

Technical Report No. CP-4

**REPORT ON FARMERS' SURVEY
CHAO PHYA PILOT PROJECT**

NAOKI IGUCHI

MARCH 1985

THAI IRRIGATED AGRICULTURE DEVELOPMENT PROJECT

JAPAN INTERNATIONAL COOPERATION AGENCY

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PREFACE

The Chao Phya Pilot Project hereinafter referred to as "the Project" was started on April 8, 1977 in ALRO (Agricultural Land Reform Office) as a sub project of IADP (Irrigated Agriculture Development Project) by the Record of Discussions signed by both Thai and Japanese Governments.

The Project covering about 430 ha. (2,637.5 rai) was set up for agriculture and rural development in Tambol Phraya Banlue, Amphoe Lad Bua Luang, Changwat Ayutthaya.

Besides being a sub project of IADP, the Project is a core of CPIADP (Chao Phya Irrigated Agriculture Development Project) covering 12,620 ha. (78,875 rai) in the west bank tract of the Lower Greater Chao Phya Basin which is partly financed by the loan of OECF (Overseas Economic Cooperation Fund) of Japan.

The activities of the Project, to play an important role as a pilot scheme for CPIADP, are to develop the necessary agricultural infrastructure in flood area to promote the rice double cropping, demonstration and training and to foster and strengthen farmer's organization for water management and cooperative activities.

The first rice cultivation in farmer's field in pilot area was started in February 1981 and so far eight harvests have been received.

During this period two times of farmer's survey were made in 1981 and 1984.

This is the report of those farmer's survey on account to know the present farming condition and farmer's economic situation as the result of project activities.

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Summary

1. Decreasing of residents in pilot project area

Between two surveys, the average family member and labor force became to less than before from 5.44 to 4.9 and from 3.6 to 3.21 respectively.

Main part of the residents drifting is observed in age group of 15 - 30 years old.

2. Change of working substances on farming between two surveys

(1) Extending of contract works on harvesting

Contract works on rice harvesting was accelerated in pilot area. It has shown by the percentage increasing of number of employer and percentage decreasing of farmers who practiced labor exchange from 68.2 to 94.4 and from 24.8 to 7 respectively.

(2) Extending of labor exchange on collecting and threshing

Though the percentage of farmer's numbers who practiced labor exchange on harvesting work was decreased as above the percentage was increased on collecting and threshing works from 51.9 to 69.9.

3. Yield and income increasing

The average yield of farmer's field by crop cutting between two surveys have been increased from 3.15 tons per ha. (504^{kg} /rai) to 4.45 tons per ha. (712^{kg} /rai) in wet season and from 3.25 tons per ha. (520^{kg} /rai) to 5.22 tons per ha. (835^{kg} /rai) in dry season.

Owing to the yield increasing, during these two years the farmer's gross income had increased by 267%.

4. Decreasing the farmers debts

The decreasing of amount and number of cases of farmer's debt in pilot area have been cleared by this survey.

The amount decreasing per farm family from 22,996 Baht to 14,504 Baht and decreasing of total numbers of cases from each source from 262 cases to 157 cases can be seen in relevant paragraph. The amount decreasing is observed in the reply of 96 farmers (67% of total farmers) and also reported 36 farmers (25%) have no debt.

5. Increasing of the number of power tillers

The percentage of the power tiller holders in pilot area was increased from 60.5 to 72.0.

The total number have reached to 117 and out of them 28 numbers (24% of total numbers) had procured in the period of second survey.

6. Changing of farmer's life

(1) Increasing of the number of appliances

Due to the improvement of farmer's economic situation and starting of electricity supply, the percentage of holding family of electric appliances such as Television, Casset and Stereo, Rice cooker and Fan were increased.

More over 10 percent of farmers as the holder of Cooking gas range also can be seen in Table XI-2 on page 40.

(2) House repairment

The farmer's houses in pilot area had been repaired by 79 farmers (55%) in the second survey period.

The average amount for this payment per family was 3,554 Baht and it is equal to 12.05% of total living expenditure.

It was not seen this kind of expenditure in the first survey in 1982.

(3) Farmer's economic situation

The number of farmers those who having Bank deposit were increased 0 to 9 (6.3%). The total amount of deposit is 107,900 Baht.

It may say the farmer's economic condition has generally improved by their reply that much improved 52 (36.4%) farmers and improved 85 (59.4%) farmers.

(4) The farmer's idea for their future farming

About a half of contacted farmers in the first survey have answered that they are holding in mind to increase their income by changing over from rice to vegetable or earning daily wages. But in the survey in 1984, they have replied to increase their income by yield increasing of rice or the area expansion of rice cultivation that 67 farmers (46.9%) and 61 farmers (42.7%) respectively.

7. Farmer's evaluation for pilot project

The project is much appreciated by farmers who have involved in this project. The related figures of farmer's recognition can be seen in paragraph XII.

I. Period and method of survey

1. Period of survey

Two times of farmer's survey were carried out in following period.

1st survey July - August 1982

Subjected cultivation period

Wet season in 1981

Dry season in 1982

2nd survey July - August 1984

Subjected cultivation period

Wet season in 1983

Dry season in 1984

2. Method of survey

There are two part of survey as main survey and supplementary survey by interview.

The interview was made on questionnaire by counterpart, secretary and staffs of Research and Planning Division of ALRO.

The first survey in 1982 was made on the purpose to know the general condition of existing farmers at initial stage of the Project. But we could contact to 129 farmers out of 151 cultivation farmers of those days because of the limited time for survey owing to the feverish activities to consider the counterplans to avoid the damage of Ragged Stunt Virus and Rats.

The second survey in 1984, it was concentrated upon to know the result of project activities. Due to this extending of survey purpose the

questionnaire was partly changed and contacted to all existing cultivation farmers in the Project area.

II. Changing of family size and farming force

The average family members and farming forces per farm family have decreased as following Table II-1

Table II-1 Changing the family size and farming forces per farm family in 129 families

	1982	1984
<u>Average family size</u>	<u>5.44</u>	<u>4.90</u>
- Adult	<u>3.89</u>	<u>3.48</u>
Male	1.99	1.77
Female	1.90	1.71
- Children	<u>1.55</u>	<u>1.42</u>
<u>Average number of labor force</u>	<u>3.60</u>	<u>3.21</u>
- Farming	3.17	2.82
- Out of farming	0.13	0.35
- Part time farming	0.30	0.04

The average number of family members is derived from the reply of 129 farmers those who had interviewed through both survey in 1982 and 1984.

The number of farm families that family size had changed and their changed number of head are as follows.

<u>Change</u>	<u>Number of family</u>	<u>Number of head</u>
Increase	26	+ 32
Decrease	39	- 91
Actual total number of decreasing		- 59

The distinctive marks on family members decreasing is the moving out of the members of age group between 15-30 years old.

On the other hand it is similarly characterized by 16 new borns in the case of family members increasing.

It has not cleared yet the reason of drift of the person in qualified age group for farming. But it is conjecturable the reason of this residents decreasing as follows.

- They were moving out just after the first survey due to their gainless farming of those days owing to the damage of Virus disease and rats.
- The farming environment was improved by spreading of direct sowing method, new water supply system and favorable activities of cooperatives for farmers. Owing to this favorable change of farming condition, it became to be managed their farming with less number of labors than before except harvesting and threshing.

The details of residents increasing and decreasing by age groups are as following Table II-2. and Table II-3.

Table II-2 Details of residents increasing in 26 farm families by age groups

Age group	1982	1984	Number of increasing
- 14	40	58	* + 18
15 - 20	17	22	+ 5
21 - 30	29	27	- 2
31 - 40	13	20	+ 7
41 - 50	11	11	-
51 - 60	7	11	+ 4
61 -	8	8	-
Total	125	157	+ 32

* Including 16 new borns

Table II-3 Details of resident decreasing in 39 farm families by age group

Age group	1982	1984	Number of decreasing
- 14	53	42	- 11
15 - 20	54	42	- 12
21 - 30	81	32	- 49
31 - 40	15	11	- 4
41 - 50	22	20	- 2
51 - 60	34	30	- 4
61 -	14	5	* - 9
Total	273	182	- 91

* Including 6 deaths

III. Land holding and farming

The total farming area by the survey in 1984 was 3,063.61 rai and is consisted of 2,312.11 rai of pilot area and 751.5 rai of out side area as follows.

Table III-1 The land tenure

(1) Pilot area	rai	%
- Tenant land from ALRO	1,614.80	69.84
- Tenant land from owner	271.26	11.73
- Own land	426.05	18.43
Sub total	2,312.11	100.00

(2) Out side area		
- Tenant land from owner	751.50	24.53% of
		total farming area
Total farming area (1)+(2)	3,063.61	(369.94 ha.)

The type of farming land holding by farmer's number and their percentage are as in next Table.

Table III-2 Type of land holding

	No. of farmers	%	
- a. Tenant farmer from ALRO	63	44.05	} Tenant farmer
- b. Tenant farmer from Land owner	4	2.80	
- c. a + b	36	25.17	
- d. Owner operator	7	4.90	
- e. a + d	17	11.89	} Part tenant farmer
- f. a + b + d	12	8.39	
- g. b + d	4	2.80	
Total	143	100.00%	

By the second survey, it is observed the increasing of part tenant farmer from 17.1% to 23.1%. It is thinkable to the some of small size owner operator have tenanted some farming land from other land owner and some farmers have newly received the farming land as the own land according to their land holding right. The changes are as follows.

	1982	1984
Owner operator	6.20%	4.90%
Part tenant farmer	17.05	23.08
Tenant farmer	76.74	72.02

The distribution of farming size by percentage is as seen in following Table III-3. It is observed no big change in it.

Table III-3 The farming size distribution

Farming size	1982		1984	
	Number of farmers	%	Number of farmers	%
0 - 5	-	0	3	2.10
5.1 - 10	28	21.71	34	23.78
10.1 - 15	8	6.20	11	7.69
15.1 - 20	36	27.91	32	22.38
20.1 - 25	12	9.30	13	9.09
25.1 - 30	14	10.85	19	13.29
30.1 - 35	4	3.10	8	5.59
35.1 - 40	14	10.85	8	5.59
40.1 - 45	4	3.10	6	4.20
45.1 - 50	3	2.33	3	2.10
50.1 -	6	4.65	6	4.20
	129	100	143	100

The average farming area per farm family by the second survey was 21.42 rai (3.43 ha.) and it is smaller than the average of 129 farmers (24.64 rai = 3.94 ha.) in the first survey in 1982 but actual total cultivated area per farm family in 1984 was 40.70.

The farming land of 3,063.61 rai had mainly using for rice cultivation as follows.

Kind of crop	area	%
Rice	2,891.61	94.39
Vegetable	163.0	5.32
Fruits	9.0	0.29
Total	3,063.61	100%

IV. The employment of farming labor and labor exchange

1. Employment of farming labor

During the two years between the first survey and second survey the percentage of farmers who employed farming labor was increased from 78.3% to 97.2%. It may be caused by shortened harvesting period and decreasing the number of labor force as shown in Table II-1. As is seen in next Table IV-1, the only percentage of others has been decreased. The percentage decreasing might be affected by decreasing of vegetable cultivation area..

Table IV-1 Changing of the labor employment between two surveys

Kind of works	1981 - 1982				1983 - 1984			
	No. of Employer	% in 129 farmers	Total days of employ	Average days per employer	No. of Employer	% in 143 farmers	Total days of employ	Average days per employer
Transplanting	7	5.43	197	28.14	15	10.49	534	35.60
Harvesting	88	68.22	3,999	45.44	135	94.41	9,663	71.58
Collecting & Threshing	44	34.11	702	15.95	74	51.75	1,967	26.58
Others	46	35.66	2,331	50.67	26	18.18	865	33.27
Total	101	78.29	7,229	71.57	139	97.20	13,029	93.73

2. Employed by other farmers

The percentage of farmers on transplanting and others are decreased from 9.03 to 4.90 and 15.50 to 10.49 respectively.

The change in the case of transplanting might be owing to the movement of qualified person as farming force from pilot area.

In the case of others, the percentage decreasing may be caused by the area decreasing of vegetable cultivation.

The employed days per employee also much decreased from 81.17 days to 53.43 days and 70.50 days to 30.80 days respectively.

On the other hand, the percentages have been increased very much in the other two cases.

These results might mainly be affected by shortened period for harvesting and threshing.

The average employed days per employee for above two works also increased but average working days per employee in total has decreased from 92.94 days to 65.49 days as is seen in next Table IV-2.

Table IV-2 Employed by others

Kind of works	1981 - 1982 (129 farmers)				1983 - 1984 (143 farmers)			
	No. of farmers	% in 129 farmers	Total employed days	Average employed days per employee	No. of farmers	% in 143 farmers	Total employed days	Average employed days per employee
Transplanting	12	9.30	974	81.17	7	4.90	374	53.43
Harvesting	17	13.18	910	53.53	51	35.66	2,862	56.12
Collecting & Threshing	4	3.10	52	13.00	23	16.08	1,083	47.09
Others	20	15.50	1,410	70.50	15	10.49	462	30.80
Total	36	27.91	3,346	92.94	73	51.05	4,781	65.49

3. Labor exchange

The percentage of farmers who practiced labor exchange has been increased from 59.69% in 1982 to 71.33% in 1984 as is shown in Table IV-3 on next page.

The noticeable changes of labor exchange between two surveys are observed on harvesting and collecting & threshing works.

The percentage of farmers who followed labor exchange on harvesting work has decreased very much. It seems that the figure is indicating some difficulty to get the labors between neighbor farmers in this limited period.

It is mainly harvested by imigrant labors as contract work. (see Table IV-1)

On the other hand the percentage for collecting & threshing work has increased from 51.94% to 69.93%.

The labor exchange was mainly made between relatives in the second survey period as follows.

Partners	No. of farmers	%
Neighbors	15	14.70
Relatives	46	45.10
Both above	41	40.20
Total	102	100.00

Table IV-3 Labor exchange

Kind of works	1981 - 1982 (129 farmers)				1983 - 1984 (143 farmers)			
	No. of farmers	% in 129 farmers	Total days of exchange	Average days per exchanged farmers	No. of farmers	% in 143 farmers	Total days of exchange	Average days per exchanged farmers
Transplanting	5	3.88	193	38.60	4	2.80	37	9.25
Harvesting	32	24.81	908	28.38	10	6.99	337	33.70
Collecting & Threshing	67	51.94	1,093	16.31	100	69.93	4,366	43.66
Others	5	3.88	20	4.00	3	2.10	31	10.33
Total	77	59.69	2,214	28.75	102	71.33	4,771	46.77

V. Diffusion of farm machinery

The number of farm machineries which have used by farmers in pilot area have been increased. It may say that is a result of improvement of farmers economic condition.

According to the farmer's answer, it has been thought to buy new power tiller by other 23 farmers (17.16%). see Table XI-6.

1. Tractor

It has been procured one tractor in the survey period but mainly used for carrying purpose.

2. Power tiller

The present percentage of diffusion of power tillers is 72.03% that 103 farmers having 117 power tillers. Out of them 28 power tillers were bought in the second survey period and their average used period was one year shortened than the one in 1982.

3. Sprayer

The farmer's holding percentage of sprayer (with engine) was increased from 20.93 % to 28.67%. The total number of them are reached to 44 and 12 of them have bought within one year.

4. Pump

The holding percentage of it has been decreased from 34.11% to 12.59% owing to the improvement of water management activities and water supply facilities.

5. Thresher

Threshing at farmer's field has been done by threshers of trial farm through cooperatives as machinery service.

But it is not enough to cover all of pilot area in limited working period. According to more requirement of it two threshers were bought by farmers in the second survey period to fit to farmer's demand on threshing.

The comparison of those figures between two surveys are as in Table V-1 on next page.

Table V-1 Changing of holding of Agricultural Machinery

Name of machinery	Tractor	Power tiller	Sprayer W/E	Pump	Thresher
No. of holding farmers	1.0	103.0	41.0	18.0	2.0
No. of machinery	1.0 (1)	117.0 (28)	44.0 (12)	18.0 (8)	2.0 (2)
% of holding farmers	0.75	72.03	28.67	12.59	1.40
Average used years	1.0	4.8	2.3	2.9	1.0
<hr/>					
No. of holding farmers	-	79.0	27.0	44.0	-
No. of machinery	-	86.0	27.0	49.0	-
% of holding farmers	-	61.24	20.93	34.11	-
Average used years	-	5.8	2.0	3.9	-

Note: The figures in brackets are number of farmers who procured new machines during two cultivation seasons of the survey period.

VI. Farmer's debt

The average amount of debt per family of 85 farmers in OECF project area who had interviewee by officials was 16,889.89 Baht at just before starting the field construction works by the project.

Since then, the amount of debt was continuously increased up to the time of first survey in July 1982 and the amount had reached to 22,996.05 Baht per farm family.

It is thinkable that the amount increasing was mainly owing to less farming income of those days by the influence of following happenings.

- The farmers in pilot area could not cultivate during the periods of field construction and its redistribution.
- Serious damages of Ragged Stunt Virus and Rats at initial period of the project.

The change of the amount of farmer's debt are as Table VI-1 on next page.

The decreasing of amount and number of cases of farmer's debt in pilot area have been resulted by about 40% less by the second survey which has been made in July 1984.

The remarkable change in this survey result is the amount decreasing of debt from Merchants which imposed a heavy interest.

The details of amount and number of cases for each resource are as in Table VI-2 and Table VI-3 on page 22.

VI-1 Amount Changing of Farmer's Debt per farm family

	Official Institutions (฿)	Private Sector (฿)	Total (฿)
1. Apr. 1979 - Mar. 1980	8,857.15	8,032.74	16,889.89
2. Dec. 1980	7,399.89	7,927.38	15,327.27
3. May 1982	10,528.62	10,318.30	20,846.92
4. July 1982	11,441.54	11,554.51	22,996.05
5. July 1984	8,540.10	5,963.63	14,503.73

Notes: 1. - 85 farm families selected in 9 villages from 3 sub-districts,

29 villages, 2,092 farmer families of 3 sub-district.

2. - 44 farm families in western part of the project area

3. - Collected from official information of pilot area

4. - } By farmer's survey in pilot area

5. - }

- Official institutions - Cooperatives, Farmer's group, BAAC

- Private sector - Commercial Bank, Middleman, Merchant,

Relative, Neighbour, Friend

Table VI-2 The amount of farmer's debt per family from each source

	1982		1984	
	Amount (฿)	%	Amount (฿)	%
Cooperatives	4,023.99	17.50	2,761.04	19.04
Farmer's group	335.66	1.46	184.64	1.27
BAAC	7,018.89	30.80	5,594.44	38.57
Commercial Bank	909.09	3.96	790.21	5.45
Middlemen	753.66	3.23	-	-
Merchants	6,600.15	28.70	2,341.95	16.15
Relatives	1,172.73	5.10	830.07	5.72
Neighbours & Friends	2,118.88	9.20	2,001.40	13.80
Total	22,996.05	100%	14,503.73	100%

Table VI-3 The number of cases of farmer's debt from each source

	1982		1984	
	No. of case	%	No. of case	%
Cooperatives	106	40.45	62	39.49
Farmer's group	10	3.82	5	3.18
BAAC	45	17.17	35	22.29
Commercial bank	6	2.29	4	2.55
Middleman	9	3.44	0	0
Merchant	46	17.56	20	12.74
Relatives	22	8.40	14	8.92
Neighbour & Friend	18	6.87	17	10.83
Total	262	100%	157	100%

VII. Increasing of rice yield in farmer's field

The rice cultivation in farmer's field in pilot area were gradually started in February 1981 in western half part area and in August the same year also started in another half part area.

The yield in farmer's field at the initial stage of the project was quite low owing to several problems as followings.

- Poor field leveling
- Deficiency of irrigation water and inexperienced water management activities
- Diminishing of soil fertility by field construction
- Lack of farming fund
- Damage of Virus disease and rats

Though it was, it has been attained the amount of Project Target of rice yield since the harvesting of dry cultivation in 1983 as in following table.

Table VII-1 The result of crop cutting survey in pilot area

Year	Dry season		Wet season	
	kg/rai	ton/ha	kg/rai	ton/ha
1981	326.4	2.04	504.0	3.15
1982	520.0	3.25	505.6	3.16
1983	715.2	4.47	712.0	4.45
1984	835.2	5.22	729.6	4.56

It is considered the reason of the yield increasing at farmer's field as follows.

- Introduced Virus resistance varieties
- Diffusion of improved rice cultivation techniques
- Timely supply of farming inputs by credit
- Success of rat control
- Improvement of water management activities

VIII. Farming expenditure

As is mentioned before, the farmer's income at initial period of the project was very low. The farming operation of half part of farmers of those days in the project were in the red.

Table VIII-1 is the comparison table for farming expenditure between two surveys.

There are four main changes as follows but no big change in total cost per rai is seen.

1. Decreasing of fertilizer cost

At the initial period of the project, the soil fertility of most farmer's field was very low and phosphorous deficient phenomenon on rice plants was observed in many fields.

Due to this soil condition, it was required rather heavy dose of fertilizers at beginning stage of Project but from the cultivation in third year the soil condition has gradually improved.

According to this improvement of field soil condition and fertilizer application techniques of farmers the application amount of fertilizers was reduced.

On the other hand, the fertilizers have timely been supplied with cheaper price through cooperatives since dry season cultivation in 1983.

Owing to above two reasons, the fertilizer cost was decreased.

2. Increasing of the costs for machinery and implements

As seen in Table V-1 on page 19 many new machineries had been

bought in the related period to second survey.

According to this new procurement the average cost of farm machinery per family has been boosted up from 671.21 Baht to 4,872.10 Baht.

3. Irrigation cost

In the initial period of project it was facing with many problems in water supply caused by poor field leveling, shortage of irrigation water, less experience on new irrigation method and problem on electricity supply.

According to this unstable condition of water supply the irrigation fee was not collected in the first survey period.

It has recently been collected 80 Baht per rai for single cultivation period but it is account for 6.75% of total production cost.

4. Decreasing of fuel cost

At the beginning stage many farmers had using own irrigation pump to irrigate their field that was caused by above mentioned problems.

The cost was 122.91 Baht per rai and is account for 11.77% of total cost per rai but the problems have gradually solved and cost also decreased to 59.43 Baht per rai.

Table VIII-1 The comparison of farming expenditure between two surveys

Year	Total farming expenditure per farm family in Baht		Farming expenditure per rai in Baht		Percentage of cost	
	1982	1984	1982	1984	1982	1984
Fertilizers	9,241.28	9,261.59	297.53	227.56	28.49	22.03
Wage (not included family labor)	4,831.07	7,370.21	155.54	181.09	14.90	17.53
Chemicals	4,509.60	6,145.27	145.19	150.99	13.91	14.61
Machinery, Repairing and Implements	671.21	4,872.10	21.61	119.71	2.07	11.59
Irrigation	-	2,838.11	-	69.73	-	6.75
Seed	1,436.84	2,732.29	45.26	67.13	4.43	6.50
Fuel, Lubricant	3,217.58	2,420.90	122.91	59.48	11.77	5.76
Interest	5,476.19	2,298.24	176.31	56.46	16.89	5.46
Machinery rental cost	523.03	2,174.52	16.84	53.48	1.61	5.17
Tenant charge & Tax	1,924.48	1,933.57	61.96	47.51	5.93	4.60
Total	32,431.28	42,046.80	1,044.15	1,033.09	100	100

Note: Total cultivation area per farm family were 31.06 rai in 1982 and 40.70 rai in 1984

IX. Farmer's income

The average farm family income has been increased to 89,273.92 B . It is equal to 218 % of the same result of the first survey. It was mainly brought by income increasing (about three times) on rice cultivation as is seen in Table IX-1.

1. Farming income

The yield increasing is seen in Table VII-1 on page 24 and more over the selling price of paddy was also higher that average price per ton in the first survey period was 2,555 Baht but it was increased to 2,800 Baht per ton in second survey period.

The higher selling price was brought by joint selling through cooperatives.

Though cultivation area of vegetable was decreased from 213.6 rai in 1982 to 163 rai in 1984, the income from it was increased by production increasing that owing to the technical improvement of farmers.

The income of fruit that mainly brought by banana was much decreased due to its area decreasing. (out side of polderdike)

The income increasing of livestock was mainly effected by appearance of two big duck farms.

2. Income of other than farming

Average income per farm family from out of farming has been decreased as seen in Table IX-1 on next page. In the first survey period, it was mainly brought by daily wages but it was mainly brought by salary in second survey period. Out of 6,774.60 Baht 1,308.60 Baht (19.3%) was earned by fish selling.

Table IX-1 Comparison of farmer's income between two surveys

Year	Amount			Percentage	
	1981 - 1982	1983 - 1984	1981 - 1982	1983 - 1984	
Rice	24,297.22 ₪	75,480.94 ₪	77.32 %	91.92 %	
Vegetable	2,250.24	3,163.53	7.16	3.84	
Fruit	3,968.99	349.65	12.63	0.42	
Livestock	907.09	3,150.20	2.89	3.82	
A... Farming income	31,423.53	82,504.32	100	100	
			A/C 76.81	92.41	
B... Other than farming	9,468.53	6,774.60	B/C 23.19	7.59	
C... Total income	40,912.07	89,278.92	100	100	

X. Rice farming in pilot area

Out of 143 farmers, who have contacted by second survey in 1984, 50 farmers were selected by the following terms to know actual rice cultivation.

- Terms of sample farmer
- Farming in rice only
 - Should not be cultivated out side area of polder dike
 - Should not be procured farm machineries in this survey period.

The 50 rice growers were selected from three groups of their farming size as follows.

Farming size	Number of farmers
- 10	19
11 - 20	20
21 -	11
<hr/>	
Total	50

The rate of selected farmer's number from each farming size group is not same to the actual distribution rate in this three farming size groups.

Because of the most farmers who belong to the group of more than 21 rai are cultivating both area of project and out side of project.

Those farmers who cultivating out side of project area spending more fuel cost to irrigate to their rice field and have partly procure fertilizers and chemicals from merchant with higher prices.

1. Working hours

It is very difficult to clearly get farmer's reply. Due to the difficulty it was asked them the working hours by unit field area and converted to the cost per rai.

Table X-1 Working hours on rice cultivation

X-1-1 Direct sowing

Kind of works	Working hours
- Field preparation and miscellaneous	3.1 hours
- Plowing	1.9
- Puddling, Planking and leveling	2.0
- Drainage	0.5
- Sowing	0.5
	} not included in transplanting
- Fertilizer application (3 times)	1.5
- Chemical application	3.5
- Weeding	1.8
- Harvesting	24.0
- Collecting	8.0
- Threshing	7.2
- Water management	0.8
Total	<u>54.8 = 6.9 days</u>

X-1-2 Transplanting

Kind of works	Working hours
- Soil preparation of nursery area and management	1.5 hour
- Uprooting and transplanting main field	24.0
nursery	1.2
- Other works	53.8
Total	80.5 ÷ 10.1 days

Notes: Actual working hours for one field of 5 rai was collected and converted to working hours for one rai.

The following working hours were estimated as follows.

(1) Water management	0.8 hour
- Interval	Once in 8 days
- Growing duration	110 days by direct sowing
- Irrigation period	80 days
- Irrigation times	13 11 times in growing period 2 times for field preparation
- Time estimation	0.5 hour in the field 0.5 hour between field and residence by walk
	1 hour x 13 times = 13 hours
	13 ÷ 17.3 rai = 0.8 hour

(2) Chemical application		<u>3.5 hours</u>
Saturn G 1 time + Furadan 1 time 2 times x 0.5 hour		= 1 hour
E.C. application 2.5 times x 1 hour		= 2.5 hours
(3) Additional working hours for transplanting field		<u>26.7 hours</u>
per rai		
a. Nursery		<u>1.5 hours</u>
- Area preparation, seed treatment and sowing		= 1 hour
- Field & Bed preparation	$20^h \times \frac{1}{5} \times \frac{1}{20}$	= 0.2 hour
- Repuddling after uprooting	$10^h \times \frac{1}{5} \times \frac{1}{20}$	= 0.1 hour
- Management		= 0.2 hour
b. Transplanting after nursery		<u>1.2 hour</u>
	$24^h \times \frac{1}{20}$	= 1.2 hour
c. Transplanting for main field		<u>24 hours</u>
	$8^h \times 3$	= 24 hours

As are seen in Table X-1 the working hours per rai for rice cultivation are 7 days for direct sowing cultivation and 10 days for transplanting cultivation.

2. Rice production cost

The production cost is the more area cultivated the cheaper cost is required.

The costs per rai are 1,146 ₭ , 1,073 ₭ and 1,039 ₭ for the farming size group of less than 10 rai, between 11 - 20 rai and more than 21 rai respectively.

It is showing that the smaller size of farming the more production cost required.

The labor cost that included family labor is account for 32.56% of total cost owing to contract work on rice harvesting and followed by the costs of fertilizer, chemical and irrigation respectively.

The production cost per ton of paddy amounts to 1,561 Baht.

3. Cost and return

The average of annual production of 50 rice cultivation farmers was 23.85 ton (4.31 t/h/crop) and it comes to 689 kg per rai.

The gross income per rai is 1,951 Baht and the distribution rate between the cost and net income is 55% and 45% respectively as shown in Table X-3 on page 36.

4. The income of rice cultivation farmers

As is seen in Table X-4 on page 37, the total income per rice cultivation farmer is 36,658 Baht which consisted by 30,318 Baht of net income on rice farming and 6,340 Baht of the income of other than farming.

The bigger farming the more percentage of net income and more amount of surplus showing.

Table X-2 The detail of rice production cost by farming size groups

Farming area group	Average per family				Common average	
	- 10 rai	11 - 20 rai	21 - rai	Average/family	₪/rai	%
Fertilizer	4,704 ₪	7,625 ₪	12,934 ₪	7,883 ₪	222	20.65
Wages	3,763	6,401	10,975	6,405	185	17.21
Family labor	2,950	6,112	9,732	5,708	165	15.35
Chemicals	3,021	5,921	8,004	5,277	152	14.14
Irrigation	1,535	2,860	4,735	2,769	80	7.44
Machinery rental cost	1,659	2,395	2,386	2,113	61	5.67
Seed	1,133	1,931	3,131	1,904	55	5.12
Fuel & Lubricant	1,133	1,469	2,944	1,666	43	4.47
Tenant charge & Tax	682	1,631	2,415	1,519	44	4.09
Interest	749	1,374	2,466	1,377	40	3.72
Machinery, Repairing and Implement	460	640	1,671	799	23	2.14
Total in Daht	21,986 ₪	32,359 ₪	61,459 ₪	37,220 ₪	1,075 ₪	100%
Total cultivation area/family	19.18 rai	35.75 rai	59.18 rai	34.61 rai		
Cost per rai	1,146 ₪	1,073 ₪	1,039 ₪	1,075 ₪	1,075 ₪	(6,719 ₪/ha)

Note: Cost of family labor is based on Table X-1 and 50 ₪/day/head

Table X-3 The cost and return for each farming group

Farming size group	- 10		11 - 20		21 -		Average
1. Total area of rice double cropping per family	19.18		35.75		59.18		34.61rai
2. Average rice yield per rai in kg. (t/h)	687 (4.29 ^t /h)		712 (4.45 ^t /h)		665 (4.16 ^t /h)		689 (4.31 ^t /h)
3. Total yield per family in ton (%)	13.18 (100%)		25.46 (100%)		39.35 (100%)		23.85 (100%)
Total selling amount in ton (%)	12.51 (95%)		24.17 (95%)		36.84 (94%)		22.53 (94.47%)
Total holding amount in ton (%)	0.67 (5%)		1.29 (5%)		2.51 (6%)		1.32 (5.53%)
4. Cost and return per rai in Baht							
Gross income	1,966 (100%)		2,032 (100%)		1,853 (100%)		1,951 (100%)
Production cost (%)	1,146 (58.29%)		1,073 (52.81%)		1,039 (56.07%)		1,075 (55.10%)
Net income	820 (41.71%)		959 (47.19%)		814 (43.93%)		876 (44.90%)

Table X-4 The average income of selected 50 rice cultivation farmers

	- 10	11 - 20	21 -	Average
Annual income per family in Baht	21,170 (100%)	40,542 (100%)	56,214 (100%)	36,658 (100%)
Net income on rice farming	15,728 (74.29%)	34,284 (84.50%)	48,173 (85.70%)	30,313 (82.71%)
Other than farming	5,442 (25.71%)	6,258 (15.44%)	8,041 (14.30%)	6,340 (17.29%)
Living cost per family in Baht	20,351	28,741	30,322	25,901
Average amount of earned surplus per family in Baht	819	11,801	25,892	10,757
Percentage of surplus amount in annual income	3.87	29.11	46.06	29.34

XI. Living costs and farmer's living

1. Living cost

The farmer's living cost has been increased by 47 percent. The increasing is mainly brought by cost rising of food, house construction and repairing, procurement of apparatus and electricity. Especially the costs of house construction and repairing and procurement of apparatus are account for 12.05% and 14.73% of total living cost respectively.

The detail of it is as following Table XI-1.

Table XI-1 The detail of farmers living cost in 1984

Items	Amount (฿)	%	Per head (฿)
Food	15,225	51.61	3,192
Cloth & Footware	1,540	5.22	323
Doctor & Medicine	1,218	4.13	255
Education	760	2.58	159
Local customs & social expenses	1,296	4.39	272
Traffic expenses	698	2.37	146
House construction & repairing	3,554	12.05	745
Furniture	604	2.05	127
Apparatus	4,346	14.73	911
Electricity	258	0.87	54
Total	29,499	100	6,184

Notes: - Electricity supply have made to 79 hours (55.2%), the average charge of those families is 467 Baht.

- Cost of apparatus are mainly effected by electric appliances.

2. Change of the holding of furnitures and apparatus

The main changes are seen in electric appliances such as Television set, Casset & Stereo, Electric fan and Cooking gas range.

The holding percent for TV. has been increased from 15.1% to 45.5%.

Casset & Stereo and Rice cooker have recently spread in project area.

Gas range for cooking also procured by 14 families during the second survey period.

On the other hand, the holding percentage for Radio, Generator and Sewing machine are decreased.

It may say that the farmers living is effected very much by electricity supply.

It is sure that the quality of farmer's living will continuously be improved from now on if it is kept present yield level and cooperative's activities.

Table XI-2 Changing of holding percentage of furnitures and appliances

No. of sample farmer	1981 - 1982			1983 - 1984		
	73			143		
	Total number	No. of holding family	% of holding family	Total number	No. of holding family	% of holding family
Car	1	1	1.4	1	1	0.7
Refrigerator	1	1	1.4	2	2	1.4
TV colour	-	-	0	10	10	7.0
E/W	11	11	15.1	55	55	38.5
Radio	65	59	80.8	110	98	68.5
Casset & Stereo	-	-	0	17	17	11.9
Electric rice cooker	-	-	0	15	15	10.5
Electric fan	10	8	11.0	69	62	43.4
Electric iron	0	0	0	4	4	2.8
Generator	7	7	9.6	6	6	4.2
Battery	2	2	2.7	12	12	8.4
Sewing machine	20	18	24.7	32	30	21.0
Motor cycle	4	4	5.8	12	12	8.4
Bicycle	68	52	71.2	139	107	74.8
Cupboard						
Show case	88	55	75.3	210	114	79.7
Wardrobe						
Gas range	-	-	0	14	14	9.8
Others	-	-	-	4	4	2.8

Others: Table 2, Mattress 1, Electric pot 1

3. Money saving by farmers

The amount decreasing of farmer's debt and farmer's number who have no debt have mentioned in paragraph VI.

It has been reported that there are no farmers who have Bank saving by the first survey but sum of 107,900 Baht deposits in Bank by 9 farmers has been observed by the second survey. It is account for 6.29 percent of total number of farmers in the project area.

4. Farmer's idea for their future

The farmers in the project area have some ideas to improve their future farming and living as following Tables.

There are much difference in farmer's idea between two surveys that by the first survey, many farmers were wanting to change to other crops or to increase their income by daily wages or saraly but by the second survey the farmers have answered to increase their income by yield increasing or area expansion. It is very clear that the farmers in the project area are positively facing to their farming.

Table XI-3 How to increase the farming income

	No. of farm family	%
By: Yield increasing	67	46.85
Area expansion	61	42.66
Grow animals	6	4.19
Get more wage income	7	4.90
Indistinct	2	1.40
Total	143	100%

Table XI-4 How to save the farming cost

	No. of farm families	%
by: Fertilizer and chemical cost	44	30.77
Fertilizer cost	61	42.66
Chemical cost	11	7.69
Labour cost	13	9.09
Can not save	9	6.29
Indistinct	5	3.50
Total	143	100%

Table XI-5 How to save the living expenses

	No. of families	%
by the cost of: Food	72	50.35
Cloth	26	18.18
Local custom	21	14.69
Can not save	13	9.09
Indistinct	9	6.29
Others	2	1.40
Total	143	100%

Others: Doctor and medicine

Education

Table XI-6 How to use the extra money

	No. of farm family	%
to: Credit payment	74	51.75
Buy power tiller	24	16.78
Buy farming land	16	11.19
Repair the house or build new house	17	11.89
Saving	3	2.10
Others	9	6.29
Total	143	100%

Others: Buy: furniture 2, TV 1, animal 1, sowing machine 1,
 food 1,
 Donate to temple 1,
 Education 1,
 Indistinct 1,

XII. Farmer's evaluation for the project

According to the farmer's answer, the most farmers rest satisfied to the project activities as follows.

Project activities	No. of farmers	Percent
- Good	110	76.92
- Fair	33	23.08
- Bad	0	0
Total	143	100%

The kind of problems also changed as Table XII on next page:

Table XII Changing of farmer's problems between two surveys

	1982		1984	
	No. of famers	%	No. of farmers	%
No. of sample farmer	82	100	143	100
No problem	47	57.31	113	79.02
Field leveling and Shortage of water	25	30.49	24	16.78
Soil fertility	12	14.63	4	2.80
Diseases and insects	8	9.75	1	0.70
Paddy price	15	18.29	1	0.70
Shortage of fund and debt	12	14.63	-	-
Rat damage	10	12.20	-	-

The farmer's problems have been much decreased as seen in above Table.

The paddy price of those days had controled by middleman or milling agencies but now the farmers in the project area are protected from those agencies by joint selling through cooperatives.

The farming fund also arranged through the cooperatives or directly from BAAC. Owing to this project activities, they have no problem on this matter.

The rat damage of those days was very serious but it came to not so big problem by project daily efforts.

Due to those advantages for farmers the cooperatives is needed by all farmers.

