 4,	T- 51
4. Practical report 1981	Tetsujiro Sugahara	1982.10,	E- 38
5. Works of 1981	Vichien Sasi prapa	1982. 4,	T- 73
6. Works of 1981	Tetsujiro Sugahara	1982.10,	E- 43
7. Works of 1982	Vichien Sasi prapa	1983. 5,	T- 57
8. Works of 1982	Tetsujiro Sugahara	1983.11,	E- 37
9. Works of 1983	Vichien Sasi prapa	1984.10,	T- 68
10. Micro computer programing	Tetsujiro Sugahara	1982. 3,	E- 33
11. Computer training paper	Tetsujiro Sugahara	1982.12,	E- 23
12. Computer programing and utilizing	Pairat Duangpibcon	1984. 1,	T- 68
13. Rat knowledge in Thailand	Translated from "Kwam roo ruang nai pra thed Thai" written by Prajong Sutto	1982,	E- 67
14. Carbofuran (Furadan) application techniques in rice paddy field. (D.O.A.)		1983. 6,	E- 14
15. Rice handbook Diseases and its control (JICA and D.O.A.)		1982. 3,	B6-T-38
16. Insect handbook (JICA and D.O.A.)		1983. 3,	B6-T-46
17. Vegetable report	written by trainees	1983. 3,	T- 43

参 考 資 料 2.

2-1 専門家派遣実績(52.4～60.3)

所 属	指 導 分 野	延派遣人・月	専門家数	備 考
プロジェクトセンター	チームリーダー	92	2	
	農業経済	56	2	
	圃場整備	60	2	
	業務調整	93	3	
	小計	301	9	
チャオピア・パイロット プロジェクト	圃場整備	48	2	
	かんがい排水	84	3	
	農業機械	64	2	
	栽培培	76	2	
	農業普及	58	1	
小計	330	10		
メクロン・パイロット プロジェクト	圃場整備	76	1	
	かんがい排水	36	2	
	栽培培	64	1	
	農業普及	41	2	
	小計	217	6	
スハンブリ試験・訓練センター 短期専門家	栽培培	103	2	
	施工管理	9	1	
	工事設計	3	1	
	工事設計・施工管理	8	1	
	ライスミル据付	2	1	チャオピア
	ポンプ据付	3	1	チャオピア
	野そ防除	2	2	チャオピア
	農業機械整備	2	1	メクロン
	病虫害防除	2	1	チャオピア
	水管理	3	1	メクロン
	小計	34	10	
	合 計	985	37	

2-2 延長3ヶ年の派遣専門家

	57年度(1982年度)				58年度(1983年度)				59年度(1984年度)			
	4~6 I	7~9 II	10~12 III	1~3 IV	I	II	III	IV	I	II	III	IV
長期専門家												
(プロジェクトセンター) リーダー	54. 9. 16					中島淳一郎						
業務調整	54. 8. 20	福島守一 0.89				高間英俊 (農業経済兼務)						
農業経済	55. 7. 30	→8.19	331									
かんがい排水	55. 8. 15	8.14			水田政之							
かんがい排水	55. 11. 01	辻 誠	10.30	12.03		福田 守						
(チャオピア)												
農業機械	56. 12. 11				沼田正道							
栽培	56. 1. 31	石坂昇助		2.24	柴田寿夫							
普及	55. 6. 17				3.29			井口尚樹				
(メクロン)												
かんがい排水	56. 1. 08	松谷要寿	1.07	3.20	久本和博							
栽培	54. 12. 15				三沢和人							
普及	56. 12. 11	堤 禎						11.16				富高元徳
栽培	53. 8. 31				菅原哲二郎			→12.10				

参 考 資 料 3.

関 連 報 告 書 類

番 号	報 告 書 名	発 行 時 期	J I C A 図 書 資 料 室 整 理 番 号
1	Feasibility Report on the Greater Mae Klong Multi- purpose Project, Thailand Second Stage Development for Irrigation, Flood Control and Hydropower	43.	
2	Study of the Development Priorities of the Greater Mae Klong Irrigation Project in Thailand (Interim Report) June 1974	49. 6	
3	Greater Mae Klong Irrigation Project Volume I Main Report	49.	
4	タイメクロン川流域洪水予警報事前調査報告書	50. 3	7.1 - 3 9 4 5
5	Report on Preliminary Survey For Mae-Klong River Basin Flood Forecasting Project, Thailand	50.	7.1 - 4 6 6 2
6	The Conflict Between Rice and Sugar Cane Farmers over Irrigation Water in the Mae Klong Irrigation Project	"	
7	タイかんがい農業開発予備調査報告 (第1部 総括編)	51. 8	4.1 3 - 4 2 3 5
8	同 上 (第2部 部門編)	"	4.1 3 - 5 2 0 8
9	Summary Report of the Preliminary Survey Mission on Irrigated Agriculture Project in Thailand	51.	4.1 3 - 4 2 3 6
10	Preliminary Survey Report to the Master Plan Study for Irrigated Agricultural Development Project in the Greater Mae Klong River Basin	"	
11	タイ国メクロン流域マスタープラン実施二次および三次調査に 関するプロポーザル	"	
12	タイ国農地改革法ほ場整備法	52. 5	4.1 1 - 5 8 8 6
13	タイ国のかんがいは場整備事業 (部内参考資料)	52. 7	4.1 - - 6 0 7 0
14	タイかんがい農業開発技術協力計画実施設計調査報告書	"	

番号	報告書名	発行時期	JICA 図書資料室 整理番号
15	タイかんがい農業開発メクロン地区実施調査現地報告書	52.	
16	Design Report : the Technical Cooperation Project on the Irrigated Agriculture Development in Thailand	"	
17	Preliminary Survey Report to the Master Plan Study for Irrigated Agricultural Development in the Greter Mae Klong River Basin	"	
18	タイ国メクロン川流域マスタープラン事前調査中間報告	"	
19	同上 事前調査報告書	52. 12	4196- 1356
20	タイ国メクロン川流域マスタープラン実施調査(2)に関する中間報告書 Vol. III	53.	
21	同上 Vol. II	"	
22	タイ国メクロン川流域マスタープラン事前調査(第2次)現地業務報告書 53. 10. 1 ~ 10. 31 第4報	"	
23	同上 53. 11. 1 ~ 11. 30 第5報	"	
24	タイメクロン川流域マスタープラン実施調査中間報告書	"	
25	同上 第2次報告書	"	
26	同上 (2)に関する中間報告書(草案) Volume I	"	
27	Irrigated Agricultural Development Project in the Kingdom of Thailand - Interim Report (2) (Wet Season) on Master Plan Study for the Great Mae Klong River Development Project October 1978	53. 10	
28	同上 - Interim Report (Jun 1978 ~ March 1979) on Master Plan Study for the Greater Mae Klong River Basin Development Project	54.	



番号	報告書名	発行時期	JICA 図書資料室 整理番号
29	タイ国かんがい農業開発計画メクロン川流域カンパンセンかんがい農業開発計画実施調査現地中間報告書	54.	
30	同上 (部内限)	"	
31	タイ国メクロン川流域カンパンセンかんがい農業開発計画実施調査報告書(草案)	"	
32	同上 附随書(草案)	"	
33	Briefing on Feasibility Study of Kampaengsaen Irrigated Agricultural Development Project in the Kingdom of Thailand	"	
34	Feasibility Report on Kampaen Saen Irrigated Agricultural Development Project in the Kingdom of Thailand	"	
35	Irrigated Agricultural Development Project in the Kingdom of Thailand : Investigation Notes on the Feasibility Study for the Kampaeng Saen Irrigated Agricultural Development Project	"	
36	Appendices on Kampaeng Saen Irrigated Agricultural Development Project in the Kingdom of Thailand	"	
37	タイ国メクロン川流域マスタープラン実施調査(第2次)現地調査業務報告書 53.12.1~12.25 第6報	"	
38	タイ国カンパンセン地区かんがい農業開発計画実施調査に関するプロポーザル	"	
39	Irrigated Agricultural Development Project in the Kingdom of Thailand : Investigation Notes (Second Survey) on the Feasibility Study For the Kampaen Saen Irrigated Agricultural Development Project	"	
40	タイ国メクロン川流域カンパンセンかんがい農業開発計画実施調査報告書	"	
41	タイ国かんがい農業開発計画メクロン川流域カンパンセンかんがい農業開発計画実施調査現地中間報告書 — 要約, 54年3月	54. 3	

番号	報 告 書 名	発行時期	JICA 図書資料室 整理番号
42	タイ国メクロン川流域マスタープラン実施二次調査報告書（昭和53年度）第2分冊	54.	
43	同 上 実施三次調査，作業監理委員会タイ・メクロン川流域マスタープラン報告書	〃	
44	Irrigated Agricultural Development Project in the Kingdom of Thailand - Interim Report (3)	54. 10	
45	タイ国メクロン川流域マスタープラン実施三次調査報告書（現地）	〃	
46	メクロン川流域マスタープラン第2次実施調査（乾季）中間報告書	54. 2	
47	Irrigated Agricultural Development Project in the Kingdom of Thailand - Investigation Notes (Dry Season) on Master Plan Study of the Greater Mas Klong River Basin Development Project	〃	
48	タイ国かんがい農業開発メクロン川流域カンパンセンかんがい農業開発計画実施二次調査報告書	54. 7	
49	Feasibility Report on the Kampaeng Saen Irrigated Agricultural Development Project in the Mae Klong River Basin in the Kingdom of Thailand - Main Report	54. 10	
50	同 上 - Appendix	〃	
51	タイ国メクロン川流域マスタープラン報告書	54. 12	
52	タイ国メクロン川流域マスタープラン実施調査報告書	55. 3	
53	Master Plan Study for the Greater Mae Klong River Basin Development Project : Summary	55.	
54	タイかんがい農業開発計画，マレーシア水管理訓練計画巡回指導チーム報告書	54. 3	4195- 6673
55	昭和54年度マレーシア水管理訓練計画及びタイかんがい農業開発計画巡回指導チーム報告書	55. 1	4196- 6962
56	タイかんがい農業開発計画，マレーシア水管理訓練計画巡回指導チーム報告書	56. 1	4195- 9992

番号	報 告 書 名	発行時期	JICA 図書資料室 整理番号
57	タイかんがい農業開発計画エバリュエーションチーム報告書	57. 4	4133- 14943
58	タイかんがい農業開発計画の現況 (エバリュエーションチームの報告書付属)	"	4133- 14944
59	タイかんがい農業開発計画の概要	56. 1	4198- 9422
60	同 上 打合せチーム報告書	57. 8	
61	タイかんがい農業開発計画帰国総合報告書 I	56. 1	
62	" II	58. 2	
63	" III	59. 1	
64	タイかんがい農業開発計画巡回指導調査報告書	58. 11	
65	東南アジアの野そとその被害・防除	59. 2	
66	タイかんがい農業開発計画第2次エバリュエーション報告書 (本報告書)	60. 1	
67	タイかんがい農業開発計画帰国総合報告書 IV (別冊)	60. 1	
	" V }	60. 6	
	" VI }		
	" VII }		

参 考 資 料 4

カウンターパート研修実績

受入年度	研 修 員 氏 名	所 属	研 修 科 目	研 修 期 間	備 考
52 (1977) 4名	MR. JOHN BOONLUE MR. CHANLONG ATTANATHO MR. CHALERMITHEP RATTANAPRAYOON MR. SUTIN SUSILA	Project Coordinator ALRO, Chao Phya P/P RID, Mae Klong P/P DTAC	農業事情視察 " " "	11.20 ~ 11.29 " " "	
53 (1978) 3名	MR. PAITON PALAYASOOT MR. PETIPONG PUNGBUN MR. PREECHA DONSAKUL	Project Coordinator ALRO COLC	農業事情視察 かんがい事情視察 農地水資源コース	3.18 ~ 4.01 " 6.22 ~ 8.21	集団研修コース
54 (1978) 2名	MR. CHULANOPE SNIDVONG MR. SAWAD WATTANAYAGORN	MOAC 次官補	農業事情視察 "	10.22 ~ 10.29 "	高級研修員 準高級研修員
55 (1980) 4名	MR. SUTIN MULPHRUK MR. PORNAKONG SIRIYOTHIN MR. PILANDH MALAKUL MR. PAITON PALAYASOOT	COLC ALRO, Chao Phya P/P Project Director Project Coordinator	農業視察 " かんがい "	7.24 ~ 8.10 " 11.16 ~ 11.30 "	
56 (1981) 5名	MR. SARAVUD ISARABHAKDI MR. RAIBOON YONGPRADIT MR. ROONGROENG CHULAJATA DR. WINIT CHANGSRI MR. OPART CHANTASUK	ALRO, Chao Phya P/P RID, Mae Klong P/P " " " DA DA, スハンブリセンター	かんがい農業開発 " " " 播栽培コース	11.05 ~ 12.01 " 10.29 ~ 11.12 " 3.04 ~ 12.14	準高級研修員 "
57 (1982) 4名	MR. WATCHARIN PANPINYA DR. SAMROENG SRICHANGAM MR. JAKRI RAMANA MR. PAIRAT DUANGPIBOON	RID, Mae Klong P/P MOAC, Inspector General Project Director ALRO, Chao Phya P/P DA, スハンブリセンター	農地水資源コース かんがい農業開発 協力 播栽培コース "	7.08 ~ 9.11 2.20 ~ 3.05 2.24 ~ 12.14 "	集団研修コース 高級研修員 集団研修コース "
58 (1983) 3名	MR. PINIT SUVANAJATA MR. SUPORN SUWANNATTANA MR. VICHEN SASIPRAPA	ALRO 局長 ALRO 土木技師 DA スハンブリセンター 副所長	農業事情視察 農地水資源コース 農業研究事情視察	5.31 ~ 6.11 7.07 ~ 9.10 8.14 ~ 8.30	高級研修員 集団研修コース
59 (1984) 4名	MR. SUPACHAI KAEWLUMYAI MR. PRATAN RIJANA MR. SOMYOT DR. DAMKERNG CHANPANJA	RID, メクロン P/P ALRO, チャオピヤ P/P DA, スハンブリセンター 所長 兼 Director of Farming System Research Institute	農業普及コース 農業協同組合コース 農業機械整備コース 農業視察	4.12 ~ 7.16 5.10 ~ 7.8 6.14 ~ 12.22 9.25 ~ 10.11	集団研修コース " " 準高級研修員

参 考 資 料 5

タイ側プロジェクト関係者 (カウンターパート)

Name	Position	Assigned date	Speciality	Original Position
Mr. Paitoon Palayasoot	Project Director	Nov. 10, 1983	Irrigation & Drainage	Inspector General MOAC
Mr. Prateep Soampong	Project Coordinator	Nov. 10, 1983	"	Chief Technical and Planning Section CLCO
(Chaophya P/P) Mr. Pinit Savanajata	Project Director	-	-	Secretary General ALRO
Dr. Tiravee Supanit	Manager	Nov. 10, 1983	Agro-Economy	ALRO
Mr. Krisadawut Wongpaiboonwatana	Counterpart	Oct. 1, 1980	Animal husbandry	"
Mr. Somyot Punyaban	"	Dec. 1, 1983	Agro-Machinery	"
Mr. Prathan Rijana	"	Dec. 1, 1983	Agronomy	"
Mr. Jakri Ramana	"	July 1, 1980	"	"
Mr. Chanchai Atiwanawat	"	Dec. 1, 1983	Irrigation & Drainage	"
(Maeklong P/P) Mr. Roongrueng Chulachart	Manager	-	Irrigation & Drainage	Manager, Greater Maeklong Project
Mr. Surasak Srikirind	Assist. Manager	Nov. 10, 1983	"	Chief engineer Region 10, RID
Mr. Osot Charnvoj	Chief, Trial Farm	-	Agronomist	O&M Div. RID
Mr. Sirod Prakunhungsit	Counterpart	June, 1979	"	RID
Mr. Supachai Kaewlumyai	"	Dec., 1981	Plant Protection	"
Mr. Ban jerd Peungudom	"	Nov., 1982	Construction	" (water master)
(Suphanburi T/C) Mr. Dankhoeng Chandrapanya	Manager	Nov. 10, 1983	Agronomy	Director, Farming System Research Institute, DA
Mr. Vichien Saaiprapa	Assist. Manager	Dec. 1, 1977	Agronomy	Agricultural Technician, DA
Mr. Chantasuk	Counterpart	June 15, 1979	"	DA
Mr. Pairat Duangpiboon	"	June 2, 1980	"	"

参 考 資 料 6

延長3ヶ年供与機材

		計 (千円)	プロジェクト センター	チャオピア パイロット プロジェクト	メクロン パイロット プロジェクト	スハンブリ 試訓練センター
57年度 (1982)	本部購送	14,995	1,320	6,506	3,360	3,809
	現地調達	68,500	135 千パーツ	2,661 千パーツ	2,505 千パーツ	419 千パーツ
	計	83,495				
58年度 (1983)	本部購送	16,834	0	6,238	6,572	4,024
	現地調達	42,000	0	1,384 千パーツ	2,100 千パーツ	470 千パーツ
	計	58,834				
59年度 (1984)	※ 本部購送	9,800				
	現地調達	5,600				
	計					

※ 59年度供与機材は、ほとんど過去に供与した機材のスペアパーツ等が中心である。

参 考 資 料 7

7. 調査団派遣実績

番号	団 名	派 遣 期 間	団員数	主 な 業 務 内 容
1	事前(予備) 調査	1976(S.51) 5.10 ~ 6.3	5	①協力要請の背景・事実関係の確認。 ②協力候補地を訪問し、予備的考察と協力の方向付け。 ③先方実施員任者との協力の可能性について具体的検討
2	実施設計 (長期調査)	1976.12.22 ~ 1977.3.31	3	農業経済、かんがい排水、栽培の長期調査員による現地事情の調査
3	実施設計	1977(S.52) 2.13 ~ 4.13	15	①計画のフレームワーク(プロジェクトの組織機構、パイロット地区の規模及び位置、タイ側の実施体制)及び日本の協力の範囲と方法について協議し、4月8日 討議議事録に署名。 ②チャオピア・パイロット地区の実施設計及び営農改善普及計画の作成
4	実施設計	1977(S.52) 9.20 ~ 10.14	6	メクロン・パイロット地区(No.1, No.2)の農業基盤整備事業の実施設計及び営農改善計画と営農組織改善計画の作成
5	計画打合せ	1978(S.53) 3.13 ~ 3.25	4	計画の策定(印刷報告書なし)
6	巡回指導 (1次)	1979(S.54) 2.1 ~ 2.7	4	①事業実施状況の把握 ②技術上・事業運営上の問題点について助言・指導
7	巡回指導 (2次)	1979(S.54) 10.25 ~ 11.4	5	チャオピア、メイクロンの両パイロット地区の基盤整備事業及びスハンブリ訓練センターの研修に関する助言・指導
8	巡回指導 (3次)	1980(S.55) 10.13 ~ 10.23	4	①実施状況の把握 ②問題点解決への助言 ③今後の運営計画の協議

	団 名	派 遣 期 間	団員数	主 な 業 務 内 容
9	エバリュ ーション	1981 (S.56) 11. 7 ~ 11. 22	6	①プロジェクト活動の評価・分析 ②協力期間満了後のプロジェクトのあり方についての検討 ③評価結果から協力期間を3年間延長する旨、両国政府へ勧告
10	計画打合せ	1982 6. 15 ~ 6. 29	4	延長3ヶ年実施計画の策定
11	巡回指導 (4次)	1983 9. 5 ~ 9. 17	3	①プロジェクトの現況把握 ②水管理分野の問題について協議し本分野の短期専門家の業務内容を含めて、その対応の検討と助言指導 ③協力期間終了以降のサブ・プロジェクトの将来構想についてタイ側からの情報の取得
12	第2次エバリュ ーション (今回)	1984 10. 8 ~ 11. 4	4	①プロジェクト活動の評価・分析 ②延長協力期間後のプロジェクト体制の維持運営方針検討 ③チャオピアサブプロジェクトファロアップ協力の検討

注) 6・7・8の巡回指導(1次～3次)は、マレーシア水管理訓練計画と合同で実施した。これらの派遣期間はタイ国滞在期間を示す。





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