THE LAND SETTLEMENTS PROJECT IN THE NORTHEAST THAILAND : BASELINE SURVEY REPORT

Prepared by :

Department of Agricultural Economics
Khon Kaen University
Khon Kaen, Thailand.

Evaluative Studies Branch
International Statistcal Programs Center
U.S. Bureau of the Census
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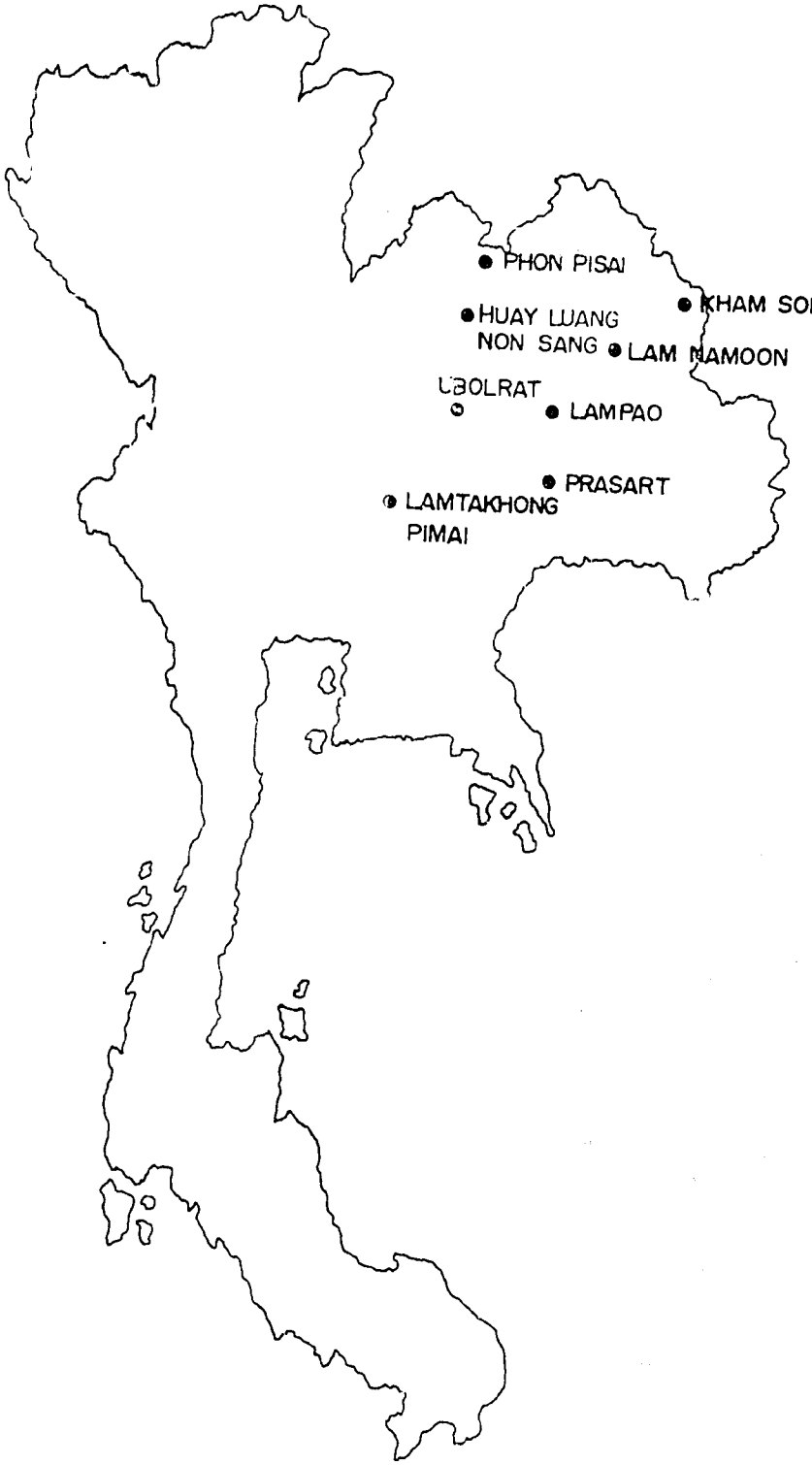

MAP OF THAILAND

THE LAND SETTLEMENTS PROJECT IN THE NORTHEAST : BASELINE SURVEY REPORT 1982.

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Data collection activities for the Land Settlements Project Evaluation Baseline Survey were designed, implemented, and supervised by the staff of the Department of Agricultural Economics, Khon Kaen University, with technical assistance of the U.S. Bureau of the Census. The sample design, weighting, and estimation procedures for the survey were developed by Karen U. O'Connor, U.S. Bureau of the Census. Data processing was performed by the staff of the Computer Services Center, Chulalongkorn University, Bangkok, under the general direction of Somchai Thayarnyong, Director.

Questions regarding the content of this report or the survey upon which it is based should be directed to Supachai Suetrong, Department of Agricultural Economics, Khon Kaen University or Michael J. Hartz, Chief, Evaluative Studies Branch, U.S. Bureau of the Census, Washington, D.C.

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EXECUTIVE SUMMARY

The Land Settlements Project, jointly sponsored by the United States Agency for International Development (USAID) and the Government of Thailand, as directed to improving land utilization and agricultural productivity in eight land settlements in rainfed agricultural areas of Northeast Thailand. The project features a "bottom up" development approach focussing on helping small farmers improve farm planning through appropriate crop deversification and cropping patterns and effective use of available agricultural inputs. The ultimate goal is to improve the quality of life among the rural poor.

This is the first of two reports to be prepared as part of the evaluation of the project. The evaluation is directed to monitoring project implementation and measuring the short-and long-term impacts of the project. Project impacts are to be measured via a qua i-experemental design study featuring the collection of sample survey data at two points in time (i.e. pre-and post-implementation) and the comparison of settlements that are and are not to receive project benefits during the evaluation period. The results of the Baseline Survey, conducted prior to project implementation, are presented in this report.

Overall, agricultural conditions in the study area are characterized by rather high levels of concentration in a few crops, low crop yields, heavy reliance on rainfall for agricultural purposes, modest use of agricultural inputs, and the infrequent application of productive agricultural methods, such as double cropping, dry

season cropping, intercropping, etc.

Differences were observed, however, in comparing agricultural practices of farm households in the study population. Project settlement households tend to be characterized by greater crop diversification , somewhat higher crop yields, and greater utilization of available agricultural inputs. In general, however, greater variability was observed within the Project Stratum than in comparing the project and control populations.

The survey results show that, overall the various study groups examined were quite similar at the time of the Baseline Survey with respect to most indicators of socio-economic status a living standards considered.

SUMMARY OF MAJOR SURVEY FINDINGS

The major findings of the Baseline Survey of the Land Settlement Project Evaluation may be summarized as follows:

(1) Overall, the various study groups examined appear to be quite similar with respect to the several measures of socio-economic status or living standards considered.

(2) Approximately 80 percent of persons aged 11 to 60 in the study population engaged in some form of economic activity in the 12 month period preceding the survey. Ninety three percent of economically active persons during this period were primarily engaged in farming activities.

(3) Households in the study population received an average of approximately 30,000 baht (U.S.$1,360) in gross income during the 12 month reference period. Allocated households in Unallocated villages (project stratum 2) reported somewhat higher levels of gross income during this period, averaging 46,000 baht, with little variation observed among the other study groups.

(4) Most households received income from multiple sources during the reference period. Ninety one percent of households received income from the sale of crops, while 74 percent received income from the sale of livestock and 41 percent from salaries and wages of household members.

(5) The average size of land holding among farm households was approximately 34 rai, with no significant differences observed among study groups.

(6) Nearly 73 percent of farm households own all of the land they held at the time of the survey, with another 10 percent owning most (but not all) of the land held.

(7) Ownership of livestock among farm households was nearly universal, with in excess of 93 percent owning some type of livestock. Livestock holdings appear to be somewhat more extensive in the Control as compared to the Project Stratum.

(8) Seventy seven percent of farm households in the study population devote at least some of their land to rice paddy, while a similar proportion (77 percent) devote land to field crops.

(9) In general, land use patterns in the Project and Control Strata appear to be quite similar. Considerable variability was observed, however, within the Project Stratum, with land use being significantly more concentrated in paddy (in terms of proportion of total rai devoted to paddy) in Unallocated than in Allocated villages.

(10) The major crops grown in the study population farms were glutinous rice, cassava, and non-glutinous rice with 63, 52, and 37 percent of farm households growing these crops respectively. All other crops were grown by fewer than 20 percent of farm households.

(11) Crop diversification would appear to be somewhat greater in the Project as compared to the Control Stratum. In the Control Stratum, less than 5 percent of farm

households grow each of the crops examined other than the three major crops, while in the Project Stratum six crops are grown by more than 10 percent of farm households.

(12) Crop yields were relatively low for all crops in the reference year.

(13) In general estimates of crop productivity tended to be somewhat higher in Project as compared to Control Stratum households and in Allocated as compared to Unallocated villages, although significant differences were observed for only two crops in each set of comparisons.

(14) Fertilizers, pesticides, and herbicides are used modestly by farm households in the study population. While the proportion of farm households using such inputs was relatively high for some crops, the rate of application was in general, quite low. The data suggest that Project Stratum households use each of the inputs in greater proportions and in greater volume than do Control Stratum households, although this conclusion was not verified statistically and should be regarded as tentative.

(15) The incidence of application of "western" agricultural technologies (i.e. intercropping, second cropping, dry season cropping, etc.) is relatively infrequent. Only tractor plowing, which is necessary for cultivation of many field crops was practiced by a substantial

proportion of farm households.

(16) The major impediment to the use of these technologies would seem to be the lack of water. Approximately 90 percent of farm households in the study population depend entirely on rain water for crop production.

(17) Glutinous rice and non-glutinous rice are grown by farm households both for a home consumption and for sale. All other crops are grown as cash crops, most notably kenaf, cassava, and jute. In excess of 95 percent of production in the previous 12 months of there crops was sold.

(18) Most farmers (84 percent) market their crop production through dealers. Only about 5 percent use farmers cooperatives to market crop production.

(19) Over one-half (55 percent) of farm households in the study population used agricultural credit during the 12 months period prior to the survey. The average amount borrowed per farm household using credit during this period was approximately 8,000 baht.

(20) The primary reasons for using credit were: (1) to pay for labor, (2) to buy fertilizer, insecticide, pesticide and other agricultural inputs, and (3) to rent farm implements.

(21) Farm households used three major sources of credit - merchants, farmers coops, and BAAC - in roughly equal proportions.

CHAPTER I

PROJECT BACKGROUND

Project Description[1]

Since 1940, the Department of Public Welfare (DPW) of the Government of Thailand (GOT) has created a total of 56 land settlements throughout the country. The land settlements were created primarily in an effort to provide land to the landless poor and later to resettle the rural population dislocated by various developmental projects, most notably the construction of dams which flooded the surrounding farmland. Specific objectives of the program included inceeasing the volume and efficiency of agricultural production, bringing uncultivated land into agricultural production, and providing employment and higher incomes for the rural poor.

As of the mid 1970's, however, little real progress appears to have been made in improving the lives of the occupants of the land settlements. The reasons for the slow progress include : (1) the time consuming procedures utilized in allocating land to the settlers, (2) large numbers of squatters, (3) inadquate water resources and physical infalstructure in many of the settlement areas, (4) resistance among the farmers to the adoption of new agricultural methods and efficient use of land, and (5) increasing population pressure on available land and other natural resources.

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1 The reader is referred to the project paper "Thailand-land Settlements" #493-0289, for a more detailed account of the project and evaluation plan.

The Land Settlements Project was designed by the U.S. Agency for International Development (USAID) with the primary purpose of improving land utilization and agricultural productivity, and thus income and living conditions, in rainfed agricultural areas comprising the land settlements in Northeast Thailand. The project is limited to eight such settlements, but will be replicated in other settlements should the underlying "bottom up" development approach prove successful. The following land settlements are included in the project:

1. Huay Luang settlement, Udon Thani
2. Non-sang settlement, Udon Thani
3. Uboltrat settlement, Khon Kaen
4. Lam Pao settlement, Kalasin
5. Lam Nam Oon settlement, Sakon Nakhorn
6. Lam Takhong, Nakhon Ratchasima
7. Prasart, Surin, and
8. Kham Soi, Nakhon Phanom

The eight settlements were selected on the basis of having the greatest number of persons per settlement who were deprived of basic government services.

The project seeks to address priority development constraints existing within the eight settlement areas. The project will concentrate on helping small farmers improve land use as an effective approach for improving incomes and the quality of life among the rural poor. Specifically, the project purposes include:

(1) Improvement of farm planning through appropriate crop deversification and cropping patterns and effective use of available agricultural inputs.

(2) Improvement and maintenance of soil fertility.

(3) Adoption of year-round cultivation of land.

(4) Provision of rural residents with adequate access to needed goods and services.

(5) Development of a replicable development and evaluation program.

In order to achieve these results, the following project outputs are to be developed or improved:

(1) Development of organized farmers groups.

(2) Improvement of primary and feeder roads.

(3) Development of water resources.

(4) Increase in the number and training of agricultural extension agents and development of extension - research linkages.

(5) Development of agricultural demonstration plots.

(6) Improvement in the access to and use of agricultural credit.

Finding for the project, which is jointly sponsored by the Government of Thailand and the U.S. Agency for International Development, was approved in 1979. Project implementation actually begin in October of 1981 and will continue throughout the course of the project. The project has a projected duration of five years.

Concommitant with the development of the project protocols was the development of an evaluation plan designed to provide the measurements required to draw conclusions as to the degree of success of the project and to provide guidance as to necessary

modifications to the program that would be needed in planning replications of the program. The evaluation plan is described below.

Evaluation Plan and Degree

The primary goals of the Land Settlements Project Evaluation are threefold :

(1) To observe and document actual project implementation.

(2) To examine immediate project effects and impacts, and

(3) To measure long-term project impacts on the target population in the eight land settlements.

Operationally, the project evaluation will require the collection, analysis, and integration of two types of data: (1) data pertaining to the provision and performance of the various project interventions, and (2) data which measure changes in project - relevant conditions in the study population. Data of the former type will derive largely (if not exclusively) from non-survey sources, while population impact measurements are to be derived from appropriately designed sample surveys. Discussion of the evaluation plan here is focussed on the population impact aspects of the project evaluation.

In order to measure the effects of the project intervention on conditions and behavior in the study population, two conditions must be met. First, data must be collected at two or more points in time in order for change to be observed. Second, provision must be made in the study design to measure project-attributable changes net of changes that would have occured irrespective of the project (i.e. changes due to factors other than the project).

Acordingly, the Land Settlement Project Evaluation is designed as a quasi-experimental study with two primary study groups: An experimental group consisting of land settlements in which the project interventions (outputs) are to be introduced and a control group consisting of land settlements which are not to receive project benefits during the evaluation period. The purpose of studying a control group is to enable the project impacts to be isolated analytically from changes attributable to other factors affecting the study population as a whole. The two settlements selected for the control group were selected to be as similar as possible to the project settlements with respect to key characteristics, although the two groups do not constitute a "matched" pair in the conventional sense. The two settlements selected to serve as a control group are Pimai and Phon Pisai..

Under the evaluation design, indicators of relevant variables are to be collected at two points in time: prior to project implementation and at a predetermined point in time following implementation (current plans are for follow-up data to be collected in 1983) Changes in the indecators are to computed for each group and compared. Simply stated, if the group differences in the relevant indicators are positive over time and are significantly greater in the experimental group than in the control group, the project can be judged a success.

In addition to measuring project impacts for the experimental group, the project evaluation will seek to measure the extent of differential impact on various subgroups within the project group.

Of particular interest is the comparison of settlement households whose land had been registered with the settlement officials prior to project implementation and households with unregistered land[2]. Accordingly, the following comparison groups will form the basis of the quasi-experimental design for the evaluation:

(1) Households in Control Settlements versus those in Project Settlements.

(2) Households located in Allocated villages (villages with 90 percent of more of households with registered land) versus households in Unallocated villages (less than 10 percent of households with registered land) with the Project Settlements[3].

(3) Allocated households (i.e. those with registered land) versus Unallocated households within Unallocated Project Settlement villages.

It was necessary to stratify at the village rather than at the household level for evaluation purposes due to the unavailability of lists of households by allocation status and the impracticality of listing the approximately 39,000 households in the 10 settlements prior to sample selection.

Specific Purposes of the Baseline Survey

As the first phase of data collection for the evaluation of the Land Settlements Project, the purposes of the Baseline Survey

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2 It is anticipated, however, that many of the latter group of households will register their land during the evaluation period.

3 There were no villages with between 11 and 89 percent of households with registered land prior to 1979.

are threefold: (1) to provide measurements on project-relevant characteristics and behavior in the study population prior to project implementation which can be compared with post-implentation measurements of the same variables as a means of evaluating the impact of the project, (2) To assess the extent to which the comparison groups to be studied differ prior to implementation so that observed differences can be taken into account in avaluating the impact of the project, and (3) To describe the study population with respect to socio-economic and demographic characteristics, economic activities, agricultural practices and productivity, and other relevant characteristics.

The design of the Baseline Survey is consistent with these objectives. The overriding concern at the design stage was the develop of a survey methodology which would provide valid and reliable estimates of parameters in the study population prior to project implementation, along with estimates of the precision of the survey estimates, which could be replicated at one or more points in time after implementation had taken place. As such, the design reflects the survey priority in measuring change over time rather than complex cross-sectional relationships among variables, although the investigation of the latter is by no means precluded.

Focus of Survey of the Baseline Report

This report presents a summary and limited analysis of the data collected in the Baseline Survey of the Land Settlements Project Evaluation, and is the first of two reports to be prepared in connection with the project evaluation. The second report will be prepared

following project implementation and completion of a follow-up survey, and will present the results of before-and-after comparisons of the relevant study groups with respect to project-relevant variables.

Accordingly, the present report is intended to describe and summarize the conditions existing in the study area prior to implementation with respect to key variables to a greater extent than to present a detailed analysis of the data. However, several of the major variables were selected for a limited analysis whose major purpose was to establish similarities and dissimilarities among the project study groups with respect to these major variables. Statistical tests were performed on these data in order to permit scientifically valid conclusions to be drawn. The results of these analysis are reported in Chapter 3.

The remainder of the Baseline Survey data are presented in Chapter 4 are a largely descriptive way. While apparent differences are noted in the course of presentation, all conclusions as to study group differences should be viewed as tentative. These data will be analyzed in detail in the final project evaluation.

CHAPTER II

RESEARCH METHODOLOGY

Survey Design Features

As noted above, the evaluation is to be based upon the principles of quasi-experimental design. Accordingly, a major survey design requirement for the Baseline Survey was that comparable data be collected for each of the study groups of interest. This was accomplished by administering identical questionnaires in all households selected for the Baseline Survey.

The Baseline Survey was designed as a multipurpose survey, since as both agricultural and non-agricultural impacts are to examined in the project evaluation, there was not a single topic which could be considered as the most important for design purposes. Accordingly, reliability and validity considerations for the several survey topics were taken into account jointly in the design of the survey protocols.

A one-year reference period was utilized in collecting information on the major survey items requiring a time reference (i.e. income, crops grown, crop yields, credit, etc.). All such estimates refer to the twelve month period preceding the Baseline Survey (i.e. March 1980 to March 1981). Shorter reference periods were utilized for other survey items where this was more appropriate (eg. visits to health clinics).

Sample Design

The universe for the sample consists of households located in the eight project and in the two control land settlements. However,

since several of the settlements had extended benefits to other villages located near settlement boundaries, must notably in villages in which a substantial proportion of farmers owned land outside the settlement, these villages will also be considered as falling within the universe of this study.

The domains for the study, that is the population subgroups for which survey estimates are required, consist of the comparison groups enumerated above in connection with the evaluation plan: Households located in the Control and Project Settlements respectively, with separate estimates for Allocated and Unallocated villages within the Project Settlements and Allocated and Unallocated households within Unallocated Project villages. However, due to the unavailability of lists of settlement households stratified by allocation status and the costleness of the special field procedures required to produce such lists, it was decided to treat Allocated and Unallocated households with Unallocated Project villages as domains at the analysis rather than at the sampling stage. Accordingly, no destination was made between households by allocation status within Unallocated Project villages during sample selection. The strata used for sampling purposes were: Allocated villages in control settlements, Unallocated villages in Control settlements, Allocated villages in the Project settlements, and Unallocated villages in the Project Settlement.

The sampling plan adopted was a multi-stage, stratified cluster design featuring selection of villages probability proportional to estimated size (PPES) at the first stage of selection, and systematic random selection of households within selected villages

at the final stage of selection. Where selected villages were substantially larger than the average size (603 to 100 households), a listing operation was performed to create "chunks" within villages of the prescribed size. One of more chunks was(were) selected randomly and households selected using a systematic random selection procedure within chunks.

Villages were selected PPES within each sampling stratum from lists of villages ordered by geographic location and economic status so as to minimize "clustering" at the village selection stage. First stage selections (i.e. the number of villages to be selected) were allocated as follows: within the Project settlements, 25 Allocated and 30 Unallocated villages were selected, while within the Control settlements 15 Allocated and 12 Unallocated villages were chosen. Following selection of villages/chunks, 15 households were selected each control settlement village and in Allocated Project villages and 25 households in each Unallocated Project village.

The expected sample size under the design outlined above was 1,500 households, with 375 and 750 in Project Allocated and Unallocated Strata respectively and 375 in the Control Stratum. The actual sample size was 1,486, the discrepancy being due to several selected villages being of insufficient size to accomodate the proscribed number of interviews.

Estimation Procedures

Weighting - since the sample design described above does not result in a self-weighting sample, the data were weighted in order to yield estimates of population parameters for the domains

defined above. Each sample household was assigned a weight equal to the inverse of its probability of selection (i.e. the product of probabilities of selection at each stage of sample selection). All data presented in this report are weighted data.

Nonresponse - Two types of nonresponse (i.e."missing data") need be distinguished: (1) interview nonresponse, when the entire interview is missing due to refusal, respondents being unavailable for interview, etc., and (2) item nonresponse, where only particular questionnaire items are not completed due to refusal, unability on the part of the respondent to answer the question, or failure of the interviewer to record the response given.

In the Baseline Survey, relatively few occurances of nonresponse were encountered. Where encountered, the following procedures were adopted. For interview nonresponse, a nonresponse adjustment factor was calculated for each sampling stratum and used to inflate the sampling weights. The adjustment factors calculated were of the form :

$$\frac{\text{Number of Completed Interviews} + \text{Number of Non Interviews}}{\text{Number of Completed Interviews}}$$

The application of this procedure results in estimates for the survey universe based upon the results of the completed interviews. Overall, the nonresponse adjustments averaged less than 1 percent in the various sampling strata.

In the case of item nonresponse, adjustments were not made to the data obtained from completed interviews. Rather, the

weighted total of the number of households not responsing to a particular item is shown in each table in the report. These households were excluded from estimates of population parameters. This procedure will result in biased estimates only when the households not responding are not representative of those who did response to the item in question. In general, this would not seem to be a serious problem in the Baseline Survey data since the incidence of item nonresponse was extremely small (averaging less than 2 percent for most survey items).

Variance Estimation - Variances for a limited number of population characteristics were estimated so that statistical analysis could be performed on these variables. The method employed for estimating the sampling variance of survey estimates consisted of a probability proportional to size (PPS) estimation of variance due to selection of first stage units (i.e. villages), adjusted by a finite population factor, and a sample random (S^2) estimator of the within village/chunk component of variance, also adjusted by a finite population correction factor. A detailed description of the procedures employed is included in the Appendix.

Data Collection

All sample selection and field activities for the Baseline Survey were carried out and/or supervised by the staff of the Department of Economics, Khon Kaen University, with technical assistances of the U.S. Bureau of the Census. Interviewers for the survey were recruited and trained at KKU using manuals developed specifically for the survey. The field work (listing and interviewing)

was performed under the supervision of the Department of Economics staff. The questionnaires resulting from the field work were edited manually at KKU prior to transmittal to Bangkok for machine processing.

Data Processing

The survey data were machine edited, weighted, and tabulated by the staff of the Computer Service Center, Chulalongkorn University, Bangkok. The editing procedures implemented consisted of range and consistency edit routines. The Census Tabulation System (CENTS), developed by the U.S. Bureau of the Census, was utilized in producing the tabulations requested by the analysts (the Department of Economics, Khon Kaen University). The estimates of variances for selected survey estimates were produced by the staff at Chulalongkorn University based upon a FORTRAN program written especially for the Land Settlements Project Evaluation.

Data Analysis

Due to the large quantity of data generated by the Baseline Survey and the fact that the data would be analyzed systematically in the final project evaluation, it was decided to limit formal analysis of the Baseline Survey data to several of the major survey topics. Accordingly, estimates of measurement precision were prepared only for these variables. The results of the limited statistical analysis performed are reported in Chapter III of this report. The remainder of the Baseline Survey data are summarized in Chapter IV.

Given the quasi-experimental design adopted for the evaluation, the analysis presented in this report takes the form of

comparisons among the several study groups of interest. The primary comparisons made in analyzing the data are :

(1) Control versus Project Stratum households.

(2) Households in Allocated villages versus households in Unallocated villages within the Project Stratum.

(3) Allocated households versus Unallocated households within Unallocated villages in the Project Stratum.

CHAPTER III

ANALYTIC RESULTS

This chapter reports the results of the limited statistical analysis performed on the Baseline Survey data. The focus of the analysis is upon characteristics and practices which are of central importance in the context of the Land Settlements Project. Specifically, these include : land holding and tenure, livestock ownership, income, land uses, crop cultivation patterns and yields, and credit availability and practices. The background and supplementary data also collected in the Baseline Survey are presented and summarized in the next chapter.

Unless otherwise noted, all statistical statements made in this Chapter were tested using convention statistical procedures (i.e. T-tests). All "differences" noted in the text were varified to be significant at the .95 level of confidence (i.e. $p < .05$), while "marginal differences" were significant at the .90 level of confidence ($P < .10$).

The results reported here are based upon sample survey data collected in the eight project settlements and in two control settlements in Northeast Thailand in 1981. The sample of households supporting the analysis is described in Table 3.1. In the table, the figures under the heading "Unweighted Data" show the distribution of the actual sample of households by study group (i.e. stratum), household type (i.e. farm and non-farm households), and household allocation status of Project Stratum 2 households (unallocated

Table 3.1 Number of Households: Type of household and household allocation status by strata.

Type of household and household allocation status	Total		Stratum							
			Control		Both Project Strata		Stratum 1		Stratum 2	
	Number	percent	Number	percent	Number	percent	Number	percent	Number	percent
Unweighted data										
Total	1,485	100.0	370	100.0	1,115	100.0	374	100.0	741	100.0
Farm households	1,406	94.7	363	98.1	1,043	93.5	364	97.3	679	91.6
Allocated	556	37.4	181	48.9	375	33.6	323	86.9	52	7.0
Unallocated	850	57.2	182	49.2	668	59.9	41	11.0	627	84.6
Non-farm households*	79	5.3	7	Z	72	6.5	10	2.7	62	8.4
Weight data										
Total	48,891	100.0	3,508	100.0	45,383	100.0	8,246	100.0	37,137	100.0
Farm households	45,245	92.5	3,465	98.8	41,780	92.1	8,019	97.2	33,761	90.9
Allocated	12,152	24.9	2,185	62.3	9,967	22.0	7,125	86.4	2,842	7.7
Unallocated	33,093	67.7	1,280	36.5	31,813	69.2	894	10.8	30,919	83.3
Non-farm households*	3,646	7.5	43	1.2	3,603	7.9	227	2.8	3,376	9.1

* The Breakdown into "allocated" and "unallocated" does not apply for non-farm households.

Z less than one-half of one percent

Source : Table 1

villages). The figures under "Weighted Data" represent the survey estimates of the number and distribution of households in the population universe from which the sample households were selected. All data presented in this report are weighted data.

The study population is a rural, agricultural-based population, with an estimated 93 percent of households being farm households. Very little variation from stratum to stratum in the proportion of households that are farm households is evident from Table 3.1. The effects of sample stratification are evident in comparing proportions of farm households which were allocated in the two project strata, where 86 percent of Project Stratum 1 farm households were allocated at the time of the Baseline Survey as compared to only 8 percent in Project Stratum 2. As noted previously, the comparison of allocated and unallocated farm households within Stratum 2 will be one of the comparisons made in the analysis of the Baseline Survey Data, the other major comparisons being Control versus Project Stratum households (i.e. Stratum 1 and Stratum 2 combined) and Project Stratum 1 (Allocated villages) versus Project Stratum 2 (Unallocated villages) households.

In the analysis that follows all references to the "Project Stratum" should be understood to refer to the combination of Project Strata 1 and 2. Project Stratum 1 and 2 will be referred to separately only when they are being compared.

Land Holding and Tenure

Table 3.2 and Figure 3.1 present data on the size of land holdings among farm households in the study population.

Table 3.2 Number and percent of farm households by size of land holding, stratum and household allocation Status.

Size of farm	Control		Total, Both Project Strata		Project Stratum 1		Project Stratum 2					
							Total		Allocated Households		Unallocated Households	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total farm Households	3,465	100.0	41,780	100.0	8,019	100.0	33,761	100.0	2,842	100.0	30,919	100.0
0-L 10* rai	183	5.3	2,926	7.0	534	6.7	2,392	7.1	15	0.5	2,377	7.7
10-L 15 rai	169	4.9	4,381	10.5	665	8.3	3,716	11.0	159	5.6	3,557	11.5
15-L 25 rai	757	21.8	10,824	25.9	2,840	35.4	7,984	23.6	692	24.3	7,292	23.6
25-L 35 rai	887	25.6	8,655	20.7	1,869	23.3	6,786	20.1	663	23.3	6,123	19.8
35-L 50 rai	603	17.4	6,677	16.0	1,159	14.5	5,518	16.3	606	21.3	4,912	15.9
50-L 75 rai	547	15.8	5,717	13.7	640	8.0	5,077	15.0	494	17.4	4,583	14.8
75-L 100 rai	222	6.4	1,495	3.6	152	1.9	1,343	4.0	109	3.8	1,234	4.0
100 rai or more	97	2.8	1,105	2.6	160	2.0	945	2.8	104	3.7	841	2.7
Mean size of landholding	37.3		33.5		29.6		34.4		43.7		33.5	

* 'L' mean 'less than'

Source : Table 21

The average number of rai held by farm households overall is estimated to be nearly 34 rai. Despite the fact the size of farm household land holding is regulated in the allocated settlement villages (i.e. Project Stratum 1) with an eye toward equalization of size of land holdings among farmers, these are no statistically significant differences among the mean size of land holding figures shown in Table 3.2 for the comparison groups of interest in this analysis.

With respect to the distribution of land holdings among farm households within each stratum, Figure 3.2 and Table 3.3 also suggest strong similarities among study groups. Figure 3.2 displays graphically the cumulative distributions of land holdings and farm households in the form of Lorentz curves for each stratum. These curves do not suggest any systematic difference among study groups with respect to the distribution of land within strata.

Similar conclusions emerge from the examination of the Gini Coefficients, a measure of the degree of departure of the observed distribution of land holdings from a standard distribution in which land is equally distributed among farm households, shown in Table 3.3. The coefficients for all strata vary within a relatively narrow range, indicating general similarity among strata with respect to distribution of land among farm households.

A large majority of farm households in all study groups own their land (see Table 3.4). Overall, nearly 73 percent of farm households own all of the land that they reported holding at the time of Baseline Survey. When farm households who reported owning

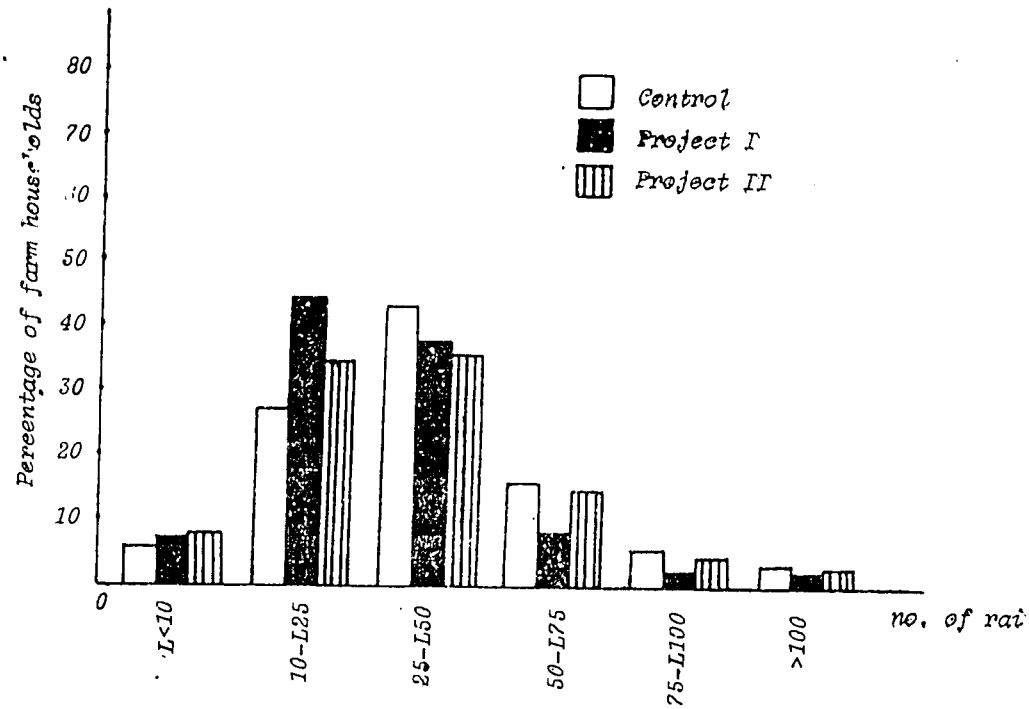

FIG. 3.1 DISTRIBUTION OF SIZE OF LAND HOLDING FOR FARM HOUSEHOLDS, BY STRATUM.

Table 3.3 Gini-coefficients of land holding distributions by stratum.

	Gini-coefficient
Control group	0.3246
Project, Both Strata	0.3635
Project Stratum 1	0.3806
Project Stratum 2	0.3619
Allocated households	0.4541
Unallocated households	0.3578

Source : calculated from Table 21.

Table 3.4 Number of farm households: Tenure of land holding by stratum and household allocation status.

Tenure of land	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,465	41,780	8,019	33,761	2,842	30,919
Tenure reported for all land	3,465	41,728	8,019	33,709	2,842	30,867
All owned	2,549	30,322	5,905	24,417	2,247	22,170
All rented*, cash payment	7	288	103	185	52	133
All rented, in-kind payment	10	660	68	592	-	592
All rented, cash & in-kind payment	-	-	-	-	-	-
All rent-free**	202	2,019	347	1,672	15	1,657
Mostly owned***	388	4,357	968	3,389	381	3,008
Mostly rented***	25	409	28	381	-	381
Mostly rent free***	104	912	232	680	-	680
Other	180	2,761	368	2,393	147	2,246

* 'rented' means that cash or in-kind payment (such as crops) is necessary for use of the land.

** 'rent-free' means that there is no payment for use of the land.

*** The mostly owned, rented, and rent free categories apply when all land holdings of a household are not held under the same tenure status. In such cases, households are classified according to the status under which the largest share of land is held.

Source : Table 22

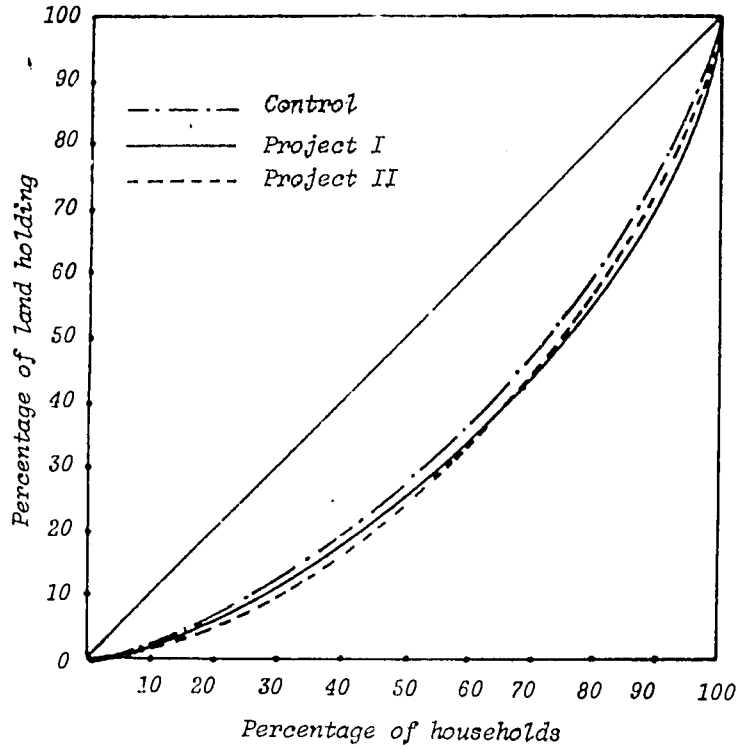

FIG. 3.2 LORENZ COURVE OF LAND HOLDING DISTRIBUTION IN THE CONTROL GROUP AND PROJECT STRATA.

most of the land held at the time of the Baseline Survey are included, this figure increases to 83 percent. Little veriability in the percentage of farm households owning their land is observed accross study groups, with in excess of 70 percent of farm households reporting owning all of the land held at the time of the survey in each of the strata.

Ownerships of Livestock

Ownership of livestock among farm households in the study population is nearly universal, with 93 percent of households owning some type of livestock (Table 3.5). Overall, 79 percent of farm households own chickens and 70 percent own buffalo, with smaller proportions owning cattle, swine, and ducks. Variability from stratum to stratum in the proportions of farm households owning

Table 3.5 Number of farm households: Type of livestock owned by project stratum and household allocation status.

Type of livestock	Control		Total, Both Project Strata		Project Stratum 1		Project Stratum 2					
							Total		Allocated Households		Unallocated Households	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total farm households	3,465	100.0	41,780	100.0	8,019	100.0	33,761	100.0	2,842	100.0	30,919	100.0
Number and percent that own:												
Buffalo	2,068	59.7	29,408	70.4	5,404	67.4	24,004	71.1	2,051	72.2	21,953	71.0
Cattle	629	18.2	3,568	8.5	864	10.8	2,704	8.0	311	10.9	2,398	7.8
Swine	686	19.8	7,271	17.4	919	11.5	6,352	18.8	470	16.5	5,882	19.0
Chickens	3,137	90.5	32,806	78.5	7,051	87.9	25,755	76.3	2,123	74.7	23,632	76.4
Ducks	963	27.8	13,520	32.4	2,005	25.0	11,515	34.1	699	24.6	10,816	35.0

Source : Tables 37A and 37C

several types of livestock is apparent, however. A higher proportion of Control Stratum households own both cattle (18 percent) and chickens (90 percent) than do households in the Project Strata (9 and 79 percent, respectively). Within the Project Stratum, a higher proportion (88 percent) of households in the allocated villages (Stratum 1) own chickens than do households in unallocated (Stratum 2) villages (76 percent). The higher proportion of Stratum 2 households (34 percent) owning ducks as compared to Stratum 1 households (25 percent) is also marginally significant.

In addition to stratum differences in the proportions of farm households owning the various types of livestock, differences in the number of livestock owned are also apparent in Table 3.6. Control Stratum households own, on average, more buffalo (3.9 per household which own buffalo) and chickens (24.4) than do Project Stratum households (3.0 and 18.8 respectively). Within the Project Strata, Stratum 1 households tend to own more chickens (25.4) than do Stratum 2 households (16.9), while Stratum 2 households own a marginally ($p < .10$) higher number of ducks on average (7.9 versus 5.8 for Stratum 1).

The comparison of Allocated and Unallocated households is Stratum 2 reveals significant differences for four of the five types of livestock considered, with Allocated households owning on average more cattle and chickens and Unallocated households owning more buffalo and duck.

Table 3.6 Average number of livestock currently owned by farm households: Type of livestock by project stratum and household allocation status.

Type of livestock	Control		Total, Both Project Strata		Project Stratum 1		Project Stratum 2: Total		Project Stratum 2: Allocated Households		Project Stratum 2: Unallocated Households	
	Number of Households*	Average number	Number of Households*	Average number	Number of Households*	Average number	Number of Households*	Average number	Number of Households*	Average number	Number of Households*	Average number
Total farm households	3,465		41,780		8,019		33,716		2,842		30,919	
Baffalo	2,068	3.9	29,408	3.0	5,404	2.8	24,004	3.1	2,051	2.4	21,953	3.1
Cattle	629	4.4	3,568	3.3	864	3.6	2,704	3.2	311	6.3	2,393	2.8
Swine	686	3.2	7,271	2.6	919	2.3	6,352	2.7	470	1.5	5,882	2.7
Chickens	3,137	24.4	32,806	18.8	7,051	25.6	25,755	16.9	2,123	19.9	23,632	16.6
Ducks	963	8.0	13,520	7.6	2,005	5.8	11,515	7.9	699	4.9	10,816	8.1

* *Number of households refers to the number of households reporting owning at least one of the indicated type of livestock.*

Source : Table 37B

Overall, these data suggest somewhat more extensive livestock holdings among households in the Control Stratum as compared to Project Stratum households, although by no means overwhelming differences. The difference observed among study groups within the Project Stratum would seem to reflect differences in preferences for or in perceived advantages of the various types of livestock rather than systematic differences in farm assets.

Income

Data on gross household income received during the twelve months preceding the survey are displayed in Table 3.7. Households in the study population received an average of approximately 30,000 baht (U.S.$ 1,360) in gross household income during the reference year, with gross income among farm households tending to be marginally higher than among non-farm households ($p < .10$).

With respect to study group comparisons, the data in Table 3.7 suggest a general similarity among most study groups, the exception having the markedly higher mean household income among Allocated households in Project Stratum 2 (as compared to Unallocated households). Households in this group clearly stand out from the other study groups in terms of household income, with a mean gross income in the reference year of in excess of 46,000 baht.

The distribution of income among households within strata is examined in Table 3.8 and Figure 3.3 to 3.5. These data suggest income distributions which are roughly analogous to those observed for land holding, although at slightly higher levels of inequality.

Table 3.7 Mean gross household income* by household type, stratum and household allocation status.

Household type	Control	Total, Both Project Strata	Stratum 1	Stratum 2		
				Total	Allocated Households	Unallocated Households
All household	3,508	45,383	8,246	37,137	2,842	30,919
Mean gross income(Baht)	32,356	29,911	30,381	29,809	46,436	29,225
Farm households	3,465	41,780	8,019	33,761	2,842	30,919
Mean gross income(Baht)	32,631	30,676	30,650	30,682	46,436	29,225
Non-Farm households	43	3,603	227	3,376	-	-
Mean gross income(Baht)	10,749	21,093	20,011	21,158	-	-

* The reference period for income was the 12 months preceding the survey.

Source : Table 24B

Household income appears to be more equally distributed among non-farm households in the Control Stratum than in the other catergories. However, the coefficient for this group should be interpreted with caution given the small number of observations upon which it is based.

Table 3.8 Gini-coefficient of gross income for the 12 months prior to the survey by stratum.

Type of household	Control	Both Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated	Unallocated
Total households	0.4168	0.5056	0.4396	0.4390	0.4394	0.4315
Farm households	0.4349	0.4391	0.4402	0.4383	0.4394	0.4315
Non-farm households	0.1880	0.3986	0.4693	0.4035	-	-

Source : calculated from Table 24B

Data describing the source of income for households in the study population are presented in Table 3.9. In excess of 91 percent of households received income from the sale of crops in the 12 months preceding the survey, followed in order of importance (in terms of percentage of households receiving income from each source) by the sale of livestock (74 percent), salaries and wages (61 percent) and sale of produce from orchards (18 percent). Approximately 11 percent of households also received remittances from outside the household. While conclusions must be tentative since statistical tests were not performed on the estimates in Table 3.9, the data suggest some differences between the Project and Control strata, with apparently higher proportions of Control

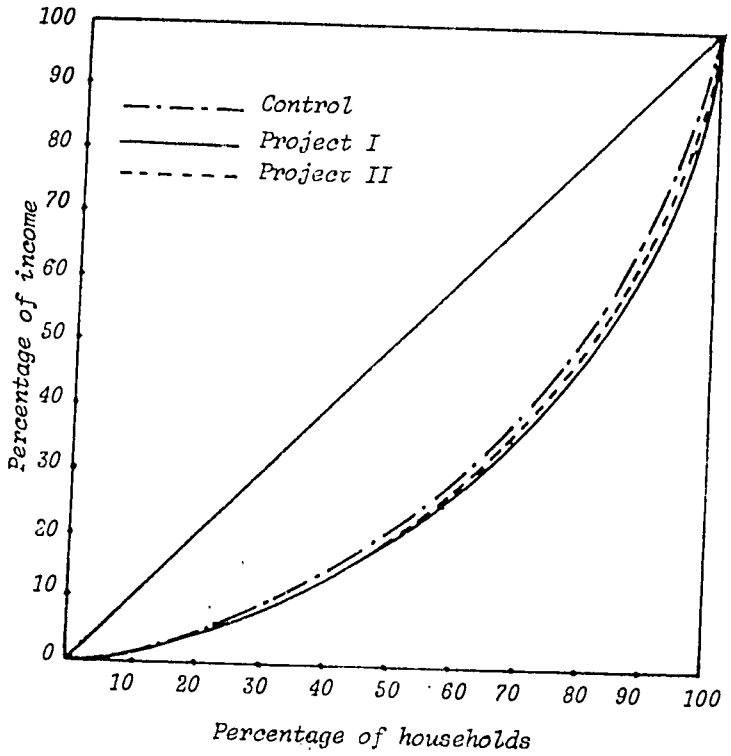

FIG. 3.3 LORENZ CURVE OF INCOME DISTRIBUTION OF TOTAL HOUSEHOLDS IN THE CONTROL GROUP AND PROJECT STRATA.

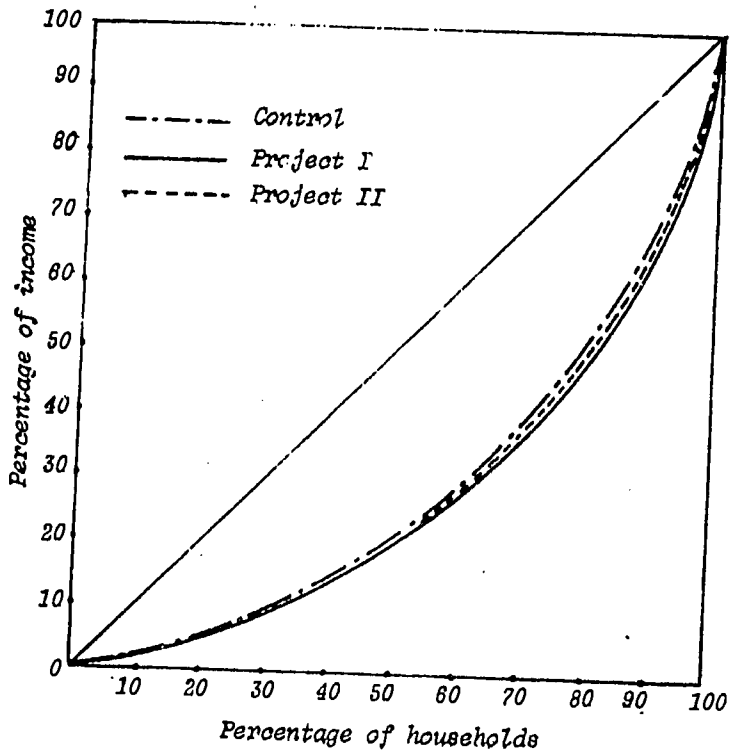

FIG. 3.4 LORENZ CURVE OF INCOME DISTRIBUTION OF FARM HOUSEHOLDS IN THE CONTROL GROUP AND PROJECT STRATA.

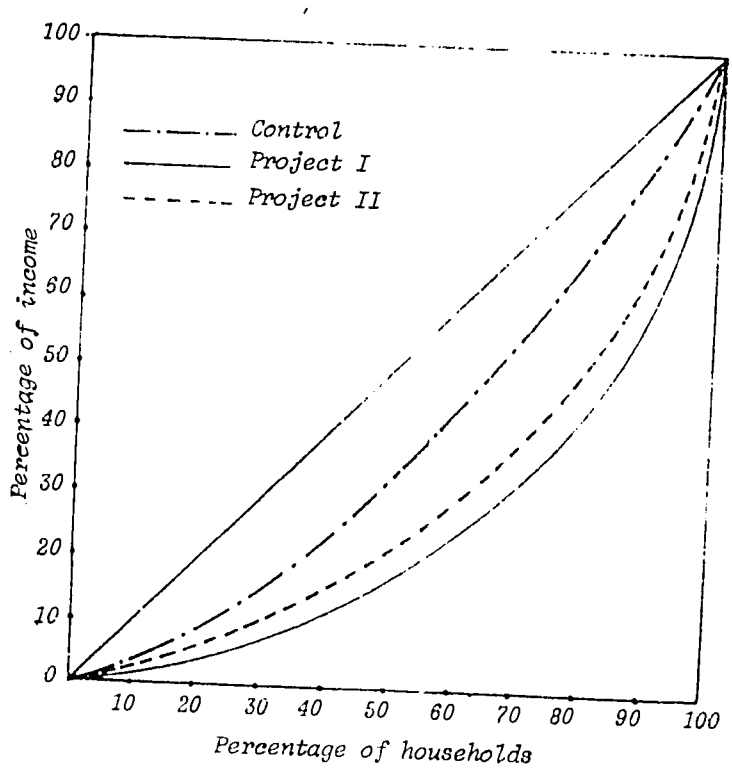

FIG. 3.5 LORENZ CURVE OF INCOME DISTRIBUTION OF NON-FARM HOUSEHOLDS IN THE CONTROL GROUP AND PROJECT STRATA.

Table 3.9 Percentage of households reporting income from various sources.

Source of income	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2
Crops	98.0	91.5	97.0	90.3
Livestock	87.9	72.7	84.6	70.6
Orchards	37.1	15.9	21.9	14.6
Other	1.6	1.9	2.4	1.7
Net from trade	9.2	11.0	9.8	11.3
Remittance from outside	15.6	10.5	12.1	10.2
Rental	2.1	2.8	3.0	2.7
Fish raising	0.7	5.2	0.5	0.3
Fishing	21.4	10.0	6.3	10.8
Wages & salaries	68.5	60.5	69.5	58.5
Poultry product	8.4	7.1	7.4	7.0
Handicraft	2.9	4.9	3.8	5.2
Sericulture	8.6	2.3	7.2	1.2

Source : Table 24A.

Stratum households receiving income from the sale of livestock and orchard products. Overall, however, these data indicate general similarity in sources of income among households in the various study groups.

It is clear from these data that many, if not most, households in the study population rely upon multiple sources of income, most notably the combination of farm and wage/salary income. A tabulation showing the proportion of mean income attributable to each source would have been helpful in exploring this phenomenon further but, unfortunately, was unavailable at the time of writing of this report. This issue should, however, be examined in the final evaluation in order to assess the extent of changes in sources of income which may have occured during the course of the project. The reader is referred to the detailed table in the Appendix (see especially Table 24A) for data on the distribution of amounts received from the various sources during the 12 months preceding the survey.

Land Use

As shown in Table 3.10, a large majority of farm households in the study population devote at least some of their land holdings to rice paddy (77 percent) and field or upland crops (also 77 percent). Aside from use of some land for home areas, use of land for forest or wasteland (idle land) and orchards is also quite common (24 and 25 percent, respectively). Relatively few farm households devote land to mulbery and vegetable gardens.

Table 3.10 Number of farm households: Type of land use by project stratum and household allocation status.

Types of land use	Control		Total, Both Project Strata		Project Stratum 1		Project Stratum 2					
							Total		Allocated Households		Unallocated Households	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total farm households	3,465	100.0	41,780	100.0	8,019	100.0	33,761	100.0	2,842	100.0	30,919	100.0
Paddy land	3,110	89.8	32,007	76.6	4,987	62.2	27,020	80.0	1,707	60.1	25,313	81.9
Field crop land	2,950	85.1	31,851	76.2	7,094	88.5	24,757	73.3	2,656	93.5	22,101	71.5
Land for mulberry	189	5.5	1,764	4.2	639	8.0	1,125	3.3	38	1.3	1,087	3.5
Vegetable garden	116	3.3	1,984	4.7	293	3.7	1,691	5.0	63	2.2	1,628	5.3
Orchard	832	24.0	6,116	14.6	1,818	22.7	4,298	12.7	562	19.8	3,736	12.1
Home area	2,415	69.7	23,915	57.2	6,459	80.5	17,456	51.7	1,154	40.6	16,302	52.7
Forest land or wasteland	958	27.6	9,769	23.4	2,519	31.4	7,250	21.5	513	18.1	6,737	21.8
Land for other use	175	5.1	932	2.2	307	3.8	625	1.9	80	2.8	545	1.8

Source : Table 25A and 25D.

Although the proportions of farm households devoting land to paddy and upland crops is substantial in all study groups, some variability accross groups is evident. A higher proportion of households in the Control Stratum (90 percent) devote land to paddy than do Project Strata households (77 percent). The proportion of Control Stratum households devoting land to field crops is also marginally higher than among Project Stratum households. Households in Allocated and Unallocated villages within the Project Stratum also differ in terms of land use for paddy and field crops, with a higher proportion of Stratum 1 households using land for field crops and a marginally higher proportion of Stratum 2 households using land for paddy. Within Stratum 2, the use of land for field crops is more common among Allocated than among Unallocated households. These differences are displayed graphically in Figure 3.6.

Data on average number of rai devoted to each type of land use are shown in Table 3.11. Farm households in all Strata devote the largest portions of their land to paddy (an average of about 20 rai per farm household using land for paddy) and field crops (about 17 rai). The only significant difference observed in these data is the greater average number of rai devoted to paddy and forest/wasteland[4] in Project Stratum 2 as compared to Project Stratum 1. Of interest, however, is the fact only among Project Stratum 1 (Allocated villages) and Allocated households in Project Stratum 2 are the survey estimates of the mean number of rai

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4 The extent to which the number of rai in forest/wasteland in Stratum 2 is put to more productive use as a result of land reallocation deserves further attention in the final project evaluation.

Table 3.11 Average rai of land held by farm households: Type of land use by project stratum and household allocation status.

Type of land use	Control		Total, Both Project Strata		Project Stratum 1		Project Stratum 2					
							Total		Allocated Households		Unallocated Households	
	Number of Households*	Average rai	Number of Households*	Average rai	Number of Households*	Average rai	Number of Households*	Average rai	Number of Households*	Average rai	Number of Households*	Average rai
Total farm households	3,465		41,780		8,019		33,761		2,842		30,919	
Paddy land	3,110	20.2	32,007	20.0	4,987	14.7	27,020	21.0	1,707	22.2	25,313	20.9
Field crop land	2,950	16.6	31,851	16.9	7,094	16.7	24,757	17.0	2,656	26.6	22,101	15.8
Land for mulberry	189	2.7	1,764	1.7	639	2.5	1,125	1.3	38	1.0	1,087	1.3
Vegetable garden	116	1.0	1,984	2.0	293	2.0	1,691	2.0	63	1.8	1,628	2.0
Orchard	832	2.4	6,116	5.3	1,818	3.6	4,298	5.9	562	13.2	3,736	4.9
Home area	2,415	1.4	23,915	1.4	6,459	1.6	17,456	1.3	1,154	1.6	16,302	1.3
Forest land or wasteland	958	10.9	9,769	14.4	2,519	9.8	7,250	16.1	513	12.1	6,737	16.4
Land for other use	175	7.1	932	5.1	307	5.7	625	4.7	80	1.7	545	5.2

* Number of households refers to the number of households reporting using land for the indicated purpose.

Source : Table 25B.

devoted to field crops greater than that devoted to paddy. This might be interpreted as an indicator of increasing crop diversification in these villages and households, although this interpretation is tentative.

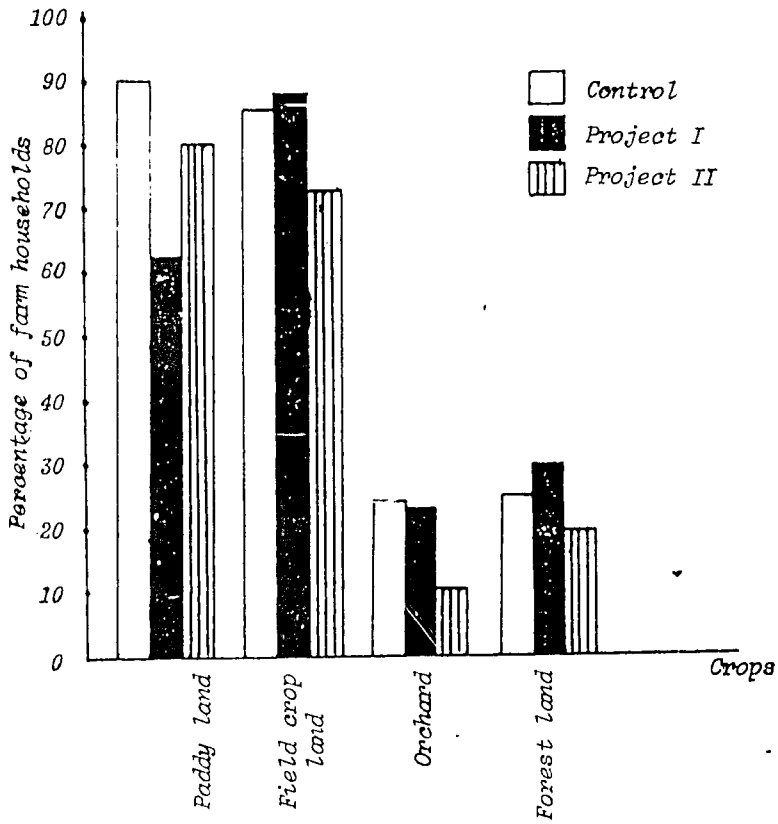

FIG. 3.6 DISTRIBUTION OF SELECTED TYPES OF LAND USE BY STRATUM.

Table 3.12 summarizes the survey data with respect to land utilization, showing the proportion of total rai held by farm households in each stratum devoted to each use. Overall 46 percent of all land held by farm households in the study population is devoted to paddy, 38 percent to field or upland crops, and 11 percent

Table 3.12 Proportion of total rai devoted to selected land uses: Type of land use by project stratum and household allocation status.

Types of land use	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households reporting total rai	3,465	41,780	8,019	33,761	2,842	30,919
Total rai of landholding	129,336	1,397,547	237,122	1,160,425	124,147	1,036,278
Paddy land	48.6	45.8	30.9	48.9	30.5	51.1
Field crop land	37.9	38.5	50.0	36.3	56.9	33.7
Land for mulberry	Z	Z	0.7	Z	Z	Z
Vegetable garden	Z	Z	Z	Z	Z	Z
Orchard	1.5	2.3	2.8	2.2	6.0	1.8
Home area	2.6	2.4	4.4	2.0	1.5	2.9
Forest land or wasteland	8.1	10.9	10.4	0.9	5.0	10.7
Land for other use	1.0	Z	0.7	Z	Z	Z

Z Less than one-half of one percent

Source : Table 25C.

forest/wasteland, with the remainder of land distributed among the other uses. Allocation of land at the stratum level appear quite similar in the Control and Project Strata, but varies considerably within the Project Stratum. A greater proportion of land is devoted to paddy in Project Stratum 2 (49 percent) than in Project Stratum 1 (31 percent). Within Project Stratum 2, Allocated households devote a significantly greater portion of their land to field crops than do Unallocated households (57 versus 34 percent), while Unallocated households use marginally greater proportions of their land for both paddy and forest/wasteland. These findings are supportive of the earlier hypothesis regarding a possible shift among allocated villages and households away from heavy reliance on paddy land.

Crops Grown and Crop Yields

The most important crops grown by farm households in the study population are, in order of importance, glutinous rice (63 percent), cassava (55 percent), and non-glutinous rice (37 percent) (see Table 6.14). All other crops are grown by less than 20 percent of farm households. While caution should be exercised in drawing conclusions since the data in Table 6.14 were not subjected to statistical verification, the data suggest greater crop diversification among Project than Control Stratum households. In the Control Stratum, only three major crops for the study population as a whole are grown in more than five percent of the households. In contrast, seven crops were grown by more than 5 percent of households (and six crops by more than 10 percent of households) in the Project Stratum. Nevertheless, glutinous rice, non-glutinous rice,

Table 3.13 Number and percent of farm households growing selected crops during the last 12 months by strata and household allocation status.

Type of crop	Control		Total, Both Project Strata		Project Stratum 1		Project Stratum 2					
							Total		Allocated Households		Unallocated Households	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total farm households	3,465	100.0	41,780	100.0	8,719	100.0	33,761	100.0	2,942	100.0	30,919	100.0
Glutinous rice	2,515	72.6	26,185	62.7	4,240	52.9	21,945	65.0	1,329	45.2	20,616	66.7
Non-glutinous rice	1,886	54.4	14,796	35.4	1,955	24.4	12,841	38.0	898	31.6	11,943	38.6
Kenaf	102	2.9	4,418	10.6	1,288	16.1	3,130	9.3	302	10.6	2,828	9.2
Cassava	2,817	81.3	20,507	49.1	4,508	59.9	15,709	46.5	1,479	52.0	14,223	46.0
Sugar cane	6	Z	1,622	3.9	292	3.6	1,330	3.9	164	5.4	1,166	3.8
Corn for consume	75	2.2	1,822	4.4	398	5.0	1,424	4.2	52	1.8	1,372	4.4
Corn for livestock	13	Z	7,198	17.3	1,404	17.5	5,794	17.2	1,042	36.7	4,752	15.4
Jute	99	2.9	1,508	3.6	271	3.4	1,237	3.7	57	2.0	1,180	3.8
Mungbean	23	0.7	967	2.3	593	7.4	374	1.1	208	7.3	166	0.5
Peanuts	63	1.8	2,431	5.8	870	10.9	1,561	4.6	236	8.3	1,325	4.3
Sorghum	-	-	131	Z	26	Z	105	Z	-	-	105	Z
Cotton	-	-	4,608	11.0	1,195	14.9	3,413	10.1	781	27.5	2,632	8.5

Z less than one-half of one percent

Source : Table 36A-36L.

and cassava are clearly the major crops grown in each of the strata (although the high proportion of Project Stratum 2, Allocated households growing corn for livestock (37 percent) is worthy of note).

Table 3.14 presents summary data on crop productivity or yields (i.e. production per rai planted) during the twelve months preceding the Baseline Survey[5]. Overall, crop yields in the study population farm households tend to be rather low for all crops. Glutinous and non-glutinous rice tend to be the most productive crops, with average yields of 246 KG/Rai and 249 KG/Rai respectively.

In general, crop productivity was higher in Project as compared with the Control Stratum households. The estimated average yields reported in Table 3.14 for Project Stratum households exceed those Control Stratum households six of the nine crops grown by both study groups, although only in the cases of the glutinous rice and corn for livestock crops are the differences statistically significant[6]. Significant differences are also observed in comparing yields for cassava and cotton among Project Stratum 1 and 2 households, with higher yields observed for Stratum 1 households, and for yields in cotton in comparing Allocated and Unallocated households within Stratum 2, with Unallocated households reporting higher yields (123 KG/Rai versus 75 KG/Rai). Differences in yields among study for selected crops are displayed graphically in Figure 3.7.

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5 The reader is referred to the more detailed tables on crop production in the Appendix (see especially Tables 34 and 35).

6 Statistical tests were not performed on yields for corn for consume because field experiences indicated the farmers had difficulty recalling the number of ears produced, and thus these data should be viewed as rough approximations.

Table 3.14 Average units of crop proportion per rai during the last 12 months for selected crops by stratum and household allocation status.

Type of crop	Unit	Control	Total, Both Project Strata	Stratum 1	Project Stratum 2		
					Total	Allocated Households	Unallocated Households
Total farm households		3,465	41,780	8,019	33,741	2,842	30,919
Glutinous rice	KG.	215.9	248.8	241.5	249.6	222.5	251.7
Non-glutinous rice	KG.	220.2	251.2	250.9	251.3	266.4	250.3
Kenaf	KG.	164.7	187.1	139.7	202.5	164.2	204.6
Cassava	Ton	1.5	1.3	1.5	1.3	1.3	1.3
Sugarcane	Ton	-	6.0	6.0	6.1	8.6	5.3
Corn for consume	EARS	1,728.9	1,233.1	1,324.5	1,273.1	2,000.0	1,158.1
Corn for livestock	KG.	178.8	253.4	272.9	248.4	234.9	251.2
Jute	KG.	104.0	164.3	162.2	164.6	100.0	168.6
Mungbean	KG	76.4	64.9	69.6	53.4	57.6	44.3
Peanuts	KG.	94.9	142.0	134.4	146.7	241.0	116.6
Sorghum	KG.	-	92.4	85.4	100.0	-	100.0
Cotton	KG.	-	120.7	184.0	105.4	74.6	122.7

Source : Table 35

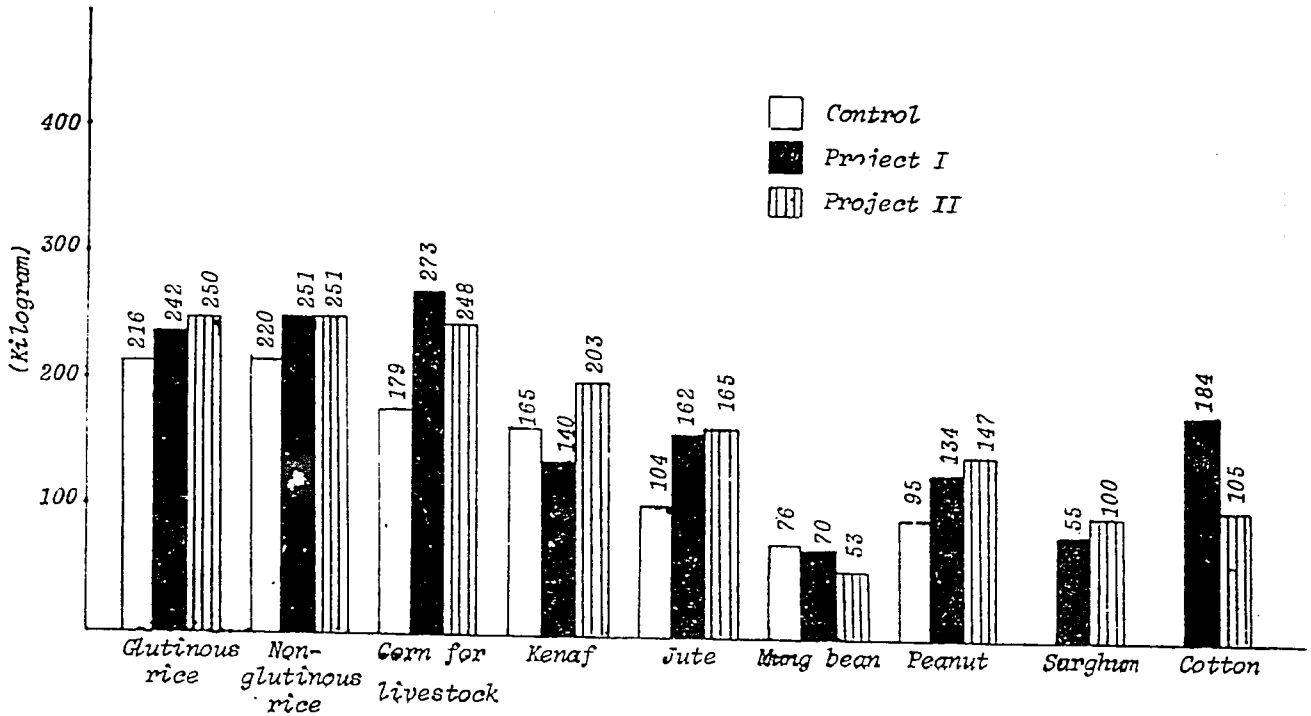

FIG. 3.7 AVERAGE UNITS PER RAI OF VARIOUS CROPS.

Use and Sources of Credit

Over one half (55 percent) of farm households used agricultural credit during the twelve months prior to the survey (Table 3.15). The proportions of households using credit are generally quite similar in each of the study groups, once again with the exception of Allocated households in Project Stratum 2, are a higher proportion of Allocated households (6[illegible] percent) used credit than did Unallocated households (58 percent).

The most common reasons for using credit were to pay for labour, with 42 percent of households overall using credit for this reason in the past 12 months to purchase agricultural inputs (30 percent), and to hire farm implements (22 percent).

The various study groups are quite similar with respect to the reasons for using credit. The only significant difference observable is the higher proportion of Project Stratum households using credit to purchase agricultural imputs (51 percent versus 18 percent of Control Stratum households)

The average amount borrowed (for all purposes) by households using credit during the year was approximately 7,070 Baht, with no significant differences observed in the comparison of study group means. Greater variability is observed, however, in comparing study groups with respect to average amounts borrowed for each purpose. The average amount borrowed by Project Stratum households to buy livestock, to buy agricultural inputs (i.e. fertilizer, insecticide, etc), and to hire farm implements are all marginally higher than the amounts borrowed by Control Stratum

Table 3.15 Percentage of farm households using agricultural credit during the last 12 months and amount borrowed: Reason for borrowing by strata and household allocation status.

Reason for borrowing	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,465	41,780	8,019	33,761	2,842	30,919
All reasons						
Percentage of households using this source	52.8	55.6	61.0	54.3	37.2	53.1
Average amount borrowed (Baht)	7,670.6	8,102.0	7,647.4	8,223.4	13,452.6	7,614.8
To buy land						
Percentage of households using this source	4.3	4.0	3.6	4.1	1.8	4.3
Average amount borrowed (Baht)	7,270.3	12,844.7	8,377.6	13,730.6	20,000.0	13,487.3
To buy livestock						
Percentage of households using this source	5.0	7.3	5.2	7.8	15.9	7.1
Average amount borrowed	4,086.9	5,662.7	4,642.5	5,824.2	6,234.7	5,739.6
To buy fertilizer, insecticides and other agricultural inputs						
Percentage of households using this source	18.1	31.3	32.1	31.2	38.0	30.5
Average amount borrowed (Baht)	1,369.0	2,730.4	2,848.8	2,701.4	6,704.5	2,243.8

(continued)

Table 3.15 (continued) Number of farm households using agricultural credit during the last 12 months and amount borrowed: Reason for borrowing by strata and household allocation status.

Reason for borrowing	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
To buy farm implements and equipment						
Percentage of households using this source	10.9	10.6	15.8	9.4	10.1	9.4
Average amount borrowed (Baht)	4,304.8	1,753.4	1,470.3	1,866.3	2,032.3	1,849.8
To pay for labor						
Percentage of households using this source	36.7	31.8	41.2	29.6	44.7	28.2
Average amount borrowed (Baht)	4,381.8	4,221.5	3,582.0	4,432.9	6,519.9	4,129.5
To hire farm implements						
Percentage of households using this source	25.7	21.4	28.7	19.6	24.4	19.2
Average amount borrowed (Baht)	3,212.2	4,820.8	3,706.4	5,208.8	7,267.7	4,968.0
To pay for growing mulberry						
Percentage of households using this source	1.9	0.4	1.8	0.1	-	0.1
Average amount borrowed (Baht)	17,630.3	11,055.7	13,887.8	100.0	-	100.0
Other						
Percentage of households using this source	2.4	2.3	3.0	2.1	1.8	2.1
Average amount borrowed (Baht)	1,804.0	4,405.7	5,661.1	3,985.4	14,000.0	3,195.2

Source : Table 41.

households. On the other hand, Control Stratum households borrowed, on average, marginally higher amounts than Project Stratum households for buying farm implements within the Project Stratum, Project Stratum 1 households borrowed substantially more on average than Stratum 2 households for growing mulberry, although the very small number of observations upon which this result based should be noted.

Data on sources of credit used in the twelve months prior to the survey are displayed in Table 3.16. The most frequently used sources of credit among farm households in the study population as a whole during the reference year were merchants (30 percent), cooperatives (12 percent), and BAAC[7] (15 percent). A higher proportion of Project Stratum households received credit from merchants than did Control Stratum households (21 versus 9 percent respectively). With in the Project Stratum, Stratum 1 households tended to rely more heavily upon cooperatives for agricultural credit (38 percent of households) than did Stratum 2 households (11 percent).

With respect to amounts of credit by source, commercial banks appear to be the major source of credit for large amounts. Borrowers using this source the reference year borrowed an average amount of approximately 11,500 baht substantial amounts of credit were also obtained by farm households in the study population from cooperatives (an average of approximately 7,200 baht for borrowers from this source) merchants (approximately 7,500 baht), and BAAC (7700 Baht) during the 12 months reference period.

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[7] Bank for Agriculture and Agricultural Cooperatives.

Table 3.16 Percentage of farm households using agricultural credit during the last 12 months and amount of credit: Source of credit by strata and household allocation status.

Source of credit	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,465	41,780	8,019	33,761	2,842	30,919
All sources						
Percentage of households using this source	52.8	55.6	61.0	54.3	67.2	53.1
Average amount per household (Baht)	7,670.6	8,102.0	7,647.4	8,223.4	13,452.6	7,614.8
Commercial bank						
Percentage of households using this source	0.7	3.2	1.6	3.5	5.8	3.3
Average amount per household (Baht)	14,458.3	11,392.4	7,516.0	11,815.5	40,365.9	7,256.3
Cooperatives						
Percentage of households using this source	20.4	16.4	38.0	11.3	18.0	10.7
Average amount per household (Baht)	6,840.5	7,254.5	7,221.2	7,281.1	11,985.1	6,551.0
Merchant						
Percentage of households using this source	8.7	21.2	12.0	23.4	22.4	23.5
Average amount per household (Baht)	2,683.8	7,604.6	4,765.0	7,950.8	7,498.4	7,990.5
Neighbors						
Percentage of households using this source	3.9	6.1	3.6	6.7	3.7	7.0
Average amount per household (Baht)	1,593.5	3,183.8	3,281.3	3,171.3	4,500.0	3,107.6

(continued)

Table 3.16 (continued) Percentage of farm households using agricultural credit during the last 12 months and amount of credit: Source of credit by strata and household allocation status.

Source of credit	Control	Total, Both Project Strata	Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Relatives						
Percentage of households using this source	5.9	5.3	5.8	5.2	6.5	5.[illegible]
Average amount per household (Baht)	3,125.7	4,054.2	3,511.0	5,199.5	18,329.9	2,428.[illegible]
Other						
Percentage of households using this source	0.6	0.5	1.0	0.4	-	0.4
Average amount per household (Baht)	15,581.8	4,001.3	7,253.0	1,987.2	-	1,987.2
BAAC						
Percentage of households using this source	21.0	12.1	10.6	12.5	23.3	11.5
Average amount per household (Baht)	9,365.3	7,504.1	7,817.9	7,440.7	6,240.7	7,665.1

Source : Table 42.

The average amounts borrowed by farm households using source were generally similar, and exception being greater average amounts borrowed by Project as compared to Control Stratum households (7,600 versus 2,700 baht respectively). Within the Project Stratum, households within allocated villages (i.e. Stratum 1 households) borrowed larger amounts on average from cooperatives than did form households in unallocated villager (Project Stratum 2).

As thown in Table 3.17, only a very small proportion of households were denied credit during the 12 month period prior to the survey (about 5 percent). The reasons for the refused credit requests were roughly proportional to the reasons for credit requests shown in Table 3.14.

Table 3.17 Number of farm households that requested but were not granted agricultural credit during the last 12 months: Reason for credit request by strata and household allocation status.

Reason for credit request	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total households refused credit*	40	2,283	302	1,981	156	1,825
To buy land	5	130	26	104	-	104
To buy livestock	-	146	42	104	-	104
To buy fertilizer, insecticides and other farm inputs	-	969	166	803	104	699
To buy farm implements and equipment	-	408	68	340	104	236
To pay for labor	22	1,276	222	1,054	52	1,002
To hire farm implements and equipment	-	573	47	526	-	526
Other	13	284	-	284	-	284

* A household may have had more than 1 reason for requesting for credit. Therefore, the total number of reasons given for requesting credit will not necessarily equal the total number of households.

Source : Table 43.

CHAPTER IV

DESCRIPTIVE DATA

This chapter presents and summarizes selected portions of the other information collected in the Baseline Survey. Unlike the previous Chapter, the purpose of this chapter is to described relevant features characteristics, and behavioral norms in the study population rather than to make probabilistic statements concerning differences among study groups. While apparent are noted during the course of description, it is to be borne in mind none of the statements made have been varified statistically, and hence conclusions should be regarded as tentative.

For organizational purposes, the data presented below have divided into four sections (each with sub-headings) as follows:

(1) Socio-economic Characteristics of the Study Population

(2) Agricultural Practices and Inputs

(3) Crop and Livestock Disposal

(4) Access to and Use of Services and Resources

Socio-economic Characteristics of the Study Population

Household Size and Composition

Approximately two-thirds (67 percent) of the population of households in the study universe are persons of working age (11 to 60)[3] nearly 29 percent are children age 10 or below, and

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[8] These figures include a small number of persons classified as invalids. See Appendix Table 2 for the detailed numbers in each study group.

approximately 4 percent are persons aged above 60 (see Table 4.1). The relatively high proportion of children aged 10 and below in the study population is characteristic of societies with high fertility levels. Population composition is quite similar in each of the study groups.

Households in the study population average about 6.3 persons per household in size, with an average of slightly in excess of 4 persons of working age and nearly two children aged 0 to 10 per household (see Table 4.2). Households in the Control Stratum would appear to be slightly larger than those in the Project Stratum (by an average of about 1/2 person per household), while farm households appear to be larger than non-farm households by an average of about one person per household.

Demographic Characteristics (Fertility and Migration)

Based upon the data presented in Appendix Tables 1 to 8, a variety of fertility measures can be calculated which reveal quite high levels of fertility in the study population. Women aged 15 and above had borne, as of the survey date, an average of nearly five children per woman (4.8), with women at the end of the reproductive period at the time of survey (i.e. women age 45-49) bearing an average of 7.2 children per woman. The data on the number of births in the 12 months prior to the survey by women aged 15-49 imply a Total Fertility Rate (TFR) of 5.98, which means that if fertility rates were to remain constant, ever married woman in the study population will bear an average of nearly six children per woman.

Table 4.1 Percent distribution of household members by age category, household type, and stratum.

Age category	Control	Total, Both Project Strata	Stratum 1	Stratum 2
All households				
Total population	23,220	283,551	50,170	233,381
All ages	100.0	100.0	100.0	100.0
Persons aged 11-60	66.9	67.8	66.0	68.0
Children aged 10 and below	29.5	28.5	30.3	28.1
Persons aged over 60	3.5	3.7	2.9	3.8
Age unknown	-	-	0.1	-
Farm households				
Total population	22,991	264,808	48,851	215,957
All ages	100.0	100.0	100.0	100.0
Persons aged 11-60	66.9	67.9	66.9	68.1
Children aged 10 and velow	29.5	28.5	30.1	28.1
Persons ages over 60	3.5	3.6	2.9	3.7
Age unknown	-	0.1	0.1	0.1
Non-farm households				
Total population	229	18,743	1,319	17,424
All ages	100.0	100.0	100.0	100.0
Persons aged 11-60	68.6	66.6	62.8	66.9
Children aged 10 and below	31.4	28.6	35.3	28.1
Persons ages over 60	-	4.8	1.8	5.1
Age unknown	-	-	-	-

Source : Table 2

Table 4.2 Average number of household members by age category, household type, and stratum.

Age category	Control	Total, Both Project Strata	Stratum 1	Stratum 2
All households				
Total, all ages	6.6	6.2	6.1	6.3
Persons aged 11-60	4.4	4.2	4.1	4.3
Children aged 10 and below	2.0	1.8	1.8	1.8
Persons aged over 60	0.2	0.2	0.2	0.2
Farm households				
Total, all ages	6.6	6.3	6.1	6.4
Persons aged 11-60	4.4	4.3	4.1	4.3
Children aged 10 and below	2.0	1.8	1.8	1.8
Persons aged over 60	0.2	0.2	0.2	0.2
Non-farm households				
Total, all ages	5.3	5.2	5.8	5.2
Persons aged 11-60	3.6	3.5	3.6	3.4
Children aged 10 and below	1.7	1.5	2.1	1.4
Persons aged over 60	-	0.2	0.1	0.3

Source : Table 2

These high levels of fertility are characteristic of Northeast Thailand.

With respect to migration, Table 4.3 shows that approximately 35 percent of households have had at least one usual resident move permanently from the household within the five years preceding the survey, with similar proportions of households in each study group experiencing the out-migration of at least one household member. On average, households in the study population experienced the out-migration of 1.6 persons. It should be borne in mind, however, that these data understate the actual magnitude of the migration phenomena, since : (1) they do not account for entire households having migrated, and (2) they do not include non-permanent (seasonal and short-term) migration. Nevertheless, it is clear migration of household members is an important aspect of family life in the study population.

The largest proportion of out-migrants moved to another household within the same village, with sizeable proportions also moving to a city or urban area or to non-settlement areas. It is likely that a large share of intra-village moves were made for the reason of marriage, which is the major reason for out-migration given by study population households, while other types of moves involved job-related motives with greater frequency (see Appendix Table 4 for the detailed data on this topic).

Economic Activities

A substantial (80 percent) and largely invariant (accross study groups) proportion of persons aged 11-60 reported undertaking some form of economic activity during the 12 months prior to the

Table 4.3 Percentage of migration status and major reason for moving

Migration status, area moved to, and major reason for moving	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Number of households (%) that had at least one usual resident aged 11-60 has moved out in the past five years.	40.1	34.6	31.7	35.2
Average number of persons moved out of household in the past five years.	1.7	1.6	1.5	1.7
Area moved to (%)	100	100	100	100
- To another household within the same village	26.9	32.4	25.3	33.7
- To another village within the settlement	13.6	15.7	19.7	15.4
- To a village in another settlement	3.9	4.9	5.8	4.7
- To a village or urban area	30.1	26.9	22.6	27.7
- Other area	22.9	19.3	27.9	17.8
- Area moved to not report	0.5	0.8	0.6	0.8
Reasons for moving (%)	100	100	100	100
- To seek employment	7.1	9.8	5.0	9.8
- To seek a better job	14.3	8.9	8.9	8.7
- To attend school	4.2	7.2	10.2	6.6
- To get married	65.2	64.8	65.1	64.8
- Other	9.1	10.3	10.8	10.2

Source : Table 3, 4.

survey (Table 4.4). Somewhat higher proportions of farm than non-farm households members were economically active in the reference year (80 versus 67 percent), in all likelihood reflecting the more limited availability of economic opportunities for women in the non-farm households.

Table 4.5 presents further data on the economic activities in the study population during the reference year. The predominance of agricultural activities in the study population is clear from these data with over 93 percent of the economically active population engaged in farming. Approximately 90 of persons primarily engaged in farming were so engaged within the settlement area. A somewhat higher proportion of persons not primarily engaged in farming were employed outside the settlement area (22 percent). These data are displayed graphically in Figures 4.1 and 4.2.

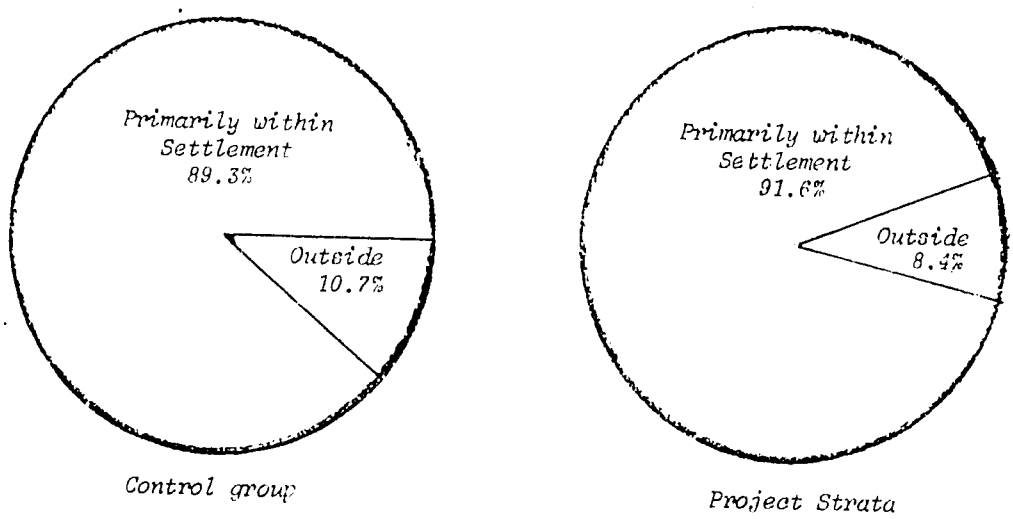

FIG 4.1 PERCENTAGE OF HOUSEHOLD MEMBERS WHO PRIMARILY ENGAGED IN FARMING.

Table 4.4 Number of household members ages 11-60*: Type of household and economic activity by project stratum and household allocation status.

Type of household and economic activity	Control		Total, Both Project Strata		Project Stratum 1		Project Stratum 2					
							Total		Allocated household members		Unallocated household members	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All households												
Total members, 11-60*	15,450	100.0	191,381	100.0	33,419	100.0	157,962	100.1	13,070	100.0	133,256	100.0
Economically active	12,433	80.5	151,308	79.1	26,448	79.2	124,860	79.0	10,467	80.1	106,620	80.1
Farm households												
Total members, 11-60*	15,306	100.0	178,916	100.0	32,590	100.0	146,326	100.0	13,070	100.0	133,256	100.0
Economically active	12,332	80.6	143,033	79.9	25,946	79.6	117,087	80.1	10,467	80.1	106,620	80.1
Non-farm households**												
Total members, 11-60	144	100.0	12,465	100.0	829	100.0	11,636	100.0	-	-	-	-
Economically active	101	70.1	8,275	66.4	502	60.6	7,773	66.80	-	-	-	-

* Person unable to work, (i.e. invalids) are excluded from the population figures in this table

** The breakdown into allocated and unallocated does not apply to non-farm households; therefore, number appear only in the 'Total' columns.

Source : Table 17

Table 4.5 Number of economically active household members ages 11-60: Primary activity during the last 12 months by strata.

Type of activity	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total	12,433	151,[illegible]	26,448	124,860
Primarily Engaged in Farming	12,224	140,[illegible]	[illegible],41[illegible]	115,160
Primarily within settlement	10,91[illegible]	128,[illegible]	24,296	104,444
Primarily Outside settlement	1,308	11,745	1,115	10,630
Location unknown	-	86	-	86
Not primarily engaged in farming	209	10,602	1,035	9,567
Primarily employed within settlement	151	8,130	789	7,341
Primarily employed outside settlement	58	2,272	246	2,026
Location unknown	-	200	-	200
Primary Activity Unknown	-	133	-	133

Source : Table 18

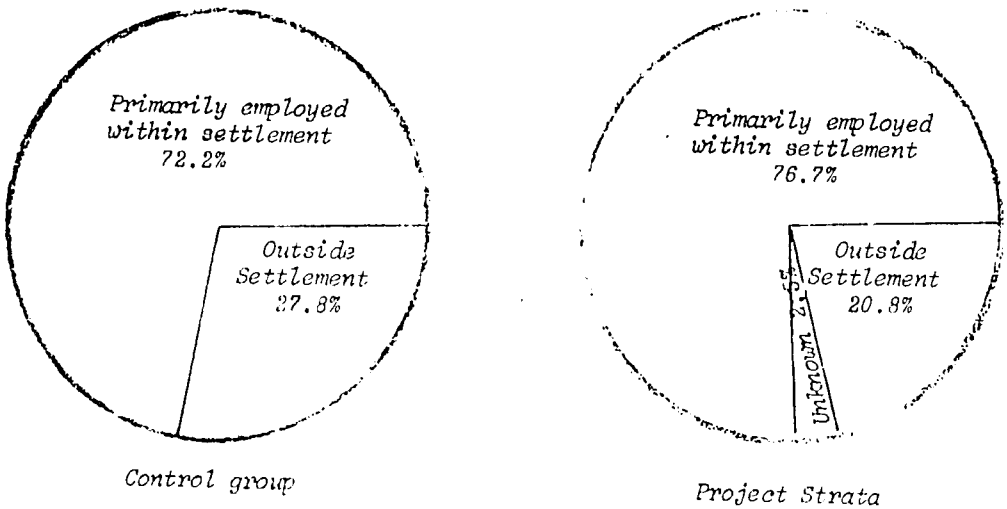

FIG. 4.2 PERCENTAGE OF HOUSEHOLD MEMBERS WHO NOT PRIMARILY ENGAGED IN FARMING.

When considering only farm households (Table 4.6), most of the household heads in each group spend about 6-9 months on farm work. However, 37 percent of the household heads in the Control group and 33 percent in the Project Strata engaged in some form of off-farm employment as well, the tenure of which averaged between 3 and 4 months. A small proportion of household heads utilize their time in "cottage industries", averaging about 4 percent for the study population as a whole. The percentage of household heads with unaccounted for time is high (about 74 percent of household heads). It would seem that the latter category of household heads have 1-4 months of excess time which should be considered when attemping to institute development projects.

Quality of Housing Materials

The roofs of houses in the control group are most commonly made of corrugated metal (85 percent), followed in order by thatch,

Table 4.[illegible] Number of farm households: Employment of household head and number of months of employment during the last 12 months by strata and household allocation status.

Employment and number of months	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Farming own farm only						
Total households						
0-2 months	3,465	41,780	8,019	33,761	2,842	30,919
3-5 months	94	1,021	327	694	53	641
6-9 months	242	2,265	701	1,564	86	1,478
10-12 months	1,867	24,948	4,348	20,600	1,607	18,993
	1,262	13,546	2,643	10,903	1,096	9,807
Other income producing activity at home						
Total households						
none	3,465	41,780	8,019	33,761	2,842	30,919
1 month	3,381	39,954	7,601	32,353	2,790	29,563
2 months	20	607	98	509	-	509
3-4 months	59	356	65	291	52	239
5 or more months	-	579	210	369	-	369
	5	284	45	239	-	239
Employment outside home and off farm						
Total households						
none	3,465	41,780	8,019	33,761	2,842	30,919
1 months	2,169	27,925	4,708	23,217	1,975	21,242
2 months	347	3,076	715	2,361	164	2,197
3-4 months	298	3,856	969	2,886	451	2,435
5 or more months	411	4,572	980	3,592	147	3,445
	240	2,352	647	1,705	105	1,600
None of these						
Total households						
None	3,465	41,780	8,019	33,761	2,842	30,919
1-2 months	839	10,709	2,345	8,364	639	7,725
3-4 months	1,136	12,145	2,448	9,697	868	8,829
5 or more months	1,014	11,704	2,203	9,501	999	8,502
	476	7,222	1,023	6,199	336	5,863

Source : Table 20

grass or bamboo, and other materials (Table 4.7). The households in the project and control strata are similar with respect to the composition of house roofing.

A similar tendency is observed with respect to the types of wall construction, as is also seen in Table 4.7. A large proportion of households (82 percent) use only wood for walls, followed by wood and grass or bamboo (7 percent) and only grass or bamboo (4 percent). The use of stone, brick and motar only, or only brick and wood is infrequent. Overall, these do not appear to be differences among study groups with respect to the quality of housing materials.

Household Assets

A similar conclusion may be drawn with respect to household assets owned by study population households (see Table 4.8). The most commonly owned among the assets listed in Table 4.8 in study population households are radios (81 percent), bicycles (61 percent), and drawing carts (51 percent). More than 10 percent of households also owned sewing machines (17 percent), electric fans (14 percent), and electric irons (13 percent). Cars are not owned by any of the households. The small proportion of households owning many of the items listed is the result of unavailability of electricity in parts of the study area. Once again, however, these do not seem to be systematic differences among study groups with respect to household assets.

Table 4.7 Number of households: Type of roofing and wall construction material by strata.

Type of roof and wall	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Type of roofing material				
Total households	3,508	45,383	8,246	37,137
Metal	2,911	38,726	7,211	31,515
Tiles	66	720	87	633
Wood	5	454	61	393
Thatch, grass or bamboo	343	3,731	594	3,137
Other material	183	1,737	293	1,444
Unknown or not reported	-	15	-	15
Type of wall construction				
Total households	3,508	45,383	8,246	37,137
Total reporting:				
Stone, brick or mortar only	17	91	-	91
Brick and wood	206	847	91	756
Wood only	2,607	37,665	6,715	30,950
Grass or bamboo only	216	1,947	392	1,555
Wood and grass or bamboo	322	2,947	559	2,388
Other	140	1,886	489	1,397
Unknown or not reported	-	-	-	-

Source : Tables 10 and 11

Table 4.8 Number of households owning selected household items: Type of household items by Strata.

Household items	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total Households	3,508	45,383	8,246	37,137
Car	-	-	-	-
Pick-up or mini-bus	41	1,208	342	866
Motorcycle	449	4,978	1,074	3,904
Bicycle	2,332	27,638	5,547	22,091
Radio	3,073	37,227	7,184	30,043
Television	123	3,769	555	3,214
Refrigerator	80	1,875	267	1,608
Electric fan	267	6,797	678	6,119
Electric iron	258	6,089	748	5,341
Electric rice cooker	113	1,402	158	1,244
Tricycle	31	334	34	300
Sewing machine	459	7,693	1,341	6,352
Drawing cart	1,761	23,067	4,152	18,915

Source : Table 12

Farm Assets

Data on farm assets owned by farm households in the study population are shown in Table 4.9. The most frequently owned among the assets listed are sprayers (with 25 percent of farm households owning) and animal draw carts (24 percent). The remainder of the assets are owned by only a small proportion of households. A somewhat higher proportion of Project Stratum households own sprayers (26 percent) than do Control Stratum households (13 percent), while ownership of farm trucks with water pump engines seem to be more common in Control Stratum farm households (14 percent versus less than 1 percent of Project Stratum households. It is likely, however, that these reflect differences in crop requirements to a greater extent than differences in assets from a standard of living point of view.

Sources of Water

Virtually all households in the study population (99 percent) obtain water for drinking and cooking outside the household. A large majority of households use shallow wells (wells not deeper than 100 feet) as their major source of water for drinking and cooking (78 percent), with the majority (94 percent) of these being open wells. Only a small proportion of households rely on either streams/rivers, ponds/lakes, or rain water for their drinking and cooking water (Table 10).

Several differences are apparent, however, in comparing study strata with respect to major source of water for cooking and

Table 4.9 Number of farm households possessing selected farm assets: Farm assets by strata and household allocation status.

Farm assets	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,465	41,780	8,019	33,761	2,842	30,919
Farm tractor	210	633	104	529	156	373
Animal draw cart	697	10,194	1,531	8,663	632	8,031
Farm truck	145	636	186	450	104	346
Pumping machine	334	3,639	476	3,163	435	2,728
Sprayer	480	10,879	2,299	8,580	1,061	7,519
Threshing machine	-	26	26	-	-	-
Rice mill	89	539	28	511	-	511
Fencing around farmland	106	2,002	325	1,677	142	1,535
Farm truck that uses pumping water machine as an engine	484	158	26	132	-	132

Source : Table 23.

Table 4.10 Number of households: Major source of drinking and cooking water by stratum.

Water source	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total households	3,408	45,383	8,246	37,137
Piped from central water system				
Into house	-	304	-	304
Outside house	-	-	-	-
Pumped from underground source				
Deep well				
Open	-	925	153	772
Covered	10	578	120	458
Shallow well				
Open	1,860	34,409	6,288	28,121
Covered	101	1,882	512	1,370
Stream or river	418	2,435	78	2,357
Pond or lake	840	663	213	450
Private reservoir	-	-	-	-
Rain water	259	3,783	882	2,901
Other	20	404	-	404
Source not reported	-	-	-	-

Source : Table 14.

drinking. Project Stratum households would appear to have greater access to shallow wells than do Control Stratum households, as 75 percent of the former and only 53 percent of the latter households use shallow wells for drinking/cooking water. Control Stratum households, on the other hand, use water from ponds or lakes in larger proportions than do Project Stratum households (24 versus 2 percent).

Table 4.11 displays data on sources of water for purposes other than drinking and cooking. The patterns of and differences in sources of water noted above with respect to water for drinking and cooking also apply to sources of water for other purposes.

Food Consumption

Data on food consumption in the seven days preceding the survey for household members aged 2 years and above are displayed in Table 4.12. To be analyzed properly, these data should be converted to nutrient equivalents. This will be done as part of the final evaluation. However, there do not appear to be major differences in the types or quantities of food consumed across study groups based upon the data in Table 4.12.

Agricultural Practices and Inputs

Length of Land Cultivation

As indicated in Table 4.13 and Figure 4.3, the typical farmer in the study population had all or part of their land under cultivation for between seven and eight and one-half months during the previous 12 month period. The narrow range of variation from

Table 4.11 Number of households: Major source of water used for purposes other than drinking and cooking by stratum.

Water source	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total households	3,508	45,383	8,246	37,137
Piped from central water system				
Into house	–	1,370	78	1,292
Outside house	39	234	234	–
Pumped from underground source				
Deep well				
Open	–	1,259	232	1,027
Covered	6	2,148	495	1,653
Shallow well				
Open	1,904	22,580	5,532	17,048
Covered	132	3,425	600	2,825
Stream or river	520	4,713	304	4,409
Pond or lake	812	7,174	625	6,549
Private reservoir	13	104	52	52
Rain water	13	52	52	–
Other	69	2,324	42	2,282
Source not reported	–	–	–	–

Source : Table 15

Table 4.12 Average units of food consumption per person in households during last 7 days: Type of food by strata.

Type of food	Unit	Strata			
		Control	Total, Both Project Strata	Stratum 1	Stratum 2
Caloric foods					
Rice	Kg				
Number persons > 2 years		21,476	267,075	46,934	220,141
Average per person		4.3	4.1	4.2	4.1
Sweet potato	Hectogram				
Number persons > 2 years		2,384	11,645	3,053	8,592
Average per person		4.6	5.3	5.5	5.2
Corn	Ears				
Number persons > 2 years		1,106	16,592	3,949	12,643
Average per person		2.7	3.1	2.6	3.3
6 minutes cassava	Hectogram				
Number persons > 2 years		1,228	15,259	3,424	11,835
Average per person		2.9	4.6	4.0	4.8
Other potato	Hectogram				
Number persons > 2 years		2,546	27,966	5,003	22,963
Average per person		4.1	4.2	4.5	4.1
Papaya	Numbers				
Number persons > 2 years		14,315	195,129	34,275	160,854
Average per person		.6	.8	.7	.8

(continued)

Table 4.12 (continued) Average units of food consumption per person in households during last 7 days: Type of food by strata.

Type of food	Unit	Strata			
		Control	Total, Both Project Strata	Stratum 1	Stratum 2
Protein foods					
Fresh meat					
Number persons > 2 years	Hectogram	15,115	193,971	36,451	157,520
Average per person		3.0	2.9	3.0	2.9
Fresh fish					
Number persons > 2 years	Hectogram	19,214	224,545	36,310	188,235
Average per person		4.1	3.8	3.8	3.8
Peanuts					
Number persons > 2 years	Hectogram	1,654	29,674	4,796	24,878
Average per person		1.5	2.5	3.5	2.1
Long beans					
Number persons > 2 years	Hectogram	13,447	147,292	25,881	121,411
Average per person		2.4	2.3	2.3	2.3
Chicken eggs					
Number persons > 2 years	Eggs	5,052	55,458	10,782	44,676
Average per person		1.4	1.6	1.5	1.6
Duck eggs					
Number persons > 2 years	Eggs	10,750	146,058	21,709	124,349
Average per person		1.8	1.8	1.9	1.8
Fermented fish					
Number persons > 2 years	Hectogram	20,738	247,129	42,889	204,240
Average per person		1.6	1.6	1.6	1.6

(continued)

Table 4.12 (continued) Average units of food consumption per person in households during last 7 days: Type of food by strata.

Type of food	Unit	Strata			
		Control	Total, Both Project Strata	Stratum 1	Stratum 2
Dry fish	Hectogram				
Number persons > 2 years		11,592	131,481	19,719	111,763
Average per person		1.6	1.6	1.5	1.7
Pla too	Hectogram				
Number persons > 2 years		9,318	131,959	22,344	109,615
Average per person		1.7	1.8	1.9	1.7

Source : Table 16.

Table 4.14 Number of households with farmland: Number of months during which all or part of household's farmland was under cultivation during the last 12 months by strata and household allocation status.

Number of months	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total households	3,475	41,789	8,028	33,761	2,842	30,919
None reporting	10	469	30	439	-	-
1 month	204	584	448	136	-	136
2 months	13	204	75	129	38	91
3 months	12	143	-	143	-	143
4 months	58	613	225	388	118	270
5 months	156	3,469	403	3,066	109	2,957
6 months	368	5,773	675	5,098	557	4,541
7 months	504	7,602	599	7,003	405	6,598
8 months	286	3,976	671	3,305	293	3,012
9 months	332	5,670	1,384	4,286	433	3,853
10 months	426	5,261	1,121	4,140	526	3,614
11 months	482	3,079	920	2,159	132	2,027
12 months	596	4,860	1,364	3,496	231	3,265
Don't know	28	525	113	412	-	412
Median number of months	8.3	7.5	8.4	7.3	7.6	7.2

Source : Table 33.

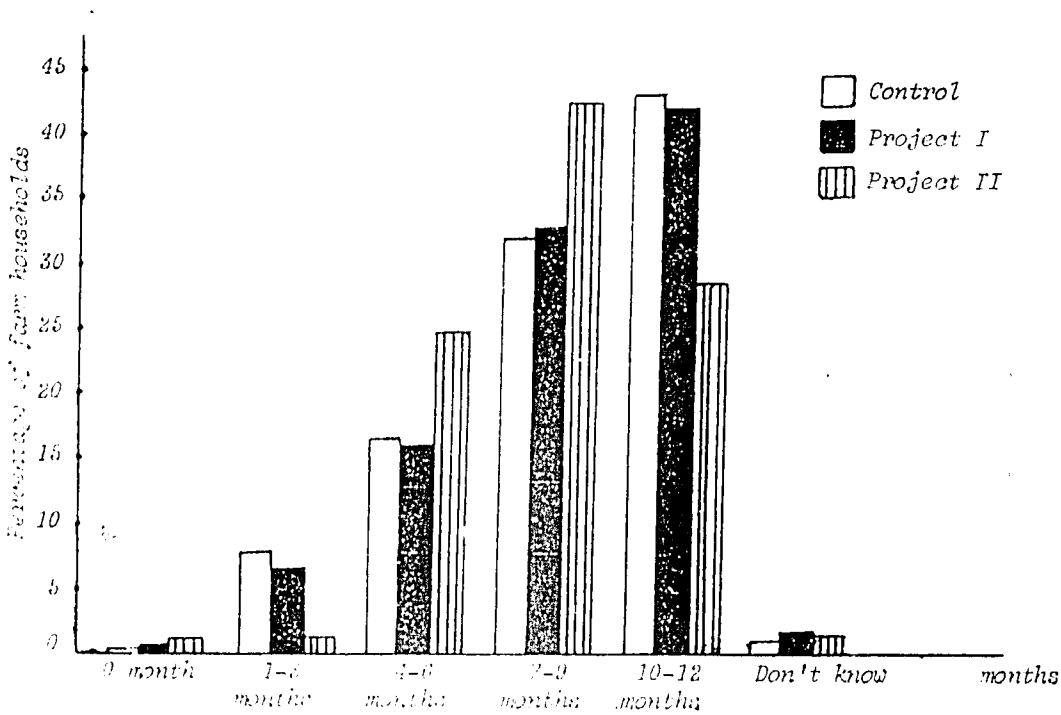

FIG. 4.3 NUMBER OF MONTHS DURING WHICH ALL OR PART OF HOUSEHOLD'S FARM LAND WAS UNDER CULTIVATION.

study group to study reflects the overall similarity in cropping patterns among these groups noted previously. This is an important area for rural development projects since the year round utilization of land is likely to contribute to the development of rural infrastructure, as well as retard the mobility of rural labor to urban areas and provide farmers with additional income.

Use of Agricultural Inputs (Fertilizer, Pesticide, Herbicide)

Data on the proportions of farm households using fertilizer, pesticide, and herbicide for each crop are displayed in Table 4.14 to 4.16. Table 4.17 presents a summary of use of these agricultural inputs accross all crops on a volume basis.

While variability from crop to crop ma input to input are apparent in this set of tables, it would seem reasonably safe to conclude[9] from these data that Project Stratum households make more extensive use of all three inputs than do Control Stratum households, both on an absolute and a per rai basis (see Table 4.17). This conclusion derives both from the summary data shown in Table 4.17 as well as from crop comparisons in the more detailed tables. Comparisons of Project Stratum 1 and 2 households within Project Stratum 2 do not indicate consistent patterns of differences.

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9 It should nevertheless be borne in mind that statistical tests were not performed on these data, and thus the potential for drawing unfounded conclusions exists.

Table 4.14 Percent of farm households growing each crop using chemical fertilizer for that crop by stratum and household allocation status.

Type of crop	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,466	41,780	8,019	33,761	3,842	30,919
Glutinous rice	86.4	64.4	51.6	67.1	30.1	65.6
Non-glutinous rice	44.8	64.4	76.0	42.4	61.1	62.8
Corn for consume	6.7	30.5	40.6	30.5	0.0	31.6
Corn for livestock	3.0	5.7	5.0	9.0	12.1	8.7
Kenaf	4.9	12.0	10.9	12.4	14.6	12.2
Oats	0.0	31.2	25.1	32.3	0.0	34.1
Cassava	6.7	10.3	1.7	12.9	7.2	13.5
Mungbean	0.0	46.4	61.4	27.5	25.0	31.3
Sugar cane	0.0	86.0	85.6	86.1	100.0	84.1
Peanuts	0.0	18.1	93.0	8.5	0.0	10.0
Pineapple	11.9	0.0	0.0	-	-	-
Sorghum	-	0.0	0.0	0.0	-	0.0
Cotton	-	63.1	64.4	62.6	73.4	59.4
Water melon	0.0	80.6	65.5	95.5	100.0	93.9
Pumpkin	0.0	64.0	86.1	54.0	-	54.0
Sesame	16.1	9.9	11.3	9.4	-	9.4
Chilli	20.0	62.5	53.6	65.2	60.0	67.2
Vegetables	79.1	93.4	90.9	93.7	84.8	95.2
Other crops	66.7	51.7	40.5	55.7	100.0	33.2

Source : Table 26.

Table 4.18 Percent of households growing each crop using pesticide for that crop by stratum and household allocation status.

Type of crop	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,468	41,780	8,019	33,761	2,842	30,919
Glutinous rice	21.8	18.6	4.7	21.3	12.5	21.9
Non-glutinous rice	19.0	8.3	6.8	8.5	0.0	9.9
Corn for consume	24.0	31.8	21.1	34.8	0.0	36.2
Corn for livestock	0.0	2.2	7.7	1.8	0.0	2.2
Kenaf	4.9	1.9	1.9	2.1	0.0	2.4
Jute	0.0	0.0	0.0	0.0	0.0	0.0
Cassava	0.1	0.1	0.5	0.0	0.0	0.0
Mungbean	56.5	88.8	92.1	85.7	100.0	63.3
Sugarcane	0.0	2.6	14.4	0.0	0.0	0.0
Peanuts	28.6	19.2	36.4	9.6	0.0	11.3
Pineapple	11.9	0.0	0.0	-	-	-
Sorghum	-	0.0	0.0	0.0	-	0.0
Cotton	-	92.5	81.8	96.3	93.3	97.2
Water melon	30.6	85.0	70.2	100.0	100.0	100.0
Pumpkin	0.0	71.8	86.1	65.3	-	65.3
Sesame	0.0	9.0	20.3	4.7	-	4.7
Chili	0.0	65.0	59.8	70.8	70.8	67.2
Vegetables	81.3	95.4	85.1	96.8	100.0	96.7
Other crops	33.3	45.2	15.8	55.7	100.0	33.2

Source : Table 27.

Table 4.16 Percent of farm households growing each crop using herbicide for that crop by stratum and household allocation status.

Type of crop	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,465	41,780	8,012	33,771	2,852	30,919
Glutinous rice	2.3	1.2	0.5	1.3	0.0	1.4
Non-glutinouse rice	3.2	1.8	1.3	1.9	0.0	2.0
Corn for consume	0.0	1.4	6.5	0.0	0.0	0.0
Corn for livestock	0.0	5.4	13.0	3.6	0.0	4.4
Kenaf	0.0	0.0	0.0	0.0	0.0	0.0
Jute	0.0	0.0	0.0	0.0	0.0	0.0
Cassava	0.0	0.3	0.0	0.4	0.0	0.4
Mungbean	0.0	0.0	0.0	0.0	0.0	0.0
Sugarcane	0.0	0.0	0.0	0.0	0.0	0.0
Peanuts	0.5	2.4	6.5	0.0	0.0	0.0
Pineapple	11.0	0.0	0.0	-	-	-
Sorghum	-	0.0	0.0	0.0	-	0.0
Cotton	-	6.2	10.9	4.6	0.0	6.0
Water melon	0.0	18.7	4.7	32.8	52.8	23.7
Sesame	0.0	0.0	0.0	0.0	-	0.0
Chili	0.0	6.5	0.0	13.8	0.0	19.2
Vegetables	0.0	6.3	11.3	5.7	0.0	5.9
Pumpkin	0.0	1.5	14.4	0.0	-	0.0
Other crops	0.0	0.0	0.0	0.0	0.0	0.0

Source : Table 28.

Table 4.17 Average volume of inputs used per farm household and mean size of land holding by stratum and household allocation status.

Type of input	Control	Total, Both Project Strata	Stratum 1	Stratum 2		
				Total	Allocated Households	Unallocated Households
Chemical fertilizer (KG)	65.0	134.9	91.6	145.2	166.4	143.2
Pesticide (C.C.)	334.8	3,134.3	3,099.1	3,142.7	7,269.1	2,763.4
Herbicide (C.C.)	19.5	116.0	205.7	94.7	23.6	101.2
Mean size of land holding (rai)	37.3	33.5	29.6	34.4	43.7	33.5

Source : Table 21 & 29.

Agricultural Methods

Table 4.18 shows the extent of practice of "western" agricultural methods such as crop rotation, inter-cropping, soil testing, second cropping, and dry cropping in the study population. In general, the most widely practiced western agricultural technology is machine tractor plowing (about 46 percent of farm households). This is because it is impossible to prepare the land for some crops using indigenous animals in many cases. Dry season cropping is also practiced by nearly one-fourth of Project Stratum households.

A major impediment to the use of "western" methods in the study areas is the lack of year-round water. Despite this, irrigation use ranges from only 5.0 percent in the Control group to 11.2 percent in Project Stratum 3 (Table 4.19). The potential for utilization of crop improvement technologies (i.e. inter-cropping, second cropping, etc.) would seem to be heavily contingent upon the resolution of the water problem. Accordingly, improving irrigation systems in the land in resettlement areas should be a matter of great priority, because this is a basic factor in increasing crop yields, reducing seasonal unemployment among farmers, and eventually raising their income.

Table 4.20 indicates that about 90 percent of the farmers in each stratum depend on natural rainfall (for all purposes combined). The proportion of farm households whose major source of water supply is irrigation canals is quite small (i.e. 1 percent in the Control group and 7 percent in the Project Stratum). Similarly, rivers or canals are used by 3 percent in the Control group and 1 percent in

Table 4.18 Percent of farm households practicing selected agricultural methods during the last 12 months by stratum and household allocation status.

Method	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,465	41,789	6,019	35,761	4,842	30,919
Crop rotation	4.2	8.3	14.4	6.8	9.3	6.7
Inter cropping	9.0	8.2	11.2	7.5	12.9	6.9
Soil testing	Z	1.0	2.6	.6	-	.7
Second cropping	3.8	16.1	18.6	15.5	27.5	14.3
Dry Season cropping	10.0	22.8	24.3	22.4	24.8	22.2
Tractor plowing	75.1	43.7	52.4	41.6	57.7	40.1

A Less than one half of one percent.

Source : Table 30.

Table 4.19 Number of farm households: Use of irrigation within the last 12 months for any purpose by strata and household allocation status.

Use of irrigation	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total households	3,465	41,780	8,019	33,761	2,842	30,919
Total households reporting	3,465	41,780	8,019	33,761	2,842	30,919
Use irrigation	172	4,333	567	3,766	229	3,537
Did not use irrigation	3,293	37,447	7,452	29,995	2,613	27,382

Source : Table 31.

Table 4.20 Number of farm households engaged in certain water-related agricultural activities: Type of activity and major source of water by strata and household allocation status.

Type of water-related activity and major source of water	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total households reporting use of water for expanding use of rice nursery (before rainy season)	3,035	31,871	4,897	26,974	1,707	25,267
- Natural compoundings	22	115	-	115	-	115
- Dug ponds	-	-	-	-	-	-
- Rivers or canals	81	612	48	564	60	504
- Irrigation canals	34	2,205	289	1,916	-	1,916
- Deep wells	-	-	-	-	-	-
- Shallow wells	-	2	2	-	-	-
- Dikes/reservoirs	24	232	17	215	-	215
- Natural rainfall	2,874	28,614	4,522	24,092	1,647	22,445
- Source not reported	-	91	19	72	-	72
Total households reporting use of water for growing vegetables	559	6,429	1,305	5,124	222	4,902
- Natural compoundings	80	368	191	177	-	177
- Dug ponds	-	-	-	-	-	-
- Rivers or canals	267	1,124	203	921	104	817
- Irrigation canals	33	2,641	169	2,472	11	2,461
- Deep wells	-	130	50	80	-	80
- Shallow wells	81	1,195	429	766	-	766
- Dikes/reservoirs	5	392	86	306	107	199
- Natural rainfall	93	579	177	402	-	402
- Source not reported	-	-	-	-	-	-

(continued)

Table 4.20 (continued) Number of farm households engaged in certain water-related agricultural activities: Type of activity and major source of water by strata and household allocation status.

Type of water-related activity and major source of water	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total households reporting use of water for double rice cropping	225	1,311	310	1,001	170	831
- Natural compoundings	13	-	-	-	-	-
- Dug ponds	88	1,157	310	847	170	677
- Rivers or canals	124	-	-	-	-	-
- Irrigation canals	-	102	-	102	-	102
- Deep wells	-	-	-	-	-	-
- Shallow wells	-	-	-	-	-	-
- Dikes/reservoirs	-	-	-	-	-	-
- Natural rainfall	-	52	-	52	-	52
- Source not reported	-	-	-	-	-	-
Total households reporting use of water for growing fruit trees	1,561	10,977	3,103	7,874	802	7,072
- Natural compoundings	-	81	24	57	-	57
- Dug ponds	5	312	164	148	52	96
- Rivers or canals	15	130	26	104	52	52
- Irrigation canals	-	68	16	52	-	52
- Deep wells	-	101	26	75	-	75
- Shallow wells	80	208	75	133	-	133
- Dikes/reservoirs	-	43	43	-	-	-
- Natural rainfall	1,456	9,885	2,729	7,156	698	6,458
- Source not reported	5	149	-	149	-	149

(continued)

Table 4.20 (continued) Number of farm households engaged in certain water-related agricultural activities: Type of activity and major source of water by strata and household allocation status.

Type of water-related activity and major source of water	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2 Total	Project Stratum 2 Allocated Households	Project Stratum 2 Unallocated Households
Total households reporting use of water for raising fish	38	895	299	596	52	544
- Natural compounding	-	19	19	-	-	-
- Dug ponds	18	435	164	271	52	219
- Rivers or canals	5	-	-	-	-	-
- Irrigation canals	-	107	16	91	-	91
- Deep wells	-	-	-	-	-	-
- Shallow wells	10	84	32	52	-	52
- Dikes/reservoirs	-	26	26	-	-	-
- Natural rainfall	5	224	42	182	-	182
- Source not reported	-	-	-	-	-	-
Total households reporting use of water for growing mulberry	357	2,430	795	1,635	-	1,635
- Natural compoundings	-	-	-	-	-	-
- Dug ponds	-	24	24	-	-	-
- Rivers or canals	-	-	-	-	-	-
- Irrigation canals	-	-	-	-	-	-
- Deep wells	-	-	-	-	-	-
- Shallow wells	-	2	2	-	-	-
- Dikes/reservoirs	-	-	-	-	-	-
- Natural rainfall	357	2,404	769	1,635	-	1,635
- Source not reported	-	-	-	-	-	-

Source : Table 32.

the Project Strata. These results indicates that, for all practical purposes, the only source of water currently available for expanding rice and nursery cultivation is rainfall, as the use of irrigation, is extremely limited.

It can be concluded that farmers in the resettlement areas still depend very much on nature for their livelihood. If water-sources can be developed so that they are more adequate for the needs of study population farmers, agricultural productivity and their standard of living could be substantially increased.

Crop and Livestock Disposal

Data on the proportion of farm households selling at least some of the production of each crop grown in the twelve months prior to the survey and the average amount sold per household selling each crop are shown in Table 4.21. These data derive from more detailed tables showing other methods of disposal in addition to sales, to which the interested reader is referred for a more detailed account of crop disposal practices (see Tables 38A-38L in the Appendix). The data in Table 4.21, however, suggest a clear distinction between cash and home consumption crops. While most farm households grow glutinous rice, only about one-third of households sold glutinous rice in the previous 12 month period. Examination of the more detailed Appendix table (Table 38A) reveals that a large majority of the glutinous rice produced by farm households in the study population was for home consumption. Substantial proportions of the production non-glutinous rice and corn for consume were also reserved for home consumption, although of a much smaller magnitude

Table 4.21 Percentage of farm households that sold the production of each crop and average amount sold per household by stratum and household allocation status.

Type of crops	Control		Total, Both Project Strata		Stratum 1		Stratum 2					
							Total		Allocated		Unallocated	
	Percentage of Households	Average amount per Hh.	Percentage of Households	Average amount per Hh.	Percentage of Households	Average amount per Hh.	Percentage of households	Average amount per Hh.	Percentage of Households	Average amount per Hh.	Percentage of Households	Average amount per Hh.
Glutinous rice (Kg)	21.7	1,527.9	37.6	1,868.0	16.8	1,103.6	41.6	1,925.1	33.0	1,497.4	42.2	1,946.7
Non-glutinous rice (Kg)	36.0	1,070.9	67.5	1,404.9	26.1	1,521.8	67.8	1,387.6	87.4	1,544.7	66.0	1,371.4
Kenaf (Kg)	95.1	505.9	98.8	903.6	96.1	564.3	100.0	1,027.4	100.0	437.8	100.0	1,101.5
Cassava (Ton)	98.4	24.4	95.8	13.7	99.1	13.5	94.5	13.7	96.5	14.9	94.7	13.6
Sugar cane (Ton)	-	-	91.0	67.5	100.0	71.6	89.0	66.5	100.0	163.6	87.5	50.9
Corn for livestock (Kg)	100.0	1,330.0	92.1	11,519.2	100.0	13,298.0	90.0	11,041.0	85.0	11,612.5	91.3	10,924.2
Jute (Kg)	100.0	325.5	100.0	681.2	100.0	291.9	100.0	678.9	100.0	500.0	100.0	687.5
Mungbeans (Kg)	56.5	552.0	95.1	553.9	92.1	305.8	100.0	428.2	100.0	435.0	100.0	194.4
Peanuts (Kg)	55.6	79.5	83.8	386.3	81.5	403.4	83.7	376.9	78.0	1,204.6	84.7	241.2
Cotton (Kg)	-	-	91.0	1,343.2	95.6	1,501.3	89.3	1,284.0	86.7	1,487.6	90.1	1,225.9

Source : Table 38A-38L.

than in the case of glutinous rice.

On the other hand, several crops appear to be grown almost exclusively as cash crops. These include kenaf, cassava, sugar cane, jute, mungbean, peanuts, sorghum and cotton. Notable among these are cassava, jute and kenaf, where in excess of 95 percent of the total crop production for farm households overall was sold. While high proportions of households also sold corn for livestock (approximately 9[illegible] percent overall), a substantial portion of the total production of this crop was disposed of in other ways (see Table 4.21).

In addition to crop production for home consumption and sale, the production of several crops was also used as a means of debt payment or exchanged/bartered by a substantial number of farm households (see Tables 88A-88L in the Appendix). For example both glutinous and especially non-glutinous rice were used for these purposes by households in all study groups in substantial proportions. Corn for livestock was used for debt payment by Project Stratum households in modest proportions (about 15 percent), but in considerable volume (an average of approximately 4000 KG. per household). Among these households, (i.e. Project Stratum households growing corn for livestock), production of this crop used for payment was the second most common method of disposal, with sale being the most common.

Marketing Outlets for Crops

Table 4.22 summarizes the data on major marketing outlets used by study population farm households for all crops combined.

Table 4.22 Percentage distribution of farm households and major marketing outlet for crops by stratum and household allocation status.

Major marketing outlet	Control	Total, Both Project strata	Stratum 1	Stratum 2 Total	Stratum 2 Allocated Households	Stratum 2 Unallocated Households
Total farm households	3,4[illegible]	41,280	8,019	33,261	2,842	30,919
Market places	1.0	5.7	5.8	5.7	10.3	5.1
Settlement dealers	47.3	29.8	26.0	30.8	16.5	32.5
Dealers outside settlement	40.4	54.1	48.2	55.6	71.7	53.7
Coops	1.0	4.8	13.4	2.6	1.2	2.8
Neighbors	4.6	2.9	3.5	2.7	-	3.0
Other	-	1.0	0.4	1.1	Z	1.3
Not reported	5.7	1.7	2.7	1.5	-	1.6

Z less than one-half of one percent

Source : Table 39A-39L.

Detailed data on marketing outlets on a crop-by-crop basis may be found in Table 39A-39L in the Appendix. Generally, farmers market their crop production through dealers (84 percent overall), with dealers outside the settlement areas accounting for 53 percent and settlement dealers used by 31 percent of farm households. There would seem to be a tendency for Control Stratum farm households to use settlement dealers to market their crop production to a greater extent than households in the Project Stratum (47 versus 30 percent), while Project Stratum households use dealers outside the settlement in greater numbers than do Control Stratum households (54 versus 40 percent). A similar pattern is evident in comparing Allocated and Unallocated households within Project Stratum 2, where Allocated

households appear to use dealers outside the settlement more frequently (72 versus 54 percent), while Unallocated households rely upon settlement dealers with greater frequency (33 versus 17 percent of Allocated households). At the time of the Baseline Survey, farmers coops were used as the major marketing outlet for crops by only about 1 percent of farm households in the study population. The patterns noted above vary somewhat from crop-to-crop, however, and the interested reader should consult tables 39A-39L in the Appendix.

Livestock Disposal

Livestock disposal is defined as the number of livestock sold, exchanged or bartered and slaughtered for home consumption. The data in Table 4.23 pertain to livestock disposal practices in the study area in the 12 months preceding the survey.

Buffalo The number of households reporting buffalo disposed in the previous 12 months is found to be similar in the various study groups (20 percent of households in the Control group, 20 percent in Project Stratum 1, and 23 percent in Project Stratum 2). The average number of buffalo disposed in the study population averaged about 1.0 head per household , with only minor fluctuations from study group to study group, while the average value of buffalo disposed per household ranged between 8,145 baht and 11,047 baht. Average price of buffalo disposed during in the reference year was approximately 6,200 baht per buffalo.

Cattle The proportion of households reporting cattle disposal during the reference year was smaller than in the case of buffalo. Six percent of households in Control group and 3 percent

Table 4.23 Number and value in baht of livestock and number of farm households disposing* of livestock during hte last 12 months: Type of livestock by stratum and household allocation status.

Type of livestock	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,465	41,780	8,019	33,761	2,842	30,919
Buffalo						
Number of households reporting buffalo disposed	686	9,435	1,607	7,828	593	7,235
Number of buffalo disposed	1,545	18,822	2,841	15,981	1,209	14,772
Value of buffalo disposed (Baht)	6,689,850	99,564,100	13,088,500	86,475,600	8,707,300	77,768,300
Cattle						
Number of households reporting cattle disposed	209	1,241	214	1,027	262	765
Number of cattle disposed	413	2,033	369	1,664	374	1,290
Value of cattle disposed (Baht)	2,122,200	8,477,600	1,793,900	6,683,700	1,168,600	5,515,100
Swine						
Number of households reporting swine disposed	422	4,241	398	3,843	252	3,591
Number of swine disposed	1,834	11,096	1,524	9,572	1,642	7,930
Value of swine disposed (Baht)	3,291,000	19,133,700	1,050,800	18,082,900	4,276,200	13,806,700
Chickens						
Number of households reporting chickens disposed	2,962	29,213	6,670	22,543	1,914	20,629
Number of chickens disposed	70,951	531,017	146,092	384,925	46,126	338,799
Value of chickens disposed (Baht)	1,742,885	14,817,595	4,247,291	10,570,304	1,322,107	9,248,197
Ducks						
Number of households reporting ducks disposed	613	7,299	944	6,355	359	5,996
Number of ducks disposed	8,964	66,577	7,479	59,098	9,475	49,623
Value of ducks disposed (Baht)	473,155	2,039,236	252,226	1,787,010	258,360	1,528,650

* 'Disposal' includes sold: exchanged or bartered, and slaughtered for home consumption.

Source : Table 40.

in both Project Stratum 1 and Project Stratum 2 disposed of cattle in the reference year. The average number of cattle disposed per household disposing of cattle was approximately 1.7. The average value of buffalo disposed per household was also slightly less than that of buffalo, about 7,300 baht overall, while the price of cattle ranged between 4,017-5,138 baht per head.

Swine The proportion of households disposing of swine amounted to 16 percent of farm households overall, with very little variation from study group to study group. Large variations are observed in the average number of swine disposed of per household, which, while averaging about 2.8 per household, ranged from a high of 6.5 in Stratum 1 Allocated households to a low of 2.2 in Stratum 2 Unallocated households. Overall, Control Stratum households disposed of an average of 4.3 swine per household as compared with 2.6 among Project Stratum households. The average value of swine disposed of in the reference year was slightly above 1,700 baht per swine.

Chickens Chickens are raised for home consumption in substantial volume, hence the number of households reporting disposal of chickens is higher than that of other livestock (71 percent of households overall, and 85 percent of Control Stratum households). On average, farm households in the study population disposed of just under 19 chickens per household, with Control Stratum households disposing of an average of 24 chickens per household as compared with 40 per household in the Project Stratum, with the average value of chickens disposed ranging from 25 to 29 baht per chicken and averaging 27 baht per chicken.

Ducks The proportion of households reporting duck disposal during the reference year was smaller than in the case of chicken. Eighteen percent of households in Control group, 12 percent in Project Stratum 1 and 19 percent in Project Stratum 2 disposed of duck in the reference year. The average number of duck disposed in the study population averaged about 10 while the average value of duck disposed per household ranged between 280-772 baht. The average value of duck disposed in the reference year was about 33 baht per duck.

Access to and Use of Services and Resources

Business-Related Visits

Table 4.24 displays summary data on the proportion of farm household heads making visits to or being visited by representatives of relevant organization/enterprises in the 12 months prior to the survey. Such information is useful in assessing both access to and utilization of these resources, particularly at the time of final project evaluation. As shown in Table 4.24, visits to and by dealers were experienced most frequently by farm household heads in the reference year. Overall, 60 percent made visits to dealers, while nearly 50 percent were visited by dealers. While equal proportions of household heads in each stratum made visits to dealers, Project Stratum households were visited by dealers in somewhat greater proportions (50 percent versus 35 percent of Control Stratum household heads). This is possibly due to the somewhat greater diversification of crops in the Project as compared to the Control Stratum, particularly the volume of cash crops produced.

Approximately 42 percent of household heads were visited by agricultural extension agents, with apparently higher proportions of Project than Control Stratum household heads receiving visits (44 versus 27 percent). This is not surprising, however, given that the extension agents are located in allocated villages. This would account for the higher proportion (52 percent) of Project Stratum 1 farmers receiving such visits.

Visits to settlement offices and agricultural demonstration plots were much less frequent (15 and 13 percent of household heads respectively). In the case of settlement office visits, household heads in allocated villages (Project Stratum 1) were much more likely to have made a visit than those in the other study groups, possibly reflecting greater commitment to the settlements.

Table 4.24 Percentage of household heads making selected type of visits during the last 12 months by stratum.

Type of visits	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2
Visits to settlement office	17.5	15.1	34.5	10.9
Visits to dealers	60.5	60.2	60.6	60.1
Visits by dealers	35.0	50.0	50.2	44.7
Visits by agricultural extension agent	26.9	43.8	52.2	41.6
Visits to agricultural demonstration plots	7.3	13.2	19.5	11.6

Source : Table 44-48.

Data showing the frequency of visits by type of visit may found in appendix Tables 44 to 48. In the way of summarization, these data show that household heads in Project Stratum 1, in addition to making visits in greater proportions, also made visit with somewhat greater frequency than those in the other study groups.

Visits to Health Clinics

As shown in Table 4.25, visits to health clinics in the thirty days prior to the survey were modest in number (approximately 9 percent of the study population overall), and proportionally similar in each stratum. It is difficult to interpret this information, however, without also having information on the proportion of persons in the study population who were ill during the thirty day period.

Trips to a Market Place

Data on the proportion of household heads making trips to a market place during the 12 months preceding the survey by the major purpose of the trip are displayed in Table 4.26. Nearly 84 percent of household heads in the study population made at least one trip to a market place in the reference year whose major purpose was to purchase food or clothing. Other major purposes given for trips by substantial numbers of household heads were to sell crops, livestock, etc. (51 percent) and to purchase agricultural inputs and livestock (38 percent). The various study groups appear to be quite similar with respect to the proportions of household heads making trips and the major purposes of the trips.

Table 4.25 Number of household members: Number of visits to a health clinic during the last 30 days by strata.

Number of visits	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total household members	23,220	283,551	50,170	233,381
None	21,452	259,210	45,384	213,826
1 visit	1,015	13,119	2,785	10,334
2 visit	403	6,115	1,143	4,972
3 visits	146	3,259	396	2,863
4 visits	84	578	230	348
5 or more visits	100	845	206	639
Number of visits not reported	20	425	26	399

Source : Table 9.

Time and Means of Transportation to Nearest Amphoe

Local buses are the most frequent means of transportation used by household members for travel to the nearest amphoe, being used by 74 percent of households overall, with "other vehicles" accounting for 21 percent of households. Control and Project Stratum households appear to differ, however, in term of proportions using each of the two major means of transportation. Fifty percent of Control Stratum households use the local bus to travel to nearest amphoe as compared to 78 percent of Project Stratum households, while the proportion of Control Stratum households using other vehicles is greater than for the Project Stratum (Table 27).

Table 4.26 Proportion of household heads making trips to market place during the last 12 months by major purpose of trip and stratum.

Purpose of trip	Control	Total, Both Project Stratum	Stratum 1	Stratum 2
Sell crops, Livestock, etc.	59.0	50.9	53.1	52.1
Purchase agricultural inputs or livestock	37.5	38.5	34.2	39.5
Purchase food or clothing	87.8	85.7	82.5	88.2
Purchase other commodities	18.5	16.1	18.3	17.3
Sell handicrafts	2.9	0.9	0.8	0.9
Other purposes	10.1	8.8	9.7	8.6

Source : Table 49

The choice of vehicle would appear to be a function of distance to the nearest amphoe. Based upon the more detailed data shown in Appendix Table 50, it can be observed that for trip taking between 31 and 60 minutes (a time period which implies a non-trivail distance irrespective of the type of vehicle used), 36 percent were by bus and 13 percent by other vehicle. In contrast, for trips taking less than 15 minutes, 48 percent were by other vehicle and only 17 percent by local bus. The modal category for time spent in travelling to the nearest amphoe in the study population was 31 to 60 minutes.

Memberships in Community Organization

Overall, the extent of memberchip in community organization is rather modest in the study population, as may be seen in Table 4.28. Village scount organizations are the most frequently belonged to organization (27 percent of households), with farm cooperatives (24 percent) and other organizations not shown in Table 4.28. (24 percent) also claiming a substantial number of members in the study population. Of interest, however, is the large proportion of Project Stratum 1 households (50 percent) at least one household members belonging to a farm cooperatives. One of the objectives of the Land Settlement Project is to promote farming cooperative arrangements. A difference of smaller magnitude is the higher proportion of Control Stratum households with a household member belonging to BAAC than is the case in the Project Stratum (28 and 15 percent respectively).

Table 4.27 Percentage of households making at least one trip to the nearest amphoe in the last year and means of transportation by stratum.

Means of transportation	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2
Local bus	57.3	74.7	69.2	76.0
Other vehicle	32.9	20.3	23.8	19.5
On foot	1.3	4.0	9.4	3.9
Other	8.5	1.0	2.6	Z

Z less than one-half of one percent

Source : Table 50

Table 4.28 Percentage of households that have at least one member belonging to a adult community organizations by stratum.

Type of organization	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2
BAAC	25.5	51.1	16.3	14.9
Village committee	23.8	17.9	19.9	17.4
Farm cooperatives	29.7	23.4	49.7	17.5
Village scout	19.9	27.5	22.2	28.6
Voluntary development and self defence village	4.4	13.8	9.0	14.9
Farmer association	8.4	8.4	11.1	7.8
Saving cooperatives	-	1.6	1.5	1.7
Other	27.9	23.6	23.4	23.6

Source : Table 51

APPENDIX A

METHOD OF ESTIMATING VARIANCES

The method employed for estimating the sampling variance of Baseline Survey estimates consists of a probability proportional to size (PPS) with replacement estimator (adjusted by a finite population correction factor) of variance due to selection of PSU's (i.e., between village/chunk variance) and a simple random sample (S^2) estimator (also adjusted by a finite population factor) of the within-village/chunk component of variance. Specifications for estimating the variance of totals, means, and proportions for the Baseline Survey data are given below.

Variance of Totals

Let X_{hij} represent a weighted estimate of a characteristic for household j, PSU i, stratum h; $X_{hi.}$ represent a weighted total of a characteristic for PSU i, stratum h ($X_{hi.} = \sum_j X_{hij}$); and $X_{h..}$ represent a stratum sum of weighted PSU totals ($X_{h..} = \sum_i X_{hi.} = \sum_i \sum_j X_{hij}$). The estimate of the variance of a stratum total $X_{h..}$ is given by:

$$\hat{Var}\, X_{h..} = \{(1 - \frac{\sum_i^{n_h} P_{hi}}{n_h}) \frac{1}{(n_h(n_h - 1))} \sum_i^{n_h} (n_h(X_{hi.} - X_{h..})^2\}$$

$$+ \{(1 - (1 - \frac{\sum_i^{n_h} P_{hi}}{n_h})) \sum_i^{n_h} \frac{M_{hi} - m_{hi}}{M_{hi}} \frac{1}{(m_{hi}(m_{hi} - 1))}$$

$$\sum_j^{m_{hi}} (m_{hi} X_{hij} - X_{hi.})^2\} \qquad (1)$$

Where:

$\sum_i^{n_h} P_{hi}$ = sum of probabilities of selection for sample PSU's in stratum h

n_h = number of sample PSU's in stratum h

M_{hi} = total number of households in PSU i

m_{hi} = number of households in PSU i in which completed interviews were obtained

Note: The expression contained in the first set of brackets provides the estimate of the between-PSU component of variance, while the expression enclosed by the second set of brackets represents the estimate of the within PSU component.

The analagous expression for covariance is:

$$Cov(X_{h..}, Y_{h..}) = \{(1 - \frac{\sum_i^{n_h} P_{hi}}{n_h}) \frac{1}{(n_h(n_h - 1))}$$

$$\sum_i^{n_h} (n_h X_{hi.} - X_{h..})(n_h Y_{hi.} - Y_{h..})\}$$

$$+ \{(1 - (1 - \frac{\sum_i^{n_h} P_{hi}}{n_h})) \sum_i^{n_h} \frac{M_{hi} - m_{hi}}{M_{hi}} (\frac{1}{(m_h(m_h - 1))}$$

$$\sum_j^{m_h} (m_{hi} X_{hij} - X_{hi.})(m_{hi} Y_{hij} - Y_{hi.})\}] \qquad (2)$$

Where: $X_{h..}$ and $Y_{h..}$ are survey estimates of stratum totals.

Variance of Ratios

Two types of ratios are to be estimated from the survey data: means and proportion. Estimates of variance were obtained for both type of ratios using the same formula, which differs only in the way the X's of the ratio R = X/Y are defined.

For means,

X = the sum of valid responses for a variable of interest, and

Y = a count of households in which completed interviews were obtained.

For proportions,

X = a count of the frequency of occurrence of a specified response with respect to a variable of interest, and

Y = as above.

The variances of both means and proportions were estimated as follows:

$$VAR(R - \frac{X}{Y}) = \frac{1}{Y^2}(VAR(X_{h..}) + R^2 VAR(Y_{h..}) - 2R\ COV(X_{h..}, Y_{h..}) \quad (3)$$

Where: all terms are as defined above.

APPENDIX B

TABLES

Table 1 Number of households: Type of household and household allocation status by strata.

Type of household and household allocation status	Total		Stratum							
			Control		Total, Both Project Strata		Stratum 1		Stratum 2	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Unweighted data										
Total	1,485	100.0	370	24.9	1,115	75.1	374	33.5	741	66.5
Farm households	1,406	94.7	363	24.4	1,043	70.2	364	32.6	679	60.9
Allocated	556	37.4	181	12.2	375	25.3	323	29.0	52	4.7
Unallocated	850	57.2	182	12.3	668	45.0	41	3.7	627	56.2
Non-farm households*	79	5.3	7	.5	72	4.8	10	.9	62	5.6
Weighted data										
Total	48,891	100.0	3,508	7.2	45,383	92.8	8,246	18.2	37,137	81.8
Farm households	45,245	92.5	3,465	7.1	41,780	85.5	8,019	17.7	33,761	74.4
Allocated	12,152	24.9	2,185	4.5	9,967	20.4	7,125	15.7	2,842	6.3
Unallocated	33,093	67.7	1,280	2.6	31,813	65.1	894	2.0	30,919	68.1
Non-farm households*	3,646	7.5	43	Z	3,603	7.4	227	.5	3,376	7.4

* The Breakdown into "allocated" and "unallocated" does not apply for non-farm households.

Z less than one-half of one percent.

Table 2 Number of household members: Age group by strata and household allocation status.

Type of household and age group	Control		Total, Both Project Strata		Project Stratum 1		Project Stratum 2					
							Total		Allocated Households Members		Unallocated Household Members	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All shouseholds												
Total population	23,220	100.0	283,551	100.0	50,170	17.7	233,381	82.3	18,928	6.7	197,029	69.5
No age given	-	-	138	Z	26	Z	112	Z	-	-	112	Z
Children under 11	6,861	29.5	80,711	28.5	15,185	5.4	65,526	23.1	5,551	2.0	55,082	19.4
Persons over 60	816	3.5	10,425	3.7	1,458	.5	8,967	3.2	255	Z	7,832	2.3
Invalids 11-60	93	Z	896	Z	82	Z	814	Z	52	Z	747	Z
Others 11-60	15,450	66.5	191,381	67.5	33,419	11.8	157,962	55.7	13,070	4.6	133,256	47.0
Farm households												
Total population	22,991	100.0	264,808	100.0	48,851	18.4	215,957	81.6	18,928	7.1	197,029	74.4
No age given	-	-	138	Z	26	Z	112	Z	-	-	112	Z
Children under 11	6,789	29.5	75,352	28.5	14,719	5.6	60,633	22.9	5,551	2.1	55,082	20.8
Persons over 60	816	3.5	9,521	3.6	1,434	.5	8,087	3.1	255	Z	7,832	3.0
Invalids 11-60	80	Z	881	Z	82	Z	799	Z	52	Z	747	Z
Others 11-60	15,306	66.6	178,916	67.6	32,590	12.3	146,326	53.3	13,070	4.9	133,256	50.3
Non-farm households*												
Total population	229	100.0	18,743	100.0	1,319	7.0	17,424	93.0	-	-	-	-
No age given	-	-	-	-	-	-	-	-	-	-	-	-
Children under 11	72	31.4	5,359	28.6	466	2.5	4,893	26.1	-	-	-	-
Persons over 60	-	-	904	4.8	24	Z	880	4.7	-	-	-	-
Invalids 11-60	13	5.7	15	Z	-	-	15	Z	-	-	-	-
Others 11-60	144	62.9	12,465	66.5	829	4.4	11,636	62.1	-	-	-	-

* The breakdown into allocated and unallocated does not apply to non-farm households: Therefore, numbers appear only in the 'Total' columns.

Z less than one half of one percent.

Table 3 Number of households: Migration status by strata.

Migration status	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total households	3,508	45,383	8,246	37,137
No usual residents* have moved out of the household during the last 5 years	2,102	29,701	5,631	24,070
At least one usual resident* has moved out during the last 5 years	1,406	15,682	2,615	13,067
Not reported	-	-	-	-

* usual residents are defined as persons whose normal or usual place of residence was the household interviewed.

Table 4 Number of persons reported to have moved permanently from households during the last 5 years: Area moved to and major reason for moving by strata.

Area moved to and major reason for moving	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total persons who moved	2,415	25,875	3,962	21,913
To another household within village	698	8,385	1,003	7,382
To seek employment; unemployed at time moving	10	103	-	103
To seek better job	-	27	27	-
To attend school	-	19	19	-
To get married	665	7,729	869	6,860
Other	23	450	88	362
Not reported	-	57	-	57
To another village within settlement	328	4,070	702	3,368
To seek employment; unemployed at time moving	17	152	-	152
To seek better job	10	108	-	108
To attend school	3	44	-	44
To get married	299	3,551	676	2,875
Other	-	215	26	189
Not reported	-	-	-	-
To a village within another settlement	94	1,266	230	1,036
To seek employment; unemployed at time of moving	-	122	46	76
To seek better job	13	77	25	52
To attend school	-	-	-	-
To get married	74	1,015	159	856
Other	7	52	-	52
Not reported	-	-	-	-

(continued)

Table 4 (continued) Number of persons reported to have moved permanently from households during the last 5 years: Area moved to and major reason for moving by strata.

Area moved to and major reason for moving	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
To a city or urban area				
To seek employment; unemployed at time of moving	725	6,958	896	6,062
To seek better job	132	1,340	106	1,234
To attend school	246	1,256	256	1,000
To get married	64	1,386	182	1,204
Other	216	2,299	246	2,053
Not reported	70	677	106	571
Other area	-	-	-	-
To seek employment; unemployed at time of moving	533	5,001	1,106	3,895
To seek better job	12	588	43	545
To attend school	74	813	42	771
To get married	35	391	202	189
Other	313	1,979	614	1,365
Not reported	119	1,230	205	1,025
Area moved to not reported	-	-	-	-
	13	195	25	170

Table 5A Number of children ever born to ever-married women aged 15 years and over: Age group of mother and sex of children by status of children.

Age of mother and sex of children ever born	Status of children ever born				Number of ever married women completely stated as to children ever-born
	Total number of reported births	Living with mother	Living elsewhere	Now dead	
Total (Both sexes)	301,584	191,668	67,835	42,081	59,665
15-19	1,127	1,114	-	13	1,043
20-24	11,581	10,902	94	585	6,492
25-29	21,011	19,517	249	1,245	7,951
30-34	32,218	28,673	620	2,925	8,280
35-39	36,532	31,689	1,389	3,454	7,465
40-44	46,030	34,108	6,571	5,351	7,026
45-49	46,423	29,071	10,571	6,781	6,368
50-54	38,262	18,053	13,372	6,837	5,069
55-59	34,750	11,264	15,528	7,958	4,587
60-64	13,025	3,457	6,571	2,997	1,935
65-69	9,714	1,806	6,057	1,851	1,510
70-74	5,928	987	3,746	1,195	979
75+	4,957	1,001	3,067	889	934
Not stated	26	26	-	-	26

Table 5B Number of children ever born to ever-married women aged 15 years and over: Age group of mother and sex of children by status of children.

Age of mother and sex of children ever born	Status of children ever born				Number of ever married women completely stated as to children ever-born
	Total	Living with mother	Living elsewhere	Now dead	
Males	154,765	90,991	41,351	22,489	59,665
15-19	544	531	-	13	1,043
20-24	5,604	5,233	3	369	6,492
25-29	10,575	9,743	146	686	7,951
30-34	16,183	14,661	316	1,206	8,280
35-39	18,806	16,090	753	1,963	7,465
40-44	24,046	18,271	3,211	2,564	7,026
45-49	24,233	15,079	5,122	4,032	6,368
50-54	19,347	8,846	6,785	3,714	5,069
55-59	17,764	5,772	7,796	4,196	4,587
60-64	7,240	1,620	3,995	1,625	1,935
65-69	528	434	3,266	828	1,510
70-74	3,048	210	2,095	743	979
75+	2,821	404	1,867	550	934
Not stated	26	26	-	-	26

Table 5C Number of children ever born to ever-married women aged 15 years and over: Age group of mother and sex of children by status of children.

Age of mother and sex of children ever born	Status of children ever born				Number of ever married women completely stated as to children ever-born
	Total	Living with mother	Living elsewhere	Now dead	
Females	146,819	94,747	32,480	19,592	59,665
15-19	583	583	-	-	1,043
20-24	5,977	5,670	91	216	6,492
25-29	10,436	9,774	103	559	7,951
30-34	16,035	14,012	304	1,719	8,280
35-39	17,726	15,599	636	1,491	7,465
40-44	21,984	15,837	3,360	2,787	7,026
45-49	22,190	13,992	5,449	2,749	6,368
50-54	18,915	9,205	6,587	3,123	5,069
55-59	15,986	5,492	7,732	3,762	4,587
60-64	5,785	1,837	2,576	1,372	1,935
65-69	5,186	1,372	2,791	1,023	1,510
70-74	2,880	777	1,651	452	979
75+	2,136	597	1,200	339	934
Not stated	-	-	-	-	26

Table 6 Number of ever-married women aged 15 years and over: Age group by date of last live birth.

Age of women	Total number of ever married women aged 15 years and over	Date of last live birth						
		Year of last live birth stated					Year of LLB N.S.*	
		Month of last live birth stated			Month of LLB N.S.*			
		LLB is 12 months or less prior to interview date	13-24 months preceding interview	24+ months preceding interview	Year of LLB is year prior to year of interview	Year of LLB is 2 or more years prior to interview	Women reporting 1 or more children ever born	Women reporting no children ever born
Total	62,746	7,502	4,[illegible]	40,981	52	4,986	926	3,466
15-19	2,060	677	[illegible]	115	-	5	22	1,014
20-24	7,369	2,894	1,718	1,471	52	66	-	1,168
25-29	8,350	1,301	1,519	4,[illegible]21	-	267	-	332
30-34	8,365	1,516	503	5,648	-	425	52	221
35-39	7,720	548	555	5,859	-	698	-	260
40-44	7,048	342	279	5,972	-	405	-	50
45-49	6,444	115	152	5,381	-	715	5	76
50-54	5,153	19	-	4,527	-	469	54	84
55-59	4,600	-	-	3,872	-	419	296	13
60-64	1,935	-	-	1,490	-	413	32	-
65-69	1,562	-	-	968	-	353	189	52
70-74	1,090	-	-	545	-	270	164	111
75+	1,024	-	-	392	-	461	86	85
Not stated	26	-	-	-	-	-	26	-

* Not stated

Table 7 Number of ever-married women aged 15 years and over reporting a birth in the 12 months preceding the survey: Age group of women by number of children ever born.

Women's age	Total	Number of children ever born of each age's group										Not Stated
		1	2	3	4	5	6	7	8	9	10	
Total	7,502	2,380	1,688	1,095	699	638	345	199	156	15	287	-
15-19	677	651	26	-	-	-	-	-	-	-	-	-
20-24	2,894	1,252	1,084	444	114	-	-	-	-	-	-	-
25-29	1,391	230	469	474	180	38	-	-	-	-	-	-
30-34	1,516	247	93	151	299	385	74	54	106	5	112	-
35-39	548	-	26	-	106	210	119	75	12	-	-	-
40-44	342	-	-	26	-	5	152	49	-	5	105	-
45-49	115	-	-	-	-	-	-	21	38	5	51	-
50-54	19	-	-	-	-	-	-	-	-	-	19	-
55-59	-	-	-	-	-	-	-	-	-	-	-	-
60-64	-	-	-	-	-	-	-	-	-	-	-	-
65-69	-	-	-	-	-	-	-	-	-	-	-	-
70-74	-	-	-	-	-	-	-	-	-	-	-	-
75+	-	-	-	-	-	-	-	-	-	-	-	-
Not stated	-	-	-	-	-	-	-	-	-	-	-	-

Table 8A Number of ever-married women aged 15 years and over: Age group and sex of children ever born by number of children ever born.

Age of women	No. of women	Number of children ever born											
		0	1	2	3	4	5	6	7	8	9	10	Not Stated
All Age	68,265	8,461	7,021	8,010	7,359	7,146	6,267	5,005	5,408	4,833	3,098	5,520	139
15-19	2,079	1,014	959	84	-	-	-	-	-	-	-	-	22
20-24	7,660	1,188	2,818	2,625	747	238	64	-	-	-	-	-	-
25-29	8,890	327	1,500	2,573	1,896	1,418	477	60	32	-	-	-	112
30-34	8,501	221	762	901	2,092	2,095	1,240	583	299	136	62	177	-
35-39	7,725	260	119	533	1,183	1,296	2,018	795	887	440	153	41	-
40-44	7,076	50	143	281	234	685	798	1,144	1,439	826	818	660	-
45-49	6,444	76	142	201	365	427	387	648	1,072	1,325	692	1,169	-
50-54	5,153	84	114	105	184	406	445	827	524	584	417	1,463	-
55-59	4,600	13	59	155	362	230	427	352	617	460	601	1,318	-
60-64	1,935	-	161	154	17	130	140	170	202	415	119	338	-
65-69	1,562	52	44	190	90	128	132	180	128	356	68	170	-
70-74	1,090	111	114	30	91	100	60	106	127	167	49	135	-
75+	1,024	85	40	178	98	52	139	132	23	124	99	49	5
Not Stated	26	-	26	-	-	-	-	-	-	-	-	-	-

Table 3 B Number of ever-married women aged 15 years and over: Age group and sex of children ever born by number of children ever born.

Age of women	No. of women	Number of male children ever born											Not Stated
		0	1	2	3	4	5	6	7	8	9	10	
All Ages	63,265	10,247	13,377	12,513	9,494	8,205	4,246	2,981	1,174	569	209	111	139
15-19	2,079	1,552	466	39	-	-	-	-	-	-	-	-	22
20-24	7,660	3,398	3,228	726	308	-	-	-	-	-	-	-	-
25-29	8,390	2,207	2,711	2,399	778	183	-	-	-	-	-	-	112
30-34	8,501	1,170	2,561	2,628	1,052	719	147	34	125	12	53	-	-
35-39	7,725	681	1,284	2,326	1,714	1,267	296	129	-	28	-	-	-
40-44	7,076	216	827	1,020	1,492	1,812	1,086	374	211	38	-	-	-
45-49	6,444	194	590	992	1,223	1,384	736	812	278	165	64	6	-
50-54	5,153	212	408	845	785	1,190	748	564	264	81	51	5	-
55-59	4,600	121	500	589	964	760	698	467	250	199	-	52	-
60-64	1,935	78	333	125	309	372	308	329	46	-	-	35	-
65-69	1,562	157	230	285	292	345	190	22	-	-	41	-	-
70-74	1,090	131	124	195	382	139	26	34	-	46	-	13	-
75+	1,024	130	89	344	195	34	11	216	-	-	-	-	5
Not Stated	26	-	26	-	-	-	-	-	-	-	-	-	-

Table 8 C. Number of ever-married women aged 15 years and over: Age group and sex of children ever born by number of children ever born.

Age of women	No. of women	Number of female children ever born											
		0	1	2	3	4	5	6	7	8	9	10+	Not stated
All Ages	65,265	10,126	15,430	13,527	8,009	7,072	4,251	1,579	987	756	259	188	139
15-19	2,079	1,474	583	-	-	-	-	-	-	-	-	-	22
20-24	7,660	3,132	3,286	1,035	207	-	-	-	-	-	-	-	-
25-29	8,230	1,086	3,339	1,785	891	117	66	-	-	-	-	-	112
30-34	8,501	931	2,783	2,503	1,088	865	122	117	30	-	-	-	-
35-39	7,725	574	1,832	2,717	1,265	1,039	287	196	-	13	-	-	-
40-44	7,070	396	1,216	1,057	1,794	1,106	887	311	155	107	18	33	-
45-49	6,444	299	786	1,280	943	1,483	767	395	263	129	41	52	-
50-54	5,153	138	634	859	1,136	858	690	164	263	296	96	19	-
55-59	4,600	281	326	919	543	961	769	430	161	117	104	17	-
60-65	1,955	181	252	564	267	228	272	59	58	74	-	-	-
65-69	1,502	74	510	386	130	192	225	134	57	-	-	52	-
70-74	1,090	205	178	182	138	195	112	43	-	22	-	15	-
75+	1,024	275	103	232	269	36	54	60	-	-	-	-	5
Not stated	26	26	-	-	-	-	-	-	-	-	-	-	-

Table 9. Number of household members: Number of visits to a health clinic during the last 30 days by strata.

Number of visits	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total household members	23,220	283,551	50,170	233,381
None	21,452	259,210	45,384	213,826
1 visit	1,015	13,119	2,785	10,334
2 visits	403	6,115	1,143	4,972
3 visits	146	3,259	396	2,863
4 visits	84	578	230	348
5 or more visits	100	845	206	639
Number of visits not reported	20	425	26	399

Table 10. Number of households: Type of roofing material by strata.

Type of roofing material	Stratum			
	Control	Total, both Project Strata	Stratum 1	Stratum 2
Total households	3,508	45,383	8,246	37,137
Metal	2,911	38,726	7,211	31,515
Tiles	66	720	87	633
Wood	5	454	61	393
Thatch, grass or bamboo	343	3,731	594	3,137
Other material	183	1,737	293	1,444
Unknown or not reported	-	15	-	15

Table 11. Number of households: Type of wall construction by strata.

Type of wall construction	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total households	3,508	45,383	8,246	37,137
Total reporting:				
Stone, brick or mortar only	17	91	-	91
Brick and wood	206	847	91	756
Wood only	2,607	37,665	6,715	30,950
Grass or bamboo only	216	1,947	392	1,555
Wood and grass or bamboo	322	2,947	559	2,388
Other	140	1,886	489	1,397
Unknown or not reported	-	-	-	-

Table 12. Number of households: Type of household item and possession of item by strata.

Household item and possession of item	Stratum			
	Control	Total, both Project Strata	Stratum 1	Stratum 2
Total households	3,508	45,383	8,246	37,137
Car				
Yes	-	-	-	-
Pick-up or mini-bus				
Yes	41	1,208	342	866
Motorcycle				
Yes	449	4,978	1,074	3,904
Bicycle				
Yes	2,332	27,638	5,547	22,091
Radio				
Yes	3,073	37,227	7,184	30,043
Television				
Yes	123	3,769	555	3,214
Refrigerator				
Yes	80	1,875	267	1,608
Electric fan				
Yes	267	6,797	678	6,119
Electric iron				
Yes	258	6,089	748	5,341
Electric rice cooker				
Yes	113	1,402	158	1,244
Tricycle				
Yes	31	334	34	300
Sewing machine				
Yes	459	7,693	1,341	6,352
Drawing cart				
Yes	1,761	23,067	4,152	18,915

Table 16. Number of households that obtain water outside the house for drinking and cooking: Average time require to go to water source by means of transportation by strata.

Average time to go to water source by means of transportation	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total households	3,249	41,244	7,364	33,880
Total not reporting means of transportation	10	17	17	-
Total using other vehicle	327	1,377	41	1,336
0-10 min.	235	921	41	880
11-20 min.	22	44	-	44
21-30 min.	48	308	-	308
Over 30 min.	22	52	-	52
Time not reported	-	52	-	52
Total doing on foot	2,489	24,112	5,526	18,586
1 min.	641	3,797	1,127	2,670
2 min.	302	3,213	996	2,217
3 min.	377	3,327	768	2,559
4-5 min.	571	6,180	1,533	4,647
6-10 min.	363	3,799	736	3,063
11-15 min.	152	1,842	274	1,568
Over 15 min.	83	1,954	92	1,862
Time not reported	-	-	-	-
Total using other transportation	423	15,738	1,780	13,958
0-10 min.	268	8,653	1,236	7,417
Over 10 min.	145	7,025	544	6,481
Time not reported	10	60	-	60

Table 14. Number of households: Major source of drinking and cooking water by stratum.

Water source	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total households	3,508	45,383	8,246	37,137
Piped from central water system				
Into house	-	304	-	304
Outside house	-	-	-	-
Pumped from underground source				
Deep Well				
Open	-	925	153	772
Covered	10	578	120	458
Shallow Well				
Open	1,860	34,409	6,288	28,121
Covered	101	1,882	512	1,370
Stream or river	418	2,435	78	2,357
Pond or lake	840	663	213	450
Private reservoir	-	-	-	-
Rain water	259	3,783	882	2,901
Other	20	404	-	404
Source not reported	-	-	-	-

Table 15. Number of households: Major source of water used for purposes other than drinking and cooking by stratum.

Water source	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total households	3,508	46,383	8,246	37,137
Piped from central water system				
Into house	-	1,370	78	1,292
Outside house	39	234	234	-
Pumped from underground source				
Deep well				
Open	-	1,259	232	1,027
Covered	6	2,148	495	1,653
Shallow well				
Open	1,904	22,580	5,532	17,048
Covered	132	3,425	600	2,825
Stream or river	520	4,713	304	4,409
Pond or lake	812	7,174	625	6,549
Private reservoir	13	104	52	52
Rain water	13	52	52	-
Other	69	2,324	42	2,282
Source not reported	-	-	-	-

Table 16. Average units of food consumption per person in households during last 7 days: Type of food by strata.

Type of food	Unit	Stratum			
		Control	Total, Each Project Strata	Stratum 1	Stratum 2
Calorie foods					
Rice					
Number persons > 2 years	Kg	21,476	267,075	46,934	220,141
Average per person		4.3	4.1	4.2	4.1
Sweet potato					
Number persons > 2 years	Hectogram	2,384	11,645	3,053	8,592
Average per person		4.6	5.7	5.5	5.2
Corn					
Number persons > 2 years	Ears	1,106	16,592	3,949	12,643
Average per person		2.7	3.1	2.6	3.3
5 minutes cassava					
Number persons > 2 years	Hectogram	1,228	15,259	3,424	11,835
Average per person		2.9	4.6	4.0	4.8
Other potato					
Number persons > 2 years	Hectogram	2,546	27,966	5,003	22,963
Average per person		4.1	4.2	4.5	4.1
Papaya					
Number persons > 2 years	Numbers	14,315	195,129	34,275	160,854
Average per person		.6	.8	.7	.8

(Continued).

Table 16 (continued) Average units of food consumption per person in households during last 7 days: Type of food by strata.

Type of food	Unit	Stratum			
		Control	Total, Both Project Strata	Stratum 1	Stratum 2
Protein foods					
Fresh meat	Hectogram				
Number persons > 2 years		15,115	193,971	36,451	157,520
Average per pers :		3.0	2.9	3.0	2.9
Fresh fish	Hectogram				
Number persons > 2 years		19,214	224,545	36,310	188,235
Average per person		4.1	3.6	3.8	3.8
Peanuts	Hectogram				
Number persons > 2 years		1,654	29,674	4,796	24,878
Average per person		1.5	2.3	3.5	2.1
Long beans	Hectogram				
Number persons > 2 years		13,447	147,292	25,881	121,411
Average per person		2.4	2.3	2.3	2.3
Chicken eggs	Eggs				
Number persons > 2 years		5,052	55,458	10,782	44,676
Average per person		1.4	1.6	1.5	1.6
Duck eggs	Eggs				
Number persons > 2 years		10,750	146,058	21,709	124,349
Average per person		1.8	1.8	1.9	1.8
Fermented fish	Hectogram				
Number persons > 2 years		20,738	247,129	42,889	204,240
Average per person		1.6	1.6	1.6	1.6
Dry fish	Hectogram				
Number persons > 2 years		11,592	131,482	19,719	111,763
Average per person		1.6	1.6	1.5	1.7
Pla too	Hectogram				
Number persons > 2 years		9,318	131,959	22,344	109,615
Average per person		1.7	1.8	1.9	1.7

Table 17. Number of household members ages 11-60 who are not invalids: Type of household and economic activity by project stratum and household allocation status.

Type of household and economic activity	Control		Total, Both Project Strata		Project stratum 1		Project stratum 2					
							Total		Allocated household members		Unallocated household members	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All households												
Total members, 11-60	15,450	100.0	191,351	100.0	33,419	17.5	157,932	82.5	13,070	6.8	133,256	69.6
Economically active	12,433	80.5	151,308	79.1	26,448	13.8	124,860	65.2	10,467	5.5	106,620	55.7
Farm households												
Total members, 11-60	15,306	100.0	178,916	100.0	32,590	18.2	146,326	81.8	13,070	7.3	133,256	74.5
Economically active	12,332	80.6	143,033	79.9	25,946	14.5	117,087	65.4	10,467	5.9	106,620	59.6
Non-farm households*												
Total members, 11-60	144	100.0	12,435	100.0	829	6.7	11,606	93.3	-	-	-	-
Economically active	101	70.1	8,275	66.4	502	4.0	7,773	62.4	-	-	-	-

* The breakdown into allocated and unallocated does not apply to non-farm households; therefore, numbers appear only in the 'Total' columns.

Table 18. Number of economically active household members ages 11-60: Primary activity during the last 12 months by strata.

Type of activity	Stratum			
	Control	Total, both Project Strata	Stratum 1	Stratum 2
Total	12,433	151,306	26,448	124,860
Primarily Engaged in Farming	12,224	140,573	25,413	115,160
Primarily within settlement	10,916	128,742	24,298	104,444
Primarily outside settlement	1,308	11,745	1,115	10,630
Location unknown	-	86	-	86
Not primarily engaged in farming	209	10,602	1,035	9,567
Primarily employed within settlement	151	8,130	789	7,341
Primarily employed outside settlement	58	2,272	246	2,026
Location unknown	-	200	-	200
Primary activity unknown	-	133	-	133

Table 19. Number of households: Employment of at least one member in subproject activities during the last 12 months and type of activity by stratum.

Type of Activity	Stratum			
	Control	Total, both Project Strata	Stratum 1	Stratum 2
Total households	3,508	45,383	8,246	37,137
Total reporting at least one member employed in subproject activities	208	1,813	502	1,311
Road construction only	13	314	92	222
Water subproject construction only	85	932	302	630
Road maintenance only	71	365	40	325
Water subproject maintenance only	-	-	-	-
Two or more activities	39	202	68	134

Table 20 Number of farm households: Employment of household heads and number of months of employment during the last 12 months by strata and household allocation status.

Employment and number of months	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Farming own farm only						
Total households	3,465	41,780	8,019	33,761	2,842	30,919
0-2 months	94	1,021	327	694	53	641
3-5 months	242	2,265	701	1,564	86	1,478
6-9 months	1,867	24,948	4,348	20,600	1,607	18,993
10-12 months	1,262	13,546	2,643	10,903	1,096	9,807
Other income producing activity at home						
Total households	3,465	41,780	8,019	33,761	2,842	30,919
0 month	3,381	39,954	7,601	32,353	2,790	29,563
1 month	20	607	98	509	-	509
2 months	59	356	65	291	52	239
3-4 months	-	579	210	369	-	369
5 or more months	5	284	45	239	-	239
Employment outside home and off farm						
Total households	3,465	41,780	8,019	33,761	2,842	30,919
0 month	2,169	27,925	4,708	23,217	1,975	21,242
1 month	347	3,076	715	2,361	164	2,197
2 months	298	3,856	969	2,886	451	2,435
3-4 months	411	4,572	980	3,592	147	3,445
5 or more months	240	2,352	647	1,705	105	1,600
None of these						
Total households	3,465	41,780	8,019	33,761	2,842	30,919
0 month	839	10,709	2,345	8,364	639	7,725
1-2 months	1,136	12,145	2,448	9,697	868	8,829
3-4 months	1,014	11,704	2,203	9,501	999	8,502
5 or more months	476	7,222	1,023	6,199	336	5,863

Table 21 Number of farm households: Size of land holding by stratum and household allocation status.

Size of farm	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,465	41,780	8,019	33,761	2,842	30,919
Size reported	3,465	41,780	8,019	33,761	2,842	30,919
0-L 10* rai	183	2,926	534	2,392	15	2,377
10-L 15 rai	169	4,381	665	3,716	159	3,557
15-L 25 rai	757	10,824	2,840	7,984	692	7,292
25-L 35 rai	887	8,655	1,869	6,786	663	6,123
35-L 50 rai	603	6,677	1,159	5,518	606	4,912
50-L 75 rai	547	5,717	640	5,077	494	4,583
75-L 100 rai	222	1,495	152	1,343	109	1,234
100 rai or more	97	1,105	160	945	104	841
Mean size of landholding	37.3	33.5	29.6	34.4	43.7	33.5

* 'L' means 'less than'

Table 22 Number of farm households: Tenure of land holding by stratum and household allocation status.

Tenure of land	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,465	41,786	8,019	33,761	2,842	30,919
Tenure reported for all land	3,465	41,728	8,019	33,709	2,842	30,867
All owned	2,549	30,322	5,905	24,417	2,247	22,170
All rented*, cash payment	7	288	103	185	52	133
All rented, in-kind payment	10	660	68	592	-	592
All rented, cash & in-kind payment	-	-	-	-	-	-
All rent-free**	202	2,019	347	1,672	15	1,657
Mostly owned***	388	4,357	968	3,389	381	3,008
Mostly rented***	25	409	28	381	-	381
Mostly rent-free***	104	912	232	680	-	680
Other	180	2,761	368	2,393	147	2,246

* 'rented' means that cash or in-kind payment (such as crops) is necessary for use of the land.

** 'rent-free' means that there is no payment for use of the land.

*** Mostly owned, rented, or rent-free means that all land holdings are not held under the same tenure category. Farm households are classified according to the tenure category of the majority of the land holdings.

Table 23 Number of farm households: Presence of farm assets by strata and household allocation status.

Presence of assets	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,465	41,780	8,019	33,761	2,842	30,919
Farm tractor						
Yes	210	633	104	529	156	373
Animal draw cart						
Yes	697	10,194	1,531	8,663	632	8,031
Farm truck						
Yes	145	636	186	450	104	346
Pumping machine						
Yes	334	3,639	476	3,163	435	2,728
Sprayer						
Yes	480	10,879	2,299	8,580	1,061	7,519
Threshing machine						
Yes	-	26	26	-	-	-
Rice mill						
Yes	89	539	28	511	-	511
Fencing around farmland						
Yes	106	2,002	325	1,677	142	1,535
Farm truck that uses pumping water machine as an engine						
Yes	484	158	26	132	-	132

Table 24A Number of households reporting income during the last 12 months from various sources of income and amount of income from that source by strata.

Source of income and amount of income	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total households	3,508	45,383	8,246	37,137
Crops				
Number of households that received income from crops	3,439	41,537	7,998	33,539
1-1,500 baht	62	982	227	755
1,501-3,500 baht	180	1,898	404	1,494
3,501-5,000 baht	206	1,764	350	1,414
5,001-10,000 baht	643	8,198	1,837	6,361
10,001-20,000 baht	839	13,992	2,597	11,395
20,001-30,000 baht	638	5,928	994	4,934
30,001-40,000 baht	302	3,327	413	2,914
40,001-50,000 baht	162	1,513	216	1,297
50,001-70,000 baht	226	1,709	342	1,367
Over 70,000 baht	151	1,996	452	1,544
Can not be computed	30	230	166	64
Livestock				
Number of households that received income from livestock	3,084	32,990	6,978	26,012
1-500 baht	1,208	13,778	2,945	10,833
501-1,500 baht	633	5,252	1,590	3,662
1,501-2,500 baht	124	2,218	403	1,815
2,501-4,000 baht	95	2,161	420	1,741
4,001-6,000 baht	240	2,440	526	1,914
6,001-10,000 baht	284	3,394	611	2,783
10,001-30,000 baht	392	2,895	369	2,526
Over 30,000 baht	57	586	93	493
Can not be computed	51	266	21	245

(continued)

Table 24A (continued) Number of households reporting income during the last 12 months from various sources: Sources of income and amount of income from that source by strata.

Source of income and amount of income	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Orchard				
Number of households that received income from orchard crops	1.302	7,236	1,805	5,431
1-500 baht	682	4,276	944	3,332
501-1,000 baht	321	875	344	531
1,001-3,000 baht	212	1,115	446	669
Over 3,000 baht	64	970	71	899
Other				
Number of households that received income from other sources	56	849	200	649
1-500 baht	-	144	44	100
501-1,000 baht	-	51	23	28
1,001-3,000 baht	7	371	98	273
Over 3,000 baht	49	283	35	248
Can not be computed	-	-	-	-
Net from trade				
Number of households that received income from trade	323	4,984	805	4,179
1-500 baht	26	553	115	438
501-1,000 baht	15	290	26	264
1,001-3,000 baht	87	1,453	372	1,081
Over 3,000 baht	195	2,662	292	2,370
Can not be computed	-	26	-	26

(continued)

Table 24A (continued) Number of households reporting income during the last 12 months from various sources: Sources of income and amount of income from that source by strata.

Source of income and amount of income	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Remittance from outside				
Number of households that received income from remittances	546	4,774	998	3,776
1-500 baht	59	509	226	283
501-1,000 baht	127	823	93	730
1,001-3,000 baht	214	1,632	313	1,319
Over 3,000 baht	146	1,786	342	1,444
Can not be computed	-	24	24	-
Rental				
Number of households that received income from rental	75	1,255	245	1,010
1-500 baht	-	27	-	27
501-1,000 baht	13	201	100	101
1,001-3,000 baht	45	419	77	342
Over 3,000 baht	17	608	68	540
Can not be computed	-	-	-	-
Raising fish				
Number of households that received invomr from raising fish	23	249	114	135
1-500 baht	5	214	78	135
501-1,000 baht	5	-	-	-
1,001-3,000 baht	13	-	-	-
Over 3,000 baht	-	16	16	-
Can not be computed	-	19	19	-

(continued)

Table 24A (continued) Number of households reporting income during the last 12 months from various sources: Sources of income and amount of income from that source by strata.

Source of income and amount of income	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Fishing				
Number of households that received income from fishing	752	4,531	522	4,009
1-500 baht	318	1,615	300	1,315
501-1,000 baht	171	848	98	750
1,001-3,000 baht	152	944	90	854
Over 3,000 baht	111	1,124	34	1,090
Can not be computed	-	-	-	-
Wages and salaries				
Number of households that received income from wages and salaries	2,402	27,453	5,728	21,725
1-1,000 baht	818	8,598	1,858	6,740
1,001-5,000 baht	1,194	12,195	2,572	9,623
5,001-10,000 baht	204	3,095	580	2,515
10,001-15,000 baht	102	1,223	196	1,027
15,001-25,000 baht	31	1,145	240	905
25,001-40,000 baht	53	749	170	579
40,001-50,000 baht	-	306	30	276
Over 50,000 baht	-	142	82	60
Can not be computed	-	-	-	-
Poultry products				
Number of households that received income from poultry products	293	3,200	608	2,592
1-500 baht	244	2,744	519	2,225
501-1,000 baht	18	83	68	15
1,001-3,000 baht	18	273	21	252
Over 3,000 baht	13	100	-	100
Can not be computed	-	-	-	-

(continued)

Table 24A (continued) Number of households reporting income during the last 12 months from various sources: Sources of income and amount of income from that source by strata.

Source of income and amount of income	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Handicrafts				
Number of households that received income from handicrafts	101	2,244	311	1,933
1-500 baht	53	878	221	657
501-1,000 baht	10	88	4	84
1,001-3,000 baht	25	583	63	520
Over 3,000 baht	13	695	23	672
Can not be computed	-	-	-	-
Sericulture				
Number of households that received income from sericulture	300	1,054	592	462
1-500 baht	80	357	169	188
501-1,000 baht	13	409	146	263
1,001-3,000 baht	108	86	75	11
Over 3,000 baht	99	202	202	-
Can not be computed	-	-	-	-

Table 24B Number of households: Income range group by project stratum and household allocation status.

Income range groups	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2 Total	Project Stratum 2 Allocated* Households	Project Stratum 2 Unallocated* Households
Total households						
Total all households	3,508	45,[illegible]	8,246	37,137	2,842	30,919
1-5,000 baht	58	1,948	297	1,648	52	1,360
5,001-10,000 baht	462	6,024	1,005	5,019	237	4,016
10,001-15,000 baht	599	7,312	1,375	5,937	152	5,067
15,001-25,000 baht	649	11,406	2,096	9,310	906	7,699
25,001-40,000 baht	778	9,169	1,651	7,518	275	6,695
40,001-60,000 baht	395	4,263	645	3,618	456	2,953
60,001-80,000 baht	223	1,831	439	1,392	323	890
80,001-100,000 baht	160	1,185	258	927	217	710
Over 100,000 baht	100	1,683	250	1,433	213	1,205
Can not be computed	84	565	230	335	11	324
Average income	32,355.7	29,911.0	30,380.9	29,[illegible]	46,435.5	29,224.6
Total farm households						
Total farm households	3,465	41,780	8,019	33,761	2,842	30,919
1-5,000 baht	50	1,686	276	1,412	52	1,360
5,001-10,000 baht	452	5,188	935	4,253	237	4,016
10,001-15,000 baht	579	6,566	1,347	5,219	152	5,067
15,001-25,000 baht	644	10,647	2,042	8,605	906	7,699
25,001-40,000 baht	778	8,621	1,651	6,970	275	6,695
40,001-60,000 baht	395	4,052	643	3,409	456	2,933
60,001-80,000 baht	223	1,624	411	1,213	323	890
80,001-100,000 baht	160	1,185	258	927	217	710
Over 100,000 baht	100	1,668	250	1,418	213	1,205
Can not be computed	84	541	206	335	11	324
Average income	32,630.5	30,676.8	30,650.4	30,[illegible]	46,435.5	29,224.6

(continued)

Table 24B (continued) Number of households: Income range group by project stratum and household allocation status.

Income range groups	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated* Households	Unallocated* Households
Total non-farm households						
Total non-farm households	43	3,603	227	3,376	-	-
1-5,000 baht	8	257	21	236	-	-
5,001-10,000 baht	10	836	70	766	-	-
10,001-15,000 baht	20	746	28	718	-	-
15,001-25,000 baht	5	759	54	705	-	-
25,001-40,000 baht	-	548	-	548	-	-
40,001-60,000 baht	-	211	2	209	-	-
60,001-80,000 baht	-	207	28	179	-	-
80,001-100,000 baht	-	-	-	-	-	-
Over 100,000 baht	-	15	-	15	-	-
Can not be computed	-	24	24	-	-	-
Average Income	10,749.1	21,038.8	20,010.6	21,158.4	-	-

* These cells have entries only for the section on farm households, since only farm households are divided into allocated and unallocated.

Table 24B Total income for households within specificed income range groups: Income range group by project stratum.

Income range groups	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated* Households	Unallocated* Households
Total households for which total income can be computed	3,424	44,818	8,016	36,802	2,802	30,595
1-5,000 baht	197,922	6,049,115	945,845	5,103,270	158,600	4,174,020
5,001-10,000 baht	3,689,839	47,450,920	7,740,203	39,710,717	1,942,780	31,054,113
10,001-15,000 baht	7,628,758	91,761,918	17,130,103	74,631,815	1,774,684	63,524,731
15,001-25,000 baht	12,803,842	225,187,818	40,954,693	184,233,125	18,505,716	152,764,639
25,001-25,000 baht	24,599,362	286,753,374	51,721,421	235,031,953	8,572,512	210,570,077
40,001-60,000 baht	18,693,096	208,803,005	31,250,836	177,552,169	20,293,520	147,035,889
60,001-80,000 baht	15,253,564	125,895,681	30,630,230	95,265,451	22,494,671	60,134,180
80,001-100,000 baht	14,241,783	105,899,862	22,967,635	82,932,227	19,954,700	62,977,527
Over 100,000 baht	13,677,866	242,749,379	40,192,464	202,556,915	37,761,621	161,892,794
Total farm households for which total income can be computed	3,381	41,239	7,813	33,426	2,831	30,595
1-5,000 baht	161,522	5,215,465	882,845	4,332,620	158,600	4,174,020
5,001-10,000 baht	3,602,589	40,196,646	7,199,753	32,996,893	1,942,780	31,054,113
10,001-15,000 baht	7,374,198	82,093,518	16,794,103	65,299,415	1,774,684	63,524,731
15,001-25,000 baht	12,719,842	211,097,048	39,826,693	171,270,355	18,505,716	152,764,639
25,001-40,000 baht	24,599,362	270,864,010	51,721,421	219,142,589	8,572,512	210,570,077
40,001-60,000 baht	18,693,096	198,483,945	31,154,536	167,329,409	20,293,520	147,035,889
60,001-80,000 baht	15,253,564	111,360,681	28,731,830	82,628,851	22,494,671	60,134,180
80,001-100,000 baht	14,241,783	105,899,862	22,967,635	82,932,227	19,954,700	62,977,527
Over 100,000 baht	13,677,866	239,846,879	40,192,464	199,654,415	37,761,621	161,892,794

* These cells have entries only for the section on farm households, since only farm households are divided into allocated and unallocated.

Table 24B Total income for households within specified income range groups: Income range group by project stratum.

Income range groups	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated* Households	Unallocated* Households
Total non-farm households for which total income can be computed	43	3,579	203	3,376	-	-
1-5,000 baht	36,400	853,650	63,000	770,650	-	-
5,001-10,000 baht	87,250	7,254,274	540,450	6,713,824	-	-
10,001-15,000 baht	254,560	9,668,400	336,000	9,332,400	-	-
15,001-25,000 baht	84,000	14,090,770	1,128,000	12,962,770	-	-
25,001-40,000 baht	-	15,889,364	-	15,889,364	-	-
40,001-60,000 baht	-	10,319,060	96,300	10,222,760	-	-
60,001-80,000 baht	-	14,535,000	1,898,400	12,636,600	-	-
80,001-100,000 baht	-	-	-	-	-	-
Over 100,000 baht	-	2,902,500	-	2,902,500	-	-

* These cells have entries only for the section on farm households, since only farm households are divided into allocated and unallocated.

Table 25A Number of farm households: Type of land use by project stratum and household allocation status.

Types of land use	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households*	3,466	41,790	8,019	33,771	2,852	30,919
Paddy land	3,110	32,007	4,987	27,020	1,707	25,313
Field crop land	2,950	31,851	7,094	24,757	2,656	22,101
Land for mulberry	189	1,764	639	1,125	38	1,087
Vegetable garden	116	1,994	293	1,691	63	1,628
Orchard	832	6,116	1,818	4,298	562	3,736
Home area	2,415	23,918	6,459	17,456	1,154	16,302
Forest land of wasteland	958	9,769	2,519	7,250	513	6,737
Land for other use	175	932	307	625	80	545

* This is not a column total. A household may be counted in more than one of stub categories.

Table 25B Average rai of land held by farm households: Type of land use by project stratum and household allocation status.

Type of land use	Control		Total, Both Project Strata		Project Stratum 1		Project Stratum 2					
							Total		Allocated Households		Unallocated Households	
	Number of Households *	Average rai	Number of Households *	Average rai	Number of Households *	Average rai	Number of Households *	Average rai	Number of Households *	Average rai	Number of Households *	Average rai
Total farm households	3,465		41,780		8,019		33,761		2,842		30,919	
Paddy land	3,110	20.2	32,007	20.0	4,987	14.7	27,020	21.0	1,707	22.2	25,313	20.9
Field crop land	2,950	16.6	31,851	16.9	7,094	16.7	24,757	17.0	1,656	26.6	22,101	15.8
Land for mulberry	189	2.7	1,764	1.7	639	2.5	1,125	1.3	38	1.0	1,087	1.3
Vegetable garden	116	1.0	1,984	2.0	293	2.0	1,691	2.0	63	1.8	1,628	2.0
Orchard	832	2.4	6,116	5.3	1,818	3.6	4,298	5.9	562	13.2	3,736	4.9
Home area	2,415	1.4	23,915	1.4	6,459	1.6	17,456	1.3	1,154	1.6	16,302	1.3
Forest land or wasteland	958	10.9	9,769	14.4	2,519	9.5	7,250	16.1	513	12.1	6,737	16.4
Land for other use	175	7.1	932	5.1	307	5.7	625	4.7	80	1.7	545	5.2

* Number of households refers to the number of households reporting using land for the indicated purpose.

Table 25C Percentage of total rai devoted to selected land uses: Type of land use by project stratum and household allocation status.

Types of land use	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households reporting total rai	3,465	41,780	8,019	33,761	2,842	30,919
Total rai of landholding	129,336	1,397,547	237,122	1,160,425	124,147	1,036,278
Paddy land	48.6	45.8	30.9	48.9	30.5	51.1
Field crop land	37.9	38.5	50.0	36.3	56.9	33.7
Land for mulberry	Z	Z	0.7	Z	Z	Z
Vegetable garden	Z	Z	Z	Z	Z	Z
Orchard	1.5	2.3	2.8	2.2	6.0	1.8
Home area	2.6	2.4	4.4	2.0	1.5	2.9
Forest land or wasteland	8.1	10.9	10.4	0.9	5.0	10.7
Land for other use	1.0	Z	0.7	Z	Z	Z

Z Less than one-half of one percent.

Table 25D Percentage of farm households using land for indicated purposes: Type of land use by project stratum and household allocation status.

Types of land use	Control	Total, Both Project Strata	Project Stratum 1	Project stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households*	3,465	41,780	6,019	33,761	2,842	30,919
Paddy land	98.8	76.6	62.2	80.0	60.1	81.9
Field crop land	95.1	76.2	88.5	73.3	93.5	71.5
Land for mulberry	5.5	4.2	8.0	3.3	1.3	3.5
Vegetable garden	3.3	4.7	3.7	5.0	2.2	5.3
Orchard	24.0	14.6	22.7	12.7	19.8	12.1
Home area	69.7	57.2	80.5	51.7	40.6	52.7
Forest land or wasteland	27.6	23.4	31.4	21.5	14.1	21.8
Land for other use	5.1	2.2	3.8	1.9	2.8	1.8

Table 26 Number of farm households: Type of crops grown and use of chemical fertilizer by strata and household allocation status.

Type of crop and use of fertilizer	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing glutinous rice	2,518	26,158	4,240	21,918	1,329	20,616
Fertilizer used for glutinous rice	917	16,903	1,176	14,786	1,260	13,525
Fertilizer not used	1,598	9,278	2,064	7,214	121	7,031
Not reported	-	-	-	-	-	-
Total growing non-glutinous rice	1,886	14,796	1,955	12,841	898	11,943
Fertilizer used for non-glutinous rice	839	9,530	1,486	8,044	549	7,495
Fertilizer not used	1,047	5,266	469	4,797	349	4,448
Not reported	-	-	-	-	-	-
Total growing corn for consume	75	1,822	398	1,424	52	1,372
Fertilizer used for corn for consume	5	556	122	434	-	434
Fertilizer not used	70	1,266	276	990	52	938
Not reported	-	-	-	-	-	-
Total growing corn for livestock	13	7,198	1,404	5,794	1,042	4,752
Fertilizer used for corn for livestock	-	599	78	521	105	416
Fertilizer not used	13	5,599	1,326	5,273	937	4,336
Not reported	-	-	-	-	-	-
Total growing kenaf	102	4,418	1,288	3,130	302	2,828
Fertilizer used for kenaf	5	530	141	389	44	345
Fertilizer not used	97	3,883	1,147	2,741	258	2,483
Not reported	-	-	-	-	-	-
Total growing jute	99	1,508	271	1,237	57	1,180
Fertilizer used for jute	-	470	68	402	-	402
Fertilizer not used	99	1,038	203	835	57	778
Not reported	-	-	-	-	-	-

(continued)

Table 26 (continued) Number of farm households: Type of crops grown and use of chemical fertilizer by strata and household allocation status.

Type of crop and use of fertilizer	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing cassava	2,817	20,507	4,805	15,702	1,479	14,223
Fertilizer used for cassava	190	2,113	83	2,030	107	1,923
Fertilizer not used	2,627	18,275	4,694	13,581	1,372	12,209
Not reported	-	114	23	91	-	91
Total growing mungbean	23	967	593	374	208	166
Fertilizer used for mungbean	-	468	364	104	52	52
Fertilizer not used	23	499	229	270	156	114
Not reported	-	-	-	-	-	-
Total growing sugar-cane	6	1,622	292	1,330	164	1,166
Fertilizer used for sugar-cane	-	1,395	250	1,145	164	981
Fertilizer not used	6	185	42	143	-	143
Not reported	-	42	-	42	-	42
Total growing peanuts	63	2,431	870	1,561	236	1,325
Fertilizer used for peanuts	-	441	809	132	-	132
Fertilizer not used	63	1,962	561	1,401	236	1,165
Not reported	-	28	-	28	-	28
Total growing pineapple	109	26	26	-	-	-
Fertilizer used for pineapple	13	-	-	-	-	-
Fertilizer not used	96	26	26	-	-	-
Not reported	-	-	-	-	-	-
Total growing sorghum	-	131	26	105	-	105
Fertilizer used for sorghum	-	-	-	-	-	-
Fertilizer not used	-	131	26	105	-	105
Not reported	-	-	-	-	-	-

(continued)

Table 26 (continued) Number of farm households: Type of crops grown and use of chemical fertilizer by strata and household allocation status.

Type of crop and use of fertilizer	Control	Total, Both Project Stratum	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing cotton	-	4,608	1,195	3,413	781	2,632
Fertilizer used for cotton	-	2,907	770	2,137	573	1,564
Fertilizer not used	-	1,701	425	1,276	208	1.068
Not reported	-	-	-	-	-	-
Total growing water melon	72	815	409	406	127	279
Fertilizer used for water melon	-	657	268	389	127	262
Fertilizer not used	72	116	99	17	-	17
Not reported	-	42	42	-	-	-
Total growing pumpkin	13	578	180	398	-	398
Fertilizer used for pumpkin	-	370	155	215	-	215
Fertilizer not used	13	208	25	183	-	183
Not reported	-	-	-	-	-	-
Total growing sesame	137	765	212	553	-	553
Fertilizer used for sesame	22	76	24	52	-	52
Fertilizer not used	115	689	188	501	-	501
Not reported	-	-	-	-	-	-
Total growing chili	20	1,945	1,024	921	260	661
Fertilizer used for chili	5	1,210	610	600	156	444
Fertilizer not used	15	709	388	321	104	217
Not reported	-	26	26	-	-	-

(continued)

Table 26 (continued) Number of farm households: Type of crops grown and use of chemical fertilizer by strata and household allocation status.

Type of crop and use of fertilizer	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing vegetables	134	3,533	416	3,117	115	3,002
Fertilizer used for vegetables	106	3,300	378	2,922	63	2,859
Fertilizer not used	28	233	38	195	52	143
Not reported	-	-	-	-	-	-
Total growing other crops	39	640	168	472	159	313
Fertilizer used for other crops	26	331	68	263	159	104
Fertilizer not used	13	309	100	209	-	209
Not reported	-	-	-	-	-	-

Table 27 Number of farm households: Type of crop and use of pesticide by strata and household allocation status.

Type of crop and use of pesticide	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing glutinous rice	2,515	26,185	4,240	21,945	1,329	20,616
Pesticide used for glutinous rice	549	4,870	200	4,670	166	4,504
Pesticide not used	1,966	21,315	4,040	17,275	1,163	16,112
Not reported	-	-	-	-	-	-
Total growing non-glutinous rice	1,886	14,796	1,955	12,841	898	11,943
Pesticide used for non-glutinous rice	358	1,229	132	1,097	-	1,097
Pesticide not used	1,528	13,567	1,823	11,744	898	10,846
Not reported	-	-	-	-	-	-
Total growing corn for consume	75	1,822	398	1,424	52	1,372
Pesticide used for corn for consume	18	580	84	496	-	496
Pesticide not used	57	1,242	314	928	52	876
Not reported	-	-	-	-	-	-
Total growing corn for livestock	13	7,198	1,404	5,794	1,042	4,752
Pesticide used for corn for livestock	-	156	52	104	-	104
Pesticide not used	13	7,042	1,352	5,690	1,042	4,648
Not reported	-	-	-	-	-	-
Total growing kenaf	102	4,418	1,288	3,130	302	2,828
Pesticide used for kenaf	5	83	16	67	-	67
Pesticide not used	97	4,335	1,272	3,063	302	2,761
Not reported	-	-	-	-	-	-
Total growing jute	99	1,508	271	1,237	57	1,180
Pesticide used for jute	-	-	-	-	-	-
Pesticide not used	99	1,508	271	1,237	57	1,180
Not reported	-	-	-	-	-	-

(continued)

Table 27 (continued) Number of farm households: Type of crop and use of pesticide by strata and household allocation status.

Type of crop and use of pesticide	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing cassava	2,817	20,507	4,805	15,702	1,479	14,223
Pesticide used for cassava	3	28	28	-	-	-
Pesticide not used	2,814	20,366	4,757	15,611	1,479	14,132
Not reported	-	114	23	91	-	91
Total growing mungbean	23	967	593	374	208	166
Pesticide used for mungbean	13	859	546	313	208	105
Pesticide not used	10	108	47	61	-	61
Not reported	-	-	-	-	-	-
Total growing sugarcane	6	1,622	292	1,330	164	1,166
Pesticide used for sugarcane	-	42	42	-	-	-
Pesticide not used	6	1,538	250	1,288	164	1,124
Not reported	-	42	-	42	-	42
Total growing peanuts	63	2,431	870	1,561	236	1,325
Pesticide used for peanuts	18	467	317	150	-	150
Pesticide not used	50	1,936	553	1,383	236	1,147
Not reported	-	28	-	28	-	28
Total growing pineapple	109	26	26	-	-	-
Pesticide used for pineapple	13	-	-	-	-	-
Pesticide not used	96	26	26	-	-	-
Not reported	-	-	-	-	-	-
Total growing sorghum	-	131	26	105	-	105
Pesticide used for sorghum	-	-	-	-	-	-
Pesticide not used	-	131	26	105	-	105
Not reported	-	-	-	-	-	-

(continued)

Table 27 (continued) Number of farm households: Type of crop and use of pesticide by strata and household allocation status.

Type of crop and use of pesticide	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing cotton	-	4,608	1,196	3,412	781	2,632
Pesticide used for cotton	-	4,364	978	3,386	829	2,557
Pesticide not used	-	244	217	127	52	75
Not reported	-	-	-	-	-	-
Total growing water melon	72	814	409	406	127	279
Pesticide used for water melon	22	693	287	406	127	279
Pesticide not used	50	80	80	-	-	-
Not reported	-	42	42	-	-	-
Total growing pumpkin	13	578	180	398	-	398
Pesticide used for pumpkin	-	415	155	260	-	260
Pesticide not used	13	163	25	138	-	138
Not reported	-	-	-	-	-	-
Total growing sesame	137	765	212	553	-	553
Pesticide used for sesame	-	69	43	26	-	26
Pesticide not used	137	696	169	527	-	527
Not reported	-	-	-	-	-	-
Total growing chili	20	1,945	1,024	921	260	661
Pesticide used for chili	-	1,264	612	652	208	444
Pesticide not used	20	655	386	269	52	217
Not reported	-	26	26	-	-	-
Total growing vegetables	134	3,533	416	3,117	115	3,002
Pesticide used for vegetables	109	3,371	354	3,017	115	2,902
Pesticide not used	25	162	62	100	-	100
Not reported	-	-	-	-	-	-

(continued)

Table 27 (continued) Number of farm households: Type of crop and use of pesticide by strata and household allocation status.

Type of crop and use of pesticide	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing other crop	39	640	168	472	159	313
Pesticide used for other crop	13	289	26	263	159	104
Pesticide not used	26	351	142	209	-	209
Not reported	-	-	-	-	-	-

Table 28 Number of farm households: Type of crops grown and use of herbicide by strata and household allocation status.

Type of crop and use of herbicide	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing glutinous rice	2,515	26,185	4,240	21,945	1,329	20,616
Herbicide used for glutinous rice	58	306	19	287	-	287
Herbicide not used	2,457	25,879	4,221	21,658	1,329	20,329
Not reported	-	-	-	-	-	-
Total growing non-glutinous rice	1,886	14,796	1,955	12,841	898	11,943
Herbicide used for non-glutinous rice	61	267	26	241	-	241
Herbicide not used	1,825	14,529	1,929	12,600	898	11,702
Not reported	-	-	-	-	-	-
Total growing corn for consume	75	1,822	398	1,424	52	1,372
Herbicide used for corn for consume	-	26	26	-	-	-
Herbicide not used	75	1,796	372	1,424	52	1,372
Not reported	-	-	-	-	-	-
Total growing corn for livestock	13	7,198	1,404	5,794	1,042	4,752
Herbicide used for corn for livestock	-	390	182	208	-	208
Herbicide not used	13	6,808	1,222	5,586	1,042	4,544
Not reported	-	-	-	-	-	-
Total growing kenaf	102	4,418	1,288	3,130	302	2,828
Herbicide used for kenaf	-	-	-	-	-	-
Herbicide not used	102	4,418	1,288	3,130	302	2,828
Not reported	-	-	-	-	-	-
Total growing jute	99	1,508	271	1,237	57	1,180
Herbicide used for jute	-	-	-	-	-	-
Herbicide not used	99	1,508	271	1,237	57	1,180
Not reported	-	-	-	-	-	-

(continued)

Table 28 (continued) Number of farm households: Type of crops grown and use of herbicide by strata and household allocation status.

Type of crop and use of herbicide	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing cassava	2,817	20,500	4,808	15,701	1,479	14,223
Herbicide used for cassava	-	63	-	63	-	63
Herbicide not used	2,817	20,330	4,792	15,538	1,479	14,069
Not reported	-	114	23	91	-	91
Total growing mungbean	23	967	593	374	208	166
Herbicide used for mungbean	-	-	-	-	-	-
Herbicide not used	23	967	593	374	208	166
Not reported	-	-	-	-	-	-
Total growing sugarcane	6	1,622	292	1,330	164	1,166
Herbicide used for sugarcane	-	-	-	-	-	-
Herbicide not used	6	1,580	292	1,288	164	1,124
Not reported	-	42	-	42	-	42
Total growing peanut	63	2,431	870	1,561	236	1,325
Herbicide used for peanut	-	59	59	-	-	-
Herbicide not used	63	2,344	811	1,533	235	1,297
Not reported	-	28	-	28	-	28
Total growing pineapple	109	26	26	-	-	-
Herbicide used for pineapple	12	-	-	-	-	-
Herbicide not used	97	26	26	-	-	-
Not reported	-	-	-	-	-	-
Total growing sorghum	-	131	26	105	-	105
Herbicide used for sorghum	-	-	-	-	-	-
Herbicide not used	-	131	26	105	-	105
Not reported	-	-	-	-	-	-

(continued)

Table 28 (continued) Number of farm households: Type of crops grown and use of herbicide by strata and household allocation status.

Type of crop and use of herbicide	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing cotton	-	4,608	1,195	3,413	781	2,632
Herbicide used for cotton	-	287	130	157	-	157
Herbicide not used	-	4,321	1,065	3,256	781	2,475
Not reported	-	-	-	-	-	-
Total growing water melon	72	815	409	406	127	279
Herbicide used for water melon	-	152	19	133	67	66
Herbicide not used	72	621	348	273	60	213
Not reported	-	42	42	-	-	-
Total growing pumpkin	13	578	180	398	-	398
Herbicide used for pumpkin	-	26	26	-	-	-
Herbicide not used	13	552	154	398	-	398
Not reported	-	-	-	-	-	-
Total growing sesame	137	765	212	553	-	553
Herbicide used for sesame	-	-	-	-	-	-
Herbicide not used	137	765	212	553	-	553
Not reported	-	-	-	-	-	-
Total growing chili	20	1,945	1,024	921	260	661
Herbicide used for chili	-	127	-	127	-	127
Herbicide not used	20	1,792	998	794	260	534
Not reported	-	26	26	-	-	-

(continued)

Table 28 (continued) Number of farm households: Type of crops grown and use of herbicide by strata and household allocation status.

Type of crop and use of herbicide	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing vegetables	134	3,[illegible]	416	3,117	115	3,002
Herbicide used for vegetables	-	224	47	177	-	177
Herbicide not used	134	3,309	369	2,940	115	2,825
Not reported	-	-	-	-	-	-
Total growing other crops	39	640	168	472	159	313
Herbicide used for other crops	-	-	-	-	-	-
Herbicide not used	39	640	168	472	159	313
Not reported	-	-	-	-	-	-

Table 29 Average number of units of inputs used per household during the last 12 months: Type of input by unit, strata and household allocation status.

Type of input	Unit	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
					Total	Allocated Households	Unallocated Households
Total farm households	K.G.	3,466	41,786	9,019	33,767	2,848	30,919
Chemical fertilizer	K.G.	65.0	134.9	91.6	145.2	166.4	143.2
Pesticide	C.C.	334.8	3,134.3	3,099.1	3,142.7	7,269.1	2,763.4
Herbicide	C.C.	19.5	116.0	205.7	94.7	23.5	101.2

Table 30 Number of farm households: Agricultural methods practiced during the last 12 months by strata and household allocation status.

Cropping methods	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total households	3,465	41,780	8,019	33,761	2,842	30,919
Crop rotation						
Yes	145	3,455	1,156	2,299	236	2,063
Intercropping						
Yes	311	3,412	897	2,515	368	2,147
Soil testing						
Yes	13	409	207	202	-	202
Second cropping						
Yes	131	6,716	1,509	5,207	782	4,425
Dry season cropping						
Yes	349	9,516	1,951	7,565	705	6,860
Tractor plowing						
Yes	2,601	18,241	4,204	14,037	1,639	12,398

Table 31 Number of farm households: Use of irrigation within the last 12 months for any purpose by strata and household allocation status.

Use of irrigation	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total households	3,465	41,780	8,019	33,761	2,842	30,919
Total not reporting	-	-	-	-	-	-
Total reporting	3,465	41,780	8,019	33,761	2,842	30,919
Use irrigation	172	4,333	567	3,766	229	3,537
Did not use irrigation	3,293	37,447	7,452	29,995	2,613	27,382

Table 82 Number of farm households engaged in certain water-related agricultural activities: Type of activity and major source of water by strata and household allocation status.

Type of water-related activity and major source of water	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total households reporting use of water for expanding use of rice nursery (before rainy season)	3,035	31,671	4,897	26,974	1,707	25,267
- Natural compoundings	22	115	-	115	-	115
- Dug ponds	-	-	-	-	-	-
- Rivers or canals	81	612	48	564	60	504
- Irrigation canals	34	2,205	289	1,916	-	1,916
- Deep wells	-	-	-	-	-	-
- Shallow wells	-	2	2	-	-	-
- Dikes /reservoirs	24	232	17	215	-	215
- Natural rainfall	2,874	28,614	4,522	24,092	1,647	22,445
- Source not reported	-	91	19	72	-	72
Total households reporting use of water for growing vegetables	559	6,429	1,305	5,124	222	4,902
- Natural compoundings	80	368	191	177	-	177
- Dug ponds	-	-	-	-	-	-
- Rivers or canals	267	1,124	203	921	104	817
- Irrigation canals	33	2,641	169	2,472	11	2,461
- Deep wells	-	130	50	80	-	80
- Shallow wells	81	1,195	429	766	-	766
- Dikes /reservoirs	5	392	86	306	107	199
- Natural rainfall	93	579	177	402	-	402
- Source not reported	-	-	-	-	-	-

(continued)

Table 32 (continued) Number of farm households engaged in certain water-related agricultural activities: Type of activity and major source of water by strata and household allocation status.

Type of water-related activity and major source of water	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total households reporting use of water for double rice cropping	225	1,311	310	1,001	170	831
- Natural compoundings	13	-	-	-	-	-
- Dug ponds	88	1,157	310	847	170	677
- Rivers or canals	124	-	-	-	-	-
- Irrigation canals	-	102	-	102	-	102
- Deep wells	-	-	-	-	-	-
- Shallow wells	-	-	-	-	-	-
- Dikes/reservoirs	-	-	-	-	-	-
- Natural rainfall	-	52	-	52	-	52
- Source not reported	-	-	-	-	-	-
Total households reporting use of water for growing fruit trees	1,561	10,977	3,103	7,874	802	7,072
- Natural compoundings	-	81	24	57	-	57
- Dug ponds	5	312	164	148	52	96
- Rivers or canals	15	130	26	104	52	52
- Irrigation canals	-	68	16	52	-	52
- Deep wells	-	101	26	75	-	75
- Shallow wells	80	208	75	133	-	133
- Dikes/reservoirs	-	43	43	-	-	-
- Natural rainfall	1,456	9,885	2,729	7,156	698	6,458
- Source not reported	5	149	-	149	-	149

(continued)

Table 32 (continued) Number of farm households engaged in certain water-related agricultural activities: Type of activity and major source of water by strata and household allocation status.

Type of water-related activity and major source of water	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total households reporting use of water for raising fish	38	895	299	596	52	544
- Natural compoundings	-	19	19	-	-	-
- Dug ponds	18	435	164	271	52	219
- Rivers or canals	5	-	-	-	-	-
- Irrigation canals	-	107	16	91	-	91
- Deep wells	-	-	-	-	-	-
- Shallow wells	10	84	32	52	-	52
- Dikes/reservoirs	-	26	26	-	-	-
- Natural rainfall	5	224	42	182	-	182
- Source not reported	-	-	-	-	-	-
Total households reporting use of water for growing mulberry	357	2,430	795	1,635	-	1,635
- Natural compoundings	-	-	-	-	-	-
- Dug ponds	-	24	24	-	-	-
- Rivers or canals	-	-	-	-	-	-
- Irrigation canals	-	-	-	-	-	-
- Deep wells	-	-	-	-	-	-
- Shallow wells	-	2	2	-	-	-
- Dikes/reservoirs	-	-	-	-	-	-
- Natural rainfall	357	2,404	769	1,635	-	1,635
- Source not reported	-	-	-	-	-	-

Table 33 Number of households with farmland: Number of months during which all or part of household's farmland was under cultivation during the last 12 months by strata and household allocation status.

Number of months	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total households	3,473	41,789	8,028	33,761	2,842	30,919
None	10	469	30	439	-	-
1 month	204	584	448	136	-	136
2 months	13	204	75	129	38	91
3 months	12	143	-	143	-	143
4 months	56	613	225	388	118	270
5 months	156	3,469	403	3,066	109	2,957
6 months	368	5,773	675	5,098	557	4,541
7 months	504	7,602	599	7,003	405	6,598
8 months	266	3,976	671	3,305	293	3,012
9 months	332	5,670	1,384	4,286	433	3,853
10 months	426	5,261	1,121	4,140	526	3,614
11 months	482	3,079	920	2,159	132	2,027
12 months	596	4,860	1,364	3,496	231	3,265
Don't know	28	528	116	412	-	412

Table 34A Number of farm households growing glutinous rice: Average kilograms per rai harvested during the last 12 months by strata and household allocation status.

Average kilograms per rai harvested	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing glutinous rice	2,515	26,185	4,249	21,945	1,329	20,616
-100 kg/rai	341	1,876	381	1,495	202	1,293
100.1-150 kg/rai	314	2,421	618	1,803	240	1,563
150.1-200 kg/rai	437	4,035	562	3,473	271	3,202
200.1-250 kg/rai	365	5,833	748	5,085	339	4,746
250.1-300 kg/rai	345	3,677	612	3,065	-	3,065
300.1-400 kg/rai	520	5,027	743	4,284	193	4,091
400.1-500 kg/rai	167	2,000	336	1,664	46	1,618
More than 500 kg/rai	26	1,266	190	1,076	38	1,038

Table 34B Number of farm households growing non-glutinous rice: Average kilograms per rai harvested during the last 12 months by strata and household allocation status.

Average kilograms per rai harvested	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing non-glutinous rice	1,888	14,790	1,958	12,841	898	11,943
0-[illegible] kg/rai	311	1,217	244	973	52	921
100.1-[illegible] kg/rai	138	1,344	248	1,096	74	1,024
150.1-200 kg/rai	267	1,989	229	1,740	97	1,643
200.1-[illegible] kg/rai	264	2,578	327	2,251	341	1,910
250.1-300 kg/rai	273	2,490	364	2,126	112	2,014
300.1-400 kg/rai	335	2,874	390	2,484	151	2,333
More than 400 kg/rai	298	2,324	155	2,169	71	2,098

Table 34C Number of farm households growing kenaf: Average kilograms per rai harvested during the last 12 months by strata and household allocation status.

Average kilograms per rai harvested	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing kenaf	102	4,418	1,288	3,130	302	2,828
0-100 kg/rai	46	1,667	546	1,121	15	1,106
100.1-150 kg/rai	23	875	327	548	137	411
150.1-200 kg/rai	18	837	193	644	112	532
200.1-250 kg/rai	5	333	61	322	38	284
250.1-300 kg/rai	5	234	32	202	-	202
300.1-400 kg/rai	-	143	76	67	-	67
More than 400 kg/rai	5	279	53	226	-	226

Table 34D Number of farm households growing cassava: Average tons per rai harvested during the last 12 months by strata and household allocation status.

Average tons per rai harvested	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing cassava	2,817	20,502	4,800	15,702	1,479	14,223
0-0.8 ton/rai	263	3,115	370	2,759	314	2,445
0.8-1.0 ton/rai	679	5,980	1,183	4,797	95	4,702
1.1-2.0 tons/rai	1,323	8,865	2,700	6,165	873	5,292
2.1-3.0 tons/rai	404	1,968	521	1,447	52	1,395
3.1-3.5 tons/rai	98	353	21	332	38	294
3.6-4.0 tons/rai	38	156	21	135	107	28
More than 4.0 tons/rai	13	67	-	67	-	67

Table 34E Number of farm households growing sugar cane: Average tons per rai harvested during the last 12 months by strata and household allocation status.

Average tons per rai harvested	Control	Total, both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing sugar cane	6	1,621	291	1,330	164	1,166
0-6 tons/rai	6	281	59	222		222
6.1-8 tons/rai	-	363	50	313	-	313
8.1-7 tons/rai	-	74	21	53	-	53
7.1-9 tons/rai	-	288	61	227	57	170
9.1-11 tons/rai	-	351	63	288	107	181
11.1-13 tons/rai	-	94	-	94	-	94
Over 13 tons/rai	-	129	38	91	-	91
Can not be computed	-	42	-	42	-	42

Table 34F Number of farm households growing peanuts: Average kilograms per rai harvested during the last 12 months by stratum and household allocation status.

Kilograms per rai harvested	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing peanuts	63	2,431	870	1,561	236	1,325
0-50 kg/rai	26	527	174	353	-	353
50.1-100 kg/rai	20	656	281	375	-	375
100.1-150 kg/rai	-	347	93	254	52	202
150.1-200 kg/rai	5	313	23	290	-	290
200.1-250 kg/rai	12	201	68	133	80	53
250.1-300 kg/rai	-	181	77	104	104	-
Over 300 kg/rai	-	166	114	52	-	52
Can not be computed	-	40	40	-	-	-

Table 34G Number of farm households growing corn for consume: Average ears per rai harvested during the last 12 months by strata and household allocation status.

Ears per rai harvested	Control	Total, both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing corn for consume	75	1,832	334	1,494	122	1,372
0-500 ears/rai	26	527	119	408	-	408
500.1-1,000 ears/rai	5	310	52	258	-	258
1,000.1-2,000 ears/rai	13	585	106	479	52	427
2,000.1-3,000 ears/rai	-	158	89	69	-	69
3,000.1-4,000 ears/rai	13	68	16	52	-	52
4,000.1-6,000 ears/rai	5	174	16	158	-	158
Over 6,000 ears/rai	13	-	-	-	-	-

Table 34E Number of farm households growing corn for livestock: Average kilograms per rai harvested during the last 12 months by strata and household allocation status.

Kilograms per rai harvested	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing corn for livestock	13	7,198	1,404	5,794	1,042	4,752
0-50 kg/rai	-	260	-	260	104	156
50.1-100 kg/rai	-	651	78	573	208	365
100.1-150 kg/rai	-	1,071	130	941	104	337
150.1-200 kg/rai	13	1,147	156	991	156	835
200.1-250 kg/rai	-	1,252	260	992	53	939
250.1-300 kg/rai	-	834	260	574	156	418
300.1-350 kg/rai	-	679	156	523	157	366
350.1-400 kg/rai	-	574	208	366	52	314
Over 400 kg/rai	-	730	156	574	52	522

Table 34I Number of farm households growing jute: Average kilograms per rai harvested during the last 12 months by strata and household allocation status.

Kilograms per rai harvested	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing jute	99	1,[illegible]	271	1,287	57	1,180
0-100 kg/rai	56	[illegible]	30	310	57	253
101.1-150 kg/rai	15	457	107	350	-	350
150.1-200 kg/rai	13	354	99	255	-	255
200.1-250 kg/rai	15	99	-	99	-	99
250.1-300 kg/rai	-	110	21	89	-	89
300.1-400 kg/rai	-	166	32	134	-	134
More than 400 kg/rai	-	2	2	-	-	-

Table 34J Number of farm households growing mungbean: Average kilograms per rai harvested during the last 12 months by strata and household allocation status.

Kilograms per rai harvested	Control	Total, Both Project Strata	Project Stratum I	Project Stratum		
				Total	Allocated Households	Unallocated Households
Total growing mungbean	23	967	893	874	208	166
0-50 kg/rai	10	473	203	270	104	166
50.1-100 kg/rai	13	390	286	104	104	-
100.1-150 kg/rai	-	78	78	-	-	-
150.1-200 kg/rai	-	-	-	-	-	-
200.1-250 kg/rai	-	26	26	-	-	-
250.1-300 kg/rai	-	-	-	-	-	-
Over 300 kg/rai	-	-	-	-	-	-

Table 34k Number of farm households growing sorghum: Average kilograms per rai harvested during the last 12 months by strata and household allocation status.

Kilograms per rai harvested	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing sorghum	-	131	26	105	-	105
0-50 kg/rai	-	-	-	-	-	-
50.1-100 kg/rai	-	131	26	105	-	105
100.1-150 kg/rai	-	-	-	-	-	-
150.1-200 kg/rai	-	-	-	-	-	-
200.1-250 kg/rai	-	-	-	-	-	-
250.1-300 kg/rai	-	-	-	-	-	-
Over 300 kg/rai	-	-	-	-	-	-

Table 34L Number of farm households growing cotton: Average kilograms per rai harvested during the last 12 months by strata and household allocation status.

Kilograms per rai harvested	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total growing cotton	-	4,606	1,195	3,411	781	2,632
0-50 kg/rai	-	958	160	798	260	535
50.1-100 kg/rai	-	1,238	290	948	208	740
100.1-150 kg/rai	-	912	183	729	209	520
150.1-200 kg/rai	-	655	130	525	52	473
200.1-250 kg/rai	-	484	276	208	52	156
250.1-300 kg/rai	-	208	52	156	-	156
Over 300 kg/rai	-	156	104	52	-	52

Table 35 Total units and average units per rai of agricultural production during the last 12 months: Type of crop by strata and household allocation status.

Type of crop	Unit	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
					Total	Allocated Households	Unallocated Households
Glutinous rice							
Total production	Kg	7,891,867	106,533,350	10,197,118	96,336,232	6,007,560	90,328,672
Total number of rai		36,553	428,155	42,222	385,933	27,003	358,930
Average per rai		215.9	248.8	241.5	249.6	222.5	251.7
Non-glutinous rice							
Total production	Kg	5,559,494	51,721,383	7,143,147	44,578,236	2,887,390	41,690,846
Total number of rai		25,248	205,885	28,469	177,416	10,840	166,576
Average per rai		220.2	251.2	250.9	251.3	266.4	250.3
Corn for consume							
Total production	Ears	287,000	9,087,145	1,822,555	7,264,590	1,560,000	5,704,590
Total number of rai		166	7,082	1,376	5,706	780	4,926
Average per rai		1,728.9	1,233.1	1,324.5	1,273.1	2,000.0	1,158.1
Corn for livestock							
Total production	Kg	18,590	74,825,689	16,382,262	58,443,277	9,[illegible]3,420	49,029,857
Total number of rai		104	295,299	60,034	235,265	40,068	195,197
Average per rai		178.8	253.4	272.9	248.4	234.9	251.2
Kenaf							
Total production	Kg	49,070	3,979,943	727,099	3,252,844	137,800	3,115,044
Total number of rai		298	21,268	5,205	16,063	839	15,224
Average per rai		164.7	187.1	139.7	202.5	164.2	204.6
Jute							
Total production	Kg	32,225	1,027,318	187,540	839,778	28,500	811,278
Total number of rai		310	6,252	1,156	5,096	285	4,811
Average per rai		104.0	164.3	162.2	164.8	100.0	168.6

(continued)

Table 35 (continued) Total units and average units per rai of agricultural production during the last 12 months: Type of crop by strata and household allocation status.

Type of crop	Unit	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
					Total	Allocated Households	Unallocated Households
Cassava							
Total production	Ton	67,763	268,428	64,307	204,121	21,199	182,922
Total number of rai		44,345	203,372	43,111	160,261	15,750	144,511
Average per rai		1.5	1.3	1.5	1.3	1.3	1.3
Mungbean							
Total production	Kg	7,488	529,100	403,348	125,752	92,820	32,932
Total number of rai		98	8,148	5,793	2,355	1,612	743
Average per rai		76.4	64.9	69.6	53.4	57.5	44.3
Sugar cane							
Total production	Ton	-	101,734	20,947	80,787	26,835	53,952
Total number of rai		6	16,821	3,482	13,339	3,136	10,203
Average per rai		-	6.0	6.0	6.1	8.6	5.3
Peanuts							
Total production	Kg	8,164	948,771	347,355	601,416	239,112	362,304
Total number of rai		86	6,663	2,584	4,099	992	3,107
Average per rai		94.9	142.0	134.4	146.7	241.0	116.6
Pineapple							
Total production	Kg	157,750	10,400	10,400	-	-	-
Total number of rai		309	26	26	-	-	-
Average per rai		510.5	400.0	400.0	-	-	-
Sorghum							
Total production	Kg	-	60,160	28,860	31,300	-	31,300
Total number of rai		-	651	338	313	-	313
Average per rai		-	92.4	85.4	100.0	-	100.0

(continued)

Table 35 (continued) Total units and average units per rai of agricultural production during the last 12 months: Type of crop by strata and household allocation status.

Type of crop	Unit	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
					Total	Allocated Households	Unallocated Households
Cotton							
Total production	Kg	-	5,839,894	1,737,280	4,102,614	1,048,680	3,053,934
Total number of rai		-	48,383	9,442	38,941	14,050	24,891
Average per rai		-	120.7	184.0	105.4	74.6	122.7
Water melon							
Total production	Kg	635,420	2,205,866	501,256	1,704,610	182,760	1,521,850
Total number of rai		373	3,254	1,581	1,673	850	823
Average per rai		1,703.5	677.9	317.0	1,018.9	215.0	1,849.1
Pumpkin							
Total production	Kg	4,550	423,148	220,368	202,780	-	202,780
Total number of rai		13	1,162	438	724	-	724
Average per rai		350.0	364.2	503.1	280.1	-	280.1
Sesame							
Total production	Kg	29,335	152,480	29,076	123,404	-	123,404
Total number of rai		944	2,769	591	2,178	-	2,178
Average per rai		31.1	55.1	49.2	56.7	-	56.7
Chili							
Total production	Kg	1,150	544,921	309,669	235,252	60,840	174,412
Total number of rai		20	4,032	2,393	1,639	520	1,119
Average per rai		57.5	135.1	129.4	143.5	117.0	155.9

(continued)

Table 35 (continued) Total units and average units per rai of agricultural production during the last 12 months: Type of crop by strata and household allocation status.

Type of crop	Unit	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
					Total	Allocated Households	Unallocated Households
Vegetables							
Total production	Kg	39,300	15,964,829	458,921	15,505,908	145,930	15,359,978
Total number of rai		139	6,973	999	5,974	427	5,547
Average per rai		282.7	2,289.5	459.4	2,595.6	341.8	2,769.1
Others							
Total production	Kg	66,300	695,922	80,217	615,705	155,195	460,510
Total number of rai		39	2,756	360	2,396	523	1,873
Average per rai		1,700.0	252.5	222.8	257.0	296.7	245.9

Table 36A Number of farm households: Value of crops produced during the last 12 months by strata and by household allocation status.

Type of crop and value	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Glutinous rice						
Number of households growing glutinous rice	2,515	26,185	4,240	21,945	1,329	20,616
0-2,500 baht	562	3,601	1,144	2,457	38	2,419
2,500.1-5,000 baht	527	3,421	933	2,488	353	2,135
5,000.1-10,000 baht	679	8,320	1,446	6,874	166	6,708
10,000.1-20,000 baht	574	7,878	603	7,275	571	6,704
20,000.1-30,000 baht	146	2,367	114	2,253	201	2,052
30,000.1-40,000 baht	22	514	-	514	-	514
More than 40,000 baht	5	84	-	84	-	84
Average value of crop (baht)	7,699.97	10,399.57	6,098.83	11,230.52	11,778.09	11,195.22

Table 36B Number of farm households: Value of crops produced during the last 12 months by crop by strata and household allocation status.

Type of crop and value	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Non-glutinous rice						
Number of households growing non-glutinous rice	1,886	14,796	1,955	12,841	898	11,943
0-2,500 baht	563	4,121	661	3,460	359	3,101
2,500.1-5,000 baht	291	2,620	178	2,442	167	2,275
5,000.1-10,000 baht	430	2,128	248	1,880	73	1,807
10,000.1-20,000 baht	377	3,707	501	3,206	173	3,033
20,000.1-30,000 baht	142	1,362	272	1,090	70	1,020
30,000.1-40,000 baht	55	501	71	430	-	430
More than 40,000 baht	28	357	24	333	56	277
Average value of crop (baht)	9,265.72	10,280.36	10,764.09	10,206.71	9,653.49	10,248.31

Table 36C Number of farm households: Value of crops produced during the last 12 months by crop strata and household allocation status.

Type of crop and value	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Corn for consumption						
Number of households growing corn for consumption	75	1,822	398	1,424	52	1,372
0-1,000 baht	62	1,099	149	950	-	950
1,000.1-2,000 baht	-	170	79	91	-	91
2,000.1-3,000 baht	-	148	68	80	-	80
3,000.1-4,000 baht	13	94	52	42	-	42
4,000.1-5,000 baht	-	105	-	105	-	105
More than 5,000 baht	-	206	50	156	52	104
Average value of crop (baht)	889.19	4,365.92	3,658.67	4,563.59	80,100.00	1,700.69

Table 36D Number of farm households: Value of crops produced during the last 12 months by crop strata and household allocation status.

Type of crop and value	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Corn for livestock						
Number of households growing corn for livestock	13	7,198	1,404	5,794	1,042	4,752
0-2,500 baht	-	547	26	521	156	365
2,500.1-5,000 baht	13	677	52	625	104	521
5,000.1-10,000 baht	-	1,099	156	943	156	787
10,000.1-20,000 baht	-	1,645	442	1,203	105	1,098
20,000.1-30,000 baht	-	1,041	260	781	208	573
More than 30,000 baht	-	2,163	442	1,721	313	1,408
Value cannot be computed	-	26	26	-	-	-
Average value of crop (baht)	4,304.30	30,485.00	34,739.24	29,473.21	28,599.18	29,664.86

Table 36E Number of farm households: Value of crops produced during the last 12 months by crop strata and household allocation status.

Type of crop and value	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Hemp						
Number of households growing hemp	102	4,418	1,288	3,130	302	2,828
0-2,500 baht	79	2,821	848	1,973	264	1,709
2,500.1-5,000 baht	5	853	341	512	38	474
5,000.1-10,000 baht	13	597	99	498	-	498
10,000.1-15,000 baht	5	147	-	147	-	147
15,000.1-20,000 baht	-	-	-	-	-	-
More than 20,000 baht	-	-	-	-	-	-
Average value of crop (baht)	2,038.17	2,744.52	2,111.66	3,004.94	1,580.17	3,157.09

Table 36F Number of farm households: Value of crops produced during the last 12 months by crop strata and household allocation status.

Type of crop and value	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Jute						
Number of households growing jute	99	1,508	271	1,237	57	1,180
0-2,500 baht	94	905	155	750	57	693
2,500.1-5,000 baht	5	469	66	403	-	403
5,000.1-10,000 baht	-	132	48	84	-	84
10,000.1-15,000 baht	-	-	-	-	-	-
15,000.1-20,000 baht	-	2	2	-	-	-
More than 20,000 baht	-	-	-	-	-	-
Average value of crop (baht)	1,449.01	2,588.85	2,966.56	2,506.10	2,400.00	2,511.23

Table 36G Number of farm households: Value of crops produced during the last 12 months by crop strata and household allocation status.

Type of crop and value	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Cassava						
Number of households growing cassava	2,817	20,507	4,805	15,702	1,479	14,223
0-5,000 baht	961	10,356	2,281	8,075	569	7,506
5,000.1-10,000 baht	509	4,580	1,137	3,443	366	3,077
10,000.1-20,000 baht	637	3,727	1,001	2,726	388	2,338
20,000.1-30,000 baht	239	1,289	324	965	104	861
30,000.1-40,000 baht	166	114	45	69	-	69
More than 40,000 baht	305	441	17	424	52	372
Average value of crop (baht)	16,555.02	8,466.39	7,941.10	8,627.13	10,008.67	8,483.47

Table 36H Number of farm households: Value of crops produced during the last 12 months by crop strata and households allocation status.

Type of crop and value	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Sugar cane						
Number of households growing sugar cane	6	1,622	292	1,330	164	1,166
0-10,000 baht	6	233	38	195	-	195
10,000.1-20,000 baht	-	294	46	248	-	248
20,000.1-30,000 baht	-	241	27	214	-	214
30,000.1-40,000 baht	-	562	95	467	107	360
40,000.1-50,000 baht	-	11	-	11	-	11
More than 50,000 baht	-	239	86	153	57	96
Value cannot be computed	-	42	-	42	-	42
Average value of crop (baht)	.00	36,780.73	43,672.09	35,218.40	79,520.12	28,754.45

Table 36I Number of farm households: Value of crops produced during the last 12 months by crop by strata and households allocation status.

Type of crop and value	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Peanuts						
Number of households growing peanuts	63	2,431	870	1,561	236	1,325
0-500 baht	36	452	161	291	-	291
500.1-1,000 baht	10	478	89	389	52	337
1,500.1-2,000 baht	12	567	189	378	-	378
2,000.1-3,000 baht	5	241	106	135	-	135
3,000.1-4,000 baht	-	211	133	78	52	26
More than 4,000 baht	-	461	171	290	132	158
Value cannot be computed	-	21	21	-	-	-
Average value of crop (baht)	814.93	2,415.31	2,669.54	2,277.04	5,454.20	1,711.14

Table 36J Number of farm households: Value of crops produced during the last 12 months by crop by strata and households allocation status.

Type of crop and value	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Sorghum						
Number of households growing sorghum	-	131	26	105	-	105
0-2,500 baht	-	131	26	105	-	105
2,500.1-5,000 baht	-	-	-	-	-	-
5,000.1-10,000 baht	-	-	-	-	-	-
10,000.1-15,000 baht	-	-	-	-	-	-
15,000.1-20,000 baht	-	-	-	-	-	-
More than 20,000 baht	-	-	-	-	-	-
Average value of crop (baht)	.00	858.15	2,397.60	476.95	.00	476.95

Table 36K Number of farm households: Value of crops produced during the last 12 months by crop by strata and households allocation status.

Type of crop and value	Control	Total, both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Cotton						
Number of households growing cotton	-	4,608	1,195	3,413	781	2,632
0-10,000 baht	-	2,078	492	1,586	364	1,222
10,000.1-20,000 baht	-	1,464	209	1,255	313	942
20,000.1-30,000 baht	-	546	234	312	-	312
30,000.1-40,000 baht	-	208	104	104	52	52
40,00-.1-50,000 baht	-	104	104	-	-	-
More than 50,000 baht	-	208	52	156	52	104
Average value of crop (baht)	.00	15,187.1[illegible]	13,417.63	14,056.08	16,262.56	13,401.35

Table 37A Number of farm households: Type of livestock owned by project stratum and household allocation status.

Type of livestock	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,465	41,780	8,019	33,761	2,842	30,919
Number owning no livestock	115	3,091	394	2,695	209	2,484
Number that own:						
Buffalo	2,068	29,408	5,404	24,004	2,051	21,953
Cattle	629	3,568	864	2,704	311	2,398
Swine	686	7,271	919	6,352	470	5,882
Chickens	3,137	32,806	7,051	25,755	2,123	23,632
Ducks	963	13,520	2,005	11,515	699	10,816

Table 37B Average number of livestock currently owned by farm households: Type of livestock by project stratum and household allocation status.

Type of livestock	Control		Total, Both Project Strata		Project Stratum 1		Project Stratum 2					
							Total		Allocated Households		Unallocated Households	
	Number of Households*	Average number	Number of Households*	Average number	Number of Households*	Average number	Number of Households*	Average number	Number of Households*	Average number	Number of Households*	Average number
Baffalo	2,068	3.9	29,408	3.0	5,404	2.6	24,004	3.1	2,051	2.4	21,953	3.1
Cattle	629	4.4	3,568	3.3	864	3.0	2,704	3.2	311	6.3	2,393	2.8
Swine	686	3.2	7,271	2.6	919	2.3	6,352	2.7	470	1.5	5,882	2.7
Chickens	3,137	24.4	32,806	18.8	7,051	25.6	25,755	16.9	2,123	19.9	23,632	16.6
Ducks	963	8.0	13,520	7.6	2,005	5.6	11,515	7.9	699	4.9	10,816	8.1

* Number of households refers to the number of households reporting ownership of the indicated type of livestock.

Table 37C Percentage of farm households owning specific types of livestock: Type of livestock by project stratum and household allocation status.

Type of livestock	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,465	41,780	8,019	33,761	2,842	30,919
No livestock owned	-	-	-	-	-	-
Buffalo	59.7	70.4	67.4	71.1	72.2	71.0
Cattle	18.2	8.5	10.8	8.0	10.9	7.8
Swine	19.8	17.4	11.5	18.8	16.5	19.0
Chickens	90.5	78.5	87.9	76.3	74.7	76.4
Ducks	27.8	32.4	25.0	34.1	24.6	35.0

Table 38A Number of households disposing of glutinous rice and average kilograms disposed of per household during the last 12 months: Type of crop disposal by strata and household allocation status.

Glutinous rice disposal	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Sold						
Number of households	547	9,849	713	9,136	439	8,697
Average amount per household	1,527.9	1,865.6	1,103.3	1,925.1	1,497.4	1,946.7
Consumed						
Number of households	2,456	25,590	4,172	21,418	1,318	20,100
Average amount per household	1,601.5	3,030.0	2,038.0	3,223.2	3,692.3	3,192.5
Exchanged or bartered						
Number of households	196	3,181	175	3,006	-	3,006
Average amount per household	117.5	198.6	113.0	203.5	-	203.5
Used for payment						
Number of households	278	3,129	301	2,828	72	2,756
Average amount per household	485.4	1,402.1	1,019.0	1,442.9	4,220.8	1,370.3
Spoiled						
Number of households	87	622	23	599	-	599
Average amount per household	52.0	35.3	12.0	36.2	-	36.2
Other						
Number of households	2,379	25,386	4,145	21,241	1,329	19,912
Average amount per household	167.5	157.0	112.6	165.6	119.2	168.7

Table 38B *Number of households disposing of non-glutinous rice and average kilograms disposed of per household during the last 12 months: Type of crop disposal by strata and household allocation status.*

Non-glutinous rice disposal	Control	Total, both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Sold						
Number of households	679	9,993	1,293	8,700	798	7,902
Average amount per household	1,070.9	1,404.7	1,521.5	1,387.3	1,544.7	1,371.4
Consumed						
Number of households	1,577	11,765	1,795	9,970	647	9,323
Average amount per household	2,529.1	1,837.5	1,763.1	1,850.9	1,849.0	1,851.0
Exchanged or bartered						
Number of households	41	549	87	462	112	350
Average amount per household	68.5	298.1	438.8	271.6	160.0	307.3
Used for payment						
Number of households	293	5,761	765	4,996	300	4,696
Average amount per household	1,151.1	2,292.0	2,122.2	2,318.0	1,130.8	2,393.9
Spoiled						
Number of households	49	242	64	178	-	178
Average amount per household	42.2	77.5	41.8	90.4	-	90.4
Other						
Number of households	1,704	13,767	1,747	12,020	845	11,175
Average amount per household	250.1	160.4	200.3	154.6	119.8	157.3

Table 38C Number of households disposing of kenaf and average kilogram disposed of per household during the last 12 months: Type of crop disposal by strata and household allocation status.

Kenaf disposal	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Sold						
Number of households	97	4,368	1,238	3,130	302	2,828
Average amount per household	505.9	903.3	584.3	1,037.4	437.8	1,101.5
Consumed						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Exchanged or bartered						
Number of households	-	23	23	-	-	-
Average amount per household	-	5.0	5.0	-	-	-
Used for payment						
Number of households	-	77	50	27	27	-
Average amount per household	-	426.2	550.0	197.0	197.0	-
Spoiled						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Other						
Number of households	-	164	74	90	42	48
Average amount per household	-	7.5	11.1	4.5	6.2	3.1

Table 38D Number of households disposing of cassava and average tons disposed of per household during the last 12 months: Type of crop disposal by strata and household allocation status.

Cassava disposal	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Sold						
Number of households	2,773	19,651	4,761	14,890	1,427	13,463
Average amount per household	24.4	13.7	13.5	13.7	14.9	13.6
Consumed						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Exchanged or bartered						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Used for payment						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Spoiled						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Other						
Number of households	18	-	-	-	-	-
Average amount per household	.8	-	-	-	-	-

Table 38E Number of households disposing of sugar cane and average tons disposed of per household during the last 12 months: Type of crop disposal by strata and household allocation status.

Sugar cane disposal	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Sold						
Number of households	-	1,476	292	1,184	164	1,020
Average amount per household	-	67.5	71.6	66.5	163.6	50.9
Consume						
Number of households	-	2	2	-	-	-
Average amount per household	-	1.0	1.0	-	-	-
Exchanged or bartered						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Used for payment						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Spoiled						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Other						
Number of households	-	108	4	104	-	104
Average amount per household	-	1.0	1.0	1.0	-	1.0

Table 38F Number of households disposing of corn for consume and average ears disposed of per household during the last 12 months: Type of crop disposal by strata and household allocation status.

Corn for consume disposal	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Sold						
Number of households	62	1,304	372	932	52	880
Average amount per household	3,036.3	4,441.4	3,675.5	4,747.2	1,500.0	4,939.0
Consume						
Number of households	75	1,468	330	1,138	52	1,086
Average amount per household	1,014.1	888.7	325.2	1,052.1	500.0	1,078.5
Exchanged or bartered						
Number of households	-	25	25	-	-	-
Average amount per household	-	60.0	60.0	-	-	-
Used for payment						
Number of households	-	52	-	52	52	-
Average amount per household	-	25,000.0	-	25,000.0	25,000.0	-
Spoiled						
Number of households	5	82	30	52	-	52
Average amount per household	200.0	326.8	200.0	400.0	-	400.0
Other						
Number of households	62	1,426	296	1,130	52	1,078
Average amount per household	220.6	172.9	183.7	170.0	500.0	154.1

Table 38G Number of households disposing of corn for livestock and average kilograms disposed of per household during the last 12 months: Type of crop disposal by strata and household allocation status.

Corn for livestock disposal	Control	Total, Each Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Sold						
Number of households	13	6,626	1,404	5,222	886	4,336
Average amount per household	1,330.0	11,519.2	12,298.0	11,041.0	11,612.5	10,924.2
Consumed						
Number of households	-	261	156	105	-	105
Average amount per household	-	106.5	77.8	149.5	-	149.5
Exchanged or bartered						
Number of households	-	26	26	-	-	-
Average amount per household	-	50.0	50.0	-	-	-
Used for payment						
Number of households	-	1,095	208	887	52	835
Average amount per household	-	6,029.1	2,950.0	6,751.1	2,600.0	7.009.6
Spoiled						
Number of households	-	313	104	209	-	209
Average amount per household	-	158.6	309.3	83.6	-	83.6
Other						
Number of households	13	6,495	1,326	5,169	990	4,179
Average amount per household	100.0	232.3	256.6	226.0	266.0	216.5

Table 38H Number of households disposing of jute and average kilograms disposed of per household during the last 12 months: Type of crop disposal by strata and household allocation status.

Jute disposal	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Sold						
Number of households	99	1,508	271	1,237	57	1,180
Average amount per household	325.5	681.2	691.9	678.9	500.0	687.5
Consumed						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Exchanged or bartered						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Used for payment						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Spoiled						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Other						
Number of households	-	2	2	-	-	-
Average amount per household	-	20.0	20.0	-	-	-

Table 38I Number of households disposing of mungbean and average kilograms disposed of per household during the last 12 months : Type of crop disposal by strata and household allocation status.

Mungbean disposal	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Sold						
Number of households	13	920	546	374	208	166
Average amount per household	552.0	553.9	708.6	328.2	435.0	194.4
Consumed						
Number of households	-	210	177	33	-	33
Average amount per household	-	22.6	23.8	16.0	-	16.0
Exchanged or bartered						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Used for payment						
Number of household	-	52	52	-	-	-
Average amount per household	-	127.5	127.5	-	-	-
Spoiled						
Number of households	-	52	52	-	-	-
Average amount per household	-	4.5	4.5	-	-	-
Other						
Number of households	13	392	255	137	104	33
Average amount per household	24.0	28.0	33.4	18.0	22.5	4.0

Table 38 J Number of households disposing of peanuts and average kilograms disposed of per household during the last 12 mounths : Type of crop disposal by strata and household allocation status.

Peanuts disposal	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Sold						
Number of households	35	2,015	709	1,306	184	1,122
Average amount per household	79.5	386.3	403.4	376.9	1,204.6	241.2
Consumed						
Number of households	48	1,047	348	699	104	595
Average amount per household	44.6	50.7	67.4	42.4	80.0	35.8
Exchanged or bartered						
Number of households	-	26	-	26	-	26
Average amount per household	-	20.0	-	20.0	-	20.0
Used for payment						
Number of households	-	122	70	52	-	52
Average amount per household	-	76.7	102.5	42.0	-	42.0
Spoiled						
Number of households	-	81	2	79	-	79
Average amount per household	-	79.6	54.0	80.3	-	80.3
Other						
Number of households	53	1,555	491	1,064	156	908
Average amount per household	61.1	71.4	82.5	66.2	58.7	67.5

Table 38K Number of households disposing of sorghum and average kilograms disposed of per household during the last 12 months : Type of crop disposal by strata and household allocation status.

Sorghum disposal	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Sold						
Number of households	-	78	26	52	-	52
Average amount per household	-	683.3	1,050.0	500.0	-	500.0
Consumed						
Number of households	-	79	26	53	-	53
Average amount per household	-	20.0	20.0	20.0	-	20.0
Exchanged or bartered						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Used for payment						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Spoiled						
Number of households	-	-	-	-	-	-
Average amount per household	-	-	-	-	-	-
Other						
Number of households	-	79	26	53	-	53
Average amount per household	-	66.8	40.0	80.0	-	80.0

Table 38L Number of households disposing of cotton and average kilograms disposed of per household during the last 12 months: Type of crop disposal by strata and household allocation status.

Cotton disposal	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Sold						
Number of households	-	4,191	1,142	3,049	677	2,372
Average amount per household	-	1,343.2	1,501.3	1,284.0	1,487.6	1,225.9
Consumed						
Number of households	-	27	27	-	-	-
Average amount per household	-	26.0	26.0	-	-	-
Exchanged or bartered						
Number of households	-	27	27	-	-	-
Average amount per household	-	11.0	11.0	-	-	-
Used for payment						
Number of households	-	390	78	312	52	260
Average amount per household	-	458.0	403.3	471.7	800.0	406.0
Spoiled						
Number of households	-	156	52	104	-	104
Average amount per household	-	271.7	55.0	380.0	-	380.0
Other						
Number of households	-	161	109	52	-	52
Average amount per household	-	41.6	51.9	20.0	-	20.0

Table 39A *Number of farm households growing glutinous rice during the last 12 months: Major marketing outlet by stratum and household allocation status.*

Major marketing outlet	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total reporting glutinous rice grown	2,515	26,185	4,240	21,945	1,329	20,616
Did not sell	1,968	16,336	3,527	12,809	890	11,919
Did sell	547	9,849	713	9,136	439	8,697
Market places	5	47	19	28	-	28
Settlement dealers	187	2,792	78	2,714	97	2,617
Dealers outside settlement	288	5,494	352	5,142	327	4,815
Coops	-	571	39	532	-	532
Neighbors	32	509	193	316	-	316
Other	-	229	-	229	15	214
Marketing outlet not reported	35	207	32	175	-	175

Table 39B Number of farm households growing non-glutinous rice during the last 12 months; Major marketing outlet by stratum and household allocation status.

Major market outlet	Control	Total Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total reporting non-glutinous rice	1,886	14,796	1,955	12,841	898	11,943
Did not sell	1,207	4,803	662	4,141	100	4,041
Did sell	679	9,993	1,293	8,700	798	7,902
Market places	12	496	94	402	112	291
Settlement dealers	229	4,018	554	3,464	246	3,218
Dealers outside settlement	357	4,239	526	3,713	380	3,333
Coops	31	352	69	283	60	223
Neighbors	15	336	-	336	-	336
Other	-	95	-	95	-	95
Marketing outlet not reported	35	457	51	406	-	406

Table 39C Number of farm households growing corn for consumption during the last 12 months; Major marketing outlet by stratum and household allocation status.

Major marketing outlet	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total reporting corn for consumption grown	75	1,822	398	1,424	52	1,372
Did not sell	13	518	26	492	-	492
Did sell	62	1,304	372	932	52	880
Marketing places	18	473	172	301	-	301
Settlement dealers	-	342	43	299	-	299
Dealers outside settlement	-	262	50	212	52	160
Coops	-	26	26	-	-	-
Neighbors	44	176	56	120	-	120
Other	-	-	-	-	-	-
Marketing outlet not reported	-	25	25	-	-	-

Table 39D Number of farm households growing corn for livestock during the last 12 months; Major marketing outlet by stratum and household allocation status.

Major marketing outlet	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total reporting corn for livestock grown	13	7,198	1,404	5,794	1,042	4,752
Did not sell	-	572	-	572	156	416
Did sell	13	6,626	1,404	5,222	886	4,336
Market places	-	1,098	156	942	104	838
Settlement dealers	-	833	52	781	53	728
Dealers outside settlement	13	3,730	494	3,236	729	2,507
Coops	-	807	702	105	-	105
Neighbors	-	53	-	53	-	53
Other	-	105	-	105	-	105
Marketing outlet not reported	-	-	-	-	-	-

Table 39E Number of farm households growing kenaf during the last 12 months: Major marketing outlet by stratum and household allocation status.

Major marketing outlet	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total reporting kenaf grown	102	4,418	1,288	3,130	302	2,828
Did not sell	5	50	50	-	-	-
Did sell	97	4,368	1,238	3,130	302	2,828
Market places	-	278	-	278	112	166
Settlement dealers	41	1,535	451	1,084	87	997
Dealers outside settlement	46	2,310	757	1,553	103	1,450
Coops	-	-	-	-	-	-
Neighbors	-	112	-	112	-	112
Other	-	38	-	38	-	38
Marketing outlet not reported	10	95	30	65	-	65

Table 39F Number of farm households growing jute during the last 12 months; Major marketing outlet by stratum and household allocation status.

Major marketing outlet	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total reporting jute grown	99	1,508	271	1,237	57	1,180
Did not sell	-	-	-	-	-	-
Did sell	99	1,508	271	1,237	57	1,180
Market places	-	-	-	-	-	-
Settlement dealers	33	375	98	277	-	277
Dealers outside settlement	61	1,133	173	960	57	903
Coops	-	-	-	-	-	-
Neighbors	-	-	-	-	-	-
Other	-	-	-	-	-	-
Marketing outlet not reported	5	-	-	-	-	-

Table 39G Number of farm households growing cassava during the last 12 months; Major marketing outlet by stratum and household allocation status.

Major marketing outlet	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total reporting cassava grown	2,817	20,507	4,805	15,702	1,479	14,223
Did not sell	44	856	44	812	52	760
Did sell	2,773	19,651	4,761	14,890	1,427	13,463
Market places	6	147	26	121	52	69
Settlement dealers	1,544	6,901	1,701	5,200	239	4,961
Dealers outside settlement	954	12,012	2,827	9,185	1,136	8,049
Coops	-	73	73	-	-	-
Neighbors	101	351	61	290	-	290
Other	6	52	-	52	-	52
Marketing outlet not reported	162	115	73	42	-	42

Table 39H Number of farm households growing mungbean during the last 12 months; Major marketing outlet by stratum and household allocation status.

Major marketing outlet	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total reporting mungbean grown	23	967	593	374	208	166
Did not sell	10	47	47	-	-	-
Did sell	13	920	546	374	208	166
Market places	-	131	78	53	-	53
Settlement dealers	-	28	-	28	-	28
Dealers outside settlement	13	466	208	260	208	52
Coops	-	260	260	-	-	-
Neighbors	-	33	-	33	-	33
Other	-	-	-	-	-	-
Marketing outlet not reported	-	-	-	-	-	-

Table 331 Number of farm households growing sugar cane during the last 12 months; Major marketing outlet by stratum and household allocation status.

Major marketing outlet	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total reporting sugar cane grown	6	1,622	292	1,330	164	1,166
Did not sell	6	104	-	104	-	104
Did sell	-	1,476	292	1,184	164	1,020
Market places	-	-	-	-	-	-
Settlement dealers	-	688	54	634	107	527
Dealers outside settlement	-	697	158	539	57	482
Coops	-	-	-	-	-	-
Neighbors	-	17	17	-	-	-
Other	-	36	25	11	-	11
Marketing outlet not reported	-	38	38	-	-	-
Sale status not reported	-	42	-	42	-	42

Table 39J Number of farm households growing peanuts during the last 12 months; Major marketing outlet by stratum and household allocation status.

Major marketing outlet	Control	Total, both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total reporting peanuts grown	63	2,431	870	1,561	236	1,325
Did not sell	28	395	140	255	52	203
Did sell	35	2,036	730	1,306	184	1,122
Market places	-	359	68	291	52	239
Settlement dealers	13	692	190	502	28	474
Dealers outside settlement	10	648	235	413	104	309
Coops	-	26	26	-	-	-
Neighbors	12	155	88	67	-	67
Other	-	21	21	-	-	-
Marketing outlet not reported	-	135	102	33	-	33

Table 39K Number of farm households growing sorghum during the last 12 months; Major marketing outlet by stratum and household allocation status.

Major marketing outlet	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total reporting sorghum grown	-	131	26	105	-	105
Did not sell	-	53	-	53	-	53
Did sell	-	78	26	52	-	52
Market places	-	-	-	-	-	-
Settlement dealers	-	-	-	-	-	-
Dealers outside settlement	-	78	26	52	-	52
Coops	-	-	-	-	-	-
Neighbors	-	-	-	-	-	-
Other	-	-	-	-	-	-
Marketing outlet not reported	-	-	-	-	-	-

Table 39L Number of farm households growing cotton during the last 12 months: Major marketing outlet by stratum and household allocation status.

Major marketing outlet	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total reporting cotton grown	-	4,608	1,195	4,413	781	2,632
Did not sell	-	417	53	364	104	260
Did sell	-	4,191	1,142	3,049	677	2,372
Market places	-	495	130	365	104	261
Settlement dealers	-	277	106	171	-	171
Dealers outside settlement	-	2,454	358	2,096	573	1,523
Coops	-	885	520	365	-	365
Neighbors	-	28	28	-	-	-
Other	-	52	-	52	-	52
Marketing outlet not reported	-	-	-	-	-	-

Table 40 Number and value in baht of livestock* of and number of farm households disposing of livestock during the last 12 months: Type of livestock by stratum and household allocation status.

Type of livestock	Control	Total, Both Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated households	Unallocated households
Total farm households	3,465	41,780	8,019	33,761	2,842	30,919
Buffalo						
No. of households reporting buffalo disposed	686	9,435	1,607	7,828	593	7,235
No. of buffalo disposed	1,545	18,822	2,841	15,981	1,209	14,772
Value of buffalo disposed	6,689,850	99,564,100	13,088,500	86,475,600	8,707,300	77,768,300
Cattle						
No. of households reporting cattle disposed	209	1,241	214	1,027	262	765
No. of cattle disposed	413	2,033	369	1,664	374	1,290
Value of cattle disposed	2,122,200	8,477,600	1,793,900	6,683,700	1,168,600	5,515,100
Swine						
No. of households reporting swine disposed	422	4,241	398	3,843	252	3,591
No. of swine disposed	1,834	11,096	1,524	9,572	1,642	7,930
Value of swine disposed	3,291,000	19,133,700	1,050,800	18,082,900	4,276,200	13,806,700
Chickens						
No. of households reporting chickens disposed	2,962	29,213	6,670	22,543	1,914	20,629
No. of chickens disposed	70,951	531,017	146,092	384,925	46,126	338,799
Value of chickens disposed	1,742,885	14,817,595	4,247,291	10,570,304	1,322,107	9,248,197
Ducks						
No. of households reporting ducks disposed	613	7,299	944	6,355	359	5,996
No. of ducks disposed	8,964	66,577	7,479	59,098	9,475	49,623
Value of ducks disposed	473,155	2,039,236	252,226	1,787,010	258,360	1,528,650

* 'Disposed' includes sold; exchanged or bartered, and slaughtered for home consumption.

Table 41 Number of farm households using agricultural credit during the last 12 months and amount borrowed: reason for borrowing by strata and household allocation status.

Reason for borrowing	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated households	Unallocated households
Total farm households	3,445	41,780	8,019	33,761	2,842	30,919
All reasons						
Average amount borrowed (Baht)	7,670.6	8,102.0	7,647.4	8,223.4	13,452.6	7,614.8
No. of households borrowing	1,828	23,211	4,889	18,322	1,910	16,412
To buy land						
Average amount borrowed (Baht)	7,270.3	12,844.7	8,577.6	13,730.6	20,000.0	13,487.3
No. of households borrowing	148	1,681	289	1,392	52	1,340
To buy livestock						
Average amount borrowed (Baht)	4,086.9	5,662.7	4.642.5	5,824.2	6,234.7	5,739.6
No. of households borrowing	172	3,066	419	2,647	452	2,195
To buy fertilizer, insecticides, and other agricultural inputs						
Average amount borrowed (Baht)	1,369.0	2,730.4	2,848.8	2,701.4	6,704.5	2,243.8
No. of households borrowing	628	13,091	2,574	10,517	1,079	9,438
To pay for labor						
Average amount borrowed (Baht)	4,381.8	4,221.5	3,582.0	4,432.9	6,519.9	4,129.5
No. of households borrowing	1,273	13,301	3,304	9,997	1,269	8,728
To buy farm implements and equipment						
Average amount borrowed (Baht)	4,304.8	1,753.4	1,470.3	1,866.3	2,032.3	1,849.8
No. of households borrowing	579	4,448	1,268	3,180	288	2,892

(continued)

Table 41 (Continued). Number of farm households using agricultural credit during the last 12 months and amount borrowed: reason for borrowing by strata and household allocation status.

Reason for borrowing	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
To hire farm implements						
Average amount borrowed (Baht)	3,212.2	4,820.8	3,706.4	5,208.8	7,267.7	4,968.0
No. of households borrowing	891	8,925	2,305	6,620	693	5,927
To pay for growing mulberry						
Average amount borrowed (Baht)	17,630.3	11,055.7	13,887.8	100.0	-	100.0
No. of households borrowing	66	185	147	38	-	38
Other						
Average amount borrowed (Baht)	1,804.0	4,405.7	5,661.1	3,985.4	14,000.0	3,195.2
No. of households borrowing	82	949	238	711	52	659

Table 42. Number of farm households using agricultural credit during the last 12 months and amount of credit: Source of credit by strata and household allocation status.

Source of credit	Control	Total, Both Project Strata	Project Stratum 1	Project stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,425	41,780	8,019	33,761	2,842	30,919
All sources						
Average amount per household(Baht)	7,270.6	8,102.0	7,647.4	8,223.4	13,452.6	7,614.6
No. of households using credit	1,828	23,211	4,889	18,322	1,910	16,412
Commercial Bank						
Average amount per household(Baht)	14,458.3	11,392.4	7,516.0	11,815.5	40,365.2	7,256.3
No. of households using credit	24	1,321	130	1,191	164	1,027
Cooperatives						
Average amount per household(Baht)	6,840.5	7,254.5	7,221.2	7,281.1	11,985.1	6,551.0
No. of households using credit	708	6,855	3,044	3,811	512	3,299
Moneylenders						
Average amount per household(Baht)	2,683.8	7,604.5	4,765.0	7,950.8	7,498.4	7,290.5
No. of households using credit	302	8,854	962	7,892	637	7,255
Neighbors						
Average amount per household(Baht)	1,593.5	3,183.8	3,281.3	3,171.3	4,500.0	3,107.6
No. of households using credit	136	2,564	291	2,273	104	2,169
Relatives						
Average amount per household(Baht)	3,125.7	4,054.2	3,511.0	4,199.5	18,329.9	2,428.6
No. of households using credit	206	2,208	466	1,742	194	1,548

(Continued)

Table 42 (Continued). Number of farm households using agricultural credit during the last 12 months and amount of credit: Source of credit by strata and household allocation status.

Source of credit	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Other						
Average amount per household (Baht)	15,581.8	4,001.5	7,253.0	1,987.2	-	1,987.2
No. of households using credit	22	217	83	134	-	134
BAAC						
Average amount per household (Baht)	9,365.3	7,594.1	7,817.9	7,440.7	6,240.7	7,665.1
No. of households using credit	728	5,059	851	4,208	663	3,545

Table 43 Number of farm households that requested but were not granted agricultural credit during the last 12 months: Reason for credit request by strata and household allocation status.

Reason for credit request	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total households refused credit *	40	2,283	302	1,981	156	1,825
To buy land	5	130	26	104	-	104
To buy livestock	-	146	42	104	-	104
To buy fertilizer, insecticides and other farm inputs	-	969	166	803	104	699
To buy farm implements and equipment	-	408	68	340	104	236
To pay for labor	22	1,276	222	1,054	52	1,002
To hire farm implements and equipment	-	573	47	526	-	526
Other	13	284	-	284	-	284

* A household may have had more than 1 reason for requesting for credit. All reasons are counted, therefore, the total reasons will be higher than the total households.

Table 44 Number of Households: Number of visits to settlement office during the last 12 months by household head by strata.

Number of visits	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total	3,508	45,385	8,246	37,137
Not reported, total	26	98	70	28
Reported, total	3,482	45,285	8,176	37,109
None	2,871	38,459	5,354	33,105
1	222	2,092	632	1,460
2	214	2,425	938	1,487
3	64	1,400	530	870
4	38	213	161	52
5	-	189	111	78
6-10	23	226	226	-
Over 10	50	281	224	57

Table 45 . Number of farm households: Number of visits to dealers during the last 12 months by strata and household allocation status.

Number of visits	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,465	41,780	8,019	33,761	2,842	30,919
Reported, total	3,465	41,681	7,972	33,709	3,842	30,867
None	1,370	16,578	3,141	13,437	525	12,912
1	467	5,848	1,328	4,520	477	4,043
2	518	7,144	1,448	5,696	620	5,076
3	400	4,771	735	4,036	585	3,451
4	180	2,366	370	1,996	296	1,700
5	222	1,514	471	1,043	27	1,016
6-10	218	2,284	340	1,944	203	1,741
Over 10	90	1,336	199	1,037	109	928

Table 46 Number of farm households: Number of business visits by dealers during the last 12 months by strata and household allocation status.

Number of visits	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,465	41,780	8,019	33,761	2,842	30,919
Reported, total	3,458	41,780	8,019	33,761	2,842	30,919
None	2,248	22,652	3,996	18,656	1,781	16,785
1	295	5,486	1,369	4,117	305	3,812
2	292	5,353	1,311	4,042	361	3,681
3	187	2,980	528	2,452	180	2,272
4	101	1,184	241	943	57	886
5	117	472	122	350	90	260
6-10	147	1,985	229	1,706	68	1,638
Over 10	75	1,718	223	1,495	-	1,495
Not Reported, Total	7	-	-	-	-	-

Table 47 Number of farm households: Number of visits by agricultural extension agents during the last 12 months by strata and household allocation status.

Number of visits	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,465	41,780	8,819	33,761	2,842	30,919
Number not visitsed by extension agent	2,533	23,489	5,334	19,055	1,477	18,178
Number visited by extension agent	932	18,291	4,185	14,106	1,365	12,741
1 visit	483	7,241	1,048	6,193	477	5,716
2 visits	282	4,868	1,389	3,479	396	3,083
3 visits	73	2,843	807	2,036	325	1,711
4 visits	23	783	266	517	52	465
5 visits	22	781	264	517	52	465
6-10 visits	39	1,184	343	811	11	800
Over 10	10	716	162	553	52	501
Number of visits not reported	-	26	26	-	-	-

Table 48 Number of farm households: Number of visits made to agricultural demonstration plots the last 12 months by strata and household allocation status.

Number of visits	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	3,465	41,780	8,019	33,761	2,842	30,919
Number that did not visit demonstration plots	3,212	36,283	6,453	29,830	2,403	27,427
Number that visited demonstration plots	253	5,497	1,566	3,931	439	3,492
1 visit	157	2,710	764	1,946	245	1,701
2 visits	36	1,447	478	969	142	827
3 visits	37	783	189	594	52	542
4 visits	10	126	19	107	-	107
5 visits	-	104	52	52	-	52
6-10 visits	13	219	47	172	-	172
Over 10	-	108	17	91	-	91
Number of visits not reported	-	-	-	-	-	-

Table 49 Number of households: Number of trips taken to market place during the last 12 months by household heads and major purpose of trip by strata.

Purpose and number of trips	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total sell crops, livestock or livestock products				
Total households reporting	3,031	37,861	7,110	30,752
None	1,241	18,113	3,388	14,725
1	441	4,622	949	3,673
2	372	5,628	936	4,692
3	378	3,098	580	2,518
4	111	1,709	238	1,471
5	235	1,626	402	1,226
6-10	169	2,109	443	1,666
Over 10	82	955	174	781
To purchase agricultural inputs or livestock				
Total households reporting	3,031	37,797	7,110	30,681
None	1,893	23,239	4,680	18,569
1	554	5,974	819	5,155
2	309	4,215	856	3,359
3	119	1,585	173	1,412
4	34	794	145	649
5	81	777	213	564
6-10	31	848	147	701
Over 10	11	359	77	282

(continued)

Table 49 (continued) Number of households: Number of trips taken to market place during the last 12 months by household heads and major purpose of trip by strata.

Purpose and number of trips	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
To purchase food of clothing				
Total households reporting	3,041	37,829	7,110	30,719
None	371	5,393	1,242	4,151
1-5	840	12,874	1,925	10,949
6-10	612	5,624	1,035	4,589
11-20	400	5,135	1,040	4,095
21-30	278	2,814	696	2,118
31-40	154	1,889	308	1,581
Over 40	374	4,100	864	3,236
To purchase other commodities				
Total households reporting	3,031	37,824	7,110	30,714
None	2,477	31,753	5,807	25,946
1	88	1,360	249	1,111
2	87	756	177	579
3	81	657	212	445
4	51	505	82	423
5	36	634	152	482
6-10	140	836	223	613
Over 10	91	1,323	208	1,115

(continued)

Table 49 (continued) Number of households: Number of trips taken to market place during the last 12 months by household heads and major purpose of trip by strata.

Purpose and number of trips	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
To sell handicrafts				
Total households reporting	3,031	37,824	7,110	30,714
None	2,944	37,490	7,056	30,434
1	35	78	26	52
2	52	112	-	112
3	-	63	-	63
4	-	-	-	-
5	-	-	-	-
6-10	-	28	28	-
Over 10	-	53	-	53
Any other purpose				
Total households reporting	3,031	37,772	7,110	30,662
None	2,724	34,439	4,421	28,018
1-2	106	1,122	359	763
3-5	57	709	118	591
Over 5	144	1,502	212	1,290

Table 50 Number of households: Average time spent for a one-way trip to the nearest amphoe by means of transportation by stratum.

Means of transportation and average time	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total households	3,505	46,383	9,246	37,137
Total not reporting means of transportation	353	5,695	797	4,898
Total reporting means of transportation	3,155	39,688	8,449	32,239
Local bus	1,808	29,638	5,158	24,480
1-15 min.	554	5,277	954	4,323
16-30 min.	794	8,959	1,840	7,119
31-60 min.	329	11,082	1,923	9,159
61-120 min.	101	3,622	341	3,281
Over 120 min.	-	586	100	486
Time not reported	-	112	-	112
Other vehicle	1,037	8,065	1,774	6,291
1-15 min.	386	4,112	1,125	2,987
16-30 min.	384	2,831	389	2,442
31-60 min.	267	906	192	714
61-120 min.	-	216	68	148
Over 120 min.	-	-	-	-
Time not reported	-	-	-	-
On foot	42	1,592	331	1,261
1-10 min.	31	570	131	439
11-20 min.	-	353	85	268
21-30 min.	-	234	48	186
Over 30 min.	11	390	67	323
Time not reported	-	45	-	45
Other	268	393	186	207
1-5 min.	23	21	21	-
6-15 min.	62	70	16	54
Over 15 min.	183	302	149	153
Time not reported	-	-	-	-

Table 51 Number of households: Type of adult community organizations and membership status by strata.

Type of organization and membership status	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Total households	3,508	43,383	6,246	37,137
BAAC				
No members in household	2,615	36,525	6,903	31,622
At least one member	893	6,858	1,343	5,515
Not reported	-	-	-	-
Village committee				
No members in household	2,675	37,277	6,604	30,673
At least one member	833	8,106	1,642	6,464
Not reported	-	-	-	-
Farm cooperatives				
No members in household	2,466	34,775	4,146	30,629
At least one member	1,042	10,608	4,100	6,508
Not reported	-	-	-	-
Village scout				
No members in household	2,811	32,925	6,416	26,509
At least one member	697	12,458	1,830	10,628
Not reported	-	-	-	-
Voluntary development and self defense village				
No members in household	3,355	39,105	7,501	31,604
At least one member	153	6,278	745	5,533
Not reported	-	-	-	-

(continued)

Table 51 (continued) Number of households: Type of adult community organizations and membership status by strata.

Type of organization and membership status	Stratum			
	Control	Total, Both Project Strata	Stratum 1	Stratum 2
Farmer association				
No members in household	3,215	41,564	7,328	34,236
At least one member	293	3,819	918	2,901
Not reported	-	-	-	-
Saving cooperatives				
No members in household	3,477	44,637	8,123	36,514
At least one member	31	746	123	623
Other				
No members in household	2,528	34,675	6,319	28,356
At least one member	980	10,708	1,927	8,781

Table 52 Variances of mean size of land holding by stratum and household allocation status.

	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households						
Reporting size of holding	* 0.2081	108.4144	2.0517	106.3627	6.8976	88.1554
Between	* 0.2069	108.3596	2.0430	106.3166	6.8127	88.0354
Within	120.1740	5485.5165	872.2119	4613.3046	8486.9263	11999.1530
Total rai held	*1327.5832	146921.6204	5881.4396	141040.1809	14334.0580	105247.1626
Between	*1273.5954	145977.2920	5641.1069	140336.1851	14005.3558	104627.2255
Within	* 53.9878	944.3284	240.3326	703.9958	328.7021	619.9871
Mean size of holding	4.8056	2.8075	5.8599	4.0349	73.0220	4.0603
Coveriance-total farm Households and total rai held	* 13.8340	3279.4886	66.0402	3213.4483	247.6472	2470.6207

* *This item must be multiply by 100000 (fraction 1:100000).*

Table 53 Variances* of average rai of land held by stratum and household allocation status.

Type of land use	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Paddy land	1.3847	[illegible]	[illegible]	[illegible]	[illegible]	1.4481
Field crop land	3.5844	[illegible]	[illegible]	7.4968	[illegible]	6.1375
Land for mulberry	0.3171	[illegible]	[illegible]	[illegible]	[illegible]	0.0115
Vegetable garden	0.0	[illegible]	[illegible]	0.0281	[illegible]	0.0282
Orchard	0.0431	[illegible]	[illegible]	2.7198	19.1945	1.7530
Home area	0.0045	[illegible]	[illegible]	[illegible]	[illegible]	0.0014
Forest land or wasteland	0.9572	[illegible]	[illegible]	6.1984	[illegible]	6.9224
Land for other use	2.9276	[illegible]	[illegible]	4.1264	[illegible]	5.2045

* The cells are variances of averages shown in table 36. (Number of rai used for the indicated use/ total number of farm households reporting a known amount of land used for that purpose).

Table 84 Variances* of proportion of total rai devoted to selected land use by stratum and household allocation status.

Type of land use	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households						
Reporting total rai	20808.8399	10841443.6886	808171.3074	10078272.8811	6827743.8810	3818540.9516
between	20688.1689	10835958.1721	804293.0388	10031748.0700	6791872.8854	3603541.7985
within	120.1740	5485.5165	878.2119	4013.8040	9448.3807	11999.1530
Paddy land	0.0010	0.0022	0.0038	0.0031	0.0111	0.0025
Field crop land	0.0015	0.0028	0.0043	0.0039	0.0073	0.0035
Land for mulberry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vegetable garden	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Orchard	0.0000	0.0000	0.0001	0.0001	0.0005	0.0000
Home area	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Forest land or wasteland	0.0003	0.0004	0.0004	0.0005	0.0003	0.0006
Land for other use	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

* These are variances of the mean proportions shown in table 80.

Table 55 Variances of proportion of farm households using land for indicated use by stratum and household allocation status.

Type of land use	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Paddy land	0.0014	0.0088	0.0052	0.0047	0.0158	0.0042
Field crop land	0.0013	0.0021	0.0013	0.0030	0.0013	0.0032
Land for mulberry	0.0004	0.0005	0.0004	0.0007	[illegible]	0.0008
Vegetable garden	0.0002	0.0007	0.0001	[illegible]	[illegible]	0.0012
Orchard	0.0013	0.0004	[illegible]	[illegible]	[illegible]	0.0005
Home area	0.0011	0.0013	[illegible]	[illegible]	[illegible]	0.0017
Forest land or wasteland	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.0006
Land for other use	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.0000

Table 56 Variances of average units per rai of agricultural production by stratum and household allocation status.

Type of crop	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Glutinous rice						
Total kg.	* 2082.0860	318125.3578	3751.6838	314373.6940	9803.2233	269596.1310
Total number of rai	* 0.0299	4.9391	0.0559	4.8832	0.1333	3.9558
Average per rai	196.6267	106.9655	159.8771	130.5817	195.3594	139.5505
Covariance-total kg. and total number of rai	* 7.4476	1110.3476	13.9368	1202.4111	43.7530	999.4146
Non-glutinous rice						
Total kg.	* 901.1193	269694.8028	9266.7751	260428.0278	1358.2804	233654.6574
Total number of rai	* 0.0127	3.6157	0.1331	3.4826	0.0144	3.1436
Average per rai	267.1479	187.0202	263.4759	217.8383	722.7180	244.6409
Covariance-total kg. and total number of rai	* 3.0932	976.6076	34.7438	941.9348	4.3893	846.4430

* This item must be multiply by 1,000,000,000 (fraction 1:1,000,000,000). **continue next product**

Table 56 (continued) *Variances of average units per rai of agricultural production of stratum and household allocation status.*

Type of crop	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Corn for livestock						
Total kg.	* 0.3076	812513.2219	68886.4075	743626.8140	21987.8176	846586.6105
Total number of rai	* 0.0000	11.9452	0.9152	11.0300	0.3986	7.8624
Average per rai	0.0134	90.8474	166.5929	140.3870	166.1980	215.1693
Covariance-total kg. and total number of rai	* 0.0017	3101.0607	249.9707	2851.0900	92.9817	2061.7120
Kenaf						
Total kg.	* 0.4270	1589.7279	68.1333	1521.5946	6.1853	1512.3248
Total number of rai	* 0.0000	0.0260	0.0027	0.0233	0.0002	0.0222
Average per rai	301.2000	891.3582	301.4527	1436.3496	174.7880	1871.1367
Covariance-total kg. and total number of rai	0.0023	5.6123	0.4022	5.2101	0.0345	5.0844

* This item must be multiply by 1,000,000,000 (fraction 1:1,000,000,000).

continue next product

Table 56 (continued) Variances of average units per rai of agricultural production of stratum and household allocation status.

Type of crop		Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
					Total	Allocated Households	Unallocated Households
Cassava							
Total ton	*	0.1634	1.9341	0.1408	1.7933	0.1121	1.5337
Total number of rai	*	0.0480	0.9747	0.0549	0.09198	0.0446	0.7843
Average per rai		0.0236	0.0041	0.0029	0.0064	0.0317	0.0072
Covariance-total ton and total number of rai	*	0.0780	1.3153	0.0864	1.2289	0.0687	1.0458
Cotton							
Total kg.	*	0.0	4516.8973	701.1744	3815.7230	419.5118	2139.8901
Total number of rai	*	0.0	0.4171	0.0151	0.4020	0.0923	0.1305
Average per rai		0.0	388.3059	884.9283	305.7867	87.8015	331.2631
Covariance-total kg. and total number of rai	*	0.0	40.3955	3.1482	37.2473	8.1748	15.9336

* This item must be multiply by 1,000,000,000 (fraction 1:1,000,000,000).

Table 57 Variances* of average number of livestock currently owned by stratum and household allocation status.

Type of livestock	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Buffalo	0.0909	0.0125	0.0119	0.0178	0.0295	0.0195
Cattle	0.5351	0.1032	0.2022	0.1577	1.2847	0.1061
Swine	0.1840	0.0809	0.5534	0.0704	0.0927	0.0895
Chickens	3.1323	1.3746	4.2464	1.9431	14.4648	1.9703
Ducks	1.8593	1.0474	0.4646	1.4590	1.3799	1.6500

* These are variances of the average presented in table 30B (revised).

Table 58. Variances* of propoition of households owning type of livestock by stratum and household allocation status.

Type of livestock	Control	Total, both Project Strata	Project Stratum 1	Project stratum 2		
				Total	Allocated households	Unallocated households
Number owning no livestock	0.8328	18.8474	18.3714	21.1845	18,4038	32,1730
Number that own:						
Buffalo	0.0047	0.0014	0.0019	0.0021	0.0116	0.0018
Cattle	0.0010	0.0002	0.0004	0.0003	0.0041	0.0004
Swine	0.0016	0.0014	0.0013	0.0021	0.0028	0.0024
Chicken	0.0003	0.0012	0.0008	0.0017	0.0105	0.0017
Ducks	0.0017	0.0011	0.0013	0.0017	0.0061	0.0017

* Variances for 'number owning no livestock' and numbers owning various types are for proportions of total farm households.

Table 59 Variances of income of total and farm house holds by stratum and household allocation status.

Income range groups	Control	Total, both Project Strata	Project Stratum 1	Project stratum 2		
				Total	Allocated households	Unallocated households
Total households	20506.9772	10387040.9375	336110.2996	10170930.6884	689759.8217	8815540.9516
Between	20506.9788	10387040.9638	336110.3052	10170930.6570	681272.8954	8803541.7985
Within	-0.0016	-0.0847	-0.0062	-0.0186	8486.9263	11999.1530
Total income *	107804.1478	14686861.7951	1011333.0687	13624329.7228	1438845.2412	10531133.0954
Between *	103114,1951	14517198.0000	987604.5502	13529591.4704	1402359.2347	10449627.4813
Within *	4689.9527	119663.7906	23728.5185	94738.1523	36486.0065	81505.6141
Covariance-total households and total income *	0.6597	281.5723	0.4405	256.4386	27.4024	202.3194
Average income	7463635.5019	3988835.7705	12760048.2675	5310180.3522	48354559.3436	6393562.7783
Farm households	20608.3399	10541442.6886	308171.3074	10636272.3812	689759.8217	8815540.9516
Between	20688.1659	10535958.1751	304299.0955	10631659.0766	681272.8954	8803541.7985
Within	120.1740	5485.5135	872.2119	4613.3046	8486.9263	11999.1530
Total income *	108169.0733	15409317.6954	1011333.3740	14397984.3214	1438845.2412	10531133.0954
Between *	103421.3019	15289698.3746	986278.0039	14303403.3707	1402359.2347	10449627.4813
Within *	4747.7715	119634.7208	25055.7701	94580.9507	36486.0065	81505.6141
Covariance-farm households and total income *	0.6767	282.9386	0.4767	276.4619	27.4024	202.3194
Average income	7614095.3844	4707788.6921	13190900.9998	6454987.9048	48354959.3436	6393562.7788

* This item must be multiply by 1,000,000,000 (fraction 1:1,000,000,000)

Table 60 Variances of proportion of farm households borrowing agricultural credit for each reason by stratum and household allocation status.

Reason for borrowing	Project	Total, both Project Strata	Project Stratum 1	Project stratum 2		
				Total	Allocated households	Unallocated households
Total farm households	20303.3388	10841447.8550	206171.8074	10636272.8211	3821732.8217	6815540.9816
All reasons						
Proportion borrowing for any reason	0.0020	0.0016	0.0021	0.0014	0.0030	0.0015
Average debt per household borrowed for any reason	675569.8278	1847321.8828	1337286.7517	2870006.4436	21606050.1262	2492956.0828
To buy land						
Proportion of borrowers borrowing for this reason	0.0004	0.0003	0.0003	0.0004	0.0007	0.0005
Average debt per household borrowed for this reason	1613180.5737	15084355.1622	4757042.5033	22079101.2937	164.1950	23634901.4315
To buy fertilizer						
Proportion of borrowers borrowing for this reason	0.0006	0.0004	0.0005	0.0005	0.0076	0.0006
Average debt per household borrowed for this reason	708382.4951	208175.1670	292137.7671	272606.4551	1191858.6003	302429.3653
Continue through other reasons listed in question 40						

(continued)

Table 60 (continued) Variances of proportion of farm households borrowing agricultural credit for each reason by stratum and household allocation status.

Reason for borrowing	Project	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	20808.3299	10641443.6888	20171.2074	10636272.3812	5820759.8217	4815540.3516
All reasons						
Proportion borrowing for any reason	0.0020	0.0010	0.0021	0.0014	0.0030	0.0015
Average baht per household borrowed for any reason	675569.8178	1847321.8899	1337295.7317	2870005.4436	21606056.1262	2492956.0828
To pay for labor						
Proportion of borrowers borrowing for this reason	0.0032	0.0022	0.0040	0.0033	0.0105	0.0032
Average baht per household borrowed for this reason	233561.6392	276322.8898	237610.4938	455899.5498	3710190.2456	485148.9187
To hire farm implements						
Proportion of borrowers borrowing for this reason	0.0022	0.0035	0.0037	0.0054	0.0251	0.0049
Average baht per household borrowed for this reason	358598.2378	573983.3518	448681.3553	901632.8147	3976686.9923	1040945.2178
Continue through other reasons listed in question 40						

(continued)

Table 60 (continued) Variances of proportion of farm households borrowing agricultural credit for each reason by stratum and household allocation status.

Reason for borrowing	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum		
				Total	Allocated Households	Unallocated Households
Total farm households	20808.3899	10841443.6880	10816171.7084	10038272.3812	889703.8217	8815540.9516
All reasons						
Proportion borrowing for any reason	0.0020	0.0010	0.0021	0.0014	0.0030	0.0015
Average baht per household borrowed for any reason	675569.8278	1847321.8893	1337295.7817	2870005.4436	21606056.1262	2492956.0828
To pay for growing mulberry						
Proportion of borrowers borrowing for this reason	0.0006	0.0000	0.0002	0.0000	0.0	0.0000
Average baht per household borrowed for this reason	12268706.4845	21337812.3747	21512313.3852	0.0053	0.0	0.0053
Other						
Proportion of borrowers borrowing for this reason	0.0006	0.0001	0.0004	0.0002	0.0007	0.0002
Average baht per household borrowed for this reason	138518.9265	1769982.4443	1261882.6645	3201698.1455	-0.6333	1692069.8305

Table 60 (continued) Variances of proportion of farm households borrowing agricultural credit for each reason by stratum and household allocation status.

Reason for borrowing	Project	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	20808.3399	10841443.6886	205171.3074	10636272.3812	689759.8127	8815540.9516
All reason						
Proportion borrowing for any reason	0.0020	0.0016	0.0021	0.0014	0.0030	0.0015
Average baht per household borrowed for any reason	675569.8278	1347321.8899	1337295.7317	2870005.4436	21606056.1262	2492956.0828
To buy fertilizer, insecticides, and other agricultural inputs						
Proportion of borrowers borrowing for this reason	0.0022	0.0024	0.0040	0.0036	0.0044	0.0041
Average baht per household borrowed for this reason	87867.5350	408229.8551	278911.0384	[illegible]	12660330.8282	250548.8653
To buy farm implements and equipment						
Proportion of borrowers borrowing for this reason	0.0008	0.0004	0.0009	0.0005	0.0049	0.0005
Average baht per household borrowed for this reason	2033212.7923	215490.1526	116383.8524	396463.6112	467747.0456	513367.5521
Continued through other reasons listed in question 40						

(continued)

Table 61 Variances of average amount of agricultural credit received per household by stratum and household allocation status.

Source of credit	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	20906.5399	10841443.6886	208171.3[illegible]	10633271.3612	889753.6217	9815540.9516
Within	20688.1653	10835958.1721	204299.0358	10631663.0768	881872.8954	8603541.7985
Between	120.1740	5485.5165	972.2119	4613.3046	8496.9263	11999.1530
All sources						
Proportion using any source	0.0026	0.0010	0.0021	0.0014	0.0030	0.0015
Average baht per household using any source	675569.8278	1847321.8899	1337295.7317	2570005.4436	21606056.1262	2492956.0828
BAAC						
Proportion of borrowers using this source	0.0041	0.0012	0.0014	0.0019	0.0093	0.0022
Average baht per household using this source	2946704.7869	515650.7260	1354449.2629	691932.4327	265580.3123	949938.7416
Commercial bank						
Proportion of borrower using this source	0.0001	0.0003	0.0001	0.0005	0.0025	0.0005
Average baht per household using this source	113098.6826	11072019.6146	4619365.5706	13136142.3146	540497568.4716	652706.0939
Continue through other sources listed in question 39						

(continued)

Table 61 (continued) Variance of average amount of agricultural credit received per household by stratum and household allocation status.

Source of credit	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	20608.3899	10841443.6988	205171.3074	10636272.3812	889759.8217	8815540.9516
Within	20688.1659	10835958.1721	204299.0955	10631659.0766	881277.8954	8803541.7985
Between	120.1740	5485.5165	872.2119	4613.3046	8486.9263	11999.1530
All sources						
Proportion using any source	0.0020	0.0010	0.0021	0.0014	0.0030	0.0015
Average baht per household using any source	675569.8278	1847321.8899	1337295.7517	2570005.4436	21606056.1262	2492956.0828
Cooperatives						
Proportion of borrowers using this source	0.0025	0.0016	0.0023	0.0021	0.0082	0.0020
Average baht per household using this source	672278.4433	589014.4130	1123865.2315	1191196.5914	9178776.4864	699242.5525
Merchant						
Proportion of borrowers using this source	0.0008	0.0032	0.0023	0.0049	0.0056	0.0052
Average baht per household using this source	251027.8271	6516009.6430	2656979.5826	8039779.8510	9680449.8208	9044883.9652
Continue through other sources listed in question 39						

(continued)

Table 61 (continued) Variances of average amount of agricultural credit received per household by stratum and household allocation status

Source of credit	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	20803.3399	10841443.6886	205171.3074	10636272.3812	689759.8217	8815540.9516
Within	20688.1659	10835958.1721	204299.0955	10631659.0766	681272.8954	8803541.7985
Between	120.1740	5485.5165	872.2119	4613.3040	8486.9263	11999.1530
All source						
Proportion using any source	0.0020	0.0010	0.0021	0.0014	0.0030	0.0015
Average baht per household using any source	675569.8278	1847321.8899	1337295.7317	2870005.4436	21606056.1262	2492956.0828
Neighbors						
Proportion of borrowers using this source	0.0003	0.0004	0.0003	0.0006	0.0022	0.0008
Average baht per household using this source	44396.7344	143301.3046	1997621.6501	149170.3396	64263.9408	157608.2655
Relatives						
Proportion of borrowers using this source	0.0004	0.0003	0.0006	0.0004	0.0025	0.0005
Average baht per household using this source	600268.4232	1599249.8229	1792104.9404	2473739.0425	114266788.7004	248698.8086
Continued through other sources listed in question 39						

(continued)

Table 61 (continued) Variances of average amount of agricultural credit received per household by stratum and household allocation status.

Source of credit	Control	Total, Both Project Strata	Project Stratum 1	Project Stratum 2		
				Total	Allocated Households	Unallocated Households
Total farm households	20808.3899	10541443.6660	204171.3074	10637272.3911	834793.8217	9815540.9516
Within	20668.1659	10835958.1721	204299.0986	10631659.0766	681278.8954	9803541.7985
Between	120.1740	5485.5168	872.2119	4616.3046	8460.9263	11999.1530
All sources						
Proportion using any source	0.0020	0.0010	0.0021	0.0014	0.0030	0.0015
Average baht per household using any source	675569.8278	1847321.8899	1337295.7317	2870005.4436	21606056.1262	2492956.0828
Other commercial banks						
Proportion of borrowers using this source	0.0000	0.0000	0.0001	0.0000	0.0	0.0000
Average baht per household using this source	51421628.1703	5722695.2366	19683660.6817	994346.3444	0.0	994346.3444

REFERENCES

Department of State Agency for International Development. 1979. Land Settlements Project Paper. Bangkok.

Hansen, M.H.; W.N. Hurwitz; and W.G. Madow. 1953. Sample Survey Methods and Theory. Vol. I. New York. John Wiley and Sons, Inc.

Kish, L. 1965. Survey Sampling. New York. John Wiley and Sons, Inc.

Panya, O., and M. Barta. 1980. Land Settlement Project Evaluation Plan. Bangkok.

Provincial Development Office. 1978. Barangay Water Program Supervisor's Manual: A Guide for Supervising Field Operations on the Barangay Water Program Survey. The Philippines.

United States Department of Commerce Bureau of the Census. 1979. Trip Report. Bangkok.