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Case studies of the impact of large-scale development projects on women

THE NORTHEAST RAINFED AGRICULTURAL DEVELOPMENT
PROJECT IN THAILAND: A BASELINE SURVEY OF
WOMEN'S ROLES AND HOUSEHOLD RESOURCE ALLOCATION
FOR A FARMING SYSTEMS APPROACH

by

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ABSTRACT

This study is an example of a preliminary investigation of women's roles and household resource allocation to aid in the design and implementation of a farming systems approach to farming improvements in a rainfed, high-risk area. It involved a two-month field survey covering household composition, labor deployment, credit sources, extension services and their limitations, household financial management, and health and welfare issues. Respondents' opinions on recent agricultural changes and on services, and their perceptions of risk and desirable improvements were also sought. Some considerations are drawn on how a farming systems approach might proceed.

Key words: pooling of resources (between households), division of labor, migration, credit, farmers' groups, extension services, risk, farming systems approach, water, health, agriculture, Thailand.

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A NOTE ON THE SERIES FOR PLANNERS

This is the third in the series of studies of the impact of large-scale development projects on women. The Population Council intends to issue at least eight studies in this series between now and 1985. As the first in the series, the NEMOW Case, was published over three years ago, it seems appropriate to comment on what we have learned in those three years and on our planned future studies.

The NEMOW Case by Ingrid Palmer was issued in 1979 as Paper No. 7 in the Working Paper Series of the International Programs Division. It was not an actual field study though it drew on a variety of field experiences. The purpose of the NEMOW Case was to (1) demonstrate how a concern with women's roles is intrinsic to a concern with development, (2) to show that it is not unusually difficult to find out how projects would affect women, and (3) to suggest that such an analysis, based on existing levels of information and supplemented by short field visits of two to three weeks by an experienced observer, might provide significant practical guidance at the design, implementation or evaluation phases of development projects. The fourth unwritten objective was to interest a donor or donors in sponsoring original field work on the effects of mainstream development efforts - in geographically diverse areas and in diverse sectors - on women's roles, with an emphasis on productivity effects.

The NEMOW Case proved very popular. Three thousand copies were printed and distributed by the Council, much of it in response to individual and institutional requests. The United States Agency for International Development's Offices of Evaluation and Women in Development also reprinted and

distributed numerous copies. The letters we received and discussions we had with users of this material indicated a void in the literature; planners, development practitioners, and those who train planners were looking for clear and persuasive materials that can be adapted for didactic purposes.

We have learned in the interval since the NEMOW study was published that whereas it is not difficult to find out how projects have affected or are likely to affect women, this type of assessment may be more or less demanding depending on the nature and geographic spread of the proposed/completed intervention. When the Council undertook the field work required for three studies of development schemes of substantial breadth (in terms of geographic variation) and flexibility (in terms of the range of interventions studied or to be designed) more extensive and in depth assessments than a three week rapid rural appraisal were in-order to provide useful guidelines to planners. This study, for instance, required two months of field investigation in 12 quite different villages spread over a large part of the Northeast Region of Thailand.

We intend to undertake additional research efforts. However, given the limitations of funds and staff time and our desire to bring as many diverse and high quality materials to readers as possible, we have looked beyond initiating field investigation of current projects to exceptional Ph.D. dissertations which have examined the impact of specific development schemes or clear changes over time on different classes of household and different members of the household. At least three studies in this series for planners will be based on dissertation field work. But development practitioners also need to know how much women are affected by particular issues, such as agrarian reform or male migration, in different countries and regions of the world. We

intend to publish monographs on those separate issues utilizing the most significant doctoral dissertations and secondary source materials.

We welcome from our audience of readers comments on the substance, format, and distribution of these materials.

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Editorial Committee of the
Materials for Planners
Project

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THE NORTHEAST RAINFED AGRICULTURAL DEVELOPMENT
PROJECT IN THAILAND: A BASELINE SURVEY OF
WOMEN'S ROLES AND HOUSEHOLD RESOURCE ALLOCATION
FOR A FARMING SYSTEMS APPROACH

SUMMARY

BACKGROUND AND OBJECTIVES OF THE PROJECT

The overall purpose of the Northeast Rainfed Agricultural Development Project (hereafter NERAD) is to improve farming productivity and the utilization of households' resources and, thereby, the livelihoods of low income families over an area of 8 tambon covering a population of 65,000 people. Under this, the specific objectives are:

1. To assist farmers to adopt practices suitable to local conditions, and to overcome risk by developing a package of technologies and resources specifically addressed to rainfed agriculture.
2. To provide adequate extension and other services to farmers.
3. To establish a research and demonstration program responsive to farmers' needs, thereby increasing farmers' awareness of economic alternatives.
4. To improve the year-round supply of supplemental water for vegetable-growing, livestock-raising, and domestic usage.
5. To provide a suitable framework for matching farmers' needs to Government resources and capabilities.

The project intends to incorporate a farming systems approach which relies heavily on extension services. Early interventions in selected villages will be refined for replication over a wider area. Not all the proposed interventions will be introduced in all the villages, but there will be core activities common to them all. Women are expected to benefit greatly through training schemes and involvement in the planning and implementation of agricultural and non-agricultural sub-projects. It is recognized that women have

a prominent position in the Northeast due to female descent of land and matrilineal marriage.

THE HOUSEHOLD IN A FARMING SYSTEMS APPROACH

A farming systems approach at the sub-household level needs to incorporate changes in the size and the sex and age composition of households at different stages of their life cycles. In the Northeast of Thailand migration of children is another factor, and its determinants by locality need to be investigated. If labor is a constraint to higher productivity farming it is important to know whose constraint this is, and what time of the year it occurs. Likewise, information on periods of relative underutilization of individuals' labor is useful baseline data for evaluating the feasibility of agricultural changes. With seasonal wage earnings comprising a proportion of total income in this dry region, the perceived desirable balance between farming and non-farming income can determine attitudes to farm productivity improvements which require more cash inputs and perhaps surrendering some wage employment. Farmers' perceptions of risk and the way they deploy household labor to minimize risks, are also a proper subject for a farming systems approach, as is the ability of existing and potential credit and extension services to counter risk.

In the Northeast women are the principal owners of land and the literature supports the belief that they also control cash income. What effect this has on farm management is also relevant to a study of the household economy.

The opinions of both men and women on family planning services, as well as an analysis of the relationships between women's work and maternal and

infant health, can provide indications of improvements in family planning services and general welfare.

THE FINDINGS

Household formation and inter-household cooperation A total of 413 households in 12 villages were included in the study. Village differences in the residence of children over 18 years could not be clearly associated with average farm size. In the poorest of the land scarce villages, with little cash cropping, grown children of both sexes were absent most frequently. Multigeneration households tended to be fewer in the most southern, smaller-scale farming villages, and households in these villages also had higher average dependency ratios indicating greater labor constraints. In most villages between 10% and 20% of households pool land, labor, and other production inputs. The smallest percentages were seen in southern villages. Women-headed households are consistently more involved in resource pooling with another household. This is due to women outliving their husbands and younger widowed or deserted women cooperating with a sibling household. The young widow or deserted woman who is not pooling resources is in danger of being excluded by extension services and other farming institutions.

Labor Deployment None of the cultivation tasks is exclusive to one sex, although the division of labor varies slightly by village. The data indicate that the flexibility of the division of labor in farming is a rational response to demand and supply of household

labor, with women taking a more prominent role when men are absent in wage employment. Very little (under 15 years) child labor is used in any village. The migration of grown children has increased the intensity of both sexes' farm labor, but men's labor more so. Transplanting and harvesting rice requires both sexes to work intensively.

The agricultural time-table influences the nature of the sexual division of wage employment. Householders in the driest villages tend to rely more on seasonal migratory employment. Home industry (silk production and weaving, cotton weaving, and basket-making) is widely undertaken by women in the dry season in all but one of the 12 villages. But this is mostly for own-use.

Attitudes
to risk

The great majority of respondents stated that they were prepared to accept a new cropping method even if it meant someone in the household having to give up wage employment, which is widely regarded as more risky than crop production. Uncertainty about prices and markets for the larger output were the most important considerations in adopting farming innovations. Additional labor input was the least important, although more women than men showed hesitation over rejecting this consideration. A female labor constraint was also indicated by respondents claiming that families with young children would prefer not to concentrate on rice production (and therefore the goal of rice self-sufficiency) because women in such families do not have the time for the work involved. Apart from the issue of additional

labor requirements, there was no difference between men's and women's replies on attitudes to farming innovations.

Credit
sources
and costs

With institutional interest rates much less than free market rates the very different usage, by village and household, of institutional credit is an important issue for the project. The relative absence of cheap Bank or Cooperative credit in some villages is often accompanied by the highest rates from private sources, including relatives and friends. Because members of Farmers' Groups sometimes sell (at somewhat higher prices) part of the allocation of cheap credit fertilizer from Cooperatives to other villagers, the Groups' membership cannot be used as an indicator of the number of households enjoying this credit. Nevertheless, that membership of the Groups is disproportionately drawn from households with above average farm size is evidence of unequal access to cheap credit. An equally important issue is that some villages are poorly organized and this is often reflected in poorly developed Farmers' Groups.

There was no observable difference between men- and women-headed households' sources of credit. Multigeneration households and pooling of resources between households with women heads help to explain this.

Extension
services

In some villages men's attendance at agricultural demonstrations is good, but elsewhere few men attend them. The picture is far worse for women. The most common reason for not attending, for both sexes, is lack of time, followed by lack of interest. Home visits by extension officers are infrequent and

are disproportionately made to households with large farms or with someone who is a member of the Village Committee. Very few women are spoken to during these visits. Nearly all of the 413 respondents believe that women would be more interested in agricultural extension if there were women agricultural extension officers and stated that they would like to see more women in the service.

Household
financial
management

The greater preponderance of men in negotiating credit appears to be due to their greater mobility. It is frequently the case that whereas women negotiate free market credit from sources within the village, men negotiate it from outside the village. Although men do most of the selling of crops, specialization in particular crops, by sex of seller, is not apparent apart from women who tend to be more involved in selling cash crops than rice (which is partly due to the absence of some men in the dry season). A significant number of respondents claim that they sell crops jointly with their spouses.

Women are still the more important custodians of all cash income. But in villages where many households sell large surpluses of rice, men are emerging as controllers of income (including wages). The continued strong role of women in financial management precludes an image of 'women's unpaid labor on husbands' cash crops'.

Earmarking of income varies by village. In the more self-provisioning villages there is least earmarking. The more intensive secondary cash cropping villages show the highest per-

centage of households who set aside income for different purposes, principally for credit repayment and food purchases. Moreover, where there is an emphasis on this practice women are more strongly confirmed as custodians of cash income. The common denominator would appear to be women's dominant role in small-scale cash cropping, using large cash inputs, in the dry season.

Welfare
and family
planning

Women and children are more important than men in collecting water for all domestic purposes. In the dry season this can be a serious problem and place a seasonal stress on women.

Rice planting and harvesting, and some dry season cash cropping, are additional causes of seasonal stress. One effect is reduced or prematurely terminated breastfeeding, more so in villages characterized by either extreme dryness or heavy concentration on rice cultivation. Monthly data on miscarriages corroborated the influence of these seasonal stresses. In villages where two or more seasonal peaks in miscarriages were apparent there are higher year-round incidences of miscarriages, suggesting that women in these villages have difficulty regaining their strength. Infant sickness tends to peak towards the end of the dry season, when the onset of rains causes stomach troubles, and in the colder months at the end of the year. But deaths of the under-fives show two peaks: during rice planting and rice harvesting. The obvious implications of these data for health are improved supplies of domestic water in the dry season

in the more critical villages, and child care facilities during rice planting and harvesting in all villages.

The people are clear that inability to divide their land between their children and seeing them depart for the cities are reasons enough for practicing birth control. The pill is the most commonly used method. When asked for their first preferences of birth control means, 132 respondents chose the pill, 106 sterilization, 60 the injection, and 50 the IUD. When asked how they thought birth control services could be improved the women's replies most frequently concerned preventing side effects from the pill, overcoming the inconvenience of traveling to medical stations by having medical extension officers visit the villages, and encountering more sympathetic attitudes from medical personnel.

Migration
and
inheritance

In villages where land is scarcest and average farm size smallest, the ratio of daughters-to-sons who migrate is greatest. Although parents expressed a preference for daughters to return to the village, there is evidence of change in the practice of female descent of land. The degree of daughter preference in land inheritance showed some covariation with the intensity of cash cropping, by village averages. Two conflicting reasons for the change in inheritance practice were heard. The 'daughter scarcity' reason is seen as the consequence of smaller family size and the migration of grown daughters. The 'land scarcity' reason states that sons are no longer waiving their inheritance rights because their wives are inheriting insuffi-

cient land. Whichever is the true explanation, a move to bilateral inheritance must have a negative effect in the long run on the general standing of women, and on young widows and deserted mothers in particular.

IMPLICATIONS FOR THE PROJECT

Ensuring that seasonal labor stress, particular for women, is not worsened must be seen as a pre-condition of farming improvements. Supplemental water resource development for domestic purposes is one obvious intervention, considerably more important in some villages than others. The idea of child care facilities in certain months of the year is popular everywhere and could be a general innovation. Designing crop improvements which require any additional labor to be applied between rice planting and harvesting or in the dry season would promote more effective utilization of household labor resources. If crops using small-scale water resources were developed this could help to underwrite riskier investment in rainfed rice. It remains an open question how underutilized women's labor is in the dry season. Project interventions may need to be directed towards raising productivity or encouraging women to move from present occupations into others.

Risk in improving mainline farming productivity in areas subject to periodic annual drought presents the challenge of raising actual production in good years so that farmers' higher incomes carry them through poor rainfall years. But if risks are to be reduced over an average of several years, the supply of cheap institutional credit must be improved since the difference between institutional and free market interest rates is large enough to affect the profitability of cropping changes. This will require mobilizing more

small-farm households in Farmers' Groups and informing farmers of Bank for Agriculture and Agricultural Cooperatives facilities.

The extension service, which is already poorly servicing the farmers, needs to be greatly strengthened if it is to be part of a farming systems approach to the Project and to help democratize access to all agricultural services, including the extension service itself. There should also be affirmative action to reach women with advice and information, especially if new dry season agriculture, in which women are currently more involved in than men, is to be developed. Women extension officers ought to be recruited.

PART I

BACKGROUND TO THE STUDY

THE NORTHEAST RAINFED AGRICULTURAL DEVELOPMENT PROJECT

Project objectives

The Northeast is the poorest of Thailand's four regions. It contains one-third of the country's population but enjoys only 14% of gross national product. In the area included in the NERAD project there is little potential for large-scale irrigation, and resettlement of population increases in new villages has led to cultivation of more marginal, lower-yielding land. Yields of some crops are reputed to be declining due to soil exhaustion. Rainfall is variable on a year-to-year basis and in some parts the land is said to bear its current potential output in only one year in three. Together with the mosaic of soil types, lower and upper terraces, and water and forest resources, this confounds any attempt to introduce a standard package of improvements.

The NERAD project seeks to devise combinations of interventions which are appropriate for different locations by an initial selection of villages or groups of households which will then be the basis of corrections and modifications for replication over a wider area.

In order to marshal the limited resources of the project as effectively as possible only two tambon (sub-districts) from each of four provinces - out of a total of 16 provinces in the Region - have been included in the NERAD area. Each tambon has between 6 and 21 villages. The eight tambon cover a population of 65,000 persons, or approximately 10,000 households. They have been chosen for their range of agro-ecological and agro-economic conditions.

Not all of the proposed interventions will be introduced in all the tambon and villages, but ultimately there will be 'core' activities common to them all: modification of cropping systems through access to technical inputs, more effective extension support, and supplemental water resource development.

The overall purpose of the project is to improve farming productivity and the utilization of households' resources, as well as the livelihoods of low income families in areas not included in the service zones of major irrigation schemes. Under this, the specific objectives are:

1. To assist farmers to adopt practices suitable to local conditions and to overcome risk due to variable rainfall by developing a package of technologies and resources which specifically addresses the problems of rainfed agriculture.
2. To provide adequate extension and other services to farmers.
3. To establish a research and demonstration program responsive to farmers' needs, thereby increasing farmers' awareness of economic alternatives.
4. To improve the year-round supply of supplemental water for vegetable-growing, livestock-raising, and domestic usage.
5. To provide a suitable framework for matching farmers' needs to Government resources and capabilities, and to improve the coordination of different agencies with relevant activities and programs.

Implications of a farming systems approach for this study

The means of implementing the project will be based on a farming systems approach: investigating the conditions of farming, introducing on-farm re-

search trials, and making the extension services more efficient and responsive to farmers' needs. It needs to be stressed that the NERAD project does not commence with an inventory of inputs to be introduced. The actual interventions made in a farming systems approach depend heavily on the process of accumulating knowledge as the project advances, and as initial experiments turn into progressive refinements. Hence this study cannot assess likely impacts of predetermined changes.

At the outset of the project it is not clear which villages or groups of households will be chosen for initial interventions, or even what their determining characteristics should be. It is intended that all delivery systems will be designed to ensure access to them by the poorest farmers, and it is hoped that these households will gain the most benefit. But a social analysis background paper warned that since land reform and debt relief schemes are not contemplated the final distribution of benefits might be otherwise.¹ Because poverty and indebtedness are locality problems as well as household class problems, it is not easy to choose an appropriate balance between targeting villages and targeting categories of households.

women in the project

The social background paper also noted that owing to the local practice of matrilineality (or, more accurately, female descent of land) women should gain a great deal from the project. One of the expected results of the emphasis on improving the utilization of household labor is that women will be more involved in farm economic activities, including tasks at peak periods of labor requirements, supplemental on-farm activities such as horticulture and animal care, basic food processing, and preparation and marketing. There is

also mention of women being trained in subjects that they are interested in, and being involved in the planning and implementation of various projects and sub-projects, such as silk production, animal husbandry, and fishery. But these activities are not included in the core activities of the project, and it remains to be seen how and if they are incorporated in the farming systems approach.

The social analysis paper stated that the effects of the project on fertility are not foreseeable but that no ill effects are expected. Nevertheless it is hoped that the conditions for success of family planning practice will be better understood and that areas in which family planning is comparatively weak will be identified so that they can be targeted. There was no mention of examining the impact of the project's economic interventions on pro-natal or anti-natal determinants.

The study

This study was undertaken when newly recruited project staff were making visits to parts of the project area prior to selecting villages for initial attention. Because of this the authors of this study went ahead and chose villages that will not necessarily be the same as those that will receive first attention from the project.

The purpose of this study is to contribute a household baseline data and analytic component to the farming systems approach of the project. As such it examines household resource allocation, distinguished between men's and women's roles in labor input and financial management, and attempts to understand the accommodations households make at different stages of their life cycle. It also looks at the relation between the household's economic base

and health, fertility, and migration. It is hoped, thereby, to identify some of the constraints on improving production and income as well as suitable interventions to ease those constraints. Since locality asset status determines options, village characteristics of households' resource allocation are examined in addition to socio-economic characteristics.

Since the project is only beginning and will not follow the usual practice of implementing a fixed package of inputs and services, this study cannot evaluate likely impacts of interventions. Instead it reviews the objectives of the project in the light of its findings on the current situation, and offers guidelines for selecting villages and household groups to receive certain kinds of initial interventions.

In the remainder of Part I there is a brief overview of the area and the people (descriptions of the sampled villages are given in the Annex), followed by the Analytical Framework of the study. Finally the sampling methodology is explained. The findings of the field research are analyzed in Part II. Under different subject headings constraints on improving farm income are indicated. Part III draws on this analysis to discuss the objectives of the project, likely problems, and suggestions for their solution.

1/ Thailand. Northeast Rainfed Agricultural Development Project.

Supplemental Analysis to the Project Paper, Social Soundness Analysis.

Annex VII, pp. 14 and 15.

THE LAND AND THE PEOPLE

Differences in environment and income portfolios

The project area includes two tambon in the provinces of Nakhorn Phanom, Chaiphum, Roi Et, and Sri Sa Ket. If the whole area is divided into upper (Nakhorn Phanom), middle (Chaiphum and Roi Et) and lower (Sri Sa Ket), it can be said that the lower and middle parts have been settled longer and have carried heavier populations than the upper part due to better soil fertility and water resource systems. The lower part has more roads than the middle part, but not all roads are usable in the wet season. Only 4.5% of arable land in the lower part is under controlled irrigation, 7.9% in the upper part, and 8.8% in the middle part. Seasonal and year-to-year variations in rainfall are significant everywhere and in some localities, notably in Chaiphum, the rains can fail for several consecutive years.

Ecological differences give rise to farm size differences. In Nakhorn Phanom, with poorer average soil fertility and many recently settled villages, average farm size is largest - well over 6 hectares. Chaiphum, the driest of the provinces, has an average farm size of over 5 hectares. More productive Roi Et and Sri Sa Ket average almost 4 hectares and about 3.5 hectares, respectively.

The seasons also affect the availability of water for purposes of kitchen-gardening, care of small livestock, drinking, and washing. Some of the shallow and moderately deep wells used for general domestic purposes have hand pumps. At the present time only one in 10 villages of the lower part of the Region has a ground-water pump for year-round water, one in five villages in the upper part, and one in four in the middle part. In addition there is surface water in depressions and swamps. Another problem is the alarming rate

of deforestation. This has implications for the cost of fuel for cooking in terms of money and labour time, and the pasturing of large livestock.

Table 1 provides a geo-physical explanation of crop-mix and sources of income in the eight tambon of the NERAD area. Rice yields vary amongst the tambon from 0.6 to 1.4 tons per hectare. Overall these yields have not altered markedly from their levels of two decades ago; the increase in total output since then being due to greater planted area. Cash crops are principally dry season or upland crops. The observed strong rank covariation between net rice income and total net income among the 8 tambon illustrates the dominant position of rice cultivation. However, there is no discernible positive or negative rank covariation among other sources of income, or between them and total net income. This reflects the many different combinations of climate, soil types, and land availability for grazing in relation to markets, communications, and sources of wage employment.

Apart from uncertain rainfall, the element of risk in investing in higher productivity methods is aggravated by declining soil fertility and changing markets. Cassava and kenaf (Thai jute) outputs have increased substantially in the last decade but both crops are believed to be suffering yield declines through soil exhaustion. Cassava has been favored by farmers because of high real prices and low labor input, but within the last year restrictions on cassava imports into the EEC have placed future exports in jeopardy. Kenaf has suffered from uncertain markets and prices since the revival of jute in Bangladesh. Groundnuts, fruits, and vegetables enjoy growing domestic and export markets and their prices have risen relative to the price of kenaf since 1974. Small field, intensive, dry season tobacco cultivation is becom-

ing increasingly popular because of the credit, extension services, and marketing offered by Adams International Tobacco Company.

Socio-economic stratification

In most areas of the Northeast the percentage of households renting land is believed to be less than 5%. There is some evidence, however, that tenancy rates are rising. The influence of farm cash inputs and market-orientation of production, moving villages away from own-consumption production, has had the usual result of growing inequality of land and income distribution through incurred debt. This is particularly true of the long-settled areas of Chaiyaphum where year to year differences in rainfall patterns make investment in cash inputs extremely risky. The size of some debts would suggest that for poorer, smaller farmers the debt burden could be almost one half of annual net income. The inevitable outcome of debt has been the emergence of a class of landless villagers. This class is smaller than it otherwise would be because of outmigration of whole families. Bangkok has received most of those seeking employment outside the rural sector. However, there has also been a great deal of rural-rural migration within the Northeast, on balance from the more densely populated and intensively cultivated southeast corner to the north, and, to a lesser extent, to the north-west and south-west.

The relationship between average village or tambon income and the incidence of poverty cannot be put in simple terms. The majority of poor households in the NERAD area do not live in easily distinguished 'poor' villages. This is because income inequalities are greater within villages than between them. For instance, in tambon Lahan, in Chaiyaphum, there are very few people living in 'poorer' villages yet the tambon has the third highest incidence of

poverty in all NERAD tambon. This means that the majority of tambon Lahan's poor must exist within the 'less poor' of its villages. Nevertheless, there are pockets of 'poor' villages, such as in tambon Kwang Jone, Na Muang, and Nong Kaew, where environmental factors indicate that targeting on 'poorer' villages might reach half of the poor in a single tambon.

Inheritance, farm size, and the economic value of kin relations

Since land is often used as collateral, the system of inheriting land is relevant to a farming systems study. With inheritance goes kin-based support systems and sometimes the pooling of land, labor, and finance. The Northeast is characterized by matrilineal descent of land and uxori-local marriage (which may be accompanied by village endogamy or exogamy). In the case of farms too small to be divided, inheritance practice is commonly female ultimogeniture¹: the youngest daughter inherits everything. This solution is based on the premise that older daughters are safely launched into marriage and motherhood by the time the parents are deceased. The youngest daughter and her husband commonly care for her aged parents and work their land until the parents' death. Where the farm is large enough to tolerate partible inheritance it is divided equally between the daughters, or, if even larger, between all children, with the youngest daughter (or youngest married daughter at time of parents' death) also inheriting the house. The ethnic Phu Thai in Nakhorn Phanom practice bilateral inheritance. If a son or daughter takes a marriage partner who already has, or anticipates inheriting, a sizeable area, he or she may waive inheritance rights. These accommodations help to explain the degree of stability of small size of holdings.

Husbands' kin can provide supporting economic ties too. Whereas a rice-deficit household might obtain its rice requirements from the uxorial extended family, bilateral extension of kin ties are used to supplement the functions of the matrilineal extended kin. For instance, husbands' kin are important for economic endeavors which require a large body of workers beyond the capacity of the matrilineal extended family. Also, the relatives of the husband can be used for contacts in other villages and in the towns to find wage employment.

In general parent-daughter and sister-sister kin relations are the most significant social and economic ties.²

- 1/ Chavivun Prachuabmoh, A Comparative Study of the Kinship Systems of Tai Speaking Peasants in Thailand in Relation to the Problems of Evolution and Ecological Adaptation in Social Structure, December 10, 1976, Thammasat University, Bangkok.
- 2/ Chavivun Prachuabmoh, op. cit. and H. Leedom Lefferts, 'Change and Population in a Northeastern Thai Village,' in Population and Development in Southeast Asia, John F. Kantner and Lee McCafferty (eds.) Lexington, Mass.: D.C. Heath and Co., 1975.

THE ANALYTICAL FRAMEWORK

Analyses of farm resource allocation and incentives are commonly made at the household level, and differences are ascribed to socio-economic class of households. Inherent in this is the unspoken assumption that, within the household, labor units are equally substitutable and mobile between income-earning ventures, while choice, risk-aversion and income benefits are held in common by all household members. But labor inputs, felt returns, constraints, and attitudes to risk apply to individuals as well. In many parts of the world economic exchange goes on within the household, suggesting that the household should not be seen as a corporate economic unit. Finally, the household goes through its own life cycle with changes in constraints and primary goals of production and wage employment. If a project is to expand households' overall capabilities all these things need to be taken into account. The following discussion elaborates on these considerations and indicates the subjects that were covered in interviews with respondents.

Definition of the household

If the project is to assume that the household is the primary unit of production and economic decision-making it is relevant to attempt to define it. Economic studies have defined a household as that collection of individuals farming a piece of land, but this fails to allow for more than one household working and benefitting from the same piece of land. During a pilot study in March 1982 it became apparent that a significant minority of 'houses' were sharing land and pooling labor and finance. Some went further to share granaries and even cooking. This left sleeping quarters, or a roof, as the lowest common denominator of a household. This definition of a household unit

represents, as closely as any can, the primary unit of family reproduction. It also has the advantage that in the great majority of cases those sharing one roof farm, exclusively, the land which is owned by one or more of the people living under that roof. For this reason it was chosen as the household unit for enumeration. It was acknowledged that this and all other definitions carry imperfections and have relative advantages and disadvantages according to the purpose of a study. The definition of the household used here does carry implications for the selection of households for initial intervention and input delivery systems since a minority of households pool farm resources with those of a close relative (usually parents). The alternative, to identify farming units which may be composed of several households with varying degrees of economic cohesion, was rejected as too complicated for a farming systems approach with fully stretched extension services. Instead, this study sought information on percentages of households which pool land, labor, finance, and output; and some of their more various characteristics.

Reproduction of the household base and the issue of risk

A household has a life cycle and its composition can change through marriage, births, divorce, migration, and deaths, before it separates into a new generation of households. Younger generations do not simply break away on reaching adulthood. Sons may leave, while daughters remain resident for some years with new husband and first or second child. Thus dependency ratios can vary widely over this cycle. It can be expected that the household labor force and financial assets will be quite different in the cases of a young nuclear family and a large multi-generation household, with resulting differ-

ences in crop-mixes, cash inputs, yields, and income portfolios. Their respective felt constraints and needs will also be different. Especially in very dry areas, where risks of farming are high, the ability of a household to deploy labor in a wide range of employments and to underwrite farming risks with wages and remittances can determine its response to a project's interventions.

The literature on Thai agriculture reiterates the emphasis farmers place on subsistence rice which allows the household at least to eat even if (volatile) cash income is foregone. This is demonstrated in the Northeast where rice acreage has been extended in the absence of an increase in yields. There are, of course, environmental limits to achieving this 'food first' strategy, and in some areas rice output may be more volatile than cash crop income. The implications of this for agricultural promotion are that farmers' responses to the creation of a gap between actual and potential total crop production by planned interventions (as discussed in the NERAD project documents) may be conditioned by the security of their current degree of rice self-sufficiency. Closing the deficit between rice production and consumption in the worst years might overcome this conditioning factor. As women are more concerned with domestic aspects of household reproduction it might be hypothesized that this leads them to express more reservation over risky commercialization of agriculture. Their opinion is especially important since this is an area where they are the majority landholders. Therefore questions on relative risks attached to cash crops and rice were asked of men and women separately. It might also be hypothesized that families with young children are more concerned with rice self-sufficiency than other families. These two hypotheses are tested in this study.

But reproduction has a wider meaning than mere physical maintenance of household members. A network of obligations amongst kin and the broader set of traditional social relations has a real economic influence through expenditure-displacing exchange labor and through cheaper credit passing amongst relatives and friends. Land may be rented ostensibly free, but invariably with some immediate or undated quid pro quo. The development of formal channels of credit, of commercialization of production, and of commoditized labor might be seen as a threat to traditional relationships because if the economic ties disappear the social ties will lose much of their basis. Women may be more sensitive to this than men because kin support systems are mainly based on women's kin. The privatized nuclear family with no moorings in informal economic relations then becomes particularly vulnerable, especially in a risky rainfed environment. Hence the strength of traditional economic arrangements and attitudes amongst farmers to approaches made by members of official institutions need to be gauged and assessed as likely constraints to accepting innovations.

Few would doubt that risk is a constraint on innovation in the NERAD area. But farmers, through the very nature of their enterprise, are prepared to take some risks. What is of interest are the means by which farmers believe they can limit risks. For instance, how do they perceive the importance of information about credit and labor requirements, access to markets, and prices before deciding whether to adopt a new crop technology? One could hypothesize that any one of these factors is the most important in the absence of any background information on the area. In this study men and women, respectively, were asked questions on the relative importance of these factors in making a decision on crop innovations. Respondents were also asked whether

they considered wage employment to be more or less risky than producing cash crops, and whether it was more important to promote non-agricultural employment than higher crop yields.

Labor deployment and income portfolios

Household labor availability is often assessed in terms of 'adult male equivalents' of all members. But when agricultural tasks and off-farm employment are sex and age typed this is a blunt analytical instrument. If labor is a constraint on adopting better methods of cultivation it is important to learn whose labor constraint this is, how severe it is, and in what periods of the year it occurs. Crop promotion can exacerbate or modify the overall (annual) sexual division of labor while at the same time placing more seasonal stress on one household member already seasonally very stretched. In Thailand the sexual division of labor in agriculture is not as sharp as in many other countries but the literature, though inconsistent, indicates that it does exist. Also women assume the major responsibility for domestic work and water collection. It is hypothesized that women's workload is more of a constraint than men's in introducing selected crops or other income-gaining opportunities.

Women's labor is not as mobile as men's because of their domestic responsibilities. Therefore project interventions to plan any home industry, and non-farm employment at the village and tambon levels for the landless and seasonably unemployed, need to incorporate the sexual division of labor.

Household labor deployment cannot be seen merely in terms of the division between farming and non-farming work such that their respective returns at the margin are equated. One of the main functions of a farming systems approach

is to understand why farmers do what they do, especially when that appears to contradict microeconomic theory. For example, securing the farm as the primary basis of a livelihood might require an income component of wages to support year round cash flow requirements. Again, if cash input incurs more debt or sources of income become less diverse farmers may perceive there is more risk in the required labor deployment. Because of this, information on the extent and duration of off-farm wage employment, the earmarking of cash income, and the willingness to give up some wage employment - if necessary - to give more attention to agriculture, was sought to help assess some of the obstacles to raising farm productivity and income. In addition, data on current sources of credit and on the range of interest rates paid, by village and farm status, were obtained to throw light on necessary delivery of additional credit services should off-farm sources of cash income be surrendered.

Assets, sources of credit, and cash flows

The project is to include improvement of credit delivery systems. Thus the current state of the credit market is an important part of baseline information. Past foreclosures on land are an indication that some loans, at least, are obtained using land as collateral. But with a wide range of both formal and informal sources of credit, demands by creditors for collateral cannot be assumed in all cases. Although interest rates ought to be lower when collateral is part of the contract, in this poorly and unevenly developed credit market collateral may be demanded by some of the most expensive as well as the cheapest sources of credit. Nevertheless we can hypothesize that interest rates are lower when collateral is requested. The state of the local credit market, and especially credit from relatives and friends, is also

important in determining interest rates. A hypothesis could be tested that where these sources of credit are plentiful, interest rates are lower. Large farm size often bestows social and political status which in itself can improve access to information, to Farmers' Group membership, or to bank managers' offices. It is therefore of particular interest to planners of improved credit supplies to know of existing channels of cheap credit and to what extent these are determined by farm size and membership of local organizations, as well as any implications for women-headed households. Questions were asked of respondents concerning these issues.

Extension services

Any farming systems approach relies heavily on extension services for its progressive accumulation of knowledge and to feed back information on the results of initial interventions. With limited extension services it is pertinent to examine the relevance of the existing extension services to farmers' needs as well as present determinants of access to them. During the pilot survey for this study it became very apparent that women do not attend meetings and demonstrations organized by agricultural extension officers. If this represents the true situation then women-headed households could be discriminated against unless they have other sources of information.

Male and female respondents were asked whether they had attended extension demonstrations; if not, why not, and whether their cropping methods had been influenced by them. Visits of extension officers to homes, the purpose of these visits, and to whom the officers spoke, were also inquired into. In addition, the hypothesis that women would be more interested in agricultural extension if there were women extension officers was tested by a direct ques-

tion to male and female respondents. They were also asked if they would like to see women officers.

Individual and household opportunity costs

Microeconomics tells us that the individual will work up to the point where he considers that the return to his last unit of work compensates him for the bother of it. The problem is that the farming household is not an individual producer or consumer. Its members have their individual workloads, and income returns may accrue to the whole household in a diffused manner, in certain arbitrary proportions, or exclusively to one individual, depending on who controls income. A higher productivity crop technology or new crop-mix is likely to entail a rearrangement of individuals' work portfolios. And if sources of income are changed the control and earmarking of income might also alter.

Therefore men and women can see the costs and returns of new opportunities in different lights. A view of the 'household's opportunity cost' fails to distinguish between individuals' opportunity costs. The present economic authority of Thai women is comparatively strong, largely due to inheritance and matrilineal practices. But this could change under the impact of institutional arrangements which commonly assume the male head of household is the custodian of household labor, credit, and income, as well as the principal decision-maker. Investigating the process of household decision-making is notoriously difficult because of its diffused and nebulous nature. This study, intended to provide baseline data and analysis for the project in a short period of time, did not have the resources to utilize the in-depth methodologies for investigating decision-making. Nevertheless, questions were

asked on members who sell the crops, retain the income, or negotiate the credit, and more open-ended questions were asked on the extent of joint decision-making on farm management.

Population implications

Migration from and within the Northeast is a reflection of population pressures on land. But this alone cannot explain why Thailand has experienced widespread acceptance of family planning and seen a remarkable fall in fertility in the last decade. The country's unusual family planning promotion has undoubtedly played a part.

Factors commonly stated to determine family size include the need for a large family labor force (use of child labor), assurance of security in old age, availability of acceptable means of birth control, and women's access to resources. The last of these is largely assured at the present time because of land inheritance practices, and is likely to have been an influence on recent ready acceptance of birth control.

Data obtained in this study include children's on-farm labor contributions for different household compositions, and the incidence of economic relationships between households at different stages of the life cycle but belonging to a common stem family. Constraints on further acceptance of family planning must include women's opinions on birth control methods and on the delivery of these services, since it can be hypothesized that the quality of these services affects acceptance. Women were therefore asked which method of birth control they used, their (ranked) preference for available methods, how they first heard about family planning, what they did to obtain more information, whether they contemplated sterilization, and what they thought

could be done to improve services. Distance of the village from the nearest health center was observed by the enumerators.

Survival of children to adulthood is often assumed to be a factor encouraging lower fertility rates. It is hypothesized that in the Northeast, where seasonal factors play such a significant role in production and water collection, the major constraints to lowering infant mortality and morbidity are found in certain months of the year and are closely associated with seasonal work stresses on women. If this is found to be true it has implications for specific "preventive health measures" in the design of the project's economic and technological interventions. Respondents were asked in which months of the year any miscarriages or infant deaths had occurred, whether breastfeeding was prematurely reduced or terminated in certain months, and how cooking, breastfeeding, and child care were arranged during periods of peak activity by women.

The recent fertility transition is producing smaller families but it can be hypothesized that ideal family sizes are smaller in areas of greater land scarcity. This was tested by questioning respondents on their idea of the most suitable family size.

One aspect of population which appears of increasing importance is the role of migrating children, their remittances to the family, and the likelihood of their returning later to farm the land. In her case studies of rural daughters working in Bangkok, Pasuk Phongpaichit¹ describes the substantial amounts of money remitted by them to their parents. The recent decline in family sizes might be encouraging more children to return or a move to bilateral land inheritance if fewer daughters are present when parents wish to retire from active farming. Thus questions were asked about remittances of

children (by sex), whether parents expected their migrant children to return to the farm, and which children were expected to inherit the land.

- 1/ Pasuk Phongpaichit, Rural Women of Thailand: From Peasant Girls to Bangkok Masseuses, World Employment Programme, Research Working Paper WEP 10/WP. 14, ILO, Geneva, November 1980.

RESEARCH METHODOLOGY

The only information on villages in the NERAD area suitable to draw upon for choosing a sample of villages was the USAID 1978-79 survey of over 60 villages. This survey described agro-economic conditions, average household income, main problems encountered by farmers, and so on.

The villages in this study were chosen to represent, as far as possible, a range of climatic and agro-economic conditions, and proximity to all-weather roads. In addition, villages within each province were selected on the basis of a difference between their average household incomes. It was originally intended to select two villages from each of the four provinces plus two control villages from outside the project area, and to sample 40 households in each village. However, in one tambon in Nakhorn Phanom province there was an opportunity to compare two neighboring villages with similar natural endowments but greatly differing average household incomes. Since Na Khoi Noi had only 22 households it was decided to sample all of them and to add another 22 households from the village of Na Khoi. Also the enumerators unexpectedly found that the village of Kratum in Sri Sa Ket province had only 17 households, so 23 households were added from the neighboring (and similar) village of Nong Yod. Finally, when the chosen villages of Nong Pan (in Roi Et province) and Yang (in Sri Sa Ket province) were found to contain only 45 and 42 households, respectively, it was decided to sample the whole population of households in them.

The choice of the two control villages was more difficult for they could scarcely represent all conditions between them. After much deliberation Na Wang, in the very dry and poor province of Chaiyaphum, was chosen because it appeared to be more economically successful than its natural endowment would

suggest, due to the high degree of organization and motivation amongst its residents. It was therefore suitable to assess progress of the project in those villages where agricultural services are targeted. The other control village, Or in Sri Sa Ket province, is a poor, isolated, and monocultural rice cropping village from which there is extensive seasonal migration. As such it is similar to several project villages chosen. Later on in the project it will also provide the basis of comparison to assess the effectiveness of the project against a background of general changes in the economy such as new markets and increasing migration.

Altogether 413 households were studied over 12 villages.

In order to obtain a selection of male and female respondents, of women-headed households, and of households of elderly couples, the enumerators were asked to follow, in each village, the simple formula of:

- (a) up to 5 women-headed households;
- (b) up to 5 households headed by elderly parents, or one elderly parent;
- (c) at least 30 households constituted with both parents active, and from which the respondents should be approximately 50% male and 50% female.

The enumerators were also asked to select from category (c) approximately 14 households with very small holdings or no land at all, 9 with average size holdings, and approximately 9 with large size holdings. Since average holding size can vary considerably by area, a common set of size ranges could not be fixed for all the villages. In the analysis of the findings, farm size was defined as land owned plus parents' land which was used. The reason for this was that variables (such as credit, hired labor, and dependency ratios) had to be studied against land assets under the permanent control of the household or

of closely-related kin (that is excluding rented land which could vary from year to year). To some extent this meant that land used under a pooling arrangement was accredited to one household, but data on resource pooling arrangements showed where this occurred.

The outcome of these guidelines for the village samples is given below.

<u>Village</u>	<u>Number of households</u>					<u>Number of respondents</u>	
	<u>Total</u>	<u>Sampled</u>	<u>Women-headed</u>	<u>Landless</u>	<u>Using parents' land wholly</u>	<u>Male</u>	<u>Female</u>
Don Daeng	113	40	5	4	6	17	23
Na Khoi	124	22	2	2	2	9	13
Na Khoi Noi	22	22	2	1	2	9	13
Lahan (No.2)	340	41	5	4	6	13	28
Kwang Jone	146	40	4	3	2	19	21
Na Wang	242	40	5	0	4	16	24
Song	131	40	5	3	5	17	23
Nong Pan	45	45	4	1	8	22	23
Yang	42	42	2	4	10	16	26
Kratum	17	17	3	0	3	8	9
Nong Yod	23	23	2	0	2	11	12
Or	83	41	5	2	5	20	21
		413	44	24	55	177	236

Each respondent was interviewed twice with the second interview including more open-ended questions of a qualitative nature than the first. The questions asked are discussed in the Analytical Framework. Ten women students

from Khon Kaen University were used for the enumeration, and sent in pairs to reside in a village for one month (with Na Khoi and Na Khoi Noi together, and Kratum and Nong Yod together, taken as only two villages respectively) before moving on to another village for the second month of the field investigation. This method of intensive investigation was designed to enable them to learn about general problems of the village, to take any opportunity to talk informally with villagers, and to obtain information about village activities and organizations.

The field investigation took place between mid-April and mid-June 1982. This period covered the end of the dry season and the start of land preparation for the rice crop.

SUMMARY OF VILLAGE CHARACTERISTICS

	DON DAENG	NA KHOI	NA KHOI NOI	LAHAN	KWANG JONE	NA WANG	SONG	NONG PAN	YANG	KRATUM	NONG YUD	OR
Number of households	113	124	22	340	146	242	131	45	42	17	23	83
Distance from all-weather road	14km	-	2km	-	3.3km	4km	-	1.5km	1.3km	4.3km (2km to railway)	4.8km (2km to railway)	5km
*Per household income (Bant)	15,829	18,661	9,383	14,444	11,159	n.a.	14,499	28,250	12,612	16,908	14,279	n.a.
*Wages as % of total income	3.5	16.6	13.7	18.8	5.8**	n.a.**	24.7	10.3	22.6	33.5	5.2	n.a.**
Average farm size	45.7 rai	37.6 rai	32.0 rai	30.7 rai	27.8 rai	n.a.	14.4 rai	28.6 rai	16.6 rai	14.6 rai	17.8 rai	n.a.
*Average dry season rice acreage	almost none	almost none	almost none	none	almost none	almost none	none	3.2 rai	none	none	none	none
Cash crops	a little kenaf and cassava	a little tobacco, cassava, watermelon	a little tobacco and watermelon	cassava and some kenaf	some kenaf, a little maize	kenaf, vege- tables, maize	tobacco, and a little kenaf	tobacco	watermelon, and a little vegetables	vegetables, a little kenaf and peanuts	watermelon and vegetables	NIL
Dry season domestic water problems	serious	fair	fair	fair	serious	good	good	quite good	serious	serious	good	fair
Institutional credit usage	very poor	poor	poor	very poor	fair	good	poor	very good	fair	very poor	fair	NIL

*Taken from the 15% sample survey of households undertaken by AIF/Bangkok in 1979-80.

**Kwang Jone: 1979-80 was a good farming year. This study was undertaken in a year of drought, and wages would have constituted an extremely high % of total income in this village.

Na Wang: The % should be relatively high (see Table 10)
Or: The % should be very high (see Table 10)

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PART II

THE FINDINGS

HOUSEHOLD FORMATION AND INTER-HOUSEHOLD COOPERATION

Summary

The presence of grown children in households was less in villages experiencing greater land shortage, but grown daughters tended to migrate less where vegetables were intensively grown in the dry season, than elsewhere. There is some evidence that small farm size leads to nuclearization of the households. Pooling of farm resources between related households is more common in poorer villages, and women-headed households are more involved than men-headed households in pooling arrangements. Within villages there is no discernible influence of farm size on either the pooling of farm resources or the sharing of granaries.

Household Composition

The composition of a household provides data on its labor force, its dependency ratio, and the tendency of older children to migrate or set up separate households.

The respondents comprised 236 women and 177 men. All the men were married except for 2 widowers and 1 'other', presumably separated or 'divorced'. (Since marriages are not registered there were no admissions of divorce.) Thirty-six of the 44 women heads of household were widows, 5 deserted, and 3 separated.

Residence of Older Children Table 2 gives data on household composition. Over all 12 villages, 122 households reported having 1 or more daughters of at least 18 years of age still in residence, and 101 reported 1 or more sons of at least 18 years still resident. There were large differences by village but these could not be related to land scarcity. Only in Don Daeng, Kratum and Nong Yod were there large differences between the numbers of households reporting the presence of

grown daughters and grown sons, with grown sons much more likely to have migrated than grown daughters. The two Sri Sa Ket villages cultivate water-melon and vegetables in the dry season and this might hold young female labor at home since these crops are predominantly cultivated by women. The low reporting of grown children of either sex in Song and Or must be related to the fact that tobacco is the only significant cash crop in Song and no cash crops are grown in Or. Therefore, family labor requirements are relatively small.

The presence of 'others' in the households also indicates the presence of multigeneration or extended family households. Others include siblings and their spouses, and spouses of married children. Resident sisters (of the head of household) were reported from 2 households in Yang and 3 in Nong Pan, and one resident brother in Or. Multigeneration households are most frequently reported in the three Chaiyaphum Villages, and in Nong Pan and Yang.

The relative prevalence of multigeneration and nuclear households could have an effect on dependency ratios. The dependency ratio used here is:

$$\frac{\text{number of resident members less than 15 and over 64}}{\text{number of resident members between 15 and 64 years.}}$$

Dependency Ratios (or near-nuclear) It might be expected that the villages with higher frequencies of nuclear households show greater frequencies of higher dependency ratios. The 3 Chaiyaphum villages and Yang do have small percentages of dependency ratios above 1.5. Nong Pan has a high percentage which can be explained by greater numbers of households with large numbers of children under 15 years of age and the comparatively fewer households with resident children over 18 years. The low numbers of multigeneration households in the Sri Sa Ket villages shows itself in the high percentage of households with dependency ratios above 1.5.

Migration and birth control patterns may be affected by small farm size. But there is some evidence from the data that small farm size is leading to nuclearization of the household accompanied by higher dependency ratios. The particular implication of high dependency ratios for women's work stress at seasonal peak periods can be seen to be moderated by having less land to cultivate.

Pooling of farm resources with another household.

Nuclear households can, of course, be sharing the use of land and pooling other resources (labor, credit and cash inputs) with another household. Table 3 summarizes, on a village basis, the incidence of use of land owned by parents, and of sharing farm resources, granaries or cooking with another household, which in many cases will be the parents' household. The frequencies of households reporting use of parents' land are certainly high in Yang and Kratum but in Nong Yod and Or they are no different from the Chaiyaphum villages. One would expect some close covariation between households reporting use of land owned by parents and households reporting pooling of farm resources although, with the likelihood of siblings' households also pooling resources, not an equality. There is some rank covariation over all 12 villages. But, a striking feature of the table is that whereas in the villages Pooling of Nakhorn Phanom, Chaiyaphum, and Roi Et, pooling resources is much more frequent than merely the use of parents' land, in Sri Sa Ket the reverse is, Resources dramatically, the case. In Sri Sa Ket the larger component of wages in total income provides the young nuclear households with more independence from parents as far as working capital is concerned, and encourages more formal production sharing arrangements with parents than pooling resources entails.

Therefore the locus of decision-making in these villages is more likely to be in the household of the younger generation when parents' land is used than in the other villages.

When making interventions, the NERAD project needs to bear in mind that in most villages between 10% and 20% of farming households pool their resources with another household.

Pooling resources is more common in the poorer villages; yet Nong Pan, a 'rich' village, stands out with by far the highest rate. But this village is also distinguished by indebtedness, and sharecropping tenancies. Some of the cases of pooling resources were between landlords and tenants. This was the only village where such a relationship was reported.

Table 4 shows that women-headed households are consistently more involved in resource pooling arrangements than men-headed households. This is heavily influenced by women outliving their husbands and assuming 'headship' of household and land. Pooling arrangements would then be with the households of married offspring. These cases should not present serious problems of delivering credit and extension services as there is always likely to be an adult male present in one or other of the households, although he will probably not be the ultimate decision-maker. It is the young widowed or deserted woman who is more vulnerable to exclusion from credit and extension services, especially if she is not pooling resources.

Sharing
Granaries
And
Cooking

There appears to be no relationship, by village averages, between pooling resources and sharing granaries, or between sharing granaries and cooking arrangements. But nearly all individual cases of sharing granaries were also pooling resources, the great majority being between parents and children under separate roofs. In the three Chaiyaphum villages this relationship accounted

for all the cases of pooling and sharing. The small sample size did not allow any conclusion on the greater incidence of pooling and sharing amongst women-headed households. Where granaries and cooking were shared it was principally between parents and married offspring. (See Table 5.) There were only 9 cases of sharing a granary with a sibling, almost always a sister (out of a total of 58 cases), and 2 cases of sharing cooking with a sister (out of a total of 13 cases). Thus when siblings pool resources this does not often lead to sharing of granaries and cooking.

Overall there was no discernible influence of farm size on the pooling of resources and sharing of granaries. But, in Don Daeng and Kwang Jone, pooling of resources was disproportionately greater amongst the largest farms (which might explain the lower dependency ratios amongst larger farms), while in Nong Pan and Nong Yod it was disproportionately greater amongst smaller farms (perhaps reflecting small indebted farmers sharecropping in Nong Pan and siblings' nuclear households pooling resources and supplementing income with wages in Nong Yod).

LABOR DEPLOYMENT: DEMANDS AND CONSTRAINTS

Summary

Although men are more involved than women in land preparation and spraying, the variation between villages in the sexual division of labor suggests that there are no strong cultural barriers to substitution between male and female farm labor. A notable feature is the very small amount of child labor used in agriculture. Exchange labor and hired labor is extensively used, more so in some villages than others. Harvesting and planting of rice are the two peak labor periods. The ratio of seasonal to casual wage employment is higher in poorer villages where water resources permit little or no dry season agriculture. In nearly all the villages studied home industry is predominantly directed to own-use.

The great majority of both male and female respondents claimed that migration of children and greater secondary crop cultivation had led to greater additional work for men than for women in recent years. Nearly all respondents rejected the hypothesis that families with young children were more concerned with self-provisioning rice production than other families, on the grounds that women with young children could cope least well with rice labor demands.

This section looks at the way households deploy their labor in all on-farm and off-farm activities because of locality differences in agricultural labor demands and the need for wage income.

Seasonal variation in agricultural work and the division of labor

Where land is of poor quality and water resources for agriculture in the dry season are meager, farm size tends to be above the regional average and great effort is put into the single rice crop. But the tasks of weeding and spraying are pursued less vigorously. The peaks of farming activity are therefore sharp for land preparation, planting, and harvesting; and the periods of lack of farming work are more extended. The smaller farms in the more fertile and better-watered areas require a more even spread of labor input in rice and, in addition, usually have smaller plots on which cash crops are intensively cultivated in the dry season.

To gauge the intensity of work on rice and cash crops respondents were asked, for each cultivation task, whether household members worked both mornings and afternoons. They were not asked how many members did this. It was believed that a separation of mornings and afternoons would give a rough indication of pressure of work, because the afternoons are hotter and therefore more unpleasant to work in, and women (at least) have domestic tasks. Working members were separated into men, women, male children under 15 years, and female children under 15 years.

The data on the use of household labor on rice growing is shown in Table 6. Children's labor was excluded because its low use did not justify adding it to the table.

Labor or Rice None of the rice cultivation tasks is exclusive to one sex. Men mostly dominate land preparation. However, in Kratum and Nong Yod women work both mornings and afternoons in land preparation in many households. This is probably due to the fewer resident male children of at least 18 years in these villages. Householders here also reported that land preparation and planting had to be hurried in order to get ahead of the rains. Slightly more women than men do transplanting, and both sexes are called upon to perform this labor-intensive work both mornings and afternoons. The intensity of planting work is comparable with that of the harvesting period.

Very little weeding is done and women are only slightly more involved in it than men. The greater weeding in Sri Sa Ket is due to the heavier doses of fertilizers applied, and in Kratum, a very fertile soil.

Harvesting requires all available hands and in most villages mornings and afternoons are worked with equal intensity by both sexes. There is no sign in any of the villages that because men work a full day women are able to work

half days. This indicates the intensity of work at this time of year. Post-harvest activities include a series of staggered tasks. The harvested crop is tied in bundles and carried, first to a platform inside the field where it might be threshed, and later to the granary. Mornings might be spent in tying bundles and afternoons in carrying (Song), or vice versa (Don Daeng, Nong Pan, and Nong Yod), or in any combination. Tying bundles seems to be men's work, but in Nong Pan (which has the least specialization of tasks by sex), Yang, and Kratum (absence of grown male children), women share this work almost equally with men. Carrying, from the field to a cart, and then from the cart to a storage or processing place, would appear to be performed equally by the sexes, and there are no really significant exceptions. It is very clear that the intensity of the work of tying bundles and carrying is related to average farm size.

While the planting period is undoubtedly a peak work time, bringing in the crop is a more protracted intensive work period in terms of both daily hours worked and number of days involved. The variations in the sexual division of labor suggest that there are no strong cultural barriers to substitution between male and female labor and that households make the best accommodation they can within the limits of the supply of resident grown children, hired and exchange labor. Nevertheless, there are obvious seasonal work stresses on women who have additional domestic duties and may be pregnant or breastfeeding.

An important feature of household labor use on rice cultivation is the very small amount of child labor. For example, in Song, with small average household size, only 7 households reported child labor in the fields at any time. This village also used less than the average of hired labor. On the

other hand, all but one household reported using some exchange labor, principally for harvesting and post-harvest work.

To test the effect of migration of children on the sexual division of labor, those villages with relatively few households reporting resident children of over 18 years (Don Daeng, Lahan, Song, and Or) were compared with those with many households reporting them (Kwang Jone, Nong Pan, and Yang). As far as planting is concerned, the only difference was that in Nong Pan men and women did not work as many afternoons as mornings. The same was true of harvesting, which was also the case in Song. But on post-harvest activities a contradiction appeared. Viewing all post-harvest activities together, households in Don Daeng and Song reported women spending far fewer of both mornings and afternoons working than men; the same was true in the latter group of villages in Kwang Jone. For an explanation the data on hired and exchange labor was looked at. Don Daeng and Kwang Jone were certainly above average for all villages in the use of hired labor. Kwang Jone and Song reported a high incidence in the use of exchange labor (36 out of 40 households), notably male labor. But the remarkable case of very high hired and exchange labor use was Or, where there was also little specialization of task by sex. The intensity of rice cultivation and high yields must go some way to explain this full deployment of all sources of labor.

Therefore, migration of grown children, by village, has some effect on the intensity of both sexes' labor input and acts on the sexual division of labor by intensifying the use of men's labor more than women's. But the work pressure on household members is mitigated by the use of hired and exchange labor.

Most hired labor is therefore used on rice growing but it is surprising how few households use it. Part of the explanation must lie in the fact that rice is mainly grown for own consumption so that wages would have to be found from other sources. A more important factor is the widespread use of exchange labor. In Song and Kratum all but one household, and in Nong Pan all but three households, used exchange labor. And in Or all households used exchange labor.

But the 'rich' village of Nong Pan, where very little hired labor is used on rice, requires another explanation. According to the 1979-80 survey, area planted to wet season rice averaged 28.6 rai. Cash inputs were moderately high, and yields the highest of all villages. Nong Pan also sells the highest proportion of its rice output. But it also has the largest average household size, and above average reporting of resident children at least 18 years old. What is more important, perhaps, is that a large number of households rent land, so that the large 'average area of farm size' planted to rice must be qualified by renting and sharecropping arrangements - in other words effective subdivision. This could explain the very intensive use of household labor on rice with few households hiring labor. It is noticeable that the data provided by this study showed that there was no hiring of labor on farm sizes (owned in this study) above 20 rai; and only 2 farms between 10.1 and 20 rai used hired labor.

Labor on Cash Crops The use of household labor on cash crops is shown in Table 7. The overall sexual division of labor is similar to that for rice, that is, very flexible. Land preparation for kenaf production starts in February and the crop is harvested just before the rice harvest. The intensity of the work effort is seen by the equal involvement of men and women and by both mornings and after-

noons worked. The relative absence of exchange labor in kenaf production is due to the fact that it is mostly grown in Chaiyaphum province where hired labor is more developed than elsewhere. Land preparation, planting and weeding in the case of cassava are undertaken in the same early months of the year, and it can be seen from the table that where it is grown by many households, as in Don Daeng and Lahan, the cultivation tasks are done intensively. In Lahan three weedings are sometimes performed. Some hired labor is used in this village. The crop can be harvested from September onwards as it can be left in the ground well beyond maturation.

Watermelons and vegetables are cultivated throughout the dry season and, because they are grown on small plots, do not require the presence of all household members over 15 years of age. Watermelon requires a great deal of water and fertilizer, and farmers are careful to weed and spray the crop. Apart from land preparation and spraying, which is very largely done by men, there is no apparent sexual division of labor, and in only one household, in Kratum, was child labor used (for harvesting). The ease of watermelon growing shows itself in the fewer afternoons than mornings worked for most tasks.

In Song and Nong Pan, where almost all households grow tobacco, land preparation for this crop commences immediately after the rice harvest and harvesting takes place in April. The short growing period includes intensive effort in planting and spraying (mostly done by men). The greater use of female labor in harvesting, especially in Nong Pan, may be due to men being absent.

The use of hired labor (see Table 8) on cash crops depends very much on the crop. Hired labor on these crops is used almost exclusively in Don Daeng, Lahan, Kwang Jone, Na Wang and Song, and very largely on kenaf.

Wage employment

Table 10 gives data on men and women in wage employment, by duration of employment. Seasonal and casual employment is much more important than full-time employment, but the ratio of seasonal to casual differs by village owing to variations in the time-table of household labor requirements in agriculture imposed by water resources.

In Kwang Jone and Or seasonal employment is more important, but in Lahan (cassava and kenaf growing), Na Wang (kenaf growing), and Nong Pan (almost all households grow tobacco) casual employment is much more important (not so much for women in Na Wang). A comparison of the division of labor in tobacco growing and the division of casual and seasonal wage employment in Song and Nong Pan provides a good example of the flexibility of the sexual division of labor in farming when wage employment is also undertaken. The poorer villages (outside of Nakhorn Phanom where there is not so much seasonal work) tend to rely more on seasonal work, and the 'rich' villages on casual work. Average income is, of course, influenced by the production bearing capacity of land and water resources which in turn determines the agricultural time-table.

Home industry

Home industry is widely undertaken everywhere except in Song, and its intensity is related to the degree of absence of agricultural activity in its dry season. It consists almost entirely of silk production and weaving, cotton weaving, and basket-making. Kwang Jone and Na Wang specialize in silk production and weaving, and Don Daeng and Yang in basket-making. The villages in Nakhorn Phanom and Chaiyaphum, and the village of Or in Sri Sa Ket, showed high frequencies of cotton weaving. Weaving is done by women, but men take

part in basket-making by providing the materials from the forests. But except in Na Wang (where 24 households produce and weave silk for sale) and in Yang (where most basket-making is for sale) almost all this industry is for own-use.

Change and risk in labor deployment

There are two reasons why it might be supposed that farmers are working harder on their farms than 5 years ago: grown children have migrated and there has been more cash cropping, particularly in the south. To the question 'Do you think that changes in farming in your village in the last 5 years have increased the amount of work done on farms?' only 12 out of the entire sample claimed they had not. It was also clear that the majority of both male and female respondents believed that more of this additional work was done by men than by women. This suggests that the sexual division of labor in agriculture attempts to accommodate women's domestic work when labor requirements in the fields increase. However, in Na Wang (extensive kenaf growing) as many as 29% of the respondents thought it had meant more work for women than men, and in Nong Pan (widespread tobacco growing) 33%. There was virtually no difference in replies of men and women in all the villages. When asked if wage employment had become more important in the last 5 years there was again an overwhelming positive response, except in Song. Inflation was given as the main reason. But greater monetization has led to more purchases of urban products and a change in consumption patterns can feel like inflation.

Dry season wage employment (both local and more distant) was generally regarded as more risky than crop production and, surprisingly, in view of the drought, in Kwang Jone all respondents claimed this. This may be due to the

absence of local employment, because of the dry conditions. But in Lahan, Na Wang and Song, also with above average dependence on wage employment, there were large minorities who felt wage employment was more risky. There were no clear differences in replies by sex of respondent.

Perceptions or Risk Against expectations, (because of an assumed desire for rice self-sufficiency) there was an overwhelming negative response to the question 'When the family is young (when there are several children under 10 years) do you think parents put more emphasis on rice production?' The reason given was that rice cultivation requires a great deal of work and that women with young children do not have the time for it. Another reason given was that cash crops are less risky.

The aversion to wage employment emerged more strongly in replies to the question 'Do you think it more important for development in your village to promote non-agricultural wage employment than bigger crop yields?' Only 20 in the whole sample of 413 stated 'more'. When framing the question it was thought some might reply that bigger yields were not possible, and that they had learned this from past experience. But the flat reason for their answer was that people did not like leaving their villages and homes to find work.

Respondents were finally asked whether, if the extra work necessitated by a new cropping method required someone in the household to give up wage employment, they would accept it. Eighty-three percent of the whole sample were still ready to accept it without further consideration. Women showed some greater hesitation than men in Lahan, Song, and Or. When respondents were invited to state in order of importance their considerations in making a decision to adopt a new crop method, prices were most important, followed by access to markets. Labor was the least important. Thus, in spite of acknow-

ledging that they work harder now than before, these farming households are prepared to work harder to make their farms viable and to remain in the villages.

CREDIT SOURCES AND COSTS

Summary

There were great differences between villages in the use of institutional credit. No strong inverse relation was observed between use of BAAC and Cooperative credit. The greater the use of (the cheaper) institutional credit in a village, the lower the interest rates of friends, relatives, and money-lenders tended to be. There was no observable difference between men- and women-headed households' sources of credit.

A first perusal of the data on credit shows enormous differences in sources by village and by farm size. The role of the formal institutions of several kinds of cooperatives and farmers' groups, the Bank for Agriculture and Agricultural Cooperation (BAAC), and an assortment of other banks was strong in some villages, in others a rare phenomenon.

There were many problems in assessing interest rates. The principal one was that credit was offered from all sources (both institutional and private) in terms of the amount of money to be returned, while duration of the loan was variable. Ostensibly institutional credit should be repaid at the end of the season, but results were different. Enumerators did their best by asking how long the loan was for and calculating interest on an annual basis. Another problem was that credit might be raised for any combination of production, house-building, land buying, education, or general expenses. A third problem was that many farmers obtained fertilizer on credit from the Cooperative which carried no direct interest, but the slightly higher price than that in towns could be interpreted as a 4% interest rate. Finally, there was a great deal of confusion amongst farmers as to what interest rates they were paying, even to the banks.

Institutional credit

Some comment needs to be made on the profusion of means of access to institutional credit. The BAAC offers both money and credit fertilizer. A borrower has to be a member of a BAAC Group. Collateral is either land (in the case of individual applicants) or the co-signatures of other members of the (joint-liability) BAAC Groups. The BAAC charged 13% interest in 1981. The commercial banks appeared to have charged 18% in the few cases of this use of institutional credit being reported.

Farmers'
Groups

In Northeastern villages farmers' organizations, which can obtain fertilizer on credit from Farmers' or Agricultural Cooperatives operating at a higher level than the village, can be called Farmers' Groups, Rice Growers' Groups, or Agricultural Groups. In this study they were all called "Farmers' Groups" for convenience. Membership is influenced by size of holding (see later) as well as by kinship relations and by personal friendships. However, non-members can still indirectly obtain fertilizer on credit from a Cooperative, albeit at a higher effective interest rate. The Group leader asks all members how many bags of fertilizer they want. The members might ask for more than they need with the intention of selling the excess to relatives or friends. Therefore, although the existence of an active Farmers' Group is a major determinant of the use of institutional credit, the size of its membership need bear no relation to the number of villagers receiving such credit fertilizer or to the numbers paying near the effective 4% interest. The 'excess' fertilizer may be sold at prices up to B.300 a bag (against the members' cost of B.260). The effective interest rate on these sales can therefore be up to 19% (15% plus the effective 4% paid by Farmers' Group members).

Use of Collateral credit in all cases. It is unclear whether land collateral is requested for this kind of (seemingly direct) from a Farmers' Cooperative and an Agricultural Cooperative were on the basis of land collateral. And in Don Daeng all three respondents who obtained fertilizer on credit from the Cooperative used land as collateral. However, neither of the two recipients of this credit in Na Khoi did so. In other villages, some recipients were asked to offer 'future income' as collateral, but whether this was to Cooperatives or to members of Farmers' Groups is again unclear. It may be that some or most of those reporting Cooperative credit were not members of a Farmers' Group but obtained the fertilizer on credit from a member who did not ask for land collateral. But there also appeared to be genuine confusion amongst some respondents as to whether land collateral was a condition for Cooperative credit.

Use of Institutional Credit Table 11 provides figures on the number of households using institutional credit, by sex of household head and by agricultural purpose. The use of credit, by village, is influenced by the degree of market-orientation of agricultural production and by the amount of cash inputs (fertilizer on rice and on extensive small-scale vegetable growing, and for hired labor, particularly on kenaf). The cheaper institutional credit was more in evidence in the better organized village of Na Wang (with a resident extension officer) and in surplus rice producing Nong Pan (where as many as 13 of the 30 respondents who received Cooperative credit were not actual members of a Farmers' Group).

There was no strong inverse relation observed between use of the BAAC and the commercial banks on the one hand, and Farmers' Groups and Cooperatives on the other. For instance, farmers in Na Wang and Nong Pan enjoyed cheap credit from all institutional sources, while farmers in Or resorted heavily to money-

lenders and merchants. Within a village the interplay of political forces, stemming from social prominence and holding size, affects the actual interest rates paid by individual households. There is clearly a need for both targeting improved credit sources on some villages and devising means to democratise the Farmers' Group.

Non-institutional credit

Private moneylenders and traders charged much higher interest rates than the Cooperatives and the BAAC. In most instances interest rates were 40% and higher in 1981 and 1982. Interest demanded by friends and relatives covered a very wide range.

Table 12 gives figures for the number of households obtaining credit from relatives, friends, and moneylenders/traders, by interest rate, and by use made in agriculture, as far as was ascertainable.

Influence of Institutional Credit on Other Interest Rates

Very few households in the Nakhorn Phanom villages used this credit. In Lahan and Kwang Jone, in Chaiyaphum, credit from relatives and friends, when it was obtained, was expensive, and could be as costly as credit from lenders and traders. In Lahan many households used expensive market credit on cash crops (cassava and kenaf) for hired labor, and for 80% of respondent households on tractor services. In Na Wang, which was noted by the enumerators as a village enjoying a great deal of cooperation between villagers, relatives and friends appear to lend on generous terms, and hardly any resort was made to lenders and traders. But it should be noted that a large number of Na Wang farmers also obtained fertilizer on credit from Cooperatives. The almost total absence of credit from any non-institutional source in Nong Pan is due to very heavy use of formal institutional credit. A comparison of the data in

Tables 11 and 12 reveals that there is some relation, by village, between extent of use of institutional credit and interest rates charged by non-institutional credit sources. The more institutional credit the lower the interest rates from other sources. The villages of Lahan, Yang, Kratum, Nong Yod, and Or, are cases in point. Farmers in Or were totally dependent on very expensive lenders and traders. Since the time when the leader of the Farmers' Group failed to pass farmers' repayments to the Cooperative, the Cooperative has refused to supply fertilizer on credit.

The hypothesis posed in the Analytical Framework states that where non-institutional credit from relatives and friends is plentiful, interest rates are lower. This has to be rejected. In fact, the presence of cheap institutional credit acted as "price leader" in the credit market.

When there is no interest demanded it is judicious to ponder whether there is some other quid pro quo, such as an indefinite return of 'exchange labor' or some gift of rice. But older, non-residential parents are likely to be amongst the zero-interest creditors. All cases of creditor-friends were operating at over 20% interest, but the majority at less than 40%. Money-lenders and traders were more explicitly in the free market. A minority were charging less than 50%, and most between 50% and 75%; but in Or some were charging between 100% and 150%. In nearly all cases moneylenders and traders did not ask for collateral.

Selling Crops "Green" It can be concluded that the hypothesis that interest rates are lower when collateral is requested was proved in general. Another means of raising credit, though for immediate cash needs rather than for purchasing inputs, is selling crops green. In this study when respondents were asked 'Do you sell any crop when it is still standing in the field?', they were quick to ask

whether this meant when the crop was very young and truly green or when it was mature. Because the study was seeking to find out about the intensity of credit needs the case of truly green crops was stipulated. Only in Nong Pan were there any instances; and only three.

Many respondents mentioned many cases of selling the crop just before harvest. These involved cash crops, notably the perishable watermelon and vegetables, and pre-harvest selling was associated with the practice of the trader organizing and paying for the harvesting.

Women-headed households

There was no observable difference between men- and women-headed households' sources of credit. In most cases of the latter the women heads were widows well over the average age of respondents and with grown children to arrange credit. Since most of the young widows were sharing farm resources with other households their credit problems would be shared with those households.

EXTENSION SERVICES AND MEMBERSHIP OF ORGANIZATIONS

Summary

Farmers' experience of extension services was unsatisfactory in most villages, and in some very poor indeed. The presence of a resident extension officer in one village meant that visits to farmers included a general discussion of farming issues instead of dissemination of advice on a particular crop, and no discrimination in extension service delivery against women. In general, visits by extension officers to farmers tended to be determined by above average farm size and by some householder's membership of the Village Committee. Both male and female respondents were overwhelmingly in favor of having women agricultural extension officers. Far fewer women than men were members of Farmers' Groups, and amongst these women there was a strong tendency for them to have very large farms.

Existing Extension Services

Farmers' experience of extension services is unsatisfactory to say the least, and in Lahan, Kratum, and Or very poor indeed. Table 13 gives replies to the questions 'If an agricultural demonstration has been held in your village, did you attend it?' and 'Has an agricultural extension officer ever visited your house?'. The replies to the first question also revealed that

Attendance some were not aware that such a demonstration had been held.

At Demon- Men's attendance at demonstrations appears comparatively good in the strations Nakhorn Phanom villages and in Nong Pan and Yang. But elsewhere few men seem to have witnessed an agricultural demonstration. The picture is far worse for women, except in Na Wang (where a higher proportion of women than men attended one), in Nong Pan (where half the women claimed to have attended one), and in Song (where equal proportions of men and women respondents have seen a demonstration).

Amongst reasons given for not attending, the most common, especially for women, was lack of time. 'Not interested' or 'relied on someone else to go' came next, with men and women proportionately about equal on both reasons.

When respondents who had attended demonstrations were asked whether they had influenced their cropping methods, the positive responses came mostly from the Roi Et villages.

It is noticeable that in the Chaiyaphum and Sri Sa Ket villages extension services are very poor. In one village farmers reported that the tambon extension officer visits the village once every two months. More often they see him pass on his motorcycle on his way to the more 'accelerated' villages. When he does stop his meetings are for 'leading farmers' (larger-scale farmers and members of Village Committees - see later) of which about 10 participate.

Home Visits Interestingly, in Nong Pan, Yang, and Na Wang (where extension activity of Exten- has generally been greatest) visits by extension officers to individual houses sion were even more frequent than farmers' attendance at demonstrations. Nong Pan Officers farmers report that the extension officer visits the village twice a month, while Na Wang farmers are privileged to have a resident extension officer. Taking the 12 villages as a whole, home visits by extension officers were dis- proportionately to households with large farm sizes. For instance, in Don Farm Size Daeng, two of the four visited had above (village) average farm size, in Na Influence Khoi all of the four, in Na Khoi Noi three of the six, and in Song one was of average size and the rest very much larger. In Yang eleven of the seventeen were above average farm size, in Kratum three of the four. But in Nong Pan only seven of the twenty-four had above average farm size.

But more significant than the relation between home visits by extension officers and farm size was that between home visits and Village Committee Committee membership of household heads (with the exception of Na Wang). Indeed in Na Membership Khoi, Na Khoi Noi, and Song it would be easy to conclude that home visiting Influence was established exclusively for the benefit of Village Committee members.

It is fairly clear from answers that the purpose of these home visits is principally to give advice on a particular crop. The exception was Na Wang, where the purposes of visits by the resident extension worker were most frequently 'general information' and 'other purposes'. Also in Na Wang, as can be seen from Table 14, men and women in the home were equally spoken to, an event not seen in any other village. Na Wang is an interesting control village if for no other reason than its extension services are already at a level which those in the other villages can reach only after some considerable effort.

Women extension officers

Table 15 gives responses to the question 'Do you think women would be more interested in agricultural extension if there were women agricultural extension officers?' and 'If "Yes", would you like there to be tambon women agricultural extension officers?' Not all replies add up to the sample size as a few respondents opted out of the questions. Also, some who replied 'no' to the first question went on to register a vote in the second. What became apparent during interviews was that the issue of using women extension officers to make women farmers more interested in agriculture was overwhelmed by the issue of general disenchantment with men officers and the very widely held view that women would be better at the job. Reasons given were that the men officers did not care enough to visit the village often, and that women are more hardworking and conscientious and make sympathetic listeners. One could surmise that, with the disproportionate attention extension officers paid farmers with large farms and farmers embodying formal authority, other farmers saw a better chance of approaching women officers. With hindsight a

more appropriate question would have been 'Which would you prefer, men or women agricultural extension officers?' The data on Table 15 speak for themselves. Suffice it to say that there is an overwhelming vote, by both sexes, to see women agricultural extension officers.

Women's membership of village institutions

Membership of Farmers' Groups is of some importance in obtaining cheap fertilizer. Table 16 shows how relatively few farmers belong to these Groups, except in Kwang Jone, Yang, and (especially) in Nong Yod. Far fewer women are members. Although households with above (village) average farm size are disproportionately represented in Farmers' Groups, especially in the villages of Farm Size Sri Sa Ket, a significant minority had farms below the average size. The five And women members in Sri Sa Ket all had farms of size well above the average for Membership their villages. Only one woman respondent was found to be a member of a Of Organi- Village Committee - in Na Khoi - and she had a farm of 200 rai. There was a zations great deal of overlapping membership of Farmers' Groups and Village Committees, but even more overlapping between respondents who had been visited by extension officers in their homes and who were members of Farmers' Groups.

HOUSEHOLD FINANCIAL MANAGEMENT.

Summary

Although more men than women were involved in negotiating credit and selling rice, the weakness of this kind of information for determining persons responsible for household financial management was made plain when it was shown that it is women who mainly control income. Many respondents stated that they took decisions jointly and controlled income jointly. But in the village which produced a large surplus of rice, men appeared to be emerging as controllers of all sources of income. In contrast where secondary cash cropping is significant, and earmarking of income for particular purposes most prominent, women were seen to be most confirmed as the custodians of income.

This section describes decision-making within the household, who controls cash income (and not merely the consumption budget), whether cash income is earmarked for specific purposes, and any signs of cash flow management.

Negotiation of credit

In all but two villages men are far more important than women in negotiating credit at its source. The BAAC sometimes requires land collateral, and land (at the present time) is predominantly owned by women. There were many reports, in detailed answers, of 'both men and women' having to present themselves to obtain BAAC credit, but there were also cases of men and women going alone to negotiate this credit. The fact that the holder of the farm land ought to be present means that in theory at least women have a veto on this source of credit. Fertilizer on credit from Cooperatives, via the Farmers' Groups was, in nearly all cases, negotiated by men.

Only in Na Wang, Song, and the Sri Sa Ket villages did women share in negotiating credit from relatives. This could be because men are away on seasonal wage employment at the time this credit is needed. Yet it is more likely that these relatives are the wife's kin, who will in any case be aware of her views. What was unexpected was the relatively greater involvement of

women than men in negotiating credit from moneylenders and traders than from relatives and friends. Apart from Farmers' Group credit and credit from relatives, a picture emerges of men negotiating credit in the town (which involves a journey) and of women negotiating credit in the villages.

However, the weakness of the question 'Who negotiates credit?' as an indicator of financial authority in the household was revealed later by answers to 'Who controls cash income?'

Selling of crops

Specialization of selling particular crops, by sex of seller, is not apparent from the data in Table 17, although men do most of the selling. But women are relatively more involved in selling cash crops than rice, especially in Na Wang and the Sri Sa Ket villages. When cash crops are dry season crops the absence of men might partly explain this. But the main reason is the selling of watermelons and vegetables to traders who visit each farm and the province of women in the cultivation of these foods. The sale of livestock by men and women depends very much on the village. A significant number of respondents claimed that they sold crops jointly with their spouses.

Control over income

What is far more important for economic standing in the household is who controls income and therefore, presumably, expenditure. The question was asked 'Does the cash income remain under the control of the person who sells the product?' It had to be assumed that if there were leakages before passing income to another member they were negligible, since it was impossible to obtain data on this. To find out which sex controls income it was necessary to

compare the data on 'Who sells?' and 'Whether this person retains the cash income'. (See Table 18). Since it has been widely assumed by writers on the Northeast that women control household income, it was taken for granted that when a woman sells the product she retains the income, but that whenever a seller surrenders the income, the seller is a man. Answers to the second question in Table 18, 'If the seller does not retain the cash income, who keeps it?' confirms that this is widely true.

From the data it is clear that in Don Daeng men hand over income from sales to women in all cases except for some cash crops. In Lahan, men sometimes retain income from cash crops. In Kwang Jone a minority of men who sell rice and cash crops retain the income. In Song, Kratum, and Nong Yod, a minority of men sell rice and retain the income. Data for Or indicate that all cash income from men's sales of non-glutinous rice and livestock are passed to women.

Nong Pan looks like an unusual village in that husbands are emerging as the household controllers. This village has some very large farms and their agricultural surpluses are, comparatively, very large.

Control Over Wages In those villages where many households report wage employment, wages are very largely placed at the disposal of women. But in Nong Pan more households reported men controlling wages than women, and in Na Khoi and Na Khoi Noi, a large minority of men are controlling wages. There is significant "joint control" (a term offered by respondents to mean there is no separate control) of wages in Yang and these are disproportionately found amongst households with large holdings. In Lahan, Kwang Jone, Na Wang, and Nong Pan, there is some evidence of the same things occurring. It suggests that where farm size is large enough to produce a financial surplus from agriculture and if men show a

greater tendency to control this cash income than on smaller farms, this practice extends to wage income as well.

A serious weakness of these data is that they do not reveal informal means of joint control. It cannot be assumed that the woman (or man) who holds money has exclusive control. Nevertheless, what is at stake in making this general inquiry is whether a woman has a command over the household's cash income which is commensurate with her responsibilities for delivering basic needs of maintenance to her family and her other roles and responsibilities. In the Northeast there is some evidence that women's control of cash earnings is moderating on large holdings when a surplus is more likely, such that men are emerging as household comptrollers.

Earmarking of income

The replies to the question 'Do you put aside part or all of income from different crops for specific purposes?' were interesting. In the more self-provisioning villages of Nakhorn Phanom there was less earmarking of farm income. In Song where only 15% of households did any earmarking the explanation may lie in the fact that the credit for tobacco growing is offered by Adams Company, and the cost of the credit is later recuperated in the price the company pays for the crop. In Or the large wages component and very high interest rates paid could explain the 54% of households who do some earmarking of income. In the Sri Sa Ket villages and in Na Wang, where cash cropping is important, very high proportions of households earmark cash income.

The more intensive farming villages, then, do much more earmarking of income. The reason of credit repayment is prominent, but this is accompanied by almost as frequent setting aside of cash income for food. To a much lesser

extent education receives an allocation. What is of further interest is that where there is an emphasis on allocating cash income, women are more strongly confirmed as the custodians of income.

WELFARE AND FAMILY PLANNING

Summary

A shortage of rice was felt most just before the harvest, and other items in the diet showed variation by location according to available sylvan produce and proximity to food markets. Women (and children) are the main water collectors, and this becomes very arduous towards the end of the dry season. Frequency of cooking and breastfeeding were affected by women's rice planting and harvesting, and a close covariation with miscarriages was observed at these times. Most respondents wanted child care facilities, but only at certain times of the year. Birth control is widely accepted and the pill is the most common means. Women stated that improvements in birth control services should include elimination of side effects and a more friendly and respectful medical service. There was a clear association between small ideal family size and (village average) small farm size.

In this section the satisfaction of basic needs (food, water and fuel), as well as the roles of different household members in that satisfaction, are discussed. Then issues of women's and children's health, and family planning, are dealt with.

Nutrition

Sales of rice and purchases of paddy and rice can be made for reasons of variety preference for eating (exchanging non-glutinous rice for glutinous rice) or to benefit from the value added income from buying paddy to process and sell later as rice. Nor are net deficits in production of this food staple a reliable indicator of poverty and poor nutrition since wages are, in some villages, a large component of total income due to little or no dry season agriculture. But in all villages anxiety about a shortage of rice was felt most just before harvests, indicating that a lean period is feared.

However, the villages experience greatly differing seasonal variations in other items of the diet. For instance, Na Khoi and Na Khoi Noi enjoy year-

round supplies of fish and bamboo shoots, and the influence of daily food markets in the 'urban' village of Lahan is shown by only 4 households reporting seasonal variation in diet. For the other villages diet clearly depends on month of the year.

Domestic water and fuel

Domestic water availability is another determinant of welfare. The intensity and the nature of the problem of water collection are far from being uniform among the villages. Sources of water for drinking and for general domestic use are usually different. Both these factors have implications for establishing priorities in water resource improvements.

Women and children are reported more frequently than men as being responsible for water collection, except in (dry) Yang where men's and children's involvement is greater than women's. But children appear to be more important water collectors than women in most of the villages. For each village there was no observable difference in the answers when water for drinking and general use was separated. These results do not indicate the relative intensity of labor involvement of the task for those involved. But they do show that children can extensively be called on for help, and also that the sexual division of labor in water collection is not very rigid except in the Nakhorn Phanom villages. The most difficult time for water collection is towards the end of the dry season.

Fuel collection is generally the province of men (except in Kwang Jone and Kratum) but there was as much village variation in the respective roles of men, women, and children as in the case of water collection.

Seasonal Work Stresses of Women

The ability of women to meet the welfare needs of the family is also affected by seasonal peaks in their farm work which come with rice planting in June and July and harvesting in November and December. Cash crops can also bring seasonal work burdens. Cassava, which is widely grown in Don Daeng and Lahan, is usually planted from February to April, but can be harvested at any time. Kenaf, which is grown by many households in Lahan, Kwang Jone, and Na Wang, is planted around March, weeded in April and May, and harvested just before rice. Women are as involved as men in these tasks and in all cases mornings and afternoons are worked with equal frequency -- a sign of work pressure.

Maternal and infant health

Effects on Breast-feeding

Table 19 gives replies to the questions 'When you were breastfeeding during the busiest months, how did you manage breastfeeding (reduce or maintain it)?' 'Have you ever had to terminate breastfeeding before the suitable time?' and "In the busiest months of the year, do you cook less frequently?' The most marked incidences of reported reduced or prematurely terminated breastfeeding are in Don Daeng, Lahan, Kwang Jone, Na Wang, Nong Pan, Kratum, and Or. Seasonality in frequency of cooking has similarities to seasonality in reduced breastfeeding.

The health of the very young was reported to be affected by three other things: the dirty water in the dry season, the arrival of fruits which cause stomach complaints in April and May, and changeable weather in the winter months of November and December.

Data on miscarriages, infants' sickness, and deaths of the under-fives, by month of the year, are presented in Table 20. The figures were obtained on the basis of recall from female respondents and wives of male respondents appertaining to the whole of their married life. Therefore the table can only be used to show monthly variation. It cannot be used to assess annual incidence of these rates.

It is impossible to know how many of the reported miscarriages were induced abortions. But spontaneous and induced abortions may be subject to the same seasonal factors. The frequencies of miscarriages in Don Daeng and Song are exceptional. These two villages also share a seasonal peak of miscarriages in the dry months of February and March. In Don Daeng men's involvement in water collection is the least of all the villages. Also cassava is planted in February and March and tobacco cultivated between January and April. In Song tobacco is cultivated between January and April. Both villages have relatively few resident children 18 years and over to assist in work requirements. But miscarriages are also more frequent during wet season rice planting in these two villages than in the others. The data for all villages show no evidence that food shortages in the 'lean months' before the rice harvest affect the miscarriage rate, but a peak in women's energy expenditure (during the harvest) does come at the end of the lean months. The lesser peak in June and July reflects women's work in planting rice. Carrying water or pushing trolleys laden with water cans in the dry season is clearly a contributory factor in some villages.

Women's harvesting work, reduced or terminated breastfeeding, less frequent cooking, and change of weather are enough to explain the November and December peaks in child deaths and infant sickness. The peak in child deaths

in most villages in June and July must be put down to the second peak agricultural work period of planting. But in Don Daeng the seasonal peak in mortality of the under-fives is in April, one month after the incidence of infants' sickness rises sharply. In Don Daeng, Kwang Jone, and Yang sickness breaks out as early as March. It is revealing that these villages are probably the driest of all in the dry season, and so water collection is most difficult. The arrival of fruits with the rains was reported by women to be the cause of the rise in infant sickness in April and May in all villages.

There are implications of these data for selective medical services and extension advice. But not much can be achieved unless women are relieved of seasonal work stress. Respondents were asked whether they desired village child care facilities, and whether these should be provided year-round or only in certain months. A clear majority wanted to see these facilities established, but only for the months of most activity in rice cultivation. In Na Wang, Kratum, and Nong Yod, however, villagers expressed a desire for year-round child care facilities. These villages have more intensive year-round cultivation of crops.

The issue of child care facilities is a good example of the advantages of a farming systems approach to development over the usual integrated development program which often designs a social component and home economics extension divorced from the felt priorities of the clientele. This study shows that the paramount purpose of a child care center should be to care for the very young while their mothers are unavoidably working. Home economics and nutrition advice would not be the main purpose of child care.

Family Planning

Birth control practice in Thailand has to be seen in the light of an active promotion program. However, villagers were very clear that many children meant lack of land inheritance and migration. If there is a single factor that relates to the differences in villages' acceptance of birth control (as shown in Table 21) it is distance from an all-weather road, which for villages without a health center means accessibility to one elsewhere. Actual rates of birth control usage amongst fertile women must be higher than those in the table because many respondents were either widows or beyond the child-bearing age. For instance, the sample in Na Khoi included 7 women household heads or women over 42 years of age, in Na Khoi Noi 11, in Nong Pan 19, in Yang 8, and in Kratum 11.

As expected the pill is the most common means of birth control. The Birth injection was important in almost half the villages. On the other hand, 33% Control of all households in Nong Pan and 19% in Yang had adopted sterilization. In Methods both these villages little else was used. The diaphragm and the condom were Used not reported to be used anywhere. There is nothing in the responses to 'reported first source of information' or 'who was approached to acquire detailed information about birth control', which could explain high village incidences of sterilization. Where they were greatest the great majority of households had talked with the medical extension officer. However, many respondents in the well-organized village of Na Wang had talked with the medical extension officer too, and there the pill was overwhelmingly the favored method. Indeed, unless it is known which contraceptives were promoted in each village, patterns of choice cannot be explained; nor can the adoption rates be

related to socio-economic influences without knowing the intensity of local family planning services.

First Preference Respondents were asked how they would order their preferences of different contraceptives on the basis of what they had heard about them. Table 22 is arranged to show how frequently 5 different methods were voted as first, second, third, and fourth choices. Not all respondents were able to complete the list of preferences.

Over all 12 villages, of those who replied, 132 chose the pill, 106 sterilization, 60 the injection, and 50 the IUD as their first preference. When first and second preferences were combined the injection moved up to second choice behind the popular pill, and the IUD fell further behind sterilization to fourth place. But in three villages, sterilization was seen as the most preferred of all, and in one the injection tied with the pill for second place. The IUD was the most preferred in two villages.

Sterilization is not, of course, to be regarded as a birth regulator or birth spacer, and therefore not a close substitute for other birth control methods. But the popularity of sterilization is an indication of people's seriousness in terminating fertility. Also, it can be seen as a measure of the expressed dissatisfaction with the side effects of contraceptive drugs. At the present time it is mainly women who are being sterilized.

When women respondents and wives of male respondents were asked if they had ever stopped using contraceptives, and if so, why (multiple answers being allowed), apart from age and desiring more children, the main reasons were backache, nausea, and bleeding. Later in interviews when respondents were asked how birth control services could be improved, one of the most frequent replies concerned preventing nausea, dizziness, getting fat, and freckles on

the face. The unpopularity of the IUD is no surprise and matches experience in most other countries.

What is remarkable is how many people (both men and women) were able to give full answers to the question on preferences. There can be few poor rural areas in the world where such a complete response could be given.

Table 23 shows that only in Na Khoi Noi (a village in which the enumerators observed a sense of isolation) was the radio an important source of first information on birth control. In two other villages it was approximately as important as relatives and friends combined. Medical stations were, overall, the most significant first source of information, especially where medical extension officers were most active as in Nong Pan and Na Wang. There is some evidence of a movement to progressive expertise: from friends and relatives to the medical stations; or, starting with the medical station, to the medical extension officer. There can be no doubt that the villagers themselves are aware of the importance of a medical station. Replies to the question 'How would you like to see birth control services improved?' were focused most frequently on the theme of the inconvenience of travel, and that health officers should visit villages more often. A few hopefully suggested a constant supply of free pills. But however enthusiastically women in the Northeast have accepted birth control, they want it delivered on what the women called "friendly and respectful" terms. The second most common suggestion for improvement was that health officers should be more friendly, have a better relationship with people, and give more information on methods. Indeed, the widespread personal unpopularity of medical officers of all kinds caused the student enumerators to be taken aback.

Table 24 gives people's ideas on the suitable number of children and on the possible effect of migration of youth on family size. Moving across the Ideal table, from Don Daeng to Song, the modal suitable number of children was 4 Family (except in Na Wang where there appears to be some uncertainty). But with a Size and sharp falling off of frequencies after 4 children, the mean is much closer to Influence 3 1/2. There is a clear association with farm size and with the lack of of Migra- further land available for any cultivation. Only in Nong Pan and Na Wang did tion the majority of respondents reply in the negative to the question, 'Do you think that migration of youth affects ideas on small or large family size?' But detailed answers to the question showed that it was understood in two ways: the effect on rural family size and on the people who had migrated to the cities. The most frequent answer was that it leads to smaller (farm) family size because it has made people aware that they cannot give land to all their children (or all daughters). But for those who thought of the effect on the migrant's family size there was a clear recognition that there was nobody at home to look after the children when both parents had to earn money: the conflict between urban employment and child care led to small family size.

MIGRATION AND INHERITANCE

Summary

The majority of children who remit money have no say in how the money is spent. This was most pronounced in villages where earmarking of all income is greatest. Parents expressed a preference for migrant daughters rather than sons to return to farm the land, but there was some evidence that female descent of land is no longer strongly favored in all villages.

Migration of children to towns and cities has three effects: it reduces (and can almost stop) the subdivision of farms¹, it leads to remittances to parents which supports the viability of the farm, and it reduces the adult labor force on the farm. A growing proportion of migrants are young women who would normally stand to inherit land.

What is most significant is that it is in villages with smaller farm sizes that daughters remitting money outnumber sons (except in Kwang Jone where the ratio was 19:20). The message is fairly clear: when land scarcity becomes serious daughters migrate as well as sons. Since sons tend to leave for reasons other than land shortage it can also be surmised that daughters from these land-scarce villages are more faithful in remitting money. Traditionally sons have migrated to visit other parts of the country and to fend for themselves before returning home to marry and settle down. Migration is more recent for daughters and female descent of land, up until now at any rate, must give daughters greater attachment to the family land. But do children who make remittances retain a standing in the family and do parents expect daughters to continue to inherit the land?

The replies to the question 'If your children send you money do they have a voice in how the money is spent?' showed a majority of negative answers in all villages except Nong Pan, Na Khoi, and Na Khoi Noi. This majority was greatest amongst the villages where average farm size was smallest. It was

also just in these villages that earmarking by householders of all cash income was seen to be most needed. The question was then asked 'Were you to have sons or daughters working in towns would you want them to return one day to farm your land?' It is difficult to explain why it was just in these villages with small farm size (plus Na Khoi and Na Khoi Noi) that almost all respondents claimed they expected their daughters to farm the land later. It may be a case of wishful thinking. In general far fewer households wanted their sons to return than their daughters.

Changes
in Land
Inheri-
tance
Patterns

Although parents expressed a preference for migrant daughters to return, the evidence of dramatic changes in traditional inheritance practices suggests parents are having to face a new reality. Respondents were asked 'Which of your children do you wish to inherit the land?' There was some ambiguity in the question for 'wishing' could be interpreted as 'expecting' or 'believing'. Nevertheless there is no reason to believe, from the replies, that female descent of land is still strongly favored in all villages. Bilateral inheritance seems to have arrived. Only in Don Daeng, Kwang Jone, Nong Pan, Kratum, and Nong Yod was daughters' inheritance clearly preferred, and by a wide margin in the vegetable-growing villages of Kratum and Nong Yod.

The degree of daughter preference in land inheritance shows covariation with the intensity of cash cropping in Nakhorn Phanom and Sri Sa Ket. In view of the deleterious effect of cash cropping on women's position in other countries this is unusual. The explanation must be that cash cropping in the Northeast is principally in the dry season and undertaken on small plots. Seasonal and casual migratory employment in the dry season is mostly taken by men. The relation with cash cropping breaks down in the Chaiyaphum and Roi Et villages. A more likely explanation is the low frequency of households in

some of the villages reporting residence of daughters over the age of 18 years. (See Table 2). The absence of adult daughters relative to adult sons could well be a cause (but perhaps also an effect) of changed inheritance norms. But in 'urban' Lahan, for instance, it was stated most bluntly that land is now given to all children, not only to daughters.

The few landless households in the total sample distinctly favor daughter inheritance of any assets. Only in Don Daeng did one of the three landless households state that the son would inherit the house.

If there is a move towards bilateral inheritance this may lead to farms becoming smaller more rapidly. Two opposing explanations of the decline in female descent of land (and matrilocality) were heard during this investigation. The first, 'daughter scarcity', rests on smaller family size and migration of daughters. It may be that there is no daughter living in the village at the time when the parents wish to retire from active farming, and with the stipulation that the child which cares for parents in old age receives a greater inheritance, parents are obliged to settle the land on a son - or on a son and daughter. The intention of a migrant daughter to return some time after this critical date for parents is not good enough.

The second, the 'land scarcity' explanation, argues that sons are finding that their wives are not inheriting enough land and thus no longer are prepared to follow the tradition of waiving their own rights to land inheritance. Of course this is self-defeating in aggregate terms because the wife's brothers may decide not to waive their rights either. The result must be fragmentation of farms, and holdings distributed between two (and in later generations several) villages.

Whatever the true explanation a move to bilateral inheritance must have a negative effect on the status of women in general, and on young widows and deserted mothers in particular. Widows with grown sons should remain secure if the cultural norm of caring for both aged parents (who at present appear to be respected as joint controllers of a holding) is maintained. The pace of change in inheritance practices will be influenced by the relative earnings prospects of young men and women in the cities.

- 1/ Leedom Lefferts, 'Change and Population in a Northeast Thai Village', in Population and Development in Southeast Asia, J.F. Kantner and L. McCafferty, (eds.) Lexington, Mass. Heath and Co., 1975, p. 177).

PART III

IMPLICATIONS FOR THE NERAD PROJECT

SUMMARY AND CONCLUSION

The villages studied here were chosen as being representative of a range of agro-ecological conditions. The accommodations that households made in terms of labor deployment, sources of income, and cropping patterns reflected this. But there were also clear differences which could not be explained by environment alone. The use of institutional credit and the attention of extension workers of all kinds needed to be superimposed on environmental conditions to explain actual resource allocations.

But in general the information collected demonstrated both a high degree of rationality on the part of farming households in the way they allocated their resources and a readiness to adopt practices which might increase their income from farming even with risks attached.

The progress made by households in some villages where cheap credit was widely used and where extension services were more attentive suggest that gaps between actual and potential agricultural production vary widely. This raises the issue of the balance that should be struck between efforts to raise production to levels which are possible with present knowledge of agriculture but which require improving effective input delivery systems, on the one hand, and efforts to raise production to levels possible with new technical information, on the other. The goal of equity, both between villages and between households, argues for the former. This indicates other roles for extension workers, especially in the field of mobilizing villagers in the sense of helping them to see what is possible and what facilities are available with

organization and cooperation. A special effort to give households with small farms equal access to cheaper input delivery systems will be required if the widely acknowledged potential of these farms for high productivity is to be achieved. But further democratization of village economic organization will be difficult until the extension services set an example by reaching a broader spectrum of farmers with different size holdings and by satisfying farmers' desire for more friendly approaches.

Apart from the farm size equity issue there are other categories of households which may need particular attention. Young nuclear households with small children have more limited household labor resources, and they can be expected to have lower per capita income. Although most women-headed households will be those where an elderly widow presides over a multigeneration establishment with a large labor force and good income flows, the minority of young widows or deserted mothers on their own must be experiencing some difficulties. Female descent of land and matrilocality provides a measure of support to them, but they still have to find their way around male-dominated village institutions and face an agricultural extension service which very largely addresses men only. Their limited financial room for maneuver and the constraints on their access to enabling facilities are serious obstacles to adoption of new practices.

Seasonal work stresses are already severe and it would be unwise to encourage farming changes which aggravate them unless countervailing measures are introduced. They affect women in particular, and, through them, the very young. Single sector interventions in domestic water collection and child care facilities are two possible ameliorating measures. The sexual division of labor in farming is by no means strict but the one or two men in the house-

hold cannot easily work more intensively at peak labor times to take the place of a woman who has pressing domestic duties or is heavily pregnant or breast-feeding a very young infant.

It needs to be stressed that some villages and households are further from the potential output of their resources than others because the institutional conditions within which they allocate those resources are inferior. Attempting to offer them higher productivity practices or crops would entail a misuse of resources until these conditions are improved.

PROJECT OBJECTIVES

Some re-phrasing of the stated objectives has been made to make them more relevant to the findings.

To assist farmers to adopt practices and crop-mixes suitable to local conditions and to overcome risk due to variable rainfall by developing a suitable package of technologies and resources.

Since extension and credit assistance is dealt with under the second objective here we look at other constraints and problems and farmers' perceptions of risk.

The data on inter-household sharing of resources did not reveal anything which suggests direct obstacles to adopting innovations. Cooperation is between close kin, mostly between parents and married children. Parents will still be legal holders of the land and often important sources of finance while the children are the active farmers. Sibling cooperation is beneficial to both households in that it increases the 'family land and labor force,' and therefore allows more flexibility in deployment of these resources. But project staff must be aware that more mobile young men who attend meetings will be reporting back to elderly parents-in-law and wives who are likely to be the landholders. Moreover there are secondary crops which women tend to be more involved with than men, and if their potential is to be realized it is important that women are reached directly with technical and marketing information. Women heads of household will mostly be elderly widows, presiding over multi-generation households. The few young widows or deserted mothers are likely to be pooling resources with a related household, and therefore can call on the services of a male relative for purposes of representation. The close life-long relationship between sisters would inhibit any tendency by men to exploit

young widowed sisters-in-law while the resource pooling arrangements mean that it is in the interests of all that total resources are utilized in the most profitable way. Therefore the problem of reaching women-headed farms with agricultural services should not be a serious issue. But a young widow or deserted mother who is not pooling resources would face considerable difficulties and deserves special attention.

There is no evidence to indicate that kin relations might be jealously guarded against institutional encroachment as was hypothesized in the Analytical Framework. On the contrary it was found that where institutional credit was virtually absent, loans from 'relatives and friends' could carry high interest rates, so that a greater presence of formal credit institutions would be welcomed. Moreover, complaints against extension officers centered on their inaccessibility and the inappropriateness of their information rather than their interference. Resource pooling arrangements between households, especially when one suffers some handicap, are a means of reducing risk. In so far as these arrangements are between close kin, this aspect of kin relations can be seen as encouragement to innovation.

In all the villages studied rice cultivation stretches both male and female household labor in certain months. The easy substitution of male and female labor indicates that the sexual division of labor does not present a constraint on the effective utilization of household labor. The fact that both men and women respondents overwhelmingly stated that men had assumed most of the greater farm work of recent years, caused by migration of children and new secondary crop cultivation, is evidence of the adaptability of the sexual division of labor in the face of constraints on women's time.

In spite of this flexible division of labor it is apparent that a severe constraint of female labor availability exists at several times of the year because of their additional domestic work. One source of evidence is the firm statement by both men and women that concentrating first on rice self-sufficiency is not a goal of young families because rice cultivation imposes a special problem for young mothers. More evidence is provided by the monthly data on miscarriages and infant mortality. Reduction or termination of breastfeeding occurs at peak labor demand periods. Most respondents wanted to see village child care facilities at certain times of the year at least.

At other times of the year women share in upland cash crop cultivation, in year-round intensive vegetable and watermelon growing; and, where water resources do not permit this, they are active in weaving and/or silkworm-raising. A project social background paper implied that women's labor was underutilized and recommended more productive activities. But, it remains an open question how underutilized women's labor is in the dry season. When agricultural labor demand is slack women use the time to catch up on textiles and clothes making for family use and (often) to cope with difficult water collection. If a village lacks water for dry season secondary agriculture it is likely to have special domestic water problems as well. That these activities are not "gainful" does not mean they can be surrendered for income-gaining activities.

The underutilization of male labor in the dry season is likely to be greater. Many more men than women undertook migratory wage employment, but the data indicated that most men remain at home. Apart from sharing with women the work on tobacco and vegetable plots, it is not clear what else they do at this time of year. Moreover, male respondents were clear that they

would rather stay at home if they could find something to do in the village or on their farms during the dry season.

Given all this plus the flexible division of farm labor it might be wise not to view promoting secondary agriculture in the dry season in terms of "women's" vegetable-growing or livestock care, but as an activity which provides enough work to retain men in the village. In designing suitable technological packages, what needs to be borne in mind is not so much avoiding additional annual burdens resulting from sex-typed agricultural tasks but avoiding sharp seasonal demand peaks which place additional burdens on women since they are already under seasonal stress.

Villagers' readiness to give up wage employment, if necessary, for adoption of new farming practices may be a reflection of their desire to stay together at home and the preference of men for farming over migratory employment. But there were many respondents who believed that wage employment was more risky than farming. Whether this is actually true or refers to the effort required to find employment is difficult to assess. If it is true, further investigation is necessary to find out if wage employment is taken because it is a cheaper way of raising working capital for farming than resorting to the credit market, or because water resources simply do not permit sufficient agriculture to justify the men's presence during several months. The results of such an investigation are likely to vary with locality. But finding out whether wage employment occurs as a result of technical impossibilities of farming or because of inadequate credit services is part of a farming systems approach. It is a necessary input to a proper evaluation of the likely efficacies of the option of pushing ahead with technical extension work without improvements in credit supplies, and the option of first putting

resources in cooperative and BAAC credit networks as a pre-condition of fielding improved extension services. Respondents stated that cash crop production provided more security than rice production, no doubt because rainfall is not relied upon so heavily. But there may be other reasons which could be investigated before deciding which crop-mixes to promote.

The main expressed obstacle to adoption of new crops or better cultivation methods lay in uncertainty about prices and markets, factors beyond the control of farmers. Farmers are ready to move into further commercialization of agricultural production if they see this as improving the base to their total income. They are not psychologically tied to maintaining subsistence (or more accurately, self-provisioning) production. The original NEKAD project plan excluded marketing assistance and evaluation. Instead resources were to be concentrated on the two-way extension work of a farming systems approach. In view of farmers' anxiety about markets and prices this decision may be a false economy. At some stage the delivery of technical information and higher productivity methods have to be traded off against calculated marketability and profitability, if farmers' confidence is to be retained. The cost of market evaluation can be minimized if crops which farmers are most anxious about are looked into only. Rice need not be one of them.

Women play an active role in the financial management of the household. All incomes are still mainly placed in their traditional custody which, although not to be interpreted as exclusive control, provides for a rational relationship between income and the satisfaction of basic consumption needs. The returns to effort are felt by individual household members through this satisfaction. But as the principal current holders of land women also have every incentive to see any surplus invested in improving farming and to wel-

come external assistance. There was nothing in the findings to suggest they were more 'conservative' than men. Their slight apprehension about extra farm work is well founded, given seasonal stresses, but it has nothing to do with aversion to risk-taking. Therefore the comparatively high status of North-eastern women cannot be regarded as a constraint on change. In fact, since the flexible division of labor, the corporate producing and spending nature of the household, and the pooling of resources between households very likely have something to do with female descent of land and matrilineal marriage, the high status of women can be seen as a positive factor in successful adoption of improved cropping patterns and methods. If this is so, then an effort to reach women directly through more home visits by extension officers is worth experimenting with. The nature of a farming systems approach allows the experiment to be confined to selected target households or to certain villages. In this way the benefit-cost ratio can be tested without a large outlay of resources.

To provide adequate credit and extension services to farmers.

It is not possible to measure the problem of the credit constraint but this study points to it being far more serious than any labor constraint in terms of understanding the gap between actual and potential production as discussed in the project background paper. One could go further: for most of these villages, unless there is a real overhaul of the operation of institutional credit sources, raising the level of potential production through technological packages need not be attempted.

There are both village and household category variations in the use of the cheaper institutional credit. Some villages may be entirely (as in the case of Or) or almost by-passed by these credit facilities. When villages

with poor physical endowments use little institutional credit but a great deal of free market credit the question must arise whether official institutions have favored the better endowed villages in the past. But cooperative credit via the various Farmers' Groups and BAAC credit on collateral based on fellow farmers' co-signatures implies a degree of village social cohesion and organization, and it is possible that there is some historical relation between poor environment (high risk) and lack of cohesion and organization. The implication of low village-level utilization of institutional credit for the project is that it is a proper function of a farming systems approach to investigate the reasons and to direct extension (or other) services to lay down favorable conditions for the adoption of new farming methods by resolving the problem. Moreover, there is not always a relationship between obtaining institutional credit for rice and for cash crops. This may be due to varying relative profitabilities of applying fertilizer to rice and cash crops by locality endowments. But it may also be due to organizational or institutional criteria for granting credit. Investigation of this is also a proper function of a farming systems approach. Low utilization of institutional credit is one indicator that should be used for identifying villages or household groups to receive initial interventions.

To a great extent the use of Cooperative credit, distributed through Farmers' Groups, must depend on leading figures in the village and their motivation to mobilize as many farmers (including small farmers who may be in debt to them) as possible. There was evidence that membership of the different village organizations was influenced by large size of farm holding. But farmers approaching the BAAC are not generally subject to intra-village socio-political factors since they go individually or as members of a joint-liabili-

ty group to the BAAC offices in town. The disadvantage of BAAC credit is that farmers must fetch fertilizer from outside the village and in the past, at least, BAAC loans have been smaller and shorter-term than Cooperative credit. The BAAC is currently overhauling its credit policies and is also planning visits to villages. It has found that its clients' repayment record is three to four times as good as Cooperatives' clients' repayment record and is now planning to concentrate on small-scale individual farmers by channeling credit to joint-liability groups of farmers, possibly on a group revolving fund basis. It might be worthwhile investigating the relative advantages and disadvantages of allocating project personnel resources to promoting one or other of these sources of credit. At the very least adding information about BAAC facilities to the information offered by extension workers would be an improvement at no additional cost. Arranging a system of village 'drops' of fertilizer might be a further consideration.

The importance of improving supplies of institutional credit to promoting farming improvements in a risky environment, where household labor has to be deployed carefully, can be shown by a simple calculation. A small farming household with 10 rai of rice applies one bag of fertilizer (at the price of B.250) per rai. Total fertilizer cost is then B.2,500. Let us suppose that the difference between institutional and free market credit is 50%. The additional cost of the free market credit amounts to B.1,250. The household might earn this by sending an adult male to wage employment. If the daily wage rate (generously, net of maintenance costs away from home) is B.20, a man must work 62 days, or about 10 weeks. The cost of failing to extend institutional credit to this household is the equivalent of an adult male working member being absent for 10 weeks. If improved cropping patterns or methods are to be

introduced without supplying cheap credit, households might be faced with supplying either the required finance or the required additional labor or a bit of both. This illustrates the trade-off between investing efforts in traditional forms of extension work only and using extension services also to improve input supplies even at the cost of reducing demonstrations. If establishing good input supply networks can be done at the start, there should be no trade-off later.

There are two kinds of changes in extension services that are implied in a farming systems approach to an agricultural promotion project. The first is to prepare the extension services for offering new technical information in the course of its normal duties and to improve access of small farmers to the services. The second, which is discussed under the third objective, is to utilize the extension services for listening to the farmers and executing a feedback system to project staff on the results of on-farm trials.

At present extension services are weak and their impact highly variable between villages and households. This field investigation revealed a situation of infrequent, fleeting visits, and of selective attention to households with larger holdings or with members sitting on village committees. Improvement here lies in the more efficient and democratic deployment of extension resources, and in terms of the project, some affirmative action to reach small-scale farming households. Part of greater efficiency must be to reach women as well as men so that there can be fully informed discussion of possibilities within the household. How the limited extension resources are to be spread over villages in the NERAD area will be bound up with the selection of target villages and target groups of households (see later). But remarks made by respondents during interviews suggest that another serious problem is

the attitude and ignorance of extension officers. This is a common problem of extension services but becomes more significant when a farming systems approach is used in agricultural promotion.

There is no doubt that the farmers want to see women extension officers. But some young women might hesitate to travel through rural areas alone or residing in a village. For similar reasons the women students who did the enumeration for this study were paired. As things turned out, apart from initial apprehension, they could have done the work singly. The project might consider initially fielding women extension officers in pairs with a view to dispersing them individually later. Their training should be the same as their male counterpart so that they are not confused with home economics extension officers. Given the responses of the farmers to this question it is important to test the possible greater efficacy of women extension officers. Any extra cost of fielding women in pairs can be viewed as justifiable risk capital for there is an important issue of effectiveness of on-going extension services to be explored, particularly given the farming systems approach.

To establish a research and demonstration program responsive to farmers' needs thereby increasing both farmers' and extension officers' awareness of economic alternatives.

In this study it was seen that neighboring villages, with similar environmental endowments, could have very different levels of production and income. Thus a poor environment is only one determinant of cropping pattern and methods. The general ambiance of motivation and organization emerged as an important determinant of economic activity. Why this is so can be viewed as a reasonable concern of a farming systems approach. Rivalries between villages over tambon or provincial resources, differences in the quality of village

leadership, intra-village inequalities and politics, and smallness of a village can all be indicators, together with weak credit sources, of villages which need to be targeted with appropriate countervailing attention. If a sense of isolation or disaffection prevails, women, with much of their time bound up within the house, could feel it more intensely. Because of their strong economic authority and it is therefore especially important in these difficult villages that they are equally incorporated in efforts to make farmers more aware of new possibilities and of access to enabling resources.

Farmers are agriculturalists, managers, marketers, and financiers. The intention of a farming systems approach is to make project staff, collectively, the same. But the integrated expertise of the farmers can only be appreciated by listening to them, and by developing a genuine two-way exchange of information and ideas. This places a heavy burden on extension officers for they constitute the 'go-betweens'. It is imperative that they be enthused with a new method of extension activity.

On-farm trials and demonstrations will lead to discussions with farmers about technical possibilities. But a systems approach must include calculations on the profitability of new methods or crops, and these calculations inevitably concern different interest rates. Complaints by farmers of unprofitability using certain credit sources is a vital ingredient of feedback information to project staff. Any additional labor requirements need to be thoroughly examined too. When they would occur, especially in relation to women's seasonal stresses and the deployment of some household labor in migratory wage employment to raise working capital, they must be seen as part of profit and benefit calculations.

Such a farming systems approach presents extension officers with an intellectual challenge. The value of their jobs in their own eyes would be enhanced if this were made clear to them. Regular workshops should encourage them to describe what they have learned and to give voice to criticisms of their current roles.

A visit by project staff and some extension officers to the control village of Na Wang could be useful. The resident extension officer there is likely to be a source of useful ideas on methods of reaching and organizing farmers. His visits to houses (talking as much to women as to men) were not to give advice on a particular crop so much as to discuss general issues. What did the farmers want to discuss with him? Where did the discussions lead? Did he organize the farmers, or did he do or say something which led them to organize themselves?

But Na Wang's resident extension officer presents more than the opportunity of studying the best technique of meeting with farmers. There is a terrible dilemma between spreading extension resources thinly or concentrating them on a village, a target group, or a problem. Nobody studying yields and the physical appearance of Na Wang could doubt that the benefit-cost ratio to that village of having one whole extension officer was very high. But what of other villages who then have fewer extension resources? Do they lose much if they lose 1/10 of an extension worker shared with nine other villages? How soon could a resident extension officer be moved to another village? Is there a demonstration effect of a model village on neighboring villages? The project's field staff and the normal extension services have limited resources. Choices on deployment have to be made. But what is fairly certain is that if a village or handicapped group of households is to be targeted because it is

very poor or currently ill-organized and poorly motivated the best extension officers available should be utilized. Putting weak extension resources on the more intractable problems is a misallocation of resources, for the results will be poor.

To improve the year-round supply of supplemental water for vegetable-growing and domestic usage.

The use made of water resources in the dry season on small plots for intensive vegetable and watermelon growing by farmers, especially women, is indicative of the economic possibilities of small-scale water development. In the past the Northeast Region has been seen as a source of upland export cash crops, but road development and urbanization have created new internal markets. This small-scale intensive agriculture is probably less risky than rice production and therefore can serve as something of a gilt-edged investment to underwrite riskier investment in rice improvements. Farmers are experienced in developing a production portfolio which combines low risk, small profit crops with high risk but sometimes large profit crops. In this risky rainfed area encouraging such a portfolio is one obvious option where water resources permit. The implication for the project is that the total gain from small-scale supplemental water development is not only the direct income from the crops which use the water but also the underwriting of periodic losses on crops which do not use it. In so far as it is a risk-minimization of part of the agricultural income portfolio it can be seen as a favorable condition for adopting riskier improvements in main crops.

Problems of obtaining domestic water in the dry season are very serious in some villages. Apart from the strong circumstantial evidence of a link with a sharp increase in miscarriages and ill-health towards the end of the

dry season, it can reasonably be asked whether there would be more productive activity were women's strength and time not so overtaxed. To put it another way, are there some villages where efforts to expand secondary agriculture or home industry would produce little return until the domestic water supply in the dry season was improved? This constraint may well be unrelated to poor organization and motivation, and therefore an issue which requires singular intervention in selected villages to release more labor resources.

1/ Palmer, I. 1977. The New Rice in Indonesia, UNRISD, Geneva.

SELECTING TARGET HOUSEHOLDS AND VILLAGES, AND INITIAL INTERVENTIONS

It is unlikely that even the core activities of the project can be commenced at the outset in all villages. Hard choices must be made on villages to be first targeted and on project components to be introduced. The temptation to go for quick successes in villages in which there are already signs of advancement will be great, but the disadvantage of this is that it will not provide experience for assisting other villages with more intractable problems. A related issue is the choice of initial interventions which have powers of constituting favorable pre-conditions for the successful implementation of later interventions. Too often in development projects action is taken which simulates a state of further economic advancement before constraints have been overcome or access points to enabling inputs and services have been widened. Assessing the 'right combination of conditions' to expand households' capabilities of adopting innovations might be a better approach than considering specific interventions in isolation.

Four bases for selecting initial interventions are suggested here. The first is to make more uniform the presence of institutional credit, farm input supplies, and extension services, and so neutralize the irrational effects of inter- and intra-village political forces. The second is overcoming a particular constraint which is felt strongly in certain villages only - for example, the domestic water supply. The third is to target attention on whole villages which are characterized by a combination of isolation, past neglect, and current lack of organization and cooperation between households. In selecting villages according to these criteria there will be some overlapping such that some villages will meet two or all of the criteria. To this extent they may not represent virtually exclusive options.

The fourth basis is the targeting of particular groups within some villages. These may be small farms in villages periodically affected by drought. But other examples could include poorer households in a village with extremes of farm size and income levels where the distribution of cheap credit and extension attention must be most suspect; and young nuclear households with high dependency ratios and therefore a labor and wage earning constraint.

All four bases require different means of identification and different resources for intervention. For instance, the second may be more of a technical issue while the third requires sensitized personnel resources. Therefore the different kinds of intervention may not compete for the same resources, and thus not be totally opposing options. However, there are too many unknown and unquantifiable factors, as well as different periods of gestation before impact, to attempt any kind of cost-benefit analysis of different options. It is dubious whether a farming systems project should fix its resource deployment at the outset because its purpose is to generate fresh intelligence all the time, and new intelligence can alter the relative merits of possibilities. The planning problem with a farming systems approach is not calculating where a project should end - or what it should achieve - but where it should start and what its procedures should be. The choice of those starting targets must be influenced by the management's judgement (and hunches) concerning economic gains, the most effective demonstration and learning experiences, and welfare concerns - and all connections there between.

Within this framework the work of on-farm trials and demonstrations can be inserted. Indeed, it is important that they accompany or quickly follow all other interventions to demonstrate what the provision of enabling facilities can lead to.

SUGGESTIONS FOR MORE SPECIFIC OBJECTIVES

Based on the foregoing discussion of alternative interventions below is the author's own judgement on what the key specific objectives should be.

1. To design farming improvements such that seasonal labor peaks are not increased.
2. To include in the farming systems approach a careful monitoring of the (wage employment) opportunity cost of greater household farm labor requirements between rice planting and harvesting and in the dry season.
3. To improve access to the cheaper formal institutional credit, particularly for smaller, poorer farmers, by means which should include the democratization of Farmers' Groups, and for villages which have so far been comparatively neglected.
4. To give women more equal access with men to agricultural extension services, particularly by means of more home visits.
5. To field more women agricultural extension officers.
6. To concentrate the best agricultural extension services on villages deemed most difficult by virtue of their isolation, past neglect, or severe drought problems.
7. To give particular attention to supplemental water resources in villages which have acute problems of water collection for drinking and other domestic problems in the dry season.
8. To establish daycare facilities for children, at least during rice planting and harvesting periods.

ANNEX

DESCRIPTION OF THE VILLAGES

The data given here are drawn from a 15% sample survey of households in the NERAD area undertaken by AID/Bangkok in 1979-80.

(1) Baan Don Daeng (Tambon Na Thom, Amphur Banpaeng, Nakhorn Phanom)

This is the third 'richest' (by average household income) of the 9 villages in the tambon. It is situated 14 km. from an all-weather road and has 113 households. Family size is comparatively large, averaging 6.4 persons. A comparatively low percentage of households practice family planning. The village has a small river which together with large forest reserves allows for the raising and care of many buffaloes and head of cattle. In the dry season farmers face a shortage of water for agriculture in spite of the presence of two large ponds. Kenaf and cassava are grown by only a small percentage of households. Low soil fertility partly explains the large average area planted to wet season rice and the low average yield (156 kg. per planted rai). A low proportion of rice output is sold. Fish are caught year-round in the river and vegetables are raised for own-consumption. There is a plentiful supply of bamboo shoots for the gathering.

The village has increased its involvement in the market economy only in the last six years with the cultivation of kenaf and cassava. Nevertheless distribution of farm size is strongly skewed: this study's sample of 40 households showed that the average amount of land owned is 25 rai, but 9 households own 80 rai or more of arable land and 6 own less than 10 rai.

(2) Baan Na Khoi and Baan Na Khoi Noi (Tambon Na Ngua, Amphur Na Ngua, Nakhorn Phanom).

The village of Na Khoi was established about 50 years ago by families which moved from Na Khoi Noi, 2 km. away. Today Na Khoi has 124 households and Na Khoi Noi only 22. Na Khoi is on an all-weather road and has a medical station, a school, 6 small rice mills, and 6 small shops. There are 12 wells for domestic water in Na Khoi and 3 in Na Khoi Noi.

The two villages share the same physical endowments of a high plain with patches of low plain for wet rice cultivation, forest reserves, and a river for year-round fishing. Yet Na Khoi Noi has a much lower average household income. This can be partly explained by differences in size of farm enterprise. In Na Khoi average farm size is 37.6 rai (of which 27 rai is under rainfed rice) and average household size is 7.4 persons. In Na Khoi Noi average farm size is 32 rai (of which 16.6 rai is under rainfed rice) and average household size is 6.7 persons. In 1979-80, only 11% of households reported practicing family planning in Na Khoi Noi, but 25% in Na Khoi were doing so. While rice cultivation is the main activity in both villages, a minority of households in each grow tobacco and/or watermelon. Cassava is also grown in Na Khoi. Cotton and silk weaving for own-use is undertaken in both villages.

Probably as a result of larger household size Na Khoi has more households with one or more members engaged in off-farm employment as well as more households with children remitting money home. This accounted for income differences. But another differentiating characteristic, which could be both cause and effect of economic differences, is the sense of isolation in Na Khoi Noi. The student investigator found that the wider spacing of houses in Na Khoi Noi isolated households, particularly women members, from each other, and that

there was not the compact and close contact between villagers that prevailed in Na Khoi.

(3) Baan Lahan (no. 2) (Tambon Lahan, Amphur Chaturat, Chaiyaphum)

The village of Lahan (no. 2) lies adjacent to another, larger, village called Baan Lahan (no. 1), which has an all-weather road running through it with buses going to the provincial capital 31 km. away. Lahan (no. 2) has 340 households. With more than 1,000 households in the two villages together the locality resembles an urban area.

The village studied is the third poorest of 10 villages in the tambon. All items that are needed can be found in the many shops or in the morning market. A large swamp provides water for domestic purposes, but drinking water in the dry season is collected from a pool about 1/2 km. from the village. Average farm size is 30.7 rai, of which 15.3 rai was planted to wet season rice and 7.5 rai to cash crops in 1979-80. There is very little renting of land, but inequality of landholding size gives rise to a village wage labor supply. Crop cultivation depends almost entirely on rainfall except that some garden crops are grown either on small built up areas within rice fields or by using swamp water. Cassava is grown by 80% of households and kenaf by 20%. The cash crop fields are in another village so that farmers tend to stay overnight at the fields until the work is finished. Most households use some hired labor on cash crops, but only a small minority use it for rice cultivation. About half still practice exchange labor (almost all male labor and used for threshing rice). Few villagers migrate to year-round or seasonal wage employment although considerable casual wage employment is taken. Because much of the wage employment is on cash crops of local large

farms the supply of these jobs declines when there is a drought. In these circumstances great efforts are made to find any work, if only for a week or two, outside the locality. This was the case at the time of the study.

In the majority of households women weave cotton but this is for own use.

Although this is a comparatively poor village with a well developed labor market it is modern in the sense of communications and contact with the outside world. A high proportion of households practice family planning: 50% according to the 1979-80 survey.

(4) Baan Kwang Jone (Tambon Kwang Jone, Amphur Plukiew, Chaiphum)

After Na Khoi Noi the village of Kwang Jone has the lowest average household income of all the villages included in this study. Annual rainfall is extremely variable. Usually the rains are good for three years but this is followed by drought conditions which can last for another three years. 1982 was the second consecutive year that the rains had failed. With only about one-third of households growing kenaf and a few growing maize the village is heavily dependent on rice production for income from agriculture. In Tambon Kwang Jone as a whole there was an insignificant increase in population between 1975 and 1980 due to heavy outmigration.

The village lies 3.3 km. from an all weather road and has 146 households. It is the third poorest of 16 villages in the tambon. But unlike many other 'poor' villages there is pronounced inequality of incomes and farm sizes (which range from 3 to 88 rai). Seventy percent of households are reported to be in a debt cycle (having to renew debts without much hope of becoming free of them) and many holdings are threatened with foreclosure. As many as 85% of

households still practice exchange labor (the majority male labor and mostly for threshing rice). Virtually all households weave cotton and silk but this is for own use, and, in the case of silk, as a source of savings to be cashed in during bad times.

The village has two small swamps adjacent to the residential area, one long thin swamp passing through the lowland rice fields, three small ponds near the residential area, and two drinking wells. Yet lack of water is the principal problem mentioned by the villagers. The relative isolation of the village means it is difficult to obtain medical help. Yet as many as 61% of households were, in 1979-80, practicing family planning. Average household size, at 5.7 persons, is comparatively small. In good years rice yields can average 380 kg. per rai, but in bad years this falls to about 100 kg. Wet season cash crops are grown on an average of only 0.9 rai, and dry season cash crops on about 0.8 rai. With net rice income accounting for 93% of average household income in 1979-80, the effect of the failure of the rains can hardly be exaggerated.

Because much less income is gained from cash crops than in Lahan, off-farm employment is seasonal rather than casual. This employment, which involves about 70% of households, is highly organized with employers from other provinces fetching workers in trucks.

(5) Baan Na Wang (Tambon Nasiew, Amphur Muang, Chaiyaphum)

Na Wang was chosen as a control village because, as a relatively 'rich' village and modern in the sense of good extension services and village development activities, it provides a basis of comparison (at the end of the project) both with villages which started with similar characteristics and with

poorer villages which are to be targetted. It lies 4 km. from an all-weather road but is only 11 km. from the provincial capital. There are 242 households. The village has two pump wells for general domestic use, four ponds (three of which were dried out in April 1982), and a well for drinking water which is shared with the adjacent small village of Na Wang Noi. It has a school, a center for village development, a center for agricultural information (with a resident extension officer), and a center for promotion of housewives' groups. But the nearest medical station is 2 km. away.

A long swamp runs through part of the residential area and the rice fields. Water is pumped from the swamp to the nearby rice fields so that even in a drought some rice cultivation can be pursued. The average rice yield is high; about 400 kg. per rai. Cash crops are peanuts, kenaf, long beans, and maize, grown in rice fields in the dry season. All households use cash inputs on their crops and average amounts of credit and cash inputs are comparatively large. Institutional credit is widely obtained by farmers. Small livestock (pigs and chickens) and silk are widely produced. Silk is woven by nearly all the households under contract to the Queen's Secretarial Office.

Although the range of farm sizes is large there is less inequality than in Lahan or Kwang Jone. The majority of households use some hired labor on both rice and cash crops, but in addition about 65% utilize exchange labor (in this case with the unusual characteristic of equal numbers of households reporting male and female exchange labor, and applied to planting as well as threshing). Off-farm wage employment is somewhat less than in Lahan and Kwang Jone, and it is predominantly female seasonal and male casual work - an unusual combination. Birth control has been so long and extensively practiced that the village teacher is complaining of too few children in primary

classes. Having won a competition for the 'most developed village,' Na Wang makes an interesting control village.

(6) Baan Song (Tambon Nong Kaew, Amphur Muang, Roi Et)

The village of Song has the lowest average household income of 21 villages in the tambon. It is comprised of 131 households and lies along an all-weather road. It has two year-round drinking wells at a distance from the residential area as well as a concrete well at the school. The village is adjacent to two ponds and a large swamp. There is a medical station on the outskirts.

Song is more generously endowed with water than the Chaiyaphum villages, but has small average farm size; 14.4 rai, of which 13.7 rai is planted to wet season rice. The range of farm sizes is less than in Chaiyaphum but there is still considerable inequality in holding size. Although the tambon generally has fertile, partly irrigated land, the village of Song suffers from soil infertility. Rice yields are low in spite of the application of rather large cash inputs. The village includes a rice mill whose owner dominates the rice trade. Tobacco is the cash crop which is grown by most households, but kenaf is also grown by a small number.

The very little wage employment in the village is accounted for by the fact that virtually all households practice exchange labor (mostly male and for harvesting). Very few households have members in seasonal wage employment, but about half have male members undertaking casual employment. However, there is a significant minority of households with (mostly female) normally resident members in year-round off-farm work, presumably due to the vil-

lage being on an all-weather road. The 1979-80 survey indicated that income from wages amounted to more than half of net rice income.

(7) Baan Nong Pan (Tambon Na Muang, Amphur Selaphum, Roi Et)

Nong Pan is a small village of 45 households, lying 1 1/2 km. from an all-weather road. The villagers are obliged to go to the tambon center for medical attention. There are 6 wells for drinking water, well distributed throughout the village, one artesian well for general domestic water needs, and a pond.

The fields closely surround the residential area of the village. Average farm size (28.6 rai) is double that in Song. As much as 24.6 rai per household is grown to wet season rice and another 2 rai is put under dry season rice. Tobacco is grown in the dry season (in the rice fields) on an average of 1.2 rai. Farm sizes are somewhat more unequally distributed than in Song, and according to the 1979-80 survey as many as 40% of households rent land. But the present study suggests this is too high.

Average household income is about double that in Song, and Nong Pan is by far the richest of all the villages included in this study. Yet the student enumerators found that it appeared poorer than Song. Indebtedness and inequality of income are two important explanations. A common practice is for indebted small farmers to pass over the use of their land to larger creditor farmers and then to farm the land under some sharecropping arrangement. The very little use of hired labor on rice or cash crops and only about half of households reporting the use of exchange labor attest to the subdivision of these large 'holdings'. Nong Pan is characterized by large marketed surpluses of rice. In 1979-80 25% of households had just enough land for rice self-suf-

ficency but 15% had enough to produce a surplus. Tobacco, the only cash crop, is grown on very small plots. A large majority of households have members in casual wage employment (over 30% with women in this employment) and almost half have at least one member in seasonal wage employment. Average household size, at 7.4 persons, is very large, but 60% of households were reported in 1979-80 to be practicing family planning.

(8) Baan Yang (Tambon Taket, Amphur Uthumphornpisai, Sri Sa Ket)

Yang has 42 households and is situated 1.3 km. from an all-weather road. There is a school, two small shops, and a small mill, but no medical station. There are three wells for drinking water, one pond, and four of the houses have artesian wells. The rice fields surround the village. As with the villages of Kratum and Nong Yod, Yang lies in a flat terrain where there is no more land available for cultivation. There is a problem of lack of water for agriculture in the dry season, but every household grows watermelon on small plots, and some grow long beans.

Average farm size is 16.6 rai. There is hardly any renting of land although land is more unequally distributed than in other Sri Sa Ket villages. Input costs are high because of the fertilizer demands of watermelons, but also because of the infertile sandy loam soil. Because of the poor land resources, Yang is the third poorest of 10 villages in the tambon.

About half the households use some hired labor in the intensively-cultivated rice field, but hardly any use it on watermelon growing. However, about three-quarters of the households use exchange labor in the rice fields, mainly male labor for harvesting and threshing.

Not many households have resident members in any kind of off-farm employment. Basket-making is undertaken in most of the houses in the dry season but returns on sales are small. However, together with remittances from migrated children this provides more than 10% of total (imputed) income.

(9) Baan Kratum and Baan Nong Yod (Tambon Tae, Amphur Uthumpornpisai, Sri Sa Ket)

The contiguous tambons of Taket and Tae have similar physical endowments and market outlets. When the enumerators reached Kratum it was found, against expectations, that the village had only 17 households. Hence 23 households in neighboring Nong Yod were added to make up a sample of 40 households.

Kratum is a 'medium' income village and Nong Yod a 'rich' village. Households in both villages depend mainly on one intensively cultivated crop of rice. Watermelon (sometimes two crops in the dry season) and long beans are also grown. In addition some households produce peanuts, Thai cucumber, and kenaf. There is almost no renting of land and no use of hired labor in Kratum, but all but one household in Kratum use exchange labor (men and women equally) for rice cultivation. The village has more serious problems of soil infertility and lack of water for agriculture than Yang, and households utilize comparatively small amounts of cash inputs on crops. The one pump well in the village was out of order in 1982. Villagers have to go to the tambon center for medical attention. The village is located 4.3 km. from an all-weather road where buses run, but villagers prefer to walk the 2 km. to the railway station to take their produce to market. The higher average household income in Kratum (than in Yang) is made up by earnings from off-farm

wage employment, principally male seasonal and casual work. A higher proportion of households in Kratum also have children making remittances.

Nong Yod enjoys larger farm sizes and a less acute water problem. There is a swamp near common ground (on which vegetables are grown in some months), three wells for general domestic purposes, and two wells for drinking water at a distance from the houses. But almost one-third of Nong Yod households use hired labor on rice production, in addition to almost all practicing exchange labor (mostly male and for harvesting and post harvest work). Off-farm wage employment is similar to that undertaken by villagers in Kratum. The train, which is 3 km. away, is also used by villagers to take produce to market.

As many as 61% of households in Nong Yod but only 17% in Kratum were reported to be practicing family planning in 1979-80. However, traditional use of plants is widely practiced in Kratum, either as contraceptives or as abortifacients.

Tambon Tae as a whole experienced a near stationary population between 1975 and 1980 due to heavy outmigration. As in tambon Taket this has meant that the very small farms have not fallen below a viable size (with the aid of wages and remittances).

(10) Baan Or (Tambon Na Luang, King Amphur Huai Tab Tun, Sri Sa Ket)

This village, which has 83 households, was chosen as the second control village, because being extremely poor, it will provide a comparison with similar poor project villages at the end of the project. It lies almost 5 km. from an allweather road. There are two swamps and two concrete wells. The village also has two small mills, but there is no medical station.

Villagers complain of the infertility of their sandy loam soil and the shortage of water for kenaf production which was abandoned three years ago because of a fall in prices. No other cash crops are grown so that the villagers depend on one intensively cultivated rice crop for all their agricultural income. The amounts of cash inputs applied are comparable with those in Nong Yod (and greater than in Kratum), but because no watermelons or vegetables are grown this means that all cash inputs are applied to rice. Yields are very high: reputedly 300 to 400 kg. per rai, and higher proportions of rice output are sold than in the other two Sri Sa Ket villages.

Farm sizes are larger than in Kratum and Nong Yod, but a comparable amount of hired labor is used on rice. All households practice exchange labor for harvesting, threshing, and carrying, with men and women equally involved.

Nearly 83% of the sampled households have at least one male member and 24% of households have at least one female member in seasonal employment. Seasonal employment, which occurs after rice planting as well as after harvesting, is highly organized, and wages comprise a substantial part of total income.

TABLE 1

VARIATIONS OF ENVIRONMENTAL CHARACTERISTICS, HOUSEHOLD LAND USE, AND SOURCES
OF INCOME OF THE EIGHT PROJECT TAMDON

	Nakhorn Phanom		Chaiyaphum		Roi Et		Sri Sa Ket	
	<u>Na Thon</u>	<u>Ke Ngua</u>	<u>Lahn</u>	<u>Kwang Jone</u>	<u>Nong Kew</u>	<u>Na Kwang</u>	<u>Faket</u>	<u>Tao</u>
Annual rainfall (mm.) 0.5 probability rainfall is less than....	1530	1530	924	980	1214	1156	1072	1072
Average farm size (ectares)	6.10	6.65	5.30	5.30	4.07	3.76	3.45	3.36
Cultivated area (hectare):								
% on flood plain	30	0	20	0	0	9	0	0
% on low terrace	31	61	25	53	89	63	100	100
% on higher ground	39	39	55	47	11	28	0	0
Household land utilization (1979-80) percent area planted:								
-in wet season	66	68	53	72	90	82	91	91
-in dry season	5	2	10	3	17	5	9	8
-to rice	63	67	42	64	90	82	90	91
-to cash crops	4	3	21	11	17	5	10	8
Percent households growing:								
-cassava	10	4	24	1	0	6	0	0
-kenaf	13	3	12	34	4	1	0	0
-watermelon	1	8	1	0	42	2	83	30
-beans	0	2	1	0	0	1	27	0
-and/or other cash crops	1	3	12	2	3	38	4	1
Rice yields (tons per hectare planted)	0.9	0.6	0.7	1.4	1.3	1.4	1.3	1.3
Household income sources (\$):								
-net rice income*	384	399	200	542	611	537	430	497
-net cash crop income	92	26	253	80	243	72	112	93
-net animal income	118	82	109	102	102	106	44	51
-net off-farm income	82	150	188	84	189	174	201	165
-net total income	688	671	807	808	1,222	959	848	902

Source: Integrated survey of NEPAD Project villages, 1979-80, AID/Bangkok. Published in
NEPAD Project Paper, pp.14 and 17.

* includes value of subsistence rice.

TABLE 2

HOUSEHOLDS/RESIDENTS: NUMBER OF HOUSEHOLDS REPORTING , BY VILLAGE

	Don Daeng	Na Khoi	Na Khoi Noi	Lahan	Kwang Jone	Na Wang	Song	Nong Pan	Tang	Kratun	Nong Tod	Or
Brought up, 18 years plus	15	5	7	9	16	9	7	12	16	6	5	9
Sex, 18 years plus	7	7	8	10	14	10	7	10	14	1	1	8
Number of children under 18 years:												
1	6	6	1	12	5	10	11	6	8	3	3	3
2	14	7	3	12	9	16	10	8	6	5	7	4
3	8	3	3	11	12	8	7	7	6	6	5	10
4	5	1	3	2	6	1	6	10	9	2	3	11
5	4	2	3	1	1	-	2	7	3	-	1	1
5	2	3	2	1	2	-	-	2	2	-	-	4
7 and over	-	-	4	-	-	-	-	-	-	-	-	-
Others	9	2	5	10	12	13	7	14	13	4	6	3
SAMPLE SIZE	40	22	22	41	40	40	40	45	42	17	23	41

N.B. Each observation records a household reporting 'yes'. This means, for instance, that in the case of Don Daeng, 15 households reported having one or more daughters of at least 18 years residing at home.

TABLE 3

PERCENT OF HOUSEHOLDS REPORTING USE OF PARENTS' LAND, AND SHARING OF PAIN RESOURCES, GRANARIES AND COOKING (%)

	Households reporting land owned by parents (resident in other households) in all or nearly all of land farmed	Households reporting pooling of land, labor, costs, produce with another house- hold	Households reporting sharing a granary with another household	Households reporting sharing cooking/ eating with another household
Don Daeng	n.a.	17.5	20.0	7.5
Na Khoi	9.1	18.2	4.5	4.5
Na Khoi Noi	9.1	18.2	0	4.5
Lahan	14.6	17.1	24.4	0
Kwang Jone	10.0	20.0	15.0	7.5
Na Wang	15.0	17.5	12.5	0
Song	n.a.	15.0	2.5	2.5
Nong Pan	17.8	40.0	28.9	6.7
Tang	26.2	19.0	11.9	0
Kratun	23.5	11.8	0	0
Nong Tod	13.0	8.7	4.3	8.7
Or	14.6	7.3	19.5	0

TABLE 4

POOLING FARM RESOURCES, AND SHARING GRANARY AND COOKING, BY SEX OF HOUSEHOLD HEAD
(number of households reporting)

	POOLING FARM RESOURCES				SHARING GRANARY				SHARING COOKING			
	male heads		female heads		male heads		female heads		male heads		female heads	
	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no
Don Daeng	5	31	2	2	7	28	1	4	2	33	1	4
Na Khoi	3	17	1	1	1	19	-	2	1	19	-	2
Na Khoi Noi	4	16	1	1	-	20	-	2	1	19	-	2
Lahan	3	32	2	4	8	27	2	4	-	35	-	6
Kwang Jone	6	30	2	2	5	31	1	3	2	34	1	3
Na Wang	6	29	1	4	5	30	-	5	-	35	-	5
Song	4	31	2	3	1	34	-	5	1	34	-	5
Nong Pan	17	29	1	5	12	27	1	5	2	37	-	6
Yang	7	33	1	1	4	36	1	1	-	40	-	2
Kratum	2	12	-	3	-	14	-	3	-	14	-	3
Nong Yod	3	15	-	4	1	20	-	2	2	19	-	2
Or	2	34	1	4	6	30	2	3	-	35	-	6
	62	309	14	34	50	316	7	40	11	354	2	46
	16.7%		29.8%		13.7%		14.9%		3.0%		4.2%	
	371		366									

TABLE 5

RELATIONSHIP OF HOUSEHOLD WITH WHICH RESPONDENT'S HOUSEHOLD SHARES A GRANARY,
BY SEX OF HOUSEHOLD HEAD (number of households reporting)

RELATIVE:	MALE HEAD OF HOUSEHOLD				FEMALE HEAD OF HOUSEHOLD			
	parent	sibling	child	other	parent	sibling	child	other
Don Daeng	3	1	2	1			1	
Na Khoi	1							
Lahan	3		5		2			
Kwang Jone	1		4		1			
Na Wang	4			1	1			
Song		1						
Nong Pan	7	2	1	2	1			
Yang	2	1		1	1			
Nong Yod				1				
Or		2	4		1	1		

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TABLE 6 USE OF ADULT (15 years and over) HOUSEHOLD LABOR
IN RICE CULTIVATION BY MORNINGS AND AFTERNOON
(number of households reporting)

	DON DAENG		NA KHOI		NA KHOI NOI		LAHAN		KWANG JONE		NA WANG														
	Adult Male	Adult Female	Adult Male	Adult Female	Adult Male	Adult Female	Adult Male	Adult Female	Adult Male	Adult Female	Adult Male	Adult Female													
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM													
land preparation	35	27	1	1	21	21	5	5	22	16	2	2	29	28	15	15	38	38	12	12	38	38	10	10	
planting	26	34	38	35	21	21	21	21	21	13	20	14	25	24	30	30	38	38	37	37	33	38	37	37	
harvesting	35	34	33	31	21	17	21	17	22	15	22	16	29	29	28	28	38	37	38	38	38	38	37	37	
tying bundles	-	35	-	1	7	20	7	14	4	22	4	14	28	26	17	15	36	8	1	1	38	24	4	3	
threshing	31	33	9	9	14	19	8	14	8	20	8	12	14	12	7	8	38	38	38	38	36	34	29	28	
winnowing	-	-	1	-	-	-	4	12	1	7	4	10	-	-	-	-	1	1	8	8	-	-	9	9	
carrying-	33	15	24	15	-	10	12	4	9	13	12	5	11	25	16	25	17	37	36	36	36	37	37	36	35

	SONG		NONG PAN		YANG		KEATUM		NONG YOD		OR													
	Adult Male	Adult Female																						
	AM	PM																						
land preparation	35	25	5	2	43	35	4	4	37	37	13	13	14	11	9	8	24	24	14	14	38	36	16	12
planting	32	28	35	31	42	30	44	32	35	36	35	34	14	7	17	8	23	11	24	12	36	38	37	40
harvesting	33	23	37	22	42	30	44	37	35	35	36	34	13	6	17	7	24	13	23	12	37	38	39	40
tying bundles	34	1	3	-	29	42	31	43	30	33	27	29	6	13	5	12	10	21	5	15	39	-	20	-
threshing	30	26	13	11	30	42	30	39	32	32	22	22	12	12	14	13	18	22	11	12	37	38	37	37
winnowing	1	1	1	-	4	12	5	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	16
carrying-	8	32	5	22	44	22	43	22	28	31	26	29	11	7	16	10	22	13	23	14	34	39	35	39

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TABLE 7 USE OF ADULT HOUSEHOLD LABOR ON MAJOR CASH CROPS BY MORNINGS AND AFTERNOONS
(number of households reporting)

<u>KENAF</u>	DON DAENG				LAHAN				KWANG JONE				NA WANG				SONG			
	Adult Male		Adult Female		Adult Male		Adult Female		Adult Male		Adult Female		Adult Male		Adult Female		Adult Male		Adult Female	
	AM	PM	AM	PM																
land preparation	2	2	3	3	12	12	3	3	14	14	2	2	25	25	5	5	3	1	-	-
planting	2	2	3	3	19	18	19	18	14	14	15	14	28	29	28	29	3	1		
weeding	1	1	2	2	22	22	21	21	14	14	15	15	16	16	17	17	-	-	-	-
harvesting	2	2	3	3	19	19	19	19	14	14	15	15	31	31	30	30	2	2	2	1
post-harvest:																				
-watering	2	2	3	3	na	na	na	na	13	13	13	13	27	27	26	26	9	5	6	4
-peeling	2	2	3	3	17	17	17	17	13	13	14	14	27	27	26	26	9	5	6	4
-bundling	2	2	3	3	15	15	12	12	13	13	11	11	28	27	12	12	9	5	6	4

<u>TOBACCO</u>	NA KHOI				NA KHOI NOI				SONG				NONG PAN				YANG			
	Adult Male		Adult Female		Adult Male		Adult Female		Adult Male		Adult Female		Adult Male		Adult Female		Adult Male		Adult Female	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
land preparation	3	2	-	-	3	1	-	-	38	22	4	1	40	25	5	5	2	2	-	-
planting	1	1	3	2	2	3	2	3	20	31	21	33	15	17	35	36	2	1	-	-
weeding	-	-	1	1	-	-	-	-	7	2	1	-	1	2	3	2	1	1	-	-
spraying	2	-	1	-	3	1	1	2	23	20	6	4	32	36	14	16	2	2	-	-
harvesting	2	-	3	-	1	1	3	2	25	2	34	2	10	2	41	20	1	-	1	1
post-harvest jobs	na	na	na	na	na	na	na	na	16	13	27	23	na	na	na	na	na	na	na	na

<u>WATERMELON</u>	NA KHOI		NA KHOI NOI		YANG		KRATUM		NONG YOD											
	Adult Male	Adult Female	Adult Male	Adult Female	Adult Male	Adult Female	Adult Male	Adult Female	Adult Male	Adult Female										
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM										
land preparation	2	2	-	-	5	3	1	-	23	28	8	8	9	4	3	1	9	6	5	-
planting	2	2	2	2	4	3	6	5	26	26	21	21	6	4	7	5	7	3	6	2
weeding	2	2	1	1	4	4	1	1	7	7	4	4	3	3	6	4	7	5	9	5
spraying	1	-	-	-	6	-	-	-	20	21	4	3	3	6	-	1	3	7	-	1
harvesting	1	-	1	-	4	1	5	2	17	13	10	7	8	1	8	3	9	1	9	1

<u>BEANS</u>	KRATUM		NONG YOD		NONG YOD							
	Adult Male	Adult Female	Adult Male	Adult Female	THAI WATERMELON, PUMPKIN, CUCUMBER	Adult Male	Adult Female					
	AM	PM	AM	PM		AM	PM					
land preparation	6	2	-	-	14	9	7	1	25	19	9	4
planting	4	1	3	2	6	7	8	8	14	15	10	16
weeding	3	-	3	1	8	9	10	7	18	16	19	14
spraying	3	2	1	1	6	7	3	1	7	16	3	2
harvesting	3	-	4	2	15	-	16	-	24	1	23	1

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Table 8. USE OF HIRED LABOR BY CROP AND AREA PLANTED
(number of households reporting)

	DON DAENG			NA KHOI			NA KHOI NOI			LAHAN			KWANG JONE			NA WANG		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
0-2		1			1					3				1			5	1
2.1-4	1										3	5	1	2	2	1	5	2
4.1-6	1		1					1			2	6		2		5	5	1
6.1-10	2		2				1				1	11		2		5	1	9
10.1-15	3											6		2	1	2	1	3
15.1-20	2		2	3				1			2	3		4		2		1
20.1-25	2				1							2			1	1	1	3
25.1-30	4						1							4		2		
30.1-35									1									
35.1-40							1								1			
40.1+	4			2										2		3		

	SONG			NONG PAN			YANG			KRATUM			NONG YOD			OR		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
0-2	1		3	1	2		3		1	1			2	1		2		
2.1-4			1				3	1	1	1	1		2			2		
4.1-6		1	1	3			1	2						1		1		
6.1-10	2			2	1			3						1				3
10.1-15	2				1			1			1			1				3
15.1-20	2				1			1						1				3
20.1-25								4						3				1
25.1-30																		1
30.1-35														1				
35.1-40								1										
40.1+																		

A=Glutinous rice
B=Non-Glutinous rice
C=Cash crops

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TABLE 9 HOME INDUSTRY
(number of households reporting)

	DON DAENG	NA KHOI	NA KHOI NOI	LAHAN	KWANG JONE	NA WANG	SONG	NONG PAN	YANG	KRATUM	NONG YOD	OR
Do you do any Home Industry?												
YES	39	19	17	26	39	34	8	14	26	6	10	36
NO	6	3	5	15	1	6	32	31	16	11	13	5
If "Yes", what is the nature of this Home Industry?												
-Silk Production	-	1	-	2	39	34	-	4	7	6	8	-
-Other Weaving	32	18	14	23	39		3	4	6	2	-	36
-Pot-Making	-	-	-	-	-		-	-	-	-	-	
-Basket-Making	20	-	1		8	1	4	6	27	1	3	4
-Making Clothes in Center	-	-	-		-		-	-	-	-	-	
-Other	16	1	4	15	10	1	6	11	1	1	-	

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TABLE 10
MALE AND FEMALE
OFF-FARM WAGE EMPLOYMENT OF NORMALLY RESIDENT HOUSEHOLD MEMBERS OF 15 YEARS AND OVER
(number of households reporting by two categories of farm size)

VILLAGE	FULL TIME		SEASONAL		CASUAL	
	landless and less than 10 rai	more than 10 rai	landless and less than 10 rai	more than 10 rai	landless and less than 10 rai	more than 10 rai
<u>Male:</u>						
Don Daeng	1	2	-	5	3	5 ¹
Na Khoi	2	2 ¹	2	5	9	14 ⁴
Na Khoi Noi	-	2	1	2	6 ¹	8 ¹
Lahan	1	-	2	1	12	20 ⁴
Kwang Jone	3	1	7	23	3	6
Na Vang	2	5 ¹	2	8 ²	3	17 ³
Song	5 ¹	1	-	1	10	9
Nong Pan	2	1	9	9 ¹	17 ¹	17 ³
Yang	2	8 ²	6	1	2	-
Kratun	2	-	4	4 ²	4	4
Nong Yod	1	3	2	2	7	3
Or	1	1	14 ³	19 ¹	-	1
<u>Females:</u>						
Don Daeng	1	2 ¹	-	5 ²	1	3 ¹
Na Khoi	1	-	-	-	-	2
Na Khoi Noi	-	-	1	1	3	2
Lahan	-	2	1	-	10 ²	18 ³
Kwang Jone	3	-	2	11 ²	1	2
Na Vang	-	3	8 ²	8 ²	1	7
Song	2	5	2	-	1	-
Nong Pan	-	-	9	4	10	4
Yang	1	2	-	-	2 ¹	-
Kratun	1	-	3	-	3	1
Nong Yod	-	1	5 ²	7 ³	3	-
Or	-	1	1	9 ¹	-	-

NaE₂ * Households reporting more than one member in wage employment.

TABLE 11

NUMBER OF MALE AND FEMALE HEADED HOUSEHOLDS REPORTING USE OF INSTITUTIONAL
(Cooperative, BAAC, and private bank) CREDIT IN AGRICULTURAL YEAR ~~1981-82~~ 1981-82

VILLAGE	SAMPLE NUMBER		USE OF INSTITUTIONAL CREDIT FOR :-					
	male headed households	female headed households	male headed households			female headed households		
			glutin. rice	non-glutin. rice	cash crops	glutin. rice	non-glutin. rice	cash crops
Don Daeng	35	5	4	-	1	1	-	-
Na Khoi	20	2	4	1	-	1	-	-
Na Khoi Noi	20	2	5	1	4	-	-	-
Lahan	36	5	1	1	6	-	-	1
Kwang Jone	36	4	14	-	2	2	-	-
Na Wang	35	5	22	11	22	3	3	2
Song	35	5	7	4	-	1	1	-
Nong Pan	41	4	31	24	2	4	3	-
Yang	40	2	11	14	10	-	1	-
Kratun	14	3	2	2	2	-	-	-
Nong Tod	21	2	9	11	7	1	1	1
Or	36	5	-	2	-	-	-	-

TABLE 13

NUMBER OF RESPONDENTS WHO HAVE ATTENDED AN AGRICULTURAL DEMONSTRATION AND
NUMBER OF HOUSEHOLDS VISITED BY AN AGRICULTURAL EXTENSION OFFICER

VILLAGE	SAMPLE NUMBER		RESPONDENTS WHO HAVE ATTENDED AN AGRICULTURAL DEMONSTRATION				HOUSEHOLDS VISITED BY AN AGRICULTURAL EXTENSION OFFICER	
	men	women	YES		NO		YES	NO
			men	women	men	women		
Don Daeng	17	23	10	7	7	16	4	36
Na Khoi	9	13	7	6	-	7	4	18
Na Khoi Noi	9	13	4	2	5	10	6	16
Lahan	13	28	-	-	2	-	2	39
Kwang Jone	19	21	5	1	4	2	-	40
Na Wang	16	24	6	15	9	9	22	18
Song	17	23	6	8	11	15	6	34
Nong Pan	22	23	17	11	3	12	24	21
Yang	16	26	10	7	4	16	17	25
Kratun	8	9	3	-	1	-	4	12
Nong Tod	11	12	5	2	6	5	6	16
Or	20	21	1	3	1	-	3	38

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TABLE 14

MEMBERS OF THE HOUSEHOLD SPoken TO BY VISITING AGRICULTURAL EXTENSION OFFICER
(number of households reporting)

<u>VILLAGE</u>	<u>men</u>	<u>women</u>	<u>parents</u>	<u>adult relatives</u>	<u>children</u>	<u>other</u>
Don Daeng	4	2			2	
Na Khoi	4	1				
Na Khoi Noi	6					
Lahan	2					
Kwang Jone						
Na Vang	15	15	1		11	2
Song	5	2		1	2	2
Nong Pan	16	6	1	1	2	1
Yang	15	4		1	1	
Kratun	4	1				
Nong Yod	4	1			1	
Or	3					

TABLE 15

OPINIONS ON WOMEN AGRICULTURAL EXTENSION OFFICERS
(number of respondents reporting)

<u>VILLAGE</u>	<u>SAMPLE SIZE</u>		<u>WOMEN WOULD BE MORE INTERESTED IN AGRICULTURE IF THERE WERE WOMEN EXTENSION OFFICERS</u>				<u>(for those who replied 'yes') WOULD LIKE TO SEE WOMEN EXTENSION OFFICERS</u>			
	<u>men</u>	<u>women</u>	<u>men</u>		<u>women</u>		<u>men</u>		<u>women</u>	
			<u>yes</u>	<u>no</u>	<u>yes</u>	<u>no</u>	<u>yes</u>	<u>no</u>	<u>yes</u>	<u>no</u>
Don Daeng	17	23	15	1	22	1	15	1	22	1
Na Khoi	9	13	9	-	11	2	9	-	11	2
Na Khoi Noi	9	13	9	-	10	2	9	-	10	2
Lahan	13	28	12	1	25	2	13	-	24	3
Kwang Jone	19	21	13	6	20	1	13	6	20	1
Na Vang	16	24	14	2	21	3	13	2	21	4
Song	17	23	16	1	21	2	15	-	22	-
Nong Pan	22	23	21	-	21	2	21	-	21	2
Yang	16	26	15	-	26	-	12	3	22	4
Kratun	8	9	7	1	5	2	6	2	4	1
Nong Yod	11	12	7	4	8	3	6	2	8	-
Or	20	21	15	5	16	5	15	-	16	-

TABLE 16

MEMBERSHIP OF (a) FARMERS' GROUPS, FARMERS' COOPERATIVES, BAAC GROUPS, AND (b) VILLAGE COMMITTEES (number of respondents reporting)

<u>VILLAGE</u>	<u>FARMERS' GROUPS, ETC.</u>		<u>VILLAGE COMMITTEES</u>	
	<u>men</u>	<u>women</u>	<u>men</u>	<u>women</u>
Don Daeng	7	-	-	-
Na Khoi	9	1	2	1
Na Khoi Noi	3	-	6	-
Kwang Jone	14	1	-	-
Lahan	11	4	-	-
Na Vang	13	2	1	-
Song	4	2	2	-
Nong Pan	9	3	5	-
Yang	26	6	7	-
Kratun	4	1	4	-
Nong Yod	12	1	-	-
Or	3	-	8	-

TABLE 17

PERSON IN HOUSEHOLD WHO SELLS PRODUCE, BY TYPE OF PRODUCE (number of households reporting)

	<u>glutinous rice</u>	<u>NON-GLUT. RICE</u>	<u>CASH CROPS</u>	<u>LIVE- STOCK</u>	<u>FISH</u>	<u>GLUTIN. RICE</u>	<u>NONGLUT. RICE</u>	<u>CASH CROPS</u>	<u>LIVE- STOCK</u>	<u>FISH</u>	<u>GLUT. RICE</u>	<u>NON-GLUT. RICE</u>	<u>CASH CROPS</u>	<u>LIV- STOCK</u>	<u>FIS.</u>
<u>Don Daeng</u>						<u>Na Khoi</u>					<u>Na Khoi Noi</u>				
male respondent/ male spouse	6	2	16	4	2	5	1	1			6	1	3		1
female respondent/ female spouse	2		5		3	4	2		2		1		5		2
parent/p.-in-law	3		1												
child/spouse of child	1		2								2	1			
<u>Lahan</u>						<u>Kwang Jone</u>					<u>Na Wang</u>				
male respondent/ male spouse		1	24		1	14	13	8			13	6	19	8	2
female respondent/ female spouse		3	17	4	1	4	3	3			7	5	8	1	
parent/p.-in-law						1	1				2	1	1		
child/spouse of child			1		2	4	5	1			5	4	5	1	2
<u>Song</u>						<u>Nong Pan</u>					<u>Yang</u>				
male respondent/ male spouse	12	9	27			14	18	27			23	14	14	4	2
female respondent/ female spouse	2	1	9	1		1	2	10				23	10		
parent/p.-in-law								1				15	10		
child/spouse of child	2	2	6			1	1	3				2	2		
<u>Kratua</u>						<u>Nong Yod</u>					<u>Or</u>				
male respondent/ male spouse		5	6	3			13	5	6			22	1		
female respondent/ female spouse		2	4	2			6	14				12			
parent/p.-in-law															
child/spouse of child		1	2				1	4			1	2			

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TABLE 18

PERSON IN THE HOUSEHOLD WHO CONTROLS CASH INCOME (number of households reporting)

Does the seller Dom of the produce retain control of the cash?	VILLAGES																							
	Doang		Na Khai		Na Khai Ned		Lahan		Kuang Jone		Na Wang		Song		Nang Jed		Yang		Kratun		Nong Tod		Or	
	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no
GLUTINOUS RICE	5	6	7	2	3	6	-	-	15	9	15	11	3	10	14	2	-	-	-	1	1	-	-	1
NONGLUTINOUS RICE	-	2	2	1	-	2	1	3	12	11	11	5	3	7	19	2	22	12	6	3	11	9	14	22
CASH CROPS	9	11	1	-	6	1	20	17	7	5	22	15	15	24	29	9	14	10	6	5	15	6	-	1
LIVESTOCK	2	2	2	-	-	-	4	-	-	-	2	7	1	-	-	-	3	1	1	1	6	2	-	-
YAM	3	2	-	-	2	1	2	1	-	-	3	-	-	-	-	-	1	1	-	-	-	-	-	-
If 'yes', who retains control?																								
husband	1		-		2		3		1		-		2	2		2		1		1			-	
wife	21		2		6		17		9		-		19	6		11		3		9			20	
parent	1								2				3	1				1		1			2	
daughter/ d.-in-law													1					1		1			5	
son/d.-in-law																								
sister									1															
brother																								

N.B. Many respondents reported having joint control of cash income with spouse, especially in Na Wang, Yang, and Na Khai Ned.

TABLE 19 BREASTFEEDING AND COOKING/EATING PROBLEMS IN BUSIEST 2 MONTHS

(number of households reporting)

	DON DAENG	NA KHOI	NA KHOI NOI	LAHAN	KWANG JONE	NA WANG	SONG	NONG PAN	YANG	KRATUM	NONG YOD	OR
When you were breastfeeding during the busiest months how did you manage breastfeeding?												
-REDUCE BREASTFEEDING	17	8	8	17	20	36	17	39	14	14	15	13
-MAINTAIN USUAL BRFD.	22	14	14	24	20	3	23	6	26	2	7	28
-DK/ERRORS	1	-	-	-	-	1	-	-	-	-	1	-
Have you ever had to terminate breastfeeding before the suitable time?												
-YES	8	1	2	7	10	3	15	7	3	4		8
-NO	31	21	20	33	30	37	25	38	41	12		32
-DK/ERROR	1	-		1	-	-		-	-	1		1
In the busiest months of the year, do you cook less frequently?												
-YES	13	1	6	15	17	-	10	37	11	3	4	15
-NO	27	21	16	26	22	40	31	8	31	14	19	26
-DK												
If "Yes", does your house eat less frequently during the day?												
-YES	4	-		7	5	-	2	-	2	1	-	1
-NO	9	1	6	14	11	-	8	37	9	2	4	14
-DK												

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TABLE 20

SEASONALITY OF MISCARRIAGES, INFANTS' SICKNESS AND DEATHS OF UNDER FIVES
(number of households reporting)

MONTH	DON	NA	NA KHOI	LAHAN	KWANG	NA	SONG	NONG	YANG	KRATUM	NONG	OR
Miscarriages	DAENG	KHOI	NOI		JONE	WANG		PAN			YOD	
J	3	1	3		1		2		1			1
F	4	1				1	5	1	1	1	1	1
M	8	1			2	1	4	1	4		1	1
A	4	1		3	2		1		2		1	
M	1	1	3	1	2	1	1	1	3	1	1	2
J	2			2	2		3	2		1		1
J	2			2	1		4					2
A	2		1				1	1				1
S	2											2
O	3		1		1	1	1				1	2
N	6			1	3		4		1		1	1
D	1		2				1		1		1	1

Most frequent infants' sickness

J	3		1			1			4			1
F	2		1		1		1	8	2		3	
M	10		2	3	14	1	1	3	13	1	3	4
A	19	13	20	10	31	6	9	12	20	5	11	21
M	2	15	16	3	7	10	4	9	14	3		15
J	6	1	1			1			3			1
J	7	1		3		3			6	1		
A	5			16			10	2		5	4	
S	2					2	1	1				
O	2			1	2	8	3	1	3			
N	4		1	15	7	23	14	17	7	5	5	21
D	9		2						4			

Deaths of under-fives

J	4		1	1	2		2		3		1	
F	1	2	1	1	2	2	3	1	1			1
M	3	1	1	1	8	3	3	1	4	1	4	1
A	8	1	5	1	2	2	1	1	3		1	
M	5	3	10		3	2	1	7	3	1		1
J	3	5			5	3	2	3	5			
J	3	2	3	3	2	4	1		2	1	1	
A	5	2	1		1	1	3	4		1		
S	3	1	2			2		3	1		1	2
O	3			1	3		1	1	1		1	2
N	3			4	4		3	1		2	4	
D	1	1	1	2	3				2	2		

These figures were obtained on the basis of recall from female respondents and wives of male respondents appertaining to the whole of their married life. Therefore the table can only be used to show monthly variation. It cannot be used to assess annual incidence of these rates.

TABLE 21

PERCENTAGE OF HOUSEHOLDS USING BIRTH CONTROL, AND NUMBERS REPORTING METHODS USED

% using birth control	SON	NA KHOI	NA KHOI NOI	LAHAN	KWANG JONE	NA WANG	SONG	HONG PAN	YANG	KRATON	KORO YOD	OR
	DAENG											
numbers using-	37.5	31.8	9.1	34.1	47.5	52.5	57.5	46.7	28.6	17.6	60.9	48.8
IUD	2	2	1		4	2	12	1	1		10	11
pill	8	3	1	12	9	16	7	5	1	1	3	2
injection	5			1		3	3		2	2		5
sterilization	2	2			6		1	15	8		1	2

TABLE 22

CONTRACEPTIVE PREFERENCES OF RESPONDENTS

VILLAGE	PILL				IUD				INJECTION				STERILIZATION				CONDOM				sample size
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Don Doeng	16	9	3	1	7	9	9	5	6	7	11	6	4	7	3	5	-	-	3	13	46
Na Khoi	14	4	4	-	2	8	8	2	-	8	7	3	6	2	2	11	-	-	-	1	22
Na Khoi Noi	10	3	3	-	1	1	11	2	2	12	2	1	4	1	-	10	-	-	1	1	22
Lahan	12	15	6	5	8	5	8	13	3	6	19	8	16	13	4	4	-	-	3	7	56
Kwang Jone	20	10	3	1	-	5	8	6	10	17	3	2	4	1	8	7	-	-	4	2	51
Na Wang	25	7	1	1	2	2	2	5	4	19	8	1	4	7	7	-	-	-	13	4	56
Song	9	9	7	6	10	8	8	3	3	4	8	8	7	8	3	5	-	-	-	3	56
Hong Pan	8	14	7	-	1	10	10	5	3	8	15	8	12	7	3	1	-	-	2	3	45
Yang	6	13	9	3	2	3	5	15	6	9	9	3	18	6	4	2	1	1	3	3	46
Kraton	3	6	-	-	-	-	5	1	5	4	-	-	2	-	4	1	-	-	-	1	17
Hong Yod	7	5	6	-	-	-	9		4	9	4	-	7	3	5	-	-	-	1	4	23
Or	2	14	12	3	17	4	6	6	12	11	9	1	2	3	1	17	-	1	5	6	41

N.B. "1" denotes first preference of birth control method

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TABLE 23. SOURCE OF INFORMATION ON BIRTH CONTROL AND STERILIZATION INTENTIONS (number of households reporting)

	DON DAENG	NA KHOI	NA KHOI NOI	LAHAN	KWANG JONE	NA WANG	SONG	NONG PAN	YANG	KRATUM	NONG YOD	OR
How did you first hear about birth control?												
-Relatives	5	-	1	2	9	-	2	-	1	-	1	9
-Friends	0	4	1	22	9	2	3	3	7	3	2	9
-Radio	6	1	8	1	3	1	3	4	8	4	5	3
-Health Station	27	13	11	12	8	32	27	37	14	3	10	8
-Other	2	3	-	5	10	4	5	1	11	2	1	8
What did you or your spouse do then to obtain more information?												
-Went to Health Station	23	12	8	20	15	27	30	2	15	4	13	18
-Talked with Medic Extension Officer	5	8	7	-	3	19	2	35	8	1	-	-
-Other (head man's wife, teacher)	12	1		12	10	1	3	8	8	1	3	1
Are you thinking of sterilization for some time in the future?												
-Yes	5	7	1	11	6	15	18	14	10	2	8	-
-No	35	13	21	30	27	24	18	16	21	12	10	38
I. Number already sterilized (not included)	-	-	2	-	6	-	1	15	8	-	1	2
II. Number of houses with women heads or wives 42+ years	-	7	11	21	-	-	-	19	-	11	8	-

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TABLE 24. IDEAL NUMBER OF CHILDREN, IMPROVEMENTS OF BIRTH CONTROL SERVICES, EFFECT OF YOUTH MIGRATION ON IDEAL FAMILY SIZE (number of households reporting)

	DON DAERG	NA KHOI	NA KHOI NOI	LAHAN	KWANG JONE	NA WANG	SONG	NONG PAN	YANG	KRATUM	NONG YOD	OR
What do you think people regard as the suitable number of children to have now?												
1	-	-	-	-	-	3	-	-	-	-	-	-
2	4	2	1	10	6	16	7	14	8	1	2	2
3	3	4	2	10	11	7	13	17	18	10	7	6
4	22	11	15	17	18	10	14	11	11	6	6	22
5	8	5	3	1	4	3	4	3	4	-	3	3
6	2	-	1	-	1	1	1	-	-	-	2	5
7	-	-	-	1	-	-	1	-	1	-	-	2
8	-	-	-	-	-	-	-	-	-	-	1	1
10											1	
Do you think birth control services could be improved?												
YES	34	14	16	19	38	20	24	34	30	9	14	24
NO	1	8	6	22	2	14	14	9	11	6	7	11
D.K.	3	-	-	-	-	6	-	-	1	1	-	6
Do you think that migration of youth effects ideas on small or large family size?												
YES	29	11	15	25	40	17	27	15	39	12	14	29
NO	-	5	5	9	-	23	5	26	1	-	2	-
D.K.	10	6	2	7	-	1	7	2	2	5	6	12

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