The Influence of Contract Farming, Land Ownership and Alternative occupation upon the Livelihood of Farmers in Pa-Yung Mitr and Kok Santisuk, Thailand

A joint interdisciplinary Research Project

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Abstract

Agriculture in the villages of Pa-Yung Mitr and Kok Santisuk is mostly based upon cash cropping of maize and cassava. This market oriented type of farming, is in the case of maize, often carried out under a contract with a middleman providing all the necessary inputs and buying the crop in the end of the season. Far from all of the villagers are solely depending upon agriculture in terms of income and a wide array of alternative income sources is available. Furthermore, it is for different reasons becoming increasingly common to rent the land for cultivation, and a decreasing percentage of farmers are owners of a piece of land.

In this study, the links between land ownership, contract farming and alternative income were investigated. The possibilities and limitations of each of these factors affecting the livelihood of farmers are studied, described and discussed.

The most resource strong of the villagers studied was found to be the land owners. However, the strategies adopted by land renters were sometimes found to contribute to a more diversified and maybe even a less vulnerable solution than to depend upon agriculture solely.

Preface

Interdisciplinary Land Use and Natural Resource Management (ILUNRM) is a part of the Sustainable Land Use and Natural Resource Management (SLUSE) curriculum. The aim of this course is to prepare students for field work by giving them the opportunity to test methods in "real life" settings. Due to the new block structure at KVL the course was run in a new format of only 9 weeks. As an effect of this new structure we have encountered many problems and difficult situations. The fact that we decided to meet the need for one Danish group to cover two groups of Thai-counterparts, and hereby two villages, gave us good experience when it comes to negotiation, accepting and the art of compromising. But it also gradually made our work difficult and very demanding both in Thailand and afterwards in Denmark. Nevertheless we have learned a lot about trans-cultural collaboration and therefore we proudly present our project.

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Contents

Introduction

The area of Lam Phra Phloeng Watershed has been settled for about 40 years. When the first settlers arrived they were subsistence farmers, growing rice and vegetables, but soon they changed to a more market oriented livelihood (Cho and Zoebisch, 2003). In the seventies the market for maize was seen as a good alternative to the upland rice, which was time and labour consuming and furthermore could be bought everywhere at the market (Cho and Zoebisch, 2003). Shifting cultivation was never practiced and most farmers have been growing continuous maize for long. However, attempts have been made with other crops. For example, some farmers initiated to grow cotton 30 years ago, but the project failed due to insect problems. In the eighties, many people planted mango orchards, but after 15-20 years they uprooted them due to low productivity. In both cases, farmers claimed to need extension help to succeed and both cases ended with a return to maize dependency (Cho and Zoebisch, 2003).

Land access

Farmers of Thailand have until recently entered deeper into the forest and cleared more land in order to support their family. However, the economy of Thailand has been growing fast lately and most of the productive land is under cultivation today. The primary forest reserves are very small or virtually not existing, leaving the small-scale farmers without new land resources to clear when the family size is growing (Mehl, 1986). Furthermore, the amount of available land is decreasing as a result of people from the outside of the village buying the land (Molle and Srijantr, 1999). In the region of Lam Phra Phloeng, the situation is no different and no more land for clearing is available (Cho and Zoebisch, 2003). As a result of decreasing land access and financial problems such as debt, a number of farmers do not own the land they use for cultivation, but rent it instead (Tokrisna, 2002).

Alternative Income sources

The need for alternative income sources, both on-farm and off-farm, is increasing. Families cannot give land to all their children and people are left landless because of debt which forces them to sell the land (Singzon and Shivakoti, 2005). Some land less people continue in agriculture by renting land (Singzon and Shivakoti, 2005) while an increasing amount of landless people are finding labour outside of the agricultural sector and/or moving into the cities (Rigg, 2006).

Contract Farming

As the need for a higher output is increasing, tractor ploughing has been increasingly adopted, and the maize varieties used require higher inputs of fertilizers and herbicides (Cho and Zoebisch, 2003). These factors raise the production costs and most farmers have to farm on contract which means lending money from middlemen or other money agencies to acquire the necessary inputs (Singzon and Shivakoti, 2005). Molle and Srijantr (1999) conclude that 3 out of 4 farmers are indebted due to lack of capital needed for the necessary inputs of agriculture. The interest of the loan is often high and the debt might be impossible to re-pay (Singzon and Shivakoti, 2005).

The objective of this study is: to understand the links between land ownership, contract farming and alternative income as these things represent three major factors in the livelihood strategies of the farmers.

The field work took place in two villages: Pa-Yung Mitr and Kok Santisuk which are situated in Lam Phra Phloeng Watershed, Province of Nakhon Ratchasima, Thailand. The two villages investigated were one village in 1999 and are separated by a small community forest.

More specifically, the following sub-objectives are targeted:

1. To investigate the causes and effects on the villagers livelihood of contract farming.

2. To investigate and compare land use and socio-economic situation between land owners and land renters.

3. To investigate the push and pull factors affecting the change of crops and the choice of alternative occupation.

To answer the above objectives, the following **Research Question** will be used:

Which reasons, effects, possibilities and limitations are relevant to contract farmers and to farmers complementing their traditional farm income with that from an additional occupation, and how do these strategies affect owners and renters respectively?

Following **Definitions** are used in this project:

Owner: Any farmer which informed us to own some part of the agricultural land he/she uses for cultivation. Often these farmers also rent additional land.

Renter: Any farmer renting all the land he / she uses for cultivation.

Household: The people living under the same roof.

Household expenditures: The money spent on basic household necessities as food, medicine, school fees, electricity and water bills, etc. No agricultural inputs are included.

Alternative occupation: As farming of staple crops as maize and cassava is the norm in the village, alternative occupation is considered as both diversification within farming (cattle, vegetable cultivation, orchards or fish ponds) and working off-farm. However, working off-farm often includes working as labour on other peoples' farm. In this study, only the alternative occupation of the head of the household has been investigated.

Sor-Por-Kor: Land title which does not give the holder right to sell the land, however it may be passed on to family members in direct line (Building Thailand, 2006).

Methodology

In the present study work, four sets of data have been collected by applying the following methods; Questionnaire, Participatory Rural Appraisal (PRA), Interviews and soil sampling and analysis. The different methods, their main purpose, sampling strategy, participants involved and shortcomings are presented in table 1.

Table 1 Methodology

Method	Main purpose for research	Sampling strategy/ Participants involved	Shortcomings & Remarks
Questionnaire			
Questionnaire	▪ To obtain baseline information about the farmers, their livelihood, and other issues directly related to the objectives of the study	*Kok-Santisuk:* ▪ Every third household out of 129 were asked to participate. ▪ In the case where nobody was present in a selected household, the adjacent household was interviewed. *Pa-Yung Mitr:* ▪ Farming households were divided into two groups; land owners and land renters using the land tenure information gathered during the pre-survey. For each group, a list of random household numbers was generated by drawing household numbers out of a hat. ▪ Sampling size was determined according to the estimated time available. ▪ The interviewers would return later to the same household in the case where nobody was present in a selected household.	*Kok-Santisuk:* ▪ Results of the pre-survey done by the Thai students before our arrival suggested that all villagers were farmers. However, it turned out that an important part of the villagers did not have an agriculture-based livelihood strategy. This obstacle has considerably reduced the number of useable questionnaires, as the questions were particularly relevant for farmers. The problem could have been avoided by making a land tenure survey as done in Pa-Yung Mitr. ▪ Furthermore, the fact that 8 questionnaires were forgotten in Kok Santisuk strongly biased the results as these particular questionnaires were done with maize and cassava farmers and had been chosen for in-depth interviews. *General:* ▪ It's important to visit the farmers in the evening when they are at home, or in the field during the day. ▪ More emphasis should have been put into the planning of sampling strategy and preparation of how to carry out interviews as this would have contributed to more reliable and useful data.

Table 1 Methods continued

Method	Main purpose for research	Sampling strategy/ Participants involved	Shortcomings & Remarks
Participatory Rural Appraisal (PRA)			
Timeline/ Village history	▪ To get information related to the community's' history and the changes it has experienced	▪ 5-7 farmers chosen by headmen	▪ Students tend to participate too much with questions, statements or opinion, and thus the results might not be a true reflection of the farmers' perspectives. An improvement would be to ensure that each farmer participates in only one of the activities organised, thus making sure that they are not too tired to get involved in discussions. ▪ In principle, students' role should rather be to encourage discussions with small hints, acting more like a facilitator than a participant. Students were often perceived as very knowledgeable in the villages, and most of their statements were taken as a truth and was in turn greatly influencing farmers' contribution. More training into conducting PRAs is needed to overcome this problem.. ▪ The place where PRA activities are held can greatly influence the way villagers will participate. Activities organized in the headman's' house has without any doubt influenced the way people answered as they were taking care of what they were saying in front of the authority. To avoid this problem, PRA activities could be held in the community centre or in any other "neutral" place. ▪ Headmen of both villages were in charge of choosing the participants to the different PRA activities, and hence the sample of people chosen might not have been representative of the whole range of households in the village. Often it will be the most outgoing and enthusiastic farmers who are participating, while the farmers who are lacking resources are absent. It is not possible to force farmers to participate, thus the bias that will occur in data from the PRA has to be corrected by triangulation using other methods such as questionnaires and interviews in any case.
Activity calendar	▪ To obtain detailed knowledge about agricultural activities performed during each month of the year.	▪ 15 farmers chosen by headmen	
Problem ranking (Pa-Yung Mitr)	▪ The pre-survey showed that the main problem encountered by villagers in Pa-Yung Mitr was their low income. In order to explore this, villagers were asked to state 5 reasons for their low income (Appendix 3). ▪ These reasons were subsequently ranked according to their contribution to low income.	▪ 15 farmers chosen by headman	
Timeline of use of fertilizer and pesticides (Kok Santisuk)	To investigate the history of the use of agricultural inputs and the history of change of crop types and to find out about when the change towards contract farming took place.	▪ 10 farmers chosen by headman	

Table 1 Methods continued

Method	Main purpose for research	Sampling strategy/ Participants involved	Shortcomings & Remarks
Focus group discussion			
Focus group discussion (Pa-Yung Mitr)	▪ To discuss the following topics which needed to be investigated more in depth; ◆ What is meant by "contract farming" ◆ The advantages and disadvantages of contract farming ◆ The relationship between middlemen and farmers (rights and obligations of both parts) ◆ The different ways of borrowing money for agriculture and their rules/criteria for qualification	▪ 1 Non-contract farmer ▪ 2 Contract farmers	▪ An interesting part of focus group discussions is that group members have an overlapping spread knowledge which covers a wider field than that of any single person (Chambers, 1997). ▪ The information collected through group discussions in more in agreement with the daily context for the farmers where they relate to each other (Buciek, 1996). ▪ Difficult to translate discussions between farmers. Please read the general remark about this subject in the end of this chapter. ▪ Too much participation and inputs by students. Refer to PRA shortcomings.
Focus group discussion (Pa-Yung Mitr)	▪ To discuss the following topics which needed to be investigated more in depth; ◆ "Push" factors (incentives, motivations, reasons for changing) ◆ "Pull" factors (limitation, barriers, obstacles) for a change.	◆ 2 farmers who would like to change crop ◆ 1 farmer who would like to have livestock ◆ 3 farmers who would like to have a non-farming occupation	

Table 1 Methods continued

Method	Main purpose for research	Sampling strategy/ Participants involved	Shortcomings & Remarks
In-depth interviews			
Kok Santisuk	▪ To clarify and go deeper into the following topics; ◆ The causes leading farmers to start farming on contract ◆ The effects contract farming has on farmers' livelihood	◆ 1 Contract farmer	▪ Difficult to translate discussions between farmers. Please read the general remark about this subject in the end of this chapter. ▪ Too much participation and inputs by students. Refer to PRA shortcomings.
Kok Santisuk	▪ To clarify and go deeper into the following topics; ◆ The rationale behind having a secondary income source	◆ 1 Contract farmer ◆ 1 Ex- contract farmer ◆ 1 Villager employed as labour	
Kok Santisuk	▪ To clarify and go deeper into the following topics; ◆ The investigate the land use factors (inputs and outputs of nutrients) at the farm level	◆ 3 farmers of maize and/or cassava	

Table 1 Methods continued

Method	Main purpose for research	Sampling strategy/ Participants involved	Shortcomings & Remarks
In-dept interview			
Pa-Yung Mitr	▪ To clarify and go deeper into the following topics; ◆ What is meant by "contract farming"? ◆ The advantages and disadvantages of contract farming ◆ The extension services available to villagers in Pa-Yung Mitr ◆ The "push" and "Pull" factors for a change of crops in Pa-Yung Mitr	◆ 1 Extension worker	▪ Difficult to translate discussion between farmers. Please read the general remark about this subject in the end of this chapter.
Pa-Yung Mitr	▪ To clarify and go deeper into the following topics; ◆ The causes for selling their land ◆ The effects that selling land could cause on their livelihood	◆ 2 Land owners thinking about selling their land	
Soil analysis			
Kok Santisuk	▪ To find out about the difference in soil fertility levels between maize and cassava fields and to see if there was any difference between owned and rented land	▪ Four fields were chosen for soil analyses: two of maize and two of cassava. Each of these two crops was represented by one field of an owner and one field of a renter.	▪ Samplings were taken from 4 fields only. Sampling from more fields would have contributed to more reliable and useful data. ▪ The fact that all samples from each field have been pooled together made it impossible during soil analyses to investigate the intra-field variations, another element that could have been interesting to study. ▪ Only soil from fields of two different farmers were sampled, which reduces even more the reliability of the results compiled

General shortcoming for the present fieldwork

A general shortcoming for the present fieldwork was the difficulties the interpreters had to translate discussions between farmers; this made it difficult for Danish students to follow what was being talked about. At the end of PRA sessions, the translations of dialogues had inevitably been reduced to summaries and ultimately Danish students lost many of the subtle details that were originally present in the discussions. Trans-cultural fieldwork is difficult but one way of improving it would be for teachers and students to explain very clearly to the interpreters, their role and their tasks.

Results and discussion of results

The results of this study will be presented in three chapters that have been divided according to our sub-objectives: investigation of the causes and effects of contract farming on farmers' livelihood, comparison of land use and socio-economic indicators between land owners and land renter and investigation of "push" and "pull" factors affecting the change of crops and the choice of alternative occupation.

Investigation of the causes and effects of contract farming on farmers' livelihood

Definition of contract farming

FAO suggests the following definition for contract farming:
"…an agreement between farmers and processing and/or marketing firms for the production and supply of agricultural products under forward agreements, frequently at predetermined prices. The arrangement also invariably involves the purchaser in providing a degree of production support through, for example, the supply of inputs and the provision of technical advice." (Eaton and Shepherd, 2001, p.2)

There are many ways in which contract farming can be structured, and this will depend greatly on the crop, the objective and the resources of the middleman, and the experience of the farmers (Eaton and Shepherd, 2001). In the case of contract farming of maize in North-eastern Thailand, the contract farming model followed could be termed "the informal model" (Eaton and Shepherd, 2001). Based on observations and information gathered in Kok Santisuk and Pa-Yung Mitr, it has been found that maize contract farming is guided by simple, informal production contracts between individual entrepreneurs (middlemen) and farmers on a seasonal basis. In most cases, middlemen following the "informal model" will only provide farmers with basic material inputs such as seeds and basic fertilizers, and with some degree of technical advice (often limited to grading and quality control) (Eaton and Shepherd, 2001). Indeed, according to an in-depth interview made with an extension service worker from Wangmee sub-district administration, contract farming is a way of farming in which farmers take fertilizers, seeds and other amendments from a middleman who lends them money and in turn buys the crop at harvest. These findings can also be supported by results from questionnaire baseline survey done in Kok Santisuk, in which farmers answered that they borrow money, seeds and fertilizers and in turn sell all their harvest to the middleman. The middleman earns profit by selling agricultural inputs at a higher price than that of the market, and by collecting interests on loans (about 5% per month) (Pers. Comm., 2006). This form of contract is common for short-term crops such as maize, and is very transitory in nature (Eaton and Shepherd, 2001). In fact, contracts are often valid only for one cropping season, and the farmer is then again free to choose to enter in another agreement or not.

An interesting finding from the questionnaires is that maize is by far the main crop grown on contract. As a matter of fact, all maize farmers have said to have a contract for this crop, while none of the cassava farmers have reported to be contract farmers. Interesting enough, all contract farmers interviewed were either maize cultivators (14) or commercial cantaloupe grower (1).

Causes of contract farming of maize

Contract farming has existed for many years as a manner to organize the commercial agricultural production. Nowadays, changes in consumption habits of villagers have created a change of livelihood, and thus an impetus for further development of this mode of agricultural production. Indeed, farmers need cash income to afford different goods and services (e.g. electronic equipment, clothes, stimulants, education and health) and they are therefore attracted by commercial production instead of subsistence agriculture (Rigg, 2006). Based on the results of a PRA activity done in Kok Santisuk, it can be shown that contract farming has become more important at the end of the 1970's, and that it has been increasing in importance until now.

As a matter of fact, in countries like Thailand, there is a danger that small-scale farmers could become even more marginalized as only large-scale farmers can achieve in being profitable (Eaton and Shepherd, 2001). Contract farming of maize in North-eastern Thailand appears to be a mean for small scale farmers to participate in commercial agriculture, due to access to different services provided by middlemen (Eaton and Shepherd, 2001). The main reasons stated by farmers of Kok Santisuk and Pa-Yung Mitr both in questionnaires and in-depth interviews for entering in maize production on contract, is the easier access to credit from the middleman than from institutional sources. One of the main reason for this could be that is it difficult, particularly for land renters, to offer a guarantee of repayment to institutional money lenders. However, according to a contract farmer in Pa-Yung Mitr, farmers only need to have a car licence number and the deed of paid taxes in order to qualify for loans from the middleman, which makes it much easier to access loans. Interestingly, results from the farm activity calendar drawn in Pa-Yung Mitr show that the crucial money shortage period for farmers, running between May and November is also the period during which they rely on loans from middlemen. This exemplifies their dependence upon this financial resource for their farming activities, but also more globally, to maintain their current livelihood strategy.

Another possible reason for farmers to choose to grow maize under contract is that extension service is not readily available for farmers of Pa-Yung Mitr and Kok Santisuk. In fact, according to the extension worker of the area, cash crop farmers can most of the time only rely on technical advice from the middleman, as the Wangmee sub-district has a limited budget and can only support farmers with special projects (e.g. mushroom cultivation). Similarly, farmers of Kok Santisuk responded in the questionnaires that almost none of them had access to technical advice from agricultural extension services.

Effects on villagers' livelihood of contract farming of maize

Contract farming of maize in North-eastern Thailand has some important positive and negative effects on farmers' livelihood. The main advantages and disadvantages of contract farming for farmers are summarized in table 2.

Table 2: Advantages and disadvantages of contract farming for farmers
(Eaton and Shepherd 2001, Pers. Comm., 2006, Rickson and Burch 1996).

Advantages for farmers	**Disadvantages for farmers**
Provision of inputs + production services	Indebtedness and high interest rate on loan
Access to credit	Unsuitable technology and crop
Introduction of technology and skill transfer	High cost of agricultural inputs
Guaranteed and fixed price structure	Low output price
Access to reliable markets	
Facilitation of post-harvest operations (storage, transportation)	

Positive effects on farmers' livelihood of contract farming of maize

Provision of inputs and production services

It is often difficult for small-scale farmers who do not farm on contract to gain access to different inputs such as fertilizers and pesticides. In the case of contract farming, these inputs are distributed by the middleman; therefore, farmers have an easy access to these production factors (Eaton and Shepherd, 2001). Findings from questionnaires, done in Kok Santisuk support the fact that it would be very difficult to access these agricultural inputs without the services of a middleman. According to farmers of Kok Santisuk, middlemen can in some cases also supply farmers with labour during harvest periods and free training and extension, and this is very valuable for farmers who would often lack these production services otherwise.

Access to credit

A great majority of small-scale farmers, especially landless farmers (i.e. land renters) experience difficulties in obtaining credit for farming, and this limits their choice of operations on their farm. Contract farming allows farmers to gain access to some form of credit to finance their agricultural inputs (Eaton and Shepherd, 2001). In-depth interviews with contract farmers and an extension service worker also reveal that one of the main effects of contract farming on farmers' livelihood is that they can finally access credit which allows them to make investments on their farm.

Introduction of technology and skill transfer

Farmers might be reluctant to adopt any new technology as they perceive it as being too risky and costly. According to FAO, they are more likely to adopt new agricultural practices when they get help from extension workers (Eaton and Shepherd, 2001). This statement can be supported by information gathered on the field, as most farmers expressed their concerns about the lack of extension service in the region, stating that it undermines their ability to opt for a change of crops. It has been proven that middlemen will often offer technology more conscientiously than government extension workers because they have a personal economic interest in improving farmers' productivity (Eaton and Shepherd, 2001). More investigations on the quality of knowledge and skills transferred from middlemen to farmers are needed for the studied villages.

Because contract farming gives farmers the opportunity to diversify their production and grow crops which they couldn't have grown without a contract, it leads them to learn new skills which sometimes can be very valuable (Eaton and Shepherd 2001). These can range from improved application methods of chemicals to knowledge of the importance of crop quality and the different demands of export markets (Eaton and Shepherd 2001). Moreover, these skills are also often applied to other cash and subsistence crops, so they appear to be long lasting (Eaton and Shepherd 2001). As mentioned earlier, middlemen are often the only sources of technical advice for farmers of Pa-Yung Mitr and Kok Santisuk. However, this skill transfer appears to be very commercial-oriented, and concerns about the environment are rarely transmitted from middlemen to farmers (Rickson and Burch 1996). As one Tasmanian middleman puts it;

"Who, among the [middlemen], should take responsibility for soil conservation? We might be giving farmers' advice about soil erosion and the farmer might turn around and grow potatoes or peas for our competitors on the land that we helped him to save" (Rickson and Burch 1996, pp.184).

This exemplifies the fact that skills and information transferred to contract farmers might be relevant, but very biased towards the middlemen's' economic interests. Based on the results of the pre-survey done in the region, it is shown that soil erosion is a major problem causing a decrease in soil fertility. When villagers later were asked in which way they managed with declining soil fertility, they declared that they had no knowledge on how this situation could be solved. The lack of incentives to conserve the soil in both studied villages can be demonstrated by the fact that farmers' grow maize as monocrops simply because it appears easier to them (Pers. Comm. 2006). While some few farmers have tried to practice intercropping of maize with other crops, they have said that they don't get any advantage of doing so as middlemen show little interest in the crop with which maize is being grown. Moreover, some producers have tried to cultivate mung beans between maize harvests, but market access for this crop is very difficult as middlemen are not willing to buy it (Pers. Comm., 2006).

Guaranteed and fixed price structure

Contract farming can, in some instance, overcome the instability of market prices on crops (Eaton and Shepherd, 2001). Indeed, middlemen will frequently announce in advance the price they are willing to pay for maize and this can be specified in the informal agreement. Farmers can then base their budget on the agreed price, and are therefore less dependent on market volatility (Eaton and Shepherd, 2001). However, results of a problem ranking activity done with community members of

Pa-Yung Mitr show that villagers consider "low sales price of maize" as being the third most important factor contributing to their low income. This is due to the fact that middlemen are in such as strong position compared to farmers that they can afford to set prices as low as possible in order for them to make a higher profit (Singzon and Shivakoti, 2005). According to many farmers, the price paid by middlemen for maize is "unfair", but farmers need to rely on these middlemen to access market.

Access to reliable markets

According to the results of the questionnaires, most contract farmers argue that they choose to sell maize under contract as it is for them the only option to access market. As a matter of fact, small-scale farmers often base their choice of crops on their ability to market them, and their limited marketing opportunities often makes diversification into different crops more difficult. Because it provides farmers with a guaranteed access to market for their maize, contract farming offers a solution to this situation (Eaton and Shepherd, 2001).

Facilitation of post-harvest operations (storage, transportation)

The fact that middlemen buy maize right after harvest greatly facilitates post-harvest operations for farmers. In fact, farmers have said that they thereby save time and costs associated with storage and transportation of their crops, as the middleman takes care of this.

Negative effects on farmers' livelihood of contract farming of maize

Indebtedness/high interest on loans

As it was said previously, one of the reasons why contract farming is so attractive to farmers in North-eastern Thailand is the fact that it makes credit available to them. However, this might lead them to accumulate debts, especially if they have to face production problems, and farmers' indebtedness can easily escalate to uneconomic levels (Eaton and Shepherd, 2001). According to results from the questionnaires, the interest on loans asked by middlemen appears to be very high (around 5% per month) and this is a major factor contributing to a fast escalation of farmers' debt to middlemen. Indeed, according to the extension worker of the area, this is the main negative effect of contract farming on farmers' livelihood. Furthermore, results of a problem ranking activity made in Pa-Yung Mitr show that they perceive "debt" as being the main factor contributing to farmers' low income. A more thorough discussion on whether this debt has only negative consequences on farmers' livelihood will be presented later on.

Indebtedness can have major consequences on farmers' livelihood. For example, several contract farmers in Pa-Yung Mitr have revealed during in-depth interviews that the best option for them to repay their debt to the middleman is to sell their land. These results also correspond to findings from questionnaires in Kok Santisuk, where farmers stated that they had to sell their land due to indebtedness. It was also mentioned by the farmers that the choice of selling their land is never forced by middlemen, but it is a personal decision made in order to get out of indebtedness. However evidence shows that in some instances, farmers appear to be better off after selling their land. For example, a farmer in Kok Santisuk has reported that selling his land has allowed him to

clear his debts with the middleman and to start producing organic fruits and herbs instead of growing maize. As a result of this change in livelihood strategy, this farmer is less dependent upon expensive agricultural inputs (chemical fertilizers and herbicides), and the agricultural operations are less time consuming so it allows his wife to return to her personal occupation, that of being a singer. A more detailed analysis of the different opportunities offered by land ownership, and the numerous constraints associated to it will be presented in the following chapter.

Unsuitable technology and crop

Maize production can interfere with traditional production, either by being grown on land traditionally reserved for subsistence crops, or by entering in competition for scarce labour resources (Eaton and Shepherd, 2001). This can thus lead to the disruption of villagers' traditional farming system and livelihood strategies.

Accordingly, Kok Santisuk's village headman has revealed in an in-depth interview that villagers' have only started to use fertilizers on their field since they cultivate under contract. According to other villagers of Kok Santisuk, the rate of fertilizer input suggested by the middleman has increased with time, as they used it only at flowering in the past, and they are now also applying it during soil preparation. According to a contract farmer interviewed, the use of chemical fertilizer degrades her soil quality as it has decreased the amount of top soil. Moreover, another contract farmer asserts that chemical fertilizers, which are strongly promoted by his middleman, lead to soil compaction and top soil degradation, which in turn leads to a major decrease in soil quality. However, several studies such as the one made by Ekasingh et al. (2004) explain that one of the most important factors leading to high maize yield in Thailand is farmers' access to chemical fertilizers, as it allows the yield potential of their cultivated maize hybrid to be achieved. However, this same study also emphasises the fact that higher soil fertility can also be achieved by other methods such as crop rotation, minimum tillage or the incorporation of green manure into the soil (Ekasingh et al., 2004). More investigations are needed in order to find out if this information is available to farmers. In this case, information is not very likely to be transmitted by middlemen because these practices aim at reducing farmers' dependence upon what they make a major part of their profit on.

Another problem related to the cultivation of maize in Kok Santisuk is that middlemen sell seeds that are not good for storage, and the maize cultivar that is sold has very low yield if it is not grown with fertilizers and pesticides. The timeline of use of fertilizer and pesticides done in Kok Santisuk reveals similar results: it shows that the use of pesticides has increased in correlation to the increase in importance of contract farming in the village. Accordingly, Hossain and Sigh (2000) state that increasing fertilizer use is an important problem for smallholders in Asia because most cultivars available are bred for highly commercial farms and thus are high yielding only in very fertile environments.

High cost of agricultural inputs

Middlemen make an important part of their profit by being the farmers' only source of agricultural inputs (i.e. seeds, chemical fertilizers, pesticides), and by selling them at a higher price than the market price (Pers. Comm., 2006). Accordingly, many farmers revealed during in-depth interviews that they are strongly encouraged to buy high quantities of very expensive fertilizers, which makes their farming activities less profitable. Moreover, results of a problem ranking activity done in

Pa-Yung Mitr show that they perceive their low income to be due in great part to the high cost of their agricultural inputs (2nd most important factor). More investigations are needed in order to get an understanding of the actual price difference between inputs sold by middlemen and those sold on the market.

Comparison of land use and socio-economic indicators between land owners and land renters

This chapter is based on two assumptions. The first one is that land ownership induces a feeling of security and incentives for long-term investment. The second one is that land ownership gives easier access to credit and hence better opportunities to purchase the necessary assets and inputs for agriculture which in turn might influence the household economy. In this objective, the income from secondary and alternative occupation is not included as the aim was to compare strategies, opportunities and limitations related to the agricultural work. Hence it will not be addressed weather it is the land owners or the land renters which have the most income generating livelihood strategy.

No investigation was done upon the type of land ownership or renting agreement. The perception of the farmer was in this case considered more important. Consequently, it was assumed that if the farmer considered to be owner of his land, this "perception of land ownership" would be enough to influence his /hers actions.

The indicators listed in table 3 have been chosen to compare the land use and the socio-economic situation of owners and renters.

Table 3: Indicators chosen to compare land owner and land renters

- Land size
- Land use, crop type, husbandry and soil fertility
- Agricultural assets
- Income from farm activity
- Household expenditures
- Debt

Land Size

As it is shown by the results of the data gathered in the questionnaires, land owners appear to cultivate a total amount of land which is higher than what is cultivated by land renters (figure 1). As mentioned earlier, land owners frequently rent additional land for cultivation. Hence, in the case of land owners the total amount of land refers to both rented and owned land.

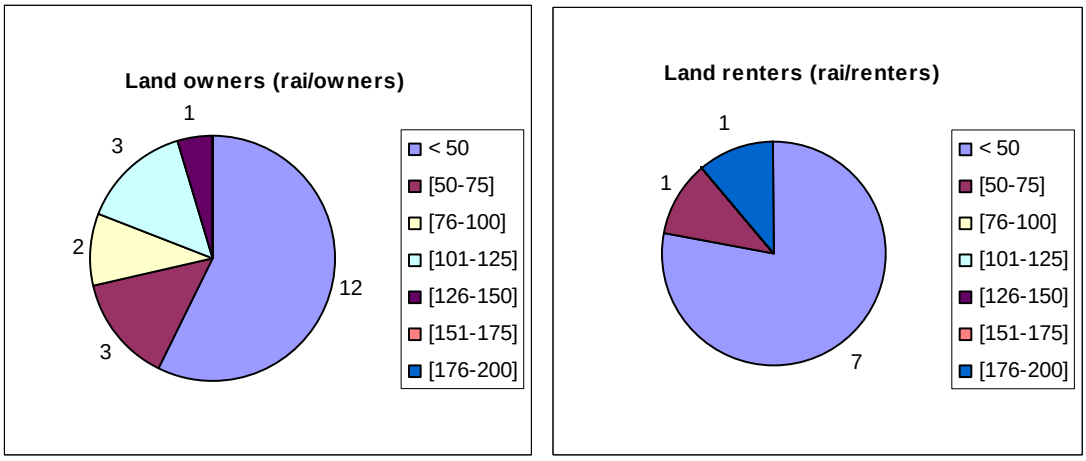


Figure 1 Average landholding in rai per land owners and land renters

As a matter of fact, 7 renters (78%) and 12 land owners (57%) cultivate less than 50 rai[1]. Accordingly, 1 land renter (11%), compared to 6 land owners (29%), cultivate more than 75 rai. This somehow contradicts a study by Feder and Onchan (1987) which states that land ownership does not induce more land acquisition in the North-eastern provinces of Thailand. However, a study made in the Lop-Buri province suggests that land owners, having a greater access to institutional credit, will invest more capital in order to acquire more land (Feder and Onchan 1987).

Land use, crop type, husbandry and soil fertility

Land use

Any difference in land management due to land ownership can not be revealed in this study. When maize is to be cultivated the farmers take care to plough a month before sowing to "let the grasses ferment". Then, just before sowing, they plough again and apply fertilizer at the same time. This practice and the rationale ("grasses fermentation") behind this practice are the same for both the owner and the renter interviewed. Also for cassava, the practice is the same for the owner and the renter and no fertilizers are used. Hence, at least in this study, no long term conservation practices could be revealed as a result of more incentives to take care of the land if a higher degree of security was present. All farmers are ploughing in the same way, which is up and down the slope. When asked why they do not plough along the slope to decrease erosion the explanation given was that the tractors could not manage the steepness. In the in-depth interviews, the farmers were asked about erosion and all claimed to have problems with this. The perception of the farmers was that the top soil layer was getting hard due to the use of fertilizers, and that this increased erosion. The hard soil could possibly be explained by low amounts of organic matter as a consequence of many years of mono-cropping. In the questionnaire, the farmers were asked about the reason behind the choice of cropping system and the reason to choose mono-cropping was such as, "higher yield" or "easier".

[1] 1 rai = 0.16 hectare or 1 hectare = 6.2 rai

According to an article of Cho and Zoebisch (2003), the most commonly grown crop in the Lam Phra Phloeng watershed over the last 30 years has been maize, since this was the easiest and most profitable. Rice requires more time and labour and there is no middleman to buy it and hence the farmer would have to find a way to access the market himself. Cho and Zoebisch (2003) found that there have been attempts to reduce the dependence on maize and to introduce other crops such as cotton and mango. However the projects failed due to lack of extension service and the farmer returned to the continuous maize-maize cultivation. This is supported by the PRA conducted in Kok Santisuk, were the history of the most important crops, fertilizer use and pesticides/herbicides use in the village was investigated. The PRA shows the change from maize and rice (30 years ago) to a higher dependence on maize and finally to the situation of today where maize and cassava are the main crops. From this PRA we also understand that, already during the eighties, the use of fertilizers and herbicides were increasing, but that the consumption increased dramatically during the nineties.

Choice of maize, cassava or alternative farming practice

When owners and renters are compared on the basis of their choice of crop, it can be seen from figure 2 that there is a higher proportion of owners cultivating both maize and cassava, which are considered the two most important cash crops in the area. It seems that renters of land, to a higher degree than land owners, choose other types of crops for their agriculture such as vegetables, orchards or cattle. Other crops grown in the study area are mung-beans, cantaloupe and sugarcane. In the category of "other crops", cattle are also included. Two farmers grow rice, though only for household consumption.

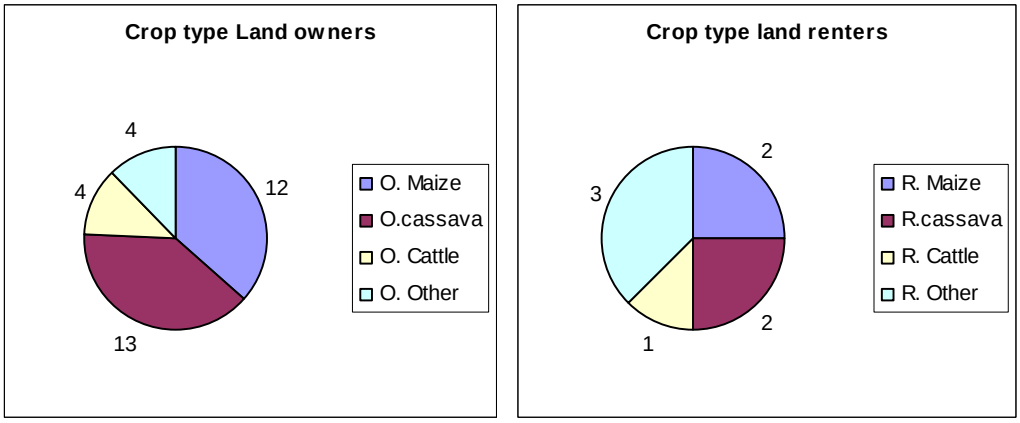


Figure 2 Choice of crop or the choice of breeding cattle

An extension worker of the area pointed out that the most profitable choice of crop at the moment would be either cassava or sugar cane. China is importing a lot of cassava at the moment but there is also a factory close to the villages buying cassava for ethanol production.

Cultivation of maize requires high amounts of inputs and, as mentioned before, these are accessed through a middleman. However, to get a contract with a middleman, you need a security as with other kinds of loans and renters possibly lack this security. As seen above, renters generally have less land for cultivation and hence, another reason for the renters cultivating less maize and cassava than the owners could be that they feel a higher risk of not being able to generate a yield which can re-pay the loans taken.

All farmers cultivating maize were doing it on contract. Therefore, even if land ownership does not influence the management of the area, it is clear that contract farming affects the land use as one of the two main crops in the study area is maize. A farmer with no or little access to capital who borrows money from a middleman will hence grow maize and do it according to the conditions suggested by the middleman.

Soil fertility

Results from the questionnaires shows that there is a general perception among farmers that their soil fertility is declining. Out of 10 farmers interviewed, 8 consider their soil fertility to have been decreasing over the years. Two farmers consider theirs to be increasing; however, they explain this phenomenon as due to the use of manure. As there is an increase of cattle in the village, the possibilities for the use of manure should also be increasing.

As it can be seen in table 4, there is no difference of nutrient contents between the rented and the owned land. However, there is a difference between the two crops concerning the soil organic matter levels, the percentage of N in the soil and pH. Looking upon the conductivity, the two lowest numbers belong to the maize fields.

Table 4 Soil fertility analyses

	Soil organic matter C:N	**Nitrogen (N) %**	**Total Phosphorus (P) g/kg soil**	**Total Potassium (K) g/kg soil**	**Conductivity in soil**	**pH (H2O)**
Cassava rented	10,00	$2,47*10^{-4}$	7,4	0,002	0,72	7,8
Cassava owned	10,81	$2,47*10^{-4}$	7,4	0,002	1,69	7,1
Maize rented	11,20	$9,87 * 10^{-5}$	7,4	0,002	0,54	5,7
Maize owned	11,21	$9,87 * 10^{-5}$	7,4	0,002	0,18	5,8

Nitrogen

The difference in Nitrogen (N) is probably mostly due to seasonality. The end of the harvesting period for maize was December and since then, leaching has probably taken place. However on both maize fields cows are left to grass but taken to the enclosure by the house in the evening. Consequently, the cows will be removing crop residues, and hence also the plant nutrients, even though they might return some of the nutrients dropping manure in the fields during daytime. The end of the cassava harvesting period was more recently. However, the fields were already prepared for the cassava cultivation at the time of sampling as cassava had to be planted very soon. Ploughing for cassava may be done a month before planting. Planting is done in the beginning of the rainy period which starts in the end of March. Therefore, the period for which cassava fields will be left fallow is not as long as for maize. The turnover of nutrients might however be enhanced by the ploughing which was already done and therefore the N content was found to be higher.

Furthermore, no cows are grassing in the cassava fields, so no removing of crop-residues will take place.

Phosphorus

The soil of the area is very red and therefore presumably with a high content of iron (Defoer et al., 2000). Iron is an element that will bind phosphorus (P) very strongly. Hence, high levels of phosphorus from analyses could be explained by the fact that total P was tested instead of available P.

Potassium

Potassium (K) levels are the same if we compare all the fields analysed. Fertilizer is applied to maize fields but not to cassava fields. However, fertilizers applied in this study only contain N and P, and never K. No study was done on the specific crop history of these fields, and therefore it is not known which crop was grown last year or what the inputs were. One land renter cultivating cassava explained during an in-depth interview that he re-cultivates cassava continuously on the same fields.

Organic matter

The rate between N and C should be approximately 10. On the fields where maize was cultivated, the ratio is a little bit higher. However, this might be due to the lower N content of these fields.

Agricultural Assets

As it is shown by the results of the data gathered in the questionnaires, land owners appear to have more agricultural assets than land renters (figure 3). It is important to note that the present study has focussed only on some specific agricultural assets, which were thought to be the most crucial for crop production in Thailand: plough, tractor, truck, trolley, chemical sprayer and water pump. Five land renters (62%) appear not to have any of the aforementioned assets, while nine owners (69%) have informed to have between 1 and 4 agricultural assets.

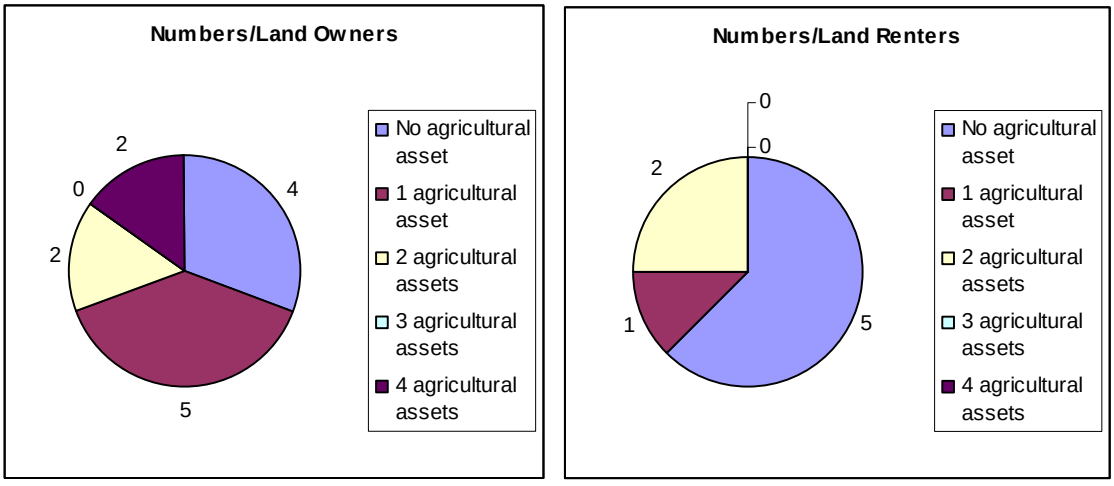


Figure 3 Agricultural assets per farmer

This is coherent with results of a study by Feder and Onchan (1987) which asserts that the capital stock (including equipment, draft animals and machinery) of a farmer with land title in Nakhon Ratchasima province is about 64% higher than that of a farmer renting land.

Average income from the cultivation of maize and cassava

As can be seen in figure 4, there does not seem to be any difference between owners and renters for their average income for maize and cassava per land unit for year 2005. When average income from maize and cassava is calculated it is 57000 for owners and 16000 for renters. This difference is at least partly explained with the higher access to land for the land owners.

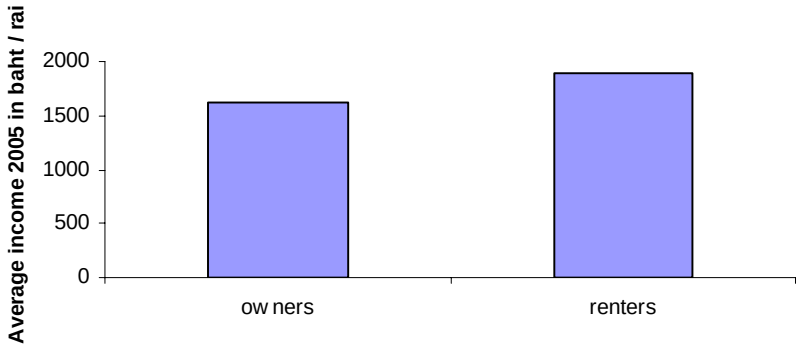


Figure 4 Average income from the cultivation of maize and cassava

The production of maize and cassava is managed in the same way by owners and renters, and this is probably the reason to why the output per unit of land is also the same. Differences in land quality were not investigated in this study. However, if differences in land quality between owners and renters exist, it does not show in the income they are able to generate from the land.

Household expenditure

For both owners and renters, the most common range of expenditure is between 500 – 1000 Bahts per month (figure 5). This range is however by far the most dominant among the renters while the picture for the owners is more diversified. Furthermore, there is no one in the group of renters who has a monthly expenditure above 2000 Bahts per month, while there are families among the owners that spend up to 2000 and 3000 Bahts per month.

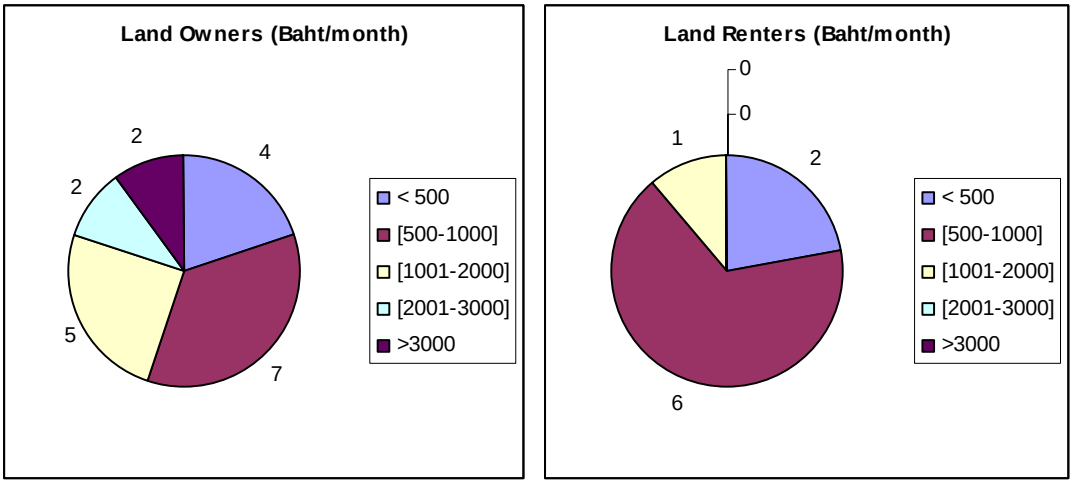


Figure 5 Household expenditures for land owners and land renters

Debt

Results of the questionnaires, in Pa-Yung Mitr and Kok Santisuk show that the average debt accumulated by land owners is much higher than that accumulated by land renters (figure 6). The average amount of debt for landowners is 74000 Baht while it is 38000 Baht for land renters.

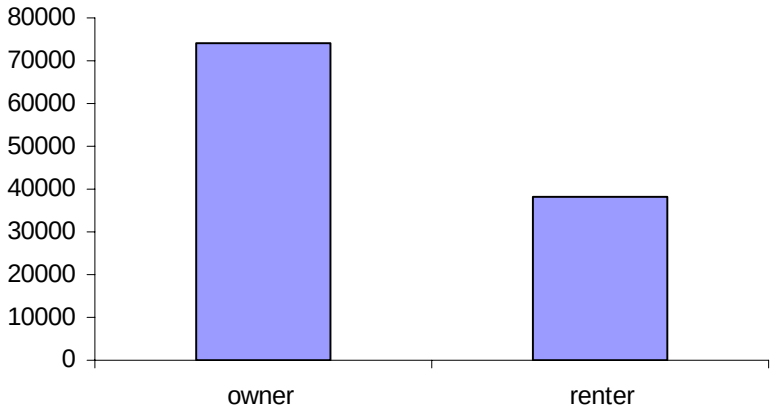


Figure 6 Average amount of debt for land owners and land renters (Baht)

This might be explained by the fact that land owners have an easier access to credit. For example, a study by Brasselle et al. (2001) reveals that owned land can acquire collateral value for money lenders, thereby facilitating the access of land owners to loans. Moreover, Feder and Onchan (1987) argue that the supply of credit in Thailand, especially from official institutions, is directly dependent on the borrower's ownership security. The Bank of Agriculture in the Wang Nam Khieo District confirms that only farmers who have a document of rights or a Sor Por Kor 4-01 title deed can borrow money from the bank. Out of 8 land owners interviewed, this title was the one they claimed to have for their land holding. The Sor Por Kor title deed is given by the government as to assure the user rights of the farmer (Molle and Srijantr, 1999). However, it does not give any rights to sell it or rent it out. This does not however stop farmers to do so (Burns, 2004). Since the land cannot be sold,

it should neither give any access to credit (Molle and Srijantr, 1999). In any case, in this area it seems to be accepted as a full de facto ownership title.

Investigation of push and pull factors affecting the change of crops and the choice of alternative occupation

Evidently, livelihoods in rural Thailand continue to depend greatly on small-holder agricultural production. However, statistics show that while 68% of Thailand's population live in countryside, the percentage of people working in agriculture has gone down from 64% to 51% between 1990 and 1999 (Rigg, 2006). A study made in the Central Plains of Thailand reveals that 57% of farm households surveyed had multiple occupations that included at least one outside of agriculture. Likewise, it is now evident that no country has been able to carry on rapid poverty alleviation without raising productivity in its agricultural sector (Timmer, 2005). According to Timmer (2005), to raise agricultural productivity in a profitable manner, diversification into crops and livestock should be targeted. Studying information gathered from the questionnaires, it is evident that also in this study area it is common to have an alternative occupation. In some cases, it takes the form of off-farm work and in other cases it takes the form of diversification of agricultural activities.

The result from the present study indicates that it is more common for land renters than for land owners to have alternative occupation. As seen in figure 7, 50% of land owners have an alternative occupation whereas all (100%) of land renters are occupied with off-farm labour or diversified farming.

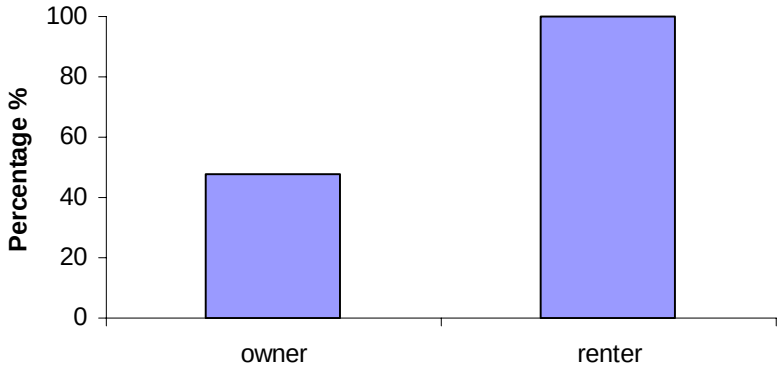


Figure 7 Percentage of land owners and land renters that have an alternative occupation

Also, when it come to whether the farmers consider alternative occupation as a good option for the future, land renters appear to be more positive. Only 30% of land owners would like another alternative occupation while the percentage is 80% for the land renters. A focus group discussion revealed that farmers would like to change to activities which would lead to a diversification within agriculture, with more vegetables, orchards and fish ponds. They were especially attracted by the orchards as this would be a long-term investment.

As diversification within and outside of agriculture seems to be the norm in Thailand, like in many other developing countries, there can be two different sets of motives leading farming households to

diversify assets, incomes and activities (Barrett, Reardon and Webb, 2001). The first set of reasons for diversification includes what is commonly termed "push factors", while the second set of reasons comprises what is traditionally called "pull factors". These different motives will be discussed here. Additionally, comments will be added on the limitations acting as barriers against diversification for farming households.

Push factors

Motives comprised in "push factors" are risk reduction, response to diminishing factor returns (e.g. family labour) in the presence of land scarcity due to population pressure, reaction to crisis, etc. (Barrett, Reardon and Webb, 2001). From this perspective, diversification is conducted by a farmer's desire of reducing risk caused by constraints in labour, market and climatic conditions, by selecting different activities which should help in stabilizing income flows (Barrett, Reardon and Webb, 2001).

Farmers of Kok Santisuk and Pa-Yung Mitr have reported during in-depth interviews that their research for alternative income was mainly motivated by the low and unstable prices paid for maize. Moreover, based on the results gathered from a farm activity calendar done in Pa-Yung Mitr, major labour shortage occur during maize harvest (from November to February) and this could also represent a major motivation in favour of diversification. This argument is also backed up by Rigg (2006) who states that labour shortage is a major propelling force in rural transformations.

Many of the farmers who have participated to a focus group discussion in Pa-Yung Mitr and to in-depth interviews in Kok Santisuk have decided to grow horticultural crops (e.g. shallots, garlic, cantaloupe, bergamot, pepper) or fruit trees (e.g. tamarind, rose apple, banana, papaya, jackfruit, mango, and lemon). Another motivation stated by farmers during in-depth interviews to change from cotton and maize cropping to fruit production is that inputs required for field crops, especially when grown under contract farming, require high investments. This statement can be verified in both studied villages, where farmers have reported in questionnaires that the main reason for their need of loans is to pay for inputs needed for maize production. Land shortage, due namely to population growth and the effects of land reforms can also be major determinants of agricultural diversification (Rigg, 2006). As it has been stated by villagers of Pa-Yung Mitr during a focus group discussion, land scarcity is a major factor contributing to their perceived need of livelihood strategy change. Many farmers seek alternative income sources off-farm. Through the questionnaires it was clarified that alternative income can be everything from working as labour on other peoples farms, construction work or going into handicrafts. The reasons to why some people chose diversifying their farming while others chose off-farm work as a way of alternating their income was not investigated. However, if land scarcity and security, soil fertility, lack of extension service and other production constraints becomes too big a problem, off-farm work might be a an attractive complement to the farming activities.

Pull factors

Motives comprised in "pull factors" are the possibility of profitable complementary activities (e.g. crop-livestock integration), specialization according to comparative advantage due to superior technologies (e.g. One Product One Tambon project in Thailand), and development of new skills.

From this point of view, opportunities for diversification are created by local engines of growth (e.g. commercial agriculture, proximity to an urban area) and farmers deliberately choose to diversify their activity in order to improve their livelihood strategy (Barrett et al., 2001).

According to an extension worker, an important "pull factor" which should motivate farmers to grow sugarcane is the fact that market price is actually very high. Moreover, a timeline PRA activity done in Pa-Yung Mitr reveals that since 2005 the BAAC is offering special loans to farmers willing to specialise into rubber tree cultivation, which should also be a contributing factor leading to an agricultural diversification in the village. A similar story has happened for cassava: in 2004, an asphalt road was constructed in Pa-Yung Mitr, giving villagers a better access to markets, and this was combined to a great market demand for cassava from China. These two factors combined have in turn acted as a major "pull factor", motivating farmers of the area to specialise into cassava cultivation. Another source of income has been the introduction of cattle breeding. The timeline activity has also linked the Thai National Village and Urban Community Fund established in 2001 to the beginning of livestock production in Pa-Yung Mitr. This appears to be due to the ability of investment of capital combined to land scarcity (push factor) and the complementarity of cattle with maize. In Kok Santisuk, questionnaires reveal that cattle production is seen as a long term investment that can make the family wealthy within three generations.

Direct observations and questionnaires done in the villages have also helped to come to the conclusion that off-farm opportunities in cities such as Bangkok represent interesting occasions for households or individuals to earn higher and more stable income. Also, a very high proportion of households interviewed in Kok Santisuk reported that at least one family member was working in Bangkok. Moreover, education, media and consumerism have completely changed the way rural people think about work, their future, and the future of their children (Rigg, 2006). In fact, farming has become a low status occupation (Rigg, 2006), while off-farm occupations in urban settings culturally occupies a higher status. Consequently, many people are moving away (temporarily or permanently) from their agriculture-based livelihood. In fact, direct observations in the village have allowed remarking that a great proportion of the villages' population was composed by young children and elders, and that a lot of the "working force" was absent.

Limitations

Although motivations for diversification are widely recognized in both villages, there appears to be limitations hampering it. As a matter of fact, many of the farmers selected for questionnaires stated that they wanted a "change of crop, or an alternative occupation" (64%), but the many barriers to these changes were expressed during a focus group discussion. Specifically, farmers of Pa-Yung Mitr argue that the lack of extension service and financial support is the government's share of responsibility in their low adoption rate of diversification strategies. Also, they declared that the lack of water resources appeared to them as a limitation, as fruit production requires substantial amount of water. Furthermore, farmers explained that the lack of market opportunities for any other agricultural product is a major obstacle for which they should find a solution. This argument is also strongly proposed by Barrett et al. (2001) who suggest that the lack of markets is one of the major factors discouraging diversification. Finally, farmers said that their land was often too degraded to grow alternative crops (e.g. sugarcane), and that many of them had too little land tenure security to afford long-term investments such as fruit tree plantations.

Final Discussion

In the present chapter, the linkages between contract farming, alternative income and land ownership will be discussed.

Findings from this research helped us to identify four different livelihood strategies adopted by farmers in Kok Santisuk and Pa-Yung Mitr:

- Growing maize or other crops (e.g. cantaloupe) on contract
- Owning land and renting additional land if needed
- Selling land, and renting it back, or simply renting land for landless farmers
- Adopting an alternative occupation (within or outside agriculture) to add an additional income to household

The adoption and abandon of these strategies by farmers enter in a very dynamic process. As a matter of fact, different strategies are often combined for the same household, and they are also very transitory in nature.

Figure 8 has been drawn to highlight the links between the problems identified in the villages, the strategies adopted by farmers as solutions to these problems, and the effects caused by the adopted strategies. Accordingly, figure 9 draws attention to the secondary effects of the adopted strategies.

Based on the findings of this research and on the links exposed in these figures, four questions have been selected for further discussions. These questions are the following:

1) Does debt only have constraining consequences on farmers' livelihood?
2) Can alternative occupation be seen as a survival strategy for farmers or as a strategy to enhance their livelihood?
3) Does contract farming lead to environmental degradation? If so, who's to blame: middlemen or commercial agriculture as a whole?
4) Is land ownership offering more possibilities for farmers' livelihood enhancement?

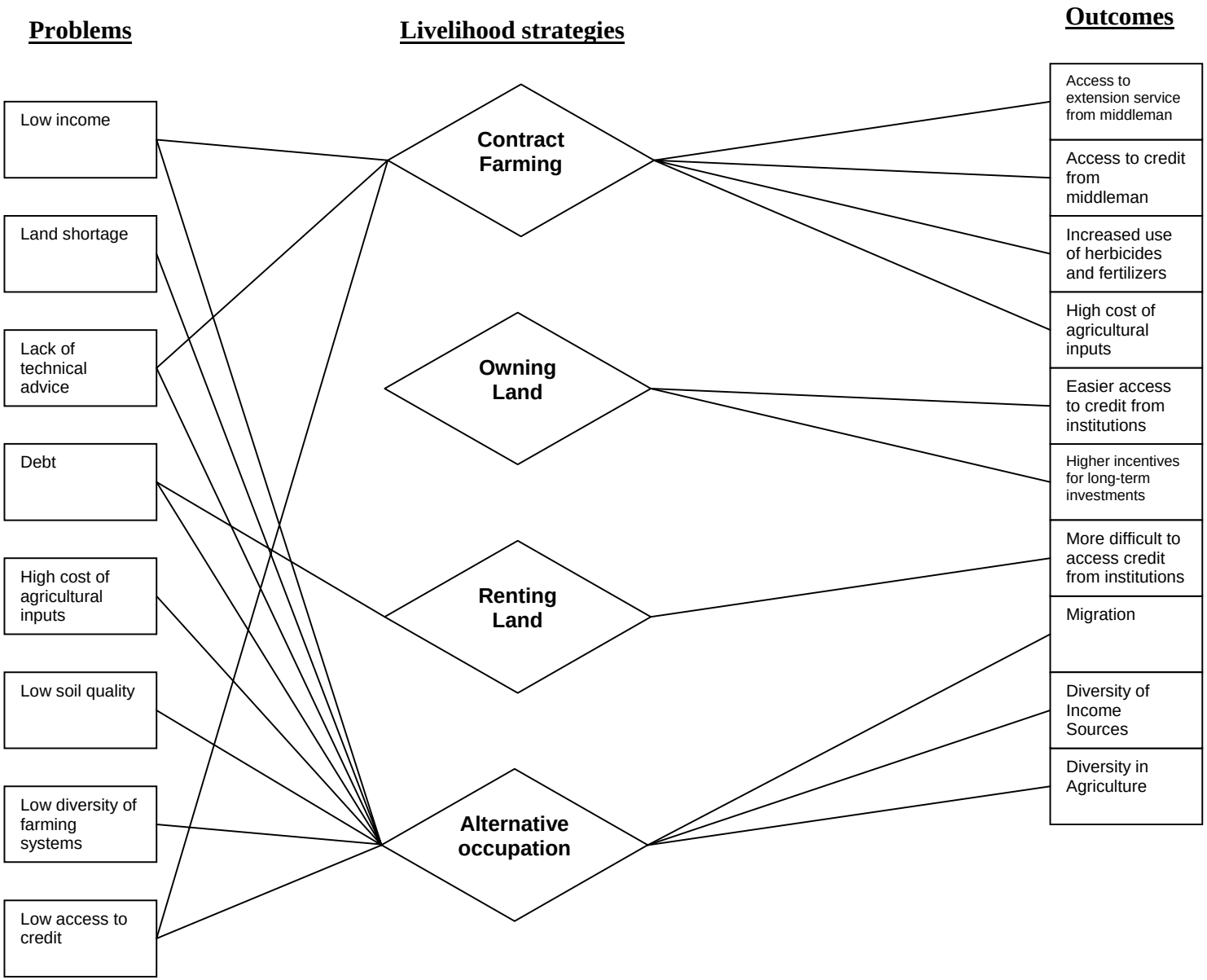
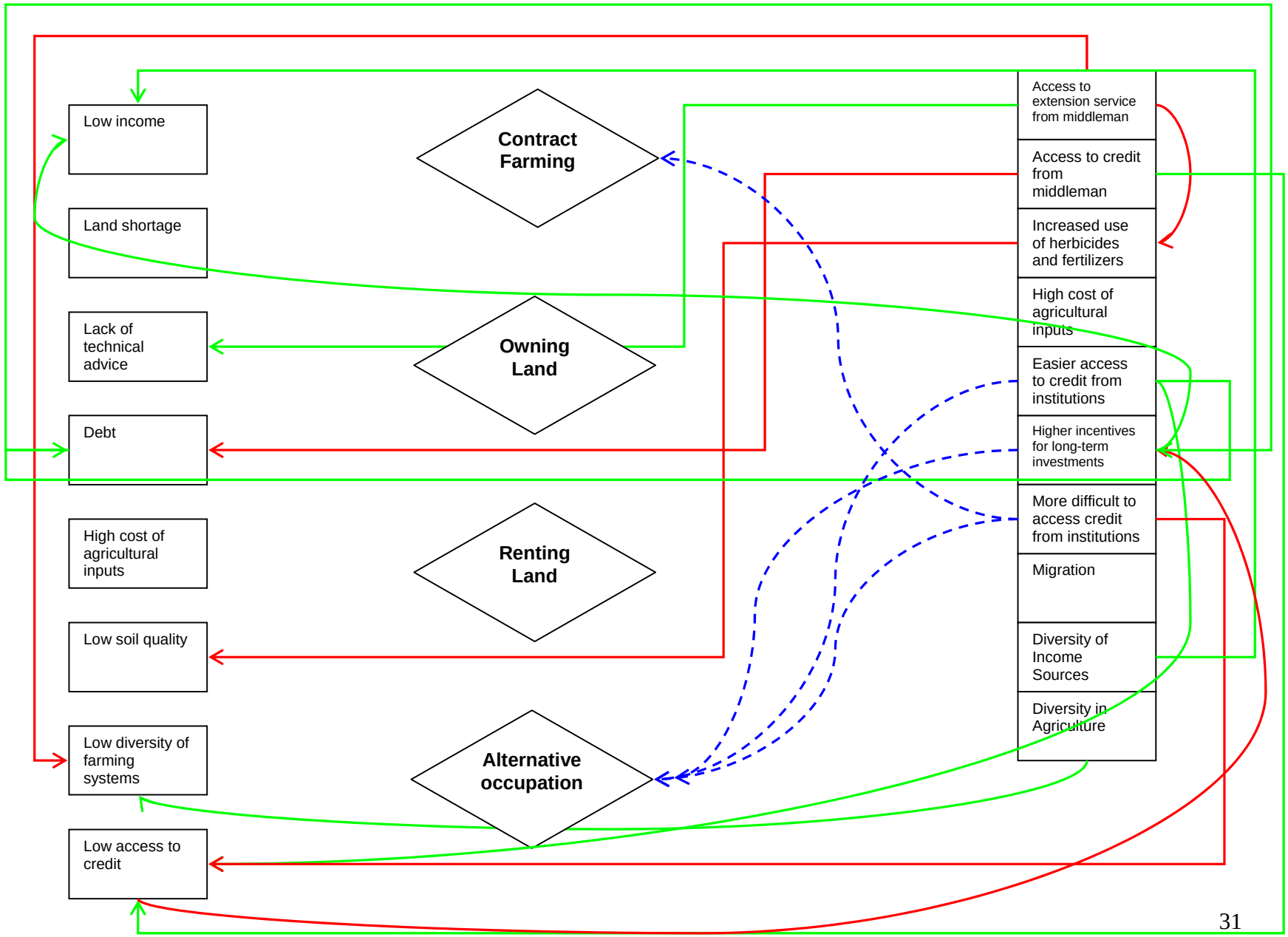


Figure 8 Relationships between problems encountered by farmers, livelihood strategies, and outcomes

Figure 9 Feedback effects of livelihood strategies outcomes on problems encountered by farmers

N.B. Green arrows represent positive feedback for farmers, while red arrows represent negative feedback. Blue arrows represent links that are suspected to exist, but which would need more investigation.



Does debt only have constraining consequences on farmers' livelihood?

According to the findings and interpretations of this research, debt might appear to be a major problem for villagers, having numerous negative consequences on their livelihood such as the selling of their land and the obligation to look for an alternative occupation (Figure 8). However, an interesting finding is that the same farmers who stated that debt was among their main problems argued that "low access to credit" was also a main factor contributing to their low income. At the same time, as it has been observed that it is often the richest and most secure villagers who can access credit, so it is a false assumption to say that debt is a poor farmers' "illness, for which a cure should be found" (Hill, 1986). Rather, credit should be considered as enabling poor men to set themselves to work (Hill, 1986), and this can be exemplified in the case of contract farming which gives small scale farmers a valuable opportunity to participate in commercial agriculture.

Both in Kok Santisuk and Pa-Yung Mitr, villagers appeared to have as ultimate aims to re-pay their loan within the deadlines in order to be eligible to borrow more money. Even though debt might represent a burden to carry, loans are also very important factors allowing farmers to have some flexibility in their operations, like for example the possibility to rent more land, to buy some machinery, or even to afford to send children to school even during years when crops fail. In some instances, debt can also act as a "push factor" leading villagers to search for an alternative occupation which can, in turn, enhance their life quality (see next part).

Finally, as it is proposed by Polly Hill (1986), there is no need to attach any moral undertone to indebtedness and the continuum running between the borrowing, re-paying, and re-borrowing of money from farmers can in some ways make the debt an "illusory, ever-changing, at the best of times elusive concept" (Hill, 1986, pp.93).

Can alternative occupation be seen as a survival strategy for farmers or as a strategy to enhance their livelihood?

As it can be seen in figure 8, all of the most common problems encountered by villagers in the study area can lead to the adoption of an alternative occupation for members of agriculture-based households. The interesting question here is to find out if the alternative occupations act more as a safety net - as a solution to counteract their permanent or temporary insufficient income - or if they are attractive employment opportunities which can lift these households out of poverty.

For many actors in development, peasants living simple and meagre lives are almost invariably poor. Accordingly, the World Bank states that "*…remoteness is an important cause of rural poverty [in Laos]…*" (World Bank, 1999, pp.7). Other people will view poverty as being in major part created by the development process, and the engagement of people with the market to be a crucial factor causing their poverty (Rigg, 2006).

In rural contexts, where livelihoods are in great majority based on agriculture, poverty can be characterised as being the product of inequalities in access to resources (e.g. land, credit, agricultural assets as in this study) (Rigg, 2006). In that sense, diversification of rural livelihoods might be seen as a way for farmers to respond to the proliferation in opportunities outside farming, notably due to their close proximity to Bangkok, and to use these opportunities to earn additional income which can then be invested on their farm. Basically, alternative occupations can offer

farmers means by which they can escape from poverty that arises from their dependence on traditional technologies, from their limited income and remoteness (Rigg, 2006). However, it is evident that alternative activities which have the highest potential for income generation, whether inside or outside agriculture, are at the same time those with the highest obstacles to entry and they are in turn unavailable to poor rural households (Rigg, 2006). Moreover, alternative occupations might turn out to be last resort occupations for poorer households, as in most instances they will generate so little income that they won't allow households to be lifted out of poverty (Rigg, 2006).

Finally, both according to findings of this research and to literature, it can be understood that farmers choosing to allow time to an alternative occupation can be both motivated by a desire to secure their farming livelihood and/or to increase their livelihood standards. The outcomes of adopting an alternative occupation can be both positive, leading to an increase of income and a lift out of poverty, and negative, leading some households to be drawn into the modernization process on rather unfavourable terms (e.g. hard working conditions, low wages) (Rigg, 2006). More specifically, these outcomes will be highly dependent on farmers' skills, education, remoteness from urban center and networks.

Does contract farming lead to environmental degradation? If so, who's to blame: middlemen or commercial agriculture as a whole?

As it can be seen in figure 9 and from the results of this study, there are various ways in which contract farming can lead to environmental degradation: by leading to an increase in the use of chemical fertilizers and herbicides, by promoting monocropping of maize and in turn leading to a decrease in diversity in rural landscape and an increase in potential incidence of weed and pest outbreaks. As it has been proven by the findings of the current research, contract farming of maize is capital intensive and requires large and continuous inputs of fertilizer, pesticides and herbicides. But who is to blame: middleman or market-oriented crop production as a whole?

One only has to imagine how maize cultivation would be done if farmers were not bound to a contract. Findings from Ekasingh et al. (2004) reveal that maize farmers in Thailand almost invariably prefer hybrid seeds from private companies because they have a higher yield potential and good grain weight. Moreover, mechanization of farm operations is becoming a necessity for maize farmers in Thailand (Ekasingh et al., 2004), and it is now widely recognized that mechanized land preparation on sloping land can lead to soil erosion. All maize farmers interviewed by Ekasingh et al. (2004) claimed that high maize yields would not be possible in Thailand without high inputs of chemical fertilizers and herbicides, although they recognized that their overuse leads to different forms of environmental degradation (Ekasingh et al., 2004).

In a world were contract farming would not exist, one could argue that farmers would be more free to decide which crops to cultivate on their land and that this could lead to a higher diversity in farming systems on a village scale. Findings of the current research reveal that middlemen are mostly interested in having contracts with farmers growing maize, and this might be due to the ease of marketing and production of this crop. These two qualities are also often what independent commercial farmers will consider most when making their choice of crops and of cropping system. Thus, it is very likely that farmers would keep on growing maize, even if they were not bound to any contract. For the same reason, it could be supposed that they would keep on growing it in a

monocropping system. Traditionally, villagers of Kok Santisuk and Pa-Yung Mitr have mostly been growing maize since they arrived in the area, and this decision was motivated by personal reasons rather than by the incentives given by middlemen as they arrived to these villages later on.

However, the fact that middlemen act as extension workers for farmers, and suggest themselves the amount of chemical inputs to be applied on the farm, while these middlemen are the ones making profit on these same inputs, is a side effect of contract farming. This could likely lead to an overuse of chemical inputs on farm lands which are producing under contract. More investigation is however needed to understand the difference between what middlemen suggest and the actual needs of maize crops.

Otherwise, it could be concluded that the environmental degradation caused by contract farming of maize is likely to be caused more by the participation of farmers themselves in a more commercial and capitalistic kind of agriculture, where high yields is the major aim, than by the management of inputs and outputs on maize farms by middlemen. This is not to say that contract farming does not have any effect on farmers' livelihood; these effects have been proposed in detail in an earlier part, but it is thought that contract farming might not lead more to environmental degradation than the sole cultivation of maize for commercial purposes.

Is land ownership offering more possibilities for farmers' livelihood enhancement?

As it can be seen in Figure A, it appears that land ownership mainly contributes to capital formation (i.e. through access to credit) and to incentives to long-term investments on farms (e.g. cattle raising, planting fruit trees). As it is proposed by Feder and Onchan (1987), these results imply that providing secure land ownership to landless farmers in Thailand could lead to an increase in productivity of their land as capital/land ratios would increase. However, an important finding of this study reveals that the main factor contributing to long-term investments on farms might not be the sense of ownership *per se*, but rather the actual access to credit which allows farmers to invest. This might lead to the conclusion that an increased access to institutional credit to all farmers could be sufficient to increase agricultural productivity through long-term investments in Thailand.

In order to grasp the full effects that selling land has on villagers' livelihood constraints and possibilities, more investigations would be needed to understand the links between land ownership, alternative occupation and contract farming. These links are represented by the blue dotted arrows on Figure 9.

Conclusion & Perspectives

The objective of the study was “to understand the links between land ownership, contract farming and alternative income as these things represent three major factors in the livelihood strategies of the farmers”.

Contract farming opens up for possibilities the farmer could not have achieved otherwise. However, it seems that the most resource strong among group of farmers, in this study represented by land owners, have better possibilities for participating in contract farming. Debt and low prices are effects of contract farming that might encourage the farmers of lesser resources, in this study represented by land renters, to complement their traditional farming with an alternative income source. Alternative occupation is an attractive option for a broad fraction of the community as it represents a way of minimizing the risks associated with counting on an ever fluctuating agriculture-based income. However, even if it immediately seems like land owners are the most resource strong villagers of the area this study has only been investigating livelihood strategies of farmers, and thus an investigation of strategies adopted by other groups of people should be made in order to allow a reflection upon these results in a broader perspective. This report doesn’t allow a conclusion on which group will have the best opportunities to create a stable and more sustainable livelihood. Land owners appear to have more possibilities to invest in capital-forming projects such as long term investments in cattle or orchards while land renters manage to find other ways of diversifying their farming and income sources. Farmers are aware of the impacts their cultivation practices have upon the land, however they feel constrained to adopt any changes to their current systems. It is hypothesised that increased possibilities of extension service would help them to adopt more sustainable management practices, but it is a question to be answered by further studies.

References

Barrett, C.B., T. Reardon and Webb, P. 2001. Nonfarm Income Diversification and Household Livelihood Strategies in Rural Africa: Concepts, Dynamics, and Policy Implications. Cornell University. [Online] Available: http://inequality.cornell.edu/publications/working_papers/Barrett-Reardon-Webb_IntroFinal.pdf Accessed [online]: 31.3.2006.

Brasselle, A.-S., F. Gaspart and Platteau, J.-P. 2001. *Land tenure security and investment incentives: puzzling evidence from Burkina Faso*. Journal of Development Economics, 67, pp. 373-418.

Buciek, K. 1996. *Fra problem til metode -en casebaseret indføring i anvendelse af kvilitative metoder til belysning af struktur-agent probelmatikken*. Roskilde Universitetsforlag. Frederiksberg.

Burns, A. 2004. *Thailand's 20 year program to title rural land.* Background paper prepared for the world development report 2005. http://siteresources.worldbank.org/INTWDR2005/Resources/burns_thailand_land_titling.pdf Accessed [online]: 05-05-06.

Building Thailand, 2006. www.buildingthailand.com [online] 07-04-06

Cho, K.M. and M.A. Zoebisch 2003. Land use Changes in the Upper Lam Phra Phleom Watershed, North-eastern Thailand, Characteristics and Driving Forces. *Journal of Rural Development in the Tropics and Subtropics*. 104, pp 15-29.

Defoer, T., A. Budelman, Toulmin, C. and S.E. Carter 2000. *Building Common Knowledge Participatory Learning and Action research, Part 1*. In: Managing Soil Fertility in the Tropics a resource Guide for Participatory Learning and Action Research. Ed. Dofoer, T. and A. Budelman. Royal Tropical Institute, Amsterdam.

Eaton, C. and A.W. Shepherd. 2001. *Contract Farming: Partnership for growth*. FAO Agricultural Services Bulletin 145. [Online] Available: http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/004/Y0937E/y0937e02.htm Accessed [online]: 25.3.2006.

Ekasingh et al. 2004. *Maize in Thailand: Production Systems, Constraints and Research Priorities.* Chiang Mai University and Ministry of Agriculture of Thailand. [Online] Available: http://www.cimmyt.org/english/docs/maize_producsys/thailand.pdf#search='Maize%20in%20Thailand%3A%20Production%20Systems%2C%20Constraints%20and%20Research%20Priorities'. Accessed [online]: 6.4.2006.

Feder, G. and T. Onchan. 1987. *Land Ownership Security and Farm Investment in Thailand.* American Journal of Agricultural Economics, 69(2), pp. 311-320.

Hill, P. 1986. *The need to be indebted.* In: Development Economics on trial: The Anthropological Case for a Prosecution. Cambridge University, USA. 198 p.

Hossain, M. and V.P. Singh. 2000. *Fertilizer use in Asian agriculture: implications for sustaining food security and the environment*. Nutrient Cycling in Agroecosystems, Vol. 57, pp. 155-169.

Mehl, C.B. 1986. *Social and Cultural aspects of land inheritance and Transactions in Thailand.* Discussion paper report NO.: ARU 52. Research unit , Agricultural and Rural Development Department, World Bank. Online: www.merimekong.or.th/documents/dbsnk/doc18f.pdf 04-04-06. Access [online]: 6.4.2006

Molle, F. and T. Srijantr 1999. *Agrarian Change and the Land System in the Chao Phraya Delta.* Doras-Delta: Research report nr 6, Kasetsart, University, Thailand. Online: www.iwmi.cgiar.org/.../River_Basin_Development_and_Management/Projects_Locations/chao_phraya_thailand.htm 04-04-06. Accessed [online]: 27.3.2006

Rigg, J. 2006. *Land, Farming, Livelihoods, and Poverty: Rethinking the Links in the Rural South.* World Development 34(1), pp.180-202.

Rickson, R.E. and D. Burch. 1996. *Contract farming in organizational agriculture: the effects upon farmers and the environment.* In: Globalization and Agri-Food Restructuring: Perspectives from the Australasia Region. Avebury, USA. Pp. 173-202.

Singzon S.B. and G.P. Shivakoti 2005. *Farmers in debt: Who Cares? The case of Rain-fed Upland Farming in Northeast Thailand*. School of Environment and Development, Asian Institute of Technology, Pathumthani, Thailand. Online: www.ari.nos.edu.sg/docs/moneylenders/singpap.pdf. Accessed [online]: 04.04.2006

Timmer, C. P. 2005. Agriculture and Pro-Poor Growth: An Asian Perspective. Center for Global Development, Working Paper No 63.

Tokrisna, R. 2002. *An Interdisciplinary Study On Existing Land Use In Klong Sathorn Village. Kasetsart University-Sustainable Land Use And Natural Resource Management Project.* Online: www.geogr.ku.dk/projects/sluse/conference/program.html Accessed [online]: 07-04-06

World Bank. 1999. *Lao People's Democratic Republic: Proposed agriculture development project.* World Bank identification mission (September/October, aide memoir).

Appendices

Appendix 1 Questionnaires Kok Santisuk

11th March ② Nok

แบบสอบถาม เรื่อง ระบบลูกไร่มีผลต่อรูปแบบการใช้ประโยชน์ที่ดินและการดำรงชีวิต
กรณีศึกษา : หมู่ที่ 9 บ้านโคกสันติสุข ตำบลวังหมี อำเภอวังน้ำเขียว จังหวัดนครราชสีมา
(The Effect of Contract Farming on Credit on Farmers' Livelihood)
Case study : Kok – Santisuk village

1.ข้อมูลทั่วไป (general information)
ชื่อผู้ให้สัมภาษณ์(Name)..... Mrs Som-ruay Maun-wai
บ้านเลขที่(House number)..... 147
อายุ(age) .....45.....ปี(Year)
เพศ (sex) (✓) หญิง (Female) ( ) ชาย(male) RENTER
2. ระดับการศึกษา(Education level)
(✓)ไม่ได้รับการศึกษา (none)
( ) ประถมศึกษา (primary school)}
( ) มัธยมศึกษาตอนต้น (secondary school)
( ) มัธยมศึกษา ตอนปลาย(high school)
( ) อนุปริญญาตรี (diploma)
( ) ปริญญาตรี (Bachelor degree)
( ) สูงกว่าปริญญาตรี (higher)
( ) อื่น ๆ (other) .....
3. สมาชิกในครัวเรือนทั้งหมด (Total family members).....3.....คน ชาย(male) .....1.....คน หญิง(female).....2.....คน

สมาชิก (members)	อายุ (age)	ความสัมพันธ์ (relationship)	การศึกษา (education)	อาชีพหลัก (occupation)	อาชีพเสริม (secondary occupation)
1.	42	husband	–	labour in agriculture	–
2		wife	–	selling vegetable	labour in agriculture
3.	22	daughter	Mathayom 1 (Grade 7)	labour in factory	–

*ถ้าไม่ได้ทำอาชีพเกษตรกรรม ทำตารางถัดไป
* If off-farm occupation. Continue to the next table.

เฉพาะนอกภาคเกษตร (Only for people with off-farm occupation.)

สมาชิก (members)	เหตุผล (reason)	ที่อยู่ปัจจุบัน (Where the person lives)	ส่งเงินกลับบ้านหรือเปล่า (If the person sends money home)
daughter		Bangkok	Yes, 2000-3000 baht/year

4. การถือครองที่ดินและลักษณะการใช้ที่ดิน (Land tenure and Land use)

4.1. ลักษณะการถือครองที่ดิน (Land tenure)

ประเภทการถือครองที่ดิน (Land tenure)	จำนวน (แปลง) (number of Land)	ขนาด (ไร่) (size)	ลักษณะเอกสารสิทธิ์ (title deeds)	ชนิดพืช (ระบุ) (type of crop)
( )ที่ดินของตนเอง (owner)		1. ..... 2. ..... 3.	1. ..... 2. ..... 3.	1. ..... 2. ..... 3. .....
(/)เช่าที่ดิน (rent)	outside village	1. 5 2. ..... 3.	1. ..... 2. ..... 3.	1. Cantaloupe 2. ..... 3. .....
(-)อื่น ๆ (other)	off-land			

4.2 ลักษณะการใช้ประโยชน์ที่ดิน (Land use)

กิจกรรมในฟาร์ม (crop and animal)	ผลผลิต / ไร่ (yield)	ระบบการปลูกพืช (Cropping system)	เหตุผล (reason)
( ) ข้าว (rice)			
( ) มันสำปะหลัง (cassava)			
( ) ข้าวโพด (maize)			
( ) อ้อย (sugar cane)			
( ) เลี้ยงสัตว์ (Livestock) ระบุ. 1..... 2..... 3.			
(✓) อื่นๆ(other) Cantaloupe	12 tone / 5 rai	mono cropping	

↳ period for cultivation is April – June (3 months)

5 . รายได้-รายจ่ายทั้งในและนอกการเกษตร (Agricultural and non-agricultural income/expenditure)

5.1 รายได้ในครัวเรือน

กิจกรรม (activity)	ต้นทุน (cost) บาท	ราคาขาย (farmer price) .	กำไร (profit)
ในภาคเกษตร (agricultural)			
ข้าวโพด (maize)			
มันสำปะหลัง (cassava)			
อ้อย (sugarcane)			
ผัก(vegetable)			
เลี้ยงวัว (cattle)			
รับจ้าง (labor)			
อื่น(Other)..... Cantaloupe	5000+400+600 *	3-5 bath / kilograme	
นอกภาคการเกษตร (non-agricultural)			
อาชีพรับราชการ (Public official)			
รับเหมาก่อสร้าง (construction)			
รับจ้างโรงงาน (Factory labor).....			
รับจ้าง(โปรดระบุ) (Others specify).....			
อื่นๆ(Other).....			

* the team didn't note which number means so I ask them and they say 5,000 → [illegible] cost of produce / 400 → plowing cost per rai / cost of renting → 600 per rai

หมายเหตุ : ต้นทุนในภาคการเกษตร หมายถึง รายจ่ายในกิจกรรม เช่น ค่าจ้าง เตรียมดิน ปลูก ใส่ปุ๋ย ฉีดยาสารเคมี เก็บผลผลิต ขนส่ง เป็นต้น และ รายจ่ายปัจจัยการผลิต เช่น ปุ๋ย สารเคมี เมล็ดพันธุ์ อื่นๆ

Remark : Cost in agriculture means the expenses in activities such as wages , preparing soil , plantation, Fertilizer , chemical pesticide etc.

5.2 รายจ่ายในชีวิตประจำวัน (daily expense)

กิจกรรม (activities)	จำนวนเงิน (amount) /ปี (year)
1.ค่าใช้จ่ายในครัวเรือน (household expense)	
2.ค่ารักษาพยาบาล(medical exepense) (30 baht/visit)	3 times / month
3.ค่าเล่าเรียนบุตรหลาน (educational expense)	
4.อื่นๆ(other)	

5.3 แหล่งเงินทุนและเงินกู้ของคนครอบครัว (source of financial)

( ) ธกส (Bank of Agriculture and Co-operatives) อัตราดอกเบี้ย (interest rate).....

( ) ธนาคารพานิชย์ (commercial bank) อัตราดอกเบี้ย (interest rate).....

( ) กลุ่มสหกรณ์ (Co-operatives) อัตราดอกเบี้ย (interest rate).....

(✓) กองทุนหมู่บ้าน (Village Fund) อัตราดอกเบี้ย (interest rate).....2.....

( ) เพื่อนบ้าน/ญาติ (friends/relatives) อัตราดอกเบี้ย (interest rate).....

( ) พ่อค้ารับซื้อ/ขาย (middle man) อัตราดอกเบี้ย(interest rate).....

( ) อื่นๆ ระบุ (others).....

ทำไมจึงไม่ยืมเงินจากแหล่งเงินทุนเหล่านี้ (in case you don't take any credit, why not ?)

.....not enough money.....

.....

6. ทำการเกษตรแบบ "ลูกไร่" หรือไม่ เพราะอะไร (Do you use contract-farming-on-credit? Why?)

(✓) ทำ (Yes) เพราะ (because).....someone encouraged them.....

จำนวน (Area).....5.....ไร่ (ตอบข้อที่ 6.1และ6.2) (answer 6.1 ,6.2 and 6.3)

( ) ไม่ทำ (No) เพราะ.....

6.1 ปลูกพืชอะไร (Crop type)

( ) ข้าว(rice) ( ) ข้าวโพด (maize) ( ) มันสำปะหลัง (cassava) ( ) อ้อย(sugarcane)

( ) ปลูกพืชมากกว่าหนึ่งชนิด (mix crop)ระบุ.....

(✓) อื่นๆ(other).....Cantaloupe.....

6.2 รับเงินสนับสนุน / วัสดุทางการเกษตรจากใคร (From whom are you borrowing money/agricultural equipment?).....middle man from Sa-kaew province.....

( ) ใช่ (yes) ( ) ไม่ (no) เหตุผล (reason).....

6.3 ได้การสนับสนุนอะไรบ้างจากนายทุน (What are you borrowing?)

(✓) เงิน (money) (✓) พันธุ์ (seed etc.) (✓) ปุ๋ยเคมี (chemical fertilizer)

(✓) ยาปราบศัตรูพืช (Pesticides) ( )อื่นๆ(Other).....

6.4 ทำสัญญาแบบใด (What type of agreement do you use here?)

( ) การทำสัญญาด้วยปากเปล่า (oral contract)

(✓) การทำเอกสารสัญญา (written)

6.4.1 หลักค้ำประกันที่ใช้ (what kind or guarantee do you use?

( ) เอกสารสิทธิ์ (land tittle)

(✓) บุคคลค้ำประกัน (guaranteed person)

( ) ใช้ความเชื่อใจ (honour)

( ) อื่นๆ (others).....

7. แหล่งที่ขายผลผลิตทางการเกษตร (produce point of sale)

(✓) นายทุน (middleman) ทำไม (why do you sell it to this person/is this place)

.....

( ) ตลาด (market) ทำไม (why do you sell it to this person/is this place)

.....

( ) โรงงาน (factory) ทำไม (why do you sell it to this person/is this place)

.....

( ) อื่นๆ(Other)..... (why do you sell it to this person/is this place)

.....

8. แหล่งน้ำ (water source)

8.1 เพื่อการอุปโภคบริโภค (for domestic consumption)

( ) น้ำฝน (Rainwater) (✓) น้ำประปา (Supply system) ( ) น้ำบาดาล (Groundwater) ( ) อื่นๆ (Other).....

8.2 เพื่อการเกษตร (for agriculture)

( ) น้ำฝน ((Rainwater) บ่อขุด (Artificial ponds) ( ) ฝาย (Weir) ( ) คลองชลประทาน (Irrigation canal) (✓) แหล่งน้ำ ธรรมชาติ (Natural ponds) ( ) อื่นๆ(Other).....

9. ประวัติการทำเกษตร (History of agriculture)

9.1 พืชที่ปลูก/สัตว์ที่เลี้ยง เมื่อเริ่มตั้งถิ่นฐาน (Initial crops/livestock)

( ) ข้าว (Rice) (✓) ข้าวโพด (Maize) ( ) มันสำปะหลัง(Cassava) ( )

อ้อย (Sugarcane) ( ) อื่นๆ(Other).....

( ) วัว (Cattle) หมู ( ) ไก่ ( ) อื่นๆ (other).....

9.2 พืชที่ปลูก/สัตว์ที่เลี้ยง ในปัจจุบัน (Current crops/livestock)

( ) ข้าว (Rice) ( ) ข้าวโพด (Maize) มันสำปะหลัง (sugarcane)

อ้อย (Sugarcane) อื่นๆ (other).....

( ) วัว(Cattle) ( ) หมู (pig) (✓) ไก่ (chickens) ( ) อื่นๆ (other).....

9.3 การใช้ปุ๋ยเคมีและยาฆ่าหญ้าและแมลงทำการเกษตรจากอดีตปัจจุบัน(the use of pesticides and insecticides from past to now)

ชนิดพืช (crop)	ปุ๋ยเคมี(กิโลกรัม/ไร่) (chemical fertilizer kg/rail)			
	อดีต (past) Yes/no	ปัจจุบัน (present) Yes/no	ชนิด (category)	อัตรา (quantity)
ข้าว(rice)				
ข้าวโพด(maize)				
มันสำปะหลัง(cassava)				
อ้อย(sugarcane)				
อื่นๆ(other) Cantaloupe	Yes (3 years)	Yes	Chemical Fertilizer	15-15-15

ชนิดพืช(crop)	ยาฆ่าหญ้า (herbicides on grass)			
	อดีต (past) Yes/no	ปัจจุบัน (present) Yes/no	ชนิด (category)	อัตรา (quantity)
ข้าว(rice)				
ข้าวโพด(maize)				
มันสำปะหลัง(cassava)				
อ้อย(sugarcane)				
อื่นๆ. (other) Cantaloupe	No (3 years)	No		

ชนิดพืช(crop)	ยาฆ่าแมลง (pesticide / insecticide)			
	อดีต (past) Yes/no	ปัจจุบัน (present) Yes/no	ชนิด (category)	อัตรา (quantity)
ข้าว(rice)				
ข้าวโพด(maize)				
มันสำปะหลัง(cassava)				
อ้อย(sugarcane)				
อื่นๆ... (other) Cantaloupe	Yes (3 years)	Yes		1 litre/ 4 bottles

9.4 แนวโน้มผลผลิต/ไร่ (อดีตถึงปัจจุบัน) (trend in yield/rai (past to present))

(✓) ลดลง (Decrease) ( ) เพิ่มขึ้น (Increase)

9.5 มีหน่วยงาน/องค์กรที่เข้าร่วมส่งเสริมหรือไม่ (Are there any agricultural extension workers?)

( ) ไม่มี (No) (✓) มี (Yes) หน่วยงาน (who?) Sugar factory, they encouraged villagers to cultivate sugar cane.

---

10. What would you do if you lack of labour?

(✓) hire 130 baht per day.

( ) not hire

Appendix 2 Questionnaire Pa-Yung Mitr.

Appendix 3 Problem ranking

This is the result from problem ranking in Pa-Yung Mitr, done by land owners and land renters.

PRA Problem ranking of reasons for low income among farmers in Pa-Yung Mitr.

Low income is caused by	1	Debt
	2	Cost
	3	Low sales price
	4	Drought
	5	Low quality of crops
	6	Low quality of soil

Appendix 4 Personal Diaries

Field work activity diary for Mariève Pouliot

Date	Activity
Tuesday 07. March	- First meeting with Thai-counterparts - We agree on splitting our field work between two villages (Kok Santisuk and Pa-Yung Mitr). - The afternoon is used to discuss with the two Thai-groups to find common objectives.
Wednesday 08. March	- Continue discussion on objectives and indicators - Presentation of objectives, we get useful critics from teachers
Thursday 09. March	- We leave KU-home early in the morning, 3 hours trip to Base camp - In the afternoon we visit the headmen of both villages - Informal talks with headmen and villagers - Discussion and hard work with the questionnaires in the evening
Friday 10. March	- Pre-test of questionnaires - Many informal talks with villagers - Reformulation of some questions, deletion of others because questionnaire was too long.
Saturday 11. March	- Morning was used to continue on questionnaire reformulation. - Transect walk with a GPS in Pa-Yung Mitr to map households
Sunday 12. March	- Questionnaires with land renters - PRA community meeting (timeline, problem ranking, season calendar)
Monday 13. March	- Preparation for presentation - Present progress in research work - Pre-analysis of data gathered to date - Work on questions for in-depth interviews and nutrient flow diagram
Tuesday 14. March	- Questionnaires with land renters - In-depth interview with a land owner having an alternative occupation (rice noodle factory)
Wednesday 15. March	- Final formulation of questions for in-dept interviews - Interview extension worker with Marie and 2 interpreters - In-dept interviews with contract and non-contract farmers at the house of headman. - In-depth interviews with farmers having alternative occupations.
Thursday 16. March	- ~~Soil sampling and nutrient flow in-depth interviews~~→Cancelled due to circumstances - Day off completely due to sickness
Friday 17. March	- Collecting the last data, type up some of the in-dept interviews - Presenting findings at community meeting - Final acknowledgements expressed in the village - Farewell party at the base camp
Saturday 18. March	- Back to Bangkok - Goodbye to Thai counterparts and teachers!

Diary for Hanna Lise Simonsen Concerning Filed Work in the Village of Kok Santisuk, Province of Nakhon Ratchasima, Thailand. March 2006.

Monday 6: Meeting with SLUSE teachers of Thailand.

Tuesday 7: Meeting with SLUSE students of Thailand. Games to get to know each others. Division of groups. Our group decided to cover two villages and consequently to work with two groups of Thai-students. This decision was done to solve the situation were 5 Thai-groups were going into the field while only 4 groups from KVL existed and everyone should have an opportunity to work with both students from both universities.

Wednesday 8: Planning adoption of field work, methods and objectives to meet the ideas and wishes from the three groups. Presentation of work to all class.

Thursday 9: Arrival to base camp. Visits to the villages of Kok Santisuk and Ba pa yung mit. Meeting with headmen's of the two villages. Preparation of questionaires in the evening.

Friday 10: Transect walk in Kok Santisuk. Testing of the questionnaire. Editing of the semi structured interviews. Planning for the next day.

Saturday 11: Editing of questionnaire in the morning and interviewing in the evening. Visiting the funeral-party of village members in the evening. Planning fir the next day.

Sunday 12: Questionnaire. Revision of objectives to adapt to data collection. Planning for the next day.

Monday 13: Preparation of mid way evaluation. Mid way evaluation at 14.00. Hereafter planning and preparing PRA´s and in depth interviewes. Planning for the next day.

Tuesday 14: Preparation of PRA´s . PRA´s conducted in the evening. Planning for the next day.

Wednesday 15: Preparation of in depth interviews and data analysis. In depth interviews took place in the evening.

Thursday 16: Day off due to hospitalized group member.

Friday 17: Preparation of community meeting. Making sure that we had all the data translated which should be brought to Denmark. Community meeting.

Saturday 18: Returning to Bangkok.

Field work activity diary for Marie Staun

Date	Activity
Tuesday 07. March	- First meeting with Thai-counterparts - We decide to agree on splitting our work between two villages. Discussion with Thai-groups, Kok- Santisuk & Pa-Yung Mitr, to find common objective for all - Really good teamwork from all students.
Wednesday 08. March	- Continue discussion - Presentation of objectives, we get useful critic.
Thursday 09. March	- We leave KU-home early in the morning, 3 hours trip to Base camp - In the afternoon we visit the headman in both villages - Discussion and hard work with the questionnaires in the evening
Friday 10. March	- Pre-test of questionnaires done half by mister Sun and the rest by Ying. - It takes to long, it's difficult to do questionnaires with interpreter
Saturday 11. March	- The morning is used to "kill our darlings" in the questionnaires, it is difficult. - After lunch I do questionnaires together with Ying and the interpreter.
Sunday 12. March	- Interview land renter with Ratch, Mariève, and interpreter. - PRA community meeting (timeline, problem ranking, season calendar)
Monday 13. March	- Prepare presentation - Present progress in research work - Work with questions for in-dept interview and nutrition flow diagram
Tuesday 14. March	- Interview with landowner together with Ying and Adrian
Wednesday 15. March	- Provide questions for in-dept interviews - Get information from Mr. First (Thai student) about some of the PRA - Interview extension worker with Mariève and the two interpreters - Drive to the marked to put Mr. Sun at the bus! - In-dept interviews with contract and non-contract farmers at the house of headman. - Together with the girls and the teachers in the evening and the night!
Thursday 16. March	- ~~Soil samples all four of us~~ →Cancelled due to circumstances - Day off completely
Friday 17. March	- Collecting the last data, type up some of the in-dept interview. - Presenting findings at community meeting, give presents to the head man, his wife and granddaughter.
Saturday 18. March	- Back to Bangkok - Goodbye to Thais'

Appendix 5 Synopsis

Appendix 2 Questionnaire Pa-Yung Mitr.

แบบสอบถามเรื่อง

(Questionnaire)

ผลกระทบจากข้อจำกัดในการประกอบอาชีพที่มีต่อรายได้ของเกษตรกรบ้านพยุงมิตร
เพื่อประกอบการศึกษารายวิชา

1. ชื่อผู้ให้สัมภาษณ์ (Name) (Mr. / Mrs. / Miss).....อายุ (age).....ปี(Year)
บ้านเลขที่.....หมู่ 15 บ้านพยุงมิตร ตำบลวังหมี อำเภอวังน้ำเขียว จังหวัดนครราชสีมา
(address)……Moo 15 Ban Payung-Mitr Tombon Wong-Me Amper Wongnamkaew Nakornrachasima

2. ระดับการศึกษาชั้นสูงสุด (Level of education)

( ) ไม่ได้รับการศึกษา (None)

( ) ประถม (Primary school).....

( ) มัธยม(High school).....

( ) อื่น ๆ (Others).....

3. สมาชิกในครัวเรือนทั้งหมด.....คน (Total family members)
ชาย (male).....คน หญิง (female).....คน

4. การประกอบอาชีพหลัก (Main occupation)

☐ เกษตรกรรม (agriculture) ☐ รับจ้าง (labor) ☐ ค้าขาย(shop owner)

☐ อื่น ๆ (ระบุ) (others specify)).....

5. อาชีพของสมาชิกในบ้าน (จำนวน) (Occupation of other household members (number))

( ) เกษตรกรรม (Agriculture)

( ) รับจ้าง (Labour)

( ) อื่น ๆ (ระบุ)(Others (specify).....

If the occupation is not farming what is the reason for choosing off-farm?
เหตุผล (Reason)……..…….....

6. การประกอบอาชีพเสริม หรือเปลี่ยนแปลงชนิดพืชจากเดิม (Alternative occupations or change crop type, for head of house)

☐ มีอาชีพเสริมหรือไม่ (Do you have alternative occupations?)

( ) มี (ระบุ)Yes(specify).....
รายได้ (income).....บาท/ปี (baht/year)

( ) ไม่มี (No)

ท่านต้องการอาชีพเสริม หรือเปลี่ยนแปลงชนิดพืชจากเดิม หรือไม่

(Do you want alternative occupations or a change in crop type?)

( ) ต้องการ (ระบุ) (Yes (specify)).....

ข้อจำกัดที่ผ่านมา (limitations in past).....

( ) ไม่ต้องการ เพราะ (No, because…).....

7. การถือครองที่ดินและลักษณะการใช้ที่ดิน (Land tenure and land use)

( ) เป็นของตนเอง(own).....ไร่(rai) ภาษีที่ดิน(tax).....บาท/ไร่ (baht/rai)

ข้าวโพด(corn).....ไร่ (rai) มันสำปะหลัง(cassava).....ไร่ (rai)

เลี้ยงโค(cattle).....ตัว(number)…….....ไร่ (rai)

อื่น ๆ(ระบุ) (others) (specify).....ไร่(rai)

ทำไมท่านจึงเลือกปลูกพืชชนิดนี้ (Why have you chosen to cultivate these crops?)

( ) ราคาดี (market price) ( ) ปลูกมาแต่ดั้งเดิม (tradition)

( ) มีผู้แนะนำ (advice from outside) ( ) อื่น ๆ (other specify))).....

( ) เช่า(rent).....ไร่(rai) ค่าเช่า(price).....บาท/ไร่ (baht/rai)

ข้าวโพด(maize)….....ไร่ (rai) มันสำปะหลัง (cassava).....ไร่ (rai)

เลี้ยงโค (cattle).....ตัว (number) …….....ไร่(rai)

อื่น ๆ(ระบุ) (others) (specify).....ไร่ (rai)

ทำไมท่านจึงเลือกปลูกพืชชนิดนี้ (Why have you chosen to cultivate these crops?)

( ) ราคาดี (market price) ( ) ปลูกมาแต่ดั้งเดิม (tradition)

( ) มีผู้แนะนำ (advice from outside) ( ) อื่น ๆ (other specify))).....

8. ท่านเลือกทำการเกษตรแบบ “ลูกไร่” หรือไม่ เพราะอะไร (Do you choose the contract-on-credit system or not ? Why ?)

( ) ลูกไร่ (contract)……..ไร่ (rai)

( ) ไม่เป็นลูกไร่ (non-contract)……ไร่ (rai)

เพราะ (because) ☐ มีเงินลงทุนส่วนตัว (have own funds)

☐ กู้จากระบบอื่น (ระบุ) (borrowed from elsewhere specify)).....

☐ อื่น ๆ others).....

9. ใช้ระบบปลูกพืชแบบไหน (What kind of cropping system do you use?)

( )ปลูกพืชชนิดเดียว (Mono-cropping) (For which crops)……

( )ปลูกสลับแถว (Intercropping) (For which crops)……

( )วนเกษตร (Agro-forestry) (For which crops)……

( )อื่น ๆ (Other (specify))……

ทำไมเลือกปลูกพืชระบบนั้น (Why do you use the system?)

( )ผลผลิตดีที่สุด (Best yield) (For which crops)……

( )ปลูกมาแต่ดั้งเดิม (Tradition) (For which crops)……

( )มีความสามารถในการปรับปรุงคุณภาพดิน (Soil fertility improvement)

(For which crops)……

( )สภาพพื้นที่เหมาะสม (Land suitability) (For which crops)……

( )อื่น ๆ (Other specify)……

10. ลักษณะการขายผลผลิต (product selling method)

( ) ขายให้นายทุนที่ไปกู้เงินมาปลูกพืช (นายทุนระบบลูกไร่) (sell within contract)

( ) ขายที่อื่น ๆ (ระบุ) (other method (specify))……

ทำไม(why?) ……

11. รายได้จากกิจกรรมภาคเกษตร (income from agriculture)

¤	ข้าวโพด	ผลผลิต.....กิโลกรัม/ไร่	ราคา.....บาท/กิโลกรัม
¤	maize	yield……..kg/rai	price……baht/kg
¤	มันสำปะหลัง	ผลผลิต.....กิโลกรัม/ไร่	ราคา.....บาท/กิโลกรัม
¤	Cassava	yield……..kg/rai	price……baht/kg
¤	เลี้ยงโค	น้ำหนัก.....กิโลกรัม/ตัว	ราคา.....บาท/กิโลกรัม
¤	Cattle	weight…….kg/animal	price…….baht/kg
¤	อื่น ๆ (ข้อ 4.)	ผลผลิต.....กิโลกรัม/ไร่	ราคา.....บาท/กิโลกรัม
¤	Others (Q4)	yield……..kg/rai	price……baht/kg

12. รายได้นอกภาคเกษตร (off-farm income)

- รับจ้าง (labor) รายได้ (income)…….....บาท/วัน (baht/day)
  จำนวน (Number).....วัน/ปี (days/year)
- ค้าขาย (shop owner) รายได้. (income).....บาท (baht)
- อื่น ๆ (ระบุ) (others (specify)).....บาท (baht)

13. ค่าใช้จ่ายในครัวเรือน (household expenditure) .....บาท/เดือน (baht/month)

14. ภาวะหนี้สินในปัจจุบัน (debt/credit)

( ) ไม่มีหนี้สิน (none)
ทำไมไม่เป็นหนี้ why).....

( ) มีหนี้สิน รายละเอียดดังนี้ (Yes, details…).....

ที่มาของเงินกู้(source)	จำนวนเงินที่กู้(amount)	อัตราดอกเบี้ย (interest rate)	กำหนดชำระเงินคืน (deadline to pay off)
นายทุนในระบบ “ลูกไร่” (contract farming)			
ธกส.(BAAC)			
ธนาคารพาณิชย์ (Non-gov. banks)			
สหกรณ์ (cooperatives)			
เงินกองทุนหมู่บ้าน (Village fund)			
อื่น ๆ(others).....			

วัตถุประสงค์ของการกู้เงิน (objective of debt/credit)

( ) ปลูกข้าวโพด (plant maize)
( ) เลี้ยงโค (raise cattle)
( ) การเกษตรอื่น ๆ(ระบุ) (other agriculture specify)).....
( ) ใช้จ่ายในครัวเรือน (household expenditure)
( ) ค่าเล่าเรียนลูก (children’s education)
( ) อื่น ๆ(ระบุ) (others specify).....

15. ทรัพย์สินทางการเกษตร (agricultural assets)

ชนิด (type)	จำนวน (number)	มูลค่าเมื่อซื้อ (บาท) (initial value)	อายุการใช้งาน (ปี) (years of use)
1. รถไถเดินตาม (plough)			
2. รถแทรกเตอร์ (tractor)			
3. รถบรรทุก (truck)			
4. รถเข็น (trolley)			
5. เครื่องพ่นยา (chemical. sprayer)			
6. เครื่องสูบน้ำ (water pump)			

16. ค่าใช้จ่ายในการเกษตร (Agriculture Expenditure)

รายการ (List)	ราคา (บาท/ปี) (cost) (baht/year)			
	ข้าวโพด (Maize)	มันสำปะหลัง (Cassava)	เลี้ยงโค (Cattle)	อื่น ๆ (Other)
ปัจจัยการผลิต (เมล็ดพันธ์,ปุ๋ย, สารเคมี,ยาฆ่าแมลง/วัชพืช) (Production factor: seeds,fertilizer,chemical, pesticide)				
ค่าจ้างแรงงาน (Laborer wage)				
แรงงานในครอบครัว (Family laborer)				
การขนส่งผลผลิตไปขาย (Transportation)				
อื่น ๆ (others)…….....				

17. การส่งเสริมจากรัฐบาล/เอกชนด้านอาชีพ (Access to extension services.)

( ) มีการเข้ามาส่งเสริม (Are there any Extensionist workers?)

ใคร (Who).....

( ) ไม่มี (No)

18. มีบางช่วงกิจกรรมหรือไม่ที่จำเป็นต้องใช้แรงงานแต่จำนวนแรงงานไม่พอ (Do you experience labour shortages on a yearly basis?)

( ) มี (Yes) กิจกรรมที่ท่านทำได้ในช่วงนั้น (Which activities do you prioritize?).....

( ) ไม่มี (No)

Appendix 5

Synopsis

Livelihood changes in the Lam Phra Phloeng watershed, Province of Nakhon Ratchasima, Thailand

Submitted to
Anders Jensen
Kristine Juul
Peter Oksen
Thorsten True

By

Marika Malinen ADK05038
Mariève Pouliot ADK05009
Hanna Lise Simonsen ADK05036
Marie Staun ADK06012

[Submitted on 29.02.06]

Table of Contents

Introduction

Wang Nam Khieo District is situated in the province of Nakhon Ratchasima, in the North-eastern part of Thailand. As presented in Figure 1, the study area consists of 5 villages located in the Lam Pra Phloeng watershed, each of them having populations ranging from around 320 to 560 inhabitants (Pitiyont et. al., 2006). Even though these villages are situated in close proximity to each other, the livelihood strategies adopted by households differ greatly between each location (Pitiyont et. al., 2006).

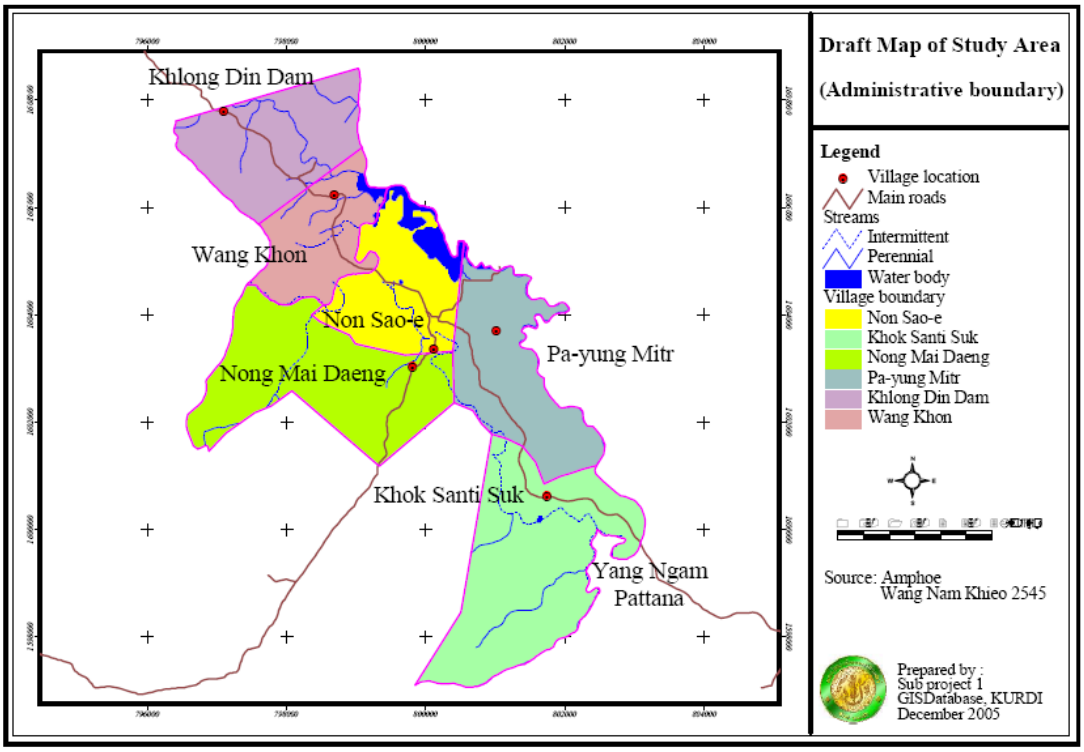


Figure 1 Draft map of study area (Pitiyont, B. et. al., 2006)

People living in the Lam Pra Phloeng watershed area migrated from other districts and provinces in the North, Northeast and central Thailand (Tokrisna et. al., 2002). Most of them now live their life in traditional styles (Pitiyont et. al., 2006) and therefore earn their living on farms. In general, farmers grow cash crops such as maize, cassava and sugar cane in a monoculture system under rain-fed conditions. In areas where irrigation systems are available, vegetables such as cucumbers, peppers and tomatoes are also cultivated. Rubber and oil palm plantations are also promoted by the government in some villages of the region (Pitiyont et. al., 2006). In addition, livestock such as beef cattle are being introduced as a way of increasing household income. However, malpractices in agriculture are said to be greatly contributing to the deterioration of natural resources of the area (Pitiyont et. al., 2006). More precisely, activities such as the use of chemical fertilizers and pesticides, the cultivation in slopes, burning of crop residues and the practice of monocropping, combined to a farmers' lack of knowledge about sustainable natural resource management, has lead to a massive corrosion of natural resources (Pitiyont et. al., 2006).

Many farmers of the Wang Nam Khieo District are very dependent on different production factors sought from outside such as funds, seeds and sprouts (Pitiyont et. al., 2006). Additionally, the dependence upon middlemen for selling agricultural products is high and debts not paid to these middlemen will often result in the loss of the land to them (Singzon & Shivakoti, 2005). For this reason, young villagers often need to work outside of their family's farm in order to earn an additional income.

Moreover, in the past ten years, agricultural land in this region has been transferred from small-holding farmers (mostly cultivating for subsistence) to rich, newly migrated farmers (also called the "capitalists") (Pitiyont et. al., 2006). In response to this changing environment, villagers of the Wang Nam Khieo District have adapted by changing their livelihood. Indeed, people have adopted different strategies, such as adjusting their occupations, diversifying their income sources, changing their cultivation practices, migrating and/or re-locating (Pitiyont et. al., 2006).

Consequently, some of the small-holding farmers who want to keep their agriculture-based livelihood are now renting back the land they used to own (Singzon & Shivakoti, 2005). Others earn income from off-farm sources, either by being employed within and outside the agricultural sector (Pitiyont et. al., 2006). Farmers renting land do not have the same long-term perspective as the ones owning land. As a matter of fact, land ownership is a major determinant of long-term investments on a farm (Dietz et al., 1992). As renting land implies less security and therefore fewer incentives for labour and capital investments than owning land (Brasselle et al., 2001), it could be assumed that land tenure will greatly influence the agricultural planning and management in the Wang Nam Khieo District. The diversity in land tenure between different farms could lead to differences in the social, economic and environmental assets of farmers' livelihood, thereby having an impact on all aspects of their life.

In order to clearly explain the research objectives of this study, some concepts need to be defined here.

Livelihood: *"A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living."* (DFDI, 1999, p.1.1)

Land owner: A land owner will be characterized as a farmer having the recognised and registered rights to manage, sell, transfer and mortgage its land (e.g. NS-3, NS-3K, NS-4).

Land renter: A land renter will be characterized as a farmer being temporarily authorized to occupy and manage the land, and therefore without the rights to sell, transfer and mortgage its land (e.g. NS-2).

Non-farming household: A non-farming household will be characterized as a household which used to practice agriculture as a main livelihood strategy and which has decided to sell its land and live out of other incomes.

Objectives

1. To put in perspective the rationale and outcomes of land tenure changes in the study area.
2. To investigate how the tenure status affects the livelihood strategy of farmers.
3. To compare the agricultural management practices of land renters to those of land owners.
4. To investigate the trend towards de-agrarianisation and its relation to land tenure changes.

Research Questions

How does land tenure change affect the social, economic and environmental assets of villagers' livelihood in the studied area?

More specifically, the following working questions will be investigated during the field work:

1. Why are farmers of the area changing their land tenure status?
2. Which types of land titles and renting agreements do the villagers possess?
3. How does land ownership influence the social, economic and environmental assets of farmer's livelihood?
4. Does land tenure change influence the trend towards de-agrarianisation?
5. What are the livelihood strategies adopted by farmers who are selling their land?

Hypothesis

"Land tenure status affects the management of the social, economic and environmental livelihood assets as it leads to different degrees of security, access to credit and long-term investments of labour and capital in the land."

In order to fulfil our objectives, a list of indicators will be investigated on the field. They should provide a basis for the intended comparison, as well as insights concerning the rationale and outcomes of land tenure changes in the study area. These indicators will be presented in the following section.

Data needed to answer the research questions

Land tenure
As described in the introduction, there have been some important land tenure changes in the area. Based on that, farmers of the area will be stratified in two groups (Appendix A), land owners and land renters with help from a key informant (e.g. the village head) during the clarifying interview. Furthermore, these groups will be interviewed in order to understand the reasons and consequences of the changes. The reasons underlying farmers' decision to change their land tenure situation will be investigated, as well as the farmer's perception of their present situation. The questions can be found in Appendix B.

Moreover, a household history will be drawn with each household as a PRA activity to understand their changes in land tenure and income generating activities.

Non-farming households
In addition to changes in land tenure and agricultural practices, a complete change from farming to other livelihood strategies is also occurring. To get a full picture of the situation, some households that have completely left agriculture and are now doing their living with alternative strategies will be included in the study by an interview. The aim of the interview is to get information about their change of the livelihood, its reasons and consequences and the current way of living. The interview guide can be found in Appendix C and the sampling strategies in Appendix A.

Indicators to be used to compare the livelihood of land owners and land renters

Agricultural indicators
To investigate the possible difference between land owners and land renters, six indicators of the agricultural asset of livelihood will be investigated. Four of these indicators are chosen since they dependent on the farmers' decision and hence might be very reliant upon their overall livelihood situation, including that of tenure. These 4 indicators are: Crops, Cropping system, Conservation practices and Investment in agriculture. The fifth and sixth indicators are Land size and Productivity and these indicators will be used to be able to compare the farming systems investigated. Following, the information expected to be obtained from the use of these indicators will be presented. Unless otherwise mentioned, the information will be obtained through a semi-structured interview that will be conducted with each selected household of the study. The questions can be seen in Appendix B.

Crops
It will be investigated which types of crops are planted and for what purpose (subsistence or cash crop). The farmers will therefore be asked for the reason of choosing a certain crop. A possible difference between the two groups of farmers, regarding the importance of cash and subsistence crops will be discussed. Later, the suitability for the region of the crops cultivated will be discussed. Information for this discussion will be obtained through literature review and the data collected through direct observations in the field (e.g. water availability, climate and landscape).

Cropping system
The type of cropping system used and reason for choosing this type of cropping system will be investigated. The possible difference between the two groups of farmers for choosing one cropping system over another will be discussed.

Conservation practices

The soil fertility status and erosion management will be the aspects of conservation practices studied. These aspects will be investigated by questioning the farmers on their view of problems with erosion or changing soil fertility and their possible action of conservation/improvement. However, the soil erosion and soil fertility will also be assessed through our own investigations. If any difference between the land renters and land owners exist, this will be discussed. It will be compared what the two groups do to deal with possible problems or to prevent future problems.

In order to assess the soil erosion in the village, the Universal Soil Loss Equation will be combined to direct, more qualitative observations on the field. See appendix B for further explanation.

To discuss the soil fertility status of a farm, a nutrient flow map will be constructed. Inputs and outputs of nutrients in the farming system will be estimated. Information for this will be withdrawn from the activity calendar done with each household. However, additional questions will have to be asked and can be found in the appendix. Additionally literature reviews will be used for estimating information we cannot get from the activity calendar or additional questions.

Investment

It will be investigated if there is any difference in the amount of investment land renters and land owners put into their land. Investment is in this case defined as labour and capital put into irrigation, fertilizers and planting of trees, which are all seen as long-term commitments. Questions will be asked for which type of investments that are made and the specific reason for making them or not will also be investigated. The questions asked for conservation practices regarding action taken to improve the soil and prevent soil erosion will also be used here.

Land size

Size of agricultural land is naturally an important factor to determine the yield and farm income. As yield refers to production per area unit per year (or agricultural cycle), the area under cultivation has to be known. Ideally, land size would be measured during the harvest, as harvested area often does not correspond to planted area. However, as the research is going to take place outside of the harvesting period, the area measurement has to be done by interviewing farmers about their land size.

Productivity

Productivity in terms of yield will be investigated asking farmers about their annual yield of the main crops. As the field trip will not take place during the harvesting season, the measurement of productivity has to be based on the information collected from farmers. Nevertheless, units (as bags) used for collecting the harvest can be measured. Moreover, there might be some factors that make the yield measurement complicated. For instance, mixed cropping and seasonal variations in yield (kg/per area unit) might be difficulties to the measurements. However, should that be the case, it will be further discussed and elaborated when the results are to be analysed.

Social indicators

As social indicators, status, networks as well as labour availability will be investigated. The questions for each indicator will can be found in the appendix A.

Status
It will be investigated if owning land contributes to a higher social status. Asking farmers to rank different signs of influence on decision-making in the village will be the approach used to investigate this. Different possibilities of factors which might have influence over the village will be listed. Thereafter the villagers will be asked to rank them based on their importance. This is an indirect way of assessing this indicator; however it is considered too sensitive an issue to ask more directly.

Networks
Good networks might be crucial for the farmers in obtaining new information about market changes, new crops etc. Furthermore a good network might be helpful if a labour shortage is experienced and extra help is needed at the farm. This topic will be addressed with questions relating to the farmers source of information and his relations to the other farmers.

Labour availability
It is proposed by the Thai University Consortium on Environment and Development (Tokrisna 2002) that 32% of farm families experiment a seasonal labour shortage during harvest periods. As labour shortage might have considerable impacts on agricultural practices, the extent to which farmers of the village encounter labour shortage on a yearly basis will have to be investigated. Questions will be asked about existence of labour shortage, for which periods it is experienced and what is done to overcome it.

Economic indicators

As economic indicators, market access, access to credits and debt as well as off-farm income will be investigated. The questions for each indicator will can be found in the appendix A.

Market access
Direct access to market is considered fundamental for farmers being economically independent and able to sell their own products. Farmers purely dependent on middle-men are normally in a weaker position and lack bargaining power. It could be supposed, that at least in some cases, land renters are more dependent on middle-men, especially if they are renting their land from him. The market access of the farmers will be studied using a semi-structured interview.

Access to credits and debt
Agricultural practices in the area have become strongly dependent on high external inputs (Tokrisna, 2002). However, often the farm income might not be sufficient to cover these costs and therefore access to credits can be seen as an important factor for farmers for maintaining their livelihood. Moreover, Tokrisna (2002) and Pitiyont et al. (2006) have reported that many of the farmers of the area are indebted, which has an enormous effect on their choice on livelihood strategies as well as their agricultural practices. Farmers will be interviewed about their access to credits and debts. Due to the sensitivity of the debt issue, more emphasis is put on access to credits than to investigating the debts of the farmers.

Off-farm income

Agriculture in the area is getting less profitable and therefore people are getting more dependent on additional sources of income (Pitiyont et al., 2006). In some cases, the change can also be voluntary in order to get a better livelihood. Two off-farm income sources, a traditional collection of NTFPs (non-timer forest products) and working outside the farm are further studied in more details.

Level of forest use (NTFPs)

Tokrisna (ed.) (2002) reported many of the farmers being highly dependent on NTFPs that are used both for own consumption as well as for commercial purposes. Normally poor farmers are assumed to be more dependent on NTFPs whereas people that are better off often use them occasionally for extra income.

Level of forest use in the village will be investigated by asking farmers about their use of forest products. Moreover, the presence of forest and its access by villagers can also be investigated by observations and by consulting the existing legislation (based on literature sources) about the forest use. Furthermore, an activity calendar will include information about collection of NTFPs.

Additionally, each household will be asked to rank their sources of food items (farm, forest, market, other) according to their importance.

Wage working

Problems with farming and increasing off-farm opportunities are leading to de-agrarianisation in the whole Southeast Asia (Rigg, 1998) and the situation in the study area is not different (Pitiyont et al., 2006). Often the change does not happen suddenly but gradually when some household members find another occupation in order to increase the household income or to change the livelihood strategy completely. Moreover, the children of the landless (renters) do not have any land to inherit and might therefore be forced to find another source of income. Farmers will be interviewed about their household members working outside the farm and reasons behind the choice to do so.

Methodology

Clarifying interviews with key informant(s)

Clarifying interviews will be conducted in order to get overall information about the village, its structure and situation of villagers. Possibly, the person interviewed will be the head of the village or another person with a good knowledge about the village and villagers.

Community Mapping

Community mapping is used to get first-hand information of the local reality, which includes area use and information of ownership. Furthermore, it can help to identify main agricultural problems in the community. At the session the farmers will be asked to give examples of typical households renting and owning their land.

Semi-structured interviews

Semi-structured interviews will be conducted in order to obtain baseline data about the situation in the village as well as to get further information about the households. Interviews will be conducted with households selected based on clarifying interviews and sampled through stratification.

Household history –timeline PRA

In order to find out about the land tenure and occupational history of the households, each of them will be asked to draw a household history –timeline as a PRA session.

Ranking the sources of food items PRA

Each household will be asked to rank their sources of food. In order to help them, the food items will be further divided in smaller categories (i.e. fruits, vegetables, oils, spices) and household members will be asked to rank them using a matrix scoring technique.

Nutrition flow diagram

Nutrition flow diagram of each household will be made based upon information gathered in the activity calendar and the semi-structured interview.

Technical measurements for RUSLE

In order to assess the soil erosion, some measurements, such as slope length and steepness (using a clinometer) have to be conducted. Moreover, soil sampling and/or the consultation of local soil maps is needed in order to determine the soil texture.

Household activity calendar PRA

The activity calendar should be drawn together with the farmers and give an overview of the inputs and outputs related to the indicators which are to be used for comparison of the land owners and land renters.
The calendar should include information about field activities such as cultivation of crops, income (cash), expenditures, labour demand, off-farm working periods, and collection of NTFPs.

Observations and informal talks

In addition to all the other methods, direct observation and informal talks will complement the data collected. Direct observations are done continuously and informal talks can take place whenever possible.

“Plan B”

One killer assumption has been identified for this study: it has been assumed that there will be both land owners and renters available for the investigation in the assigned village. In the opposite case, an alternative research plan has to be organised for which the sampling strategy (see Appendix A) will be different. Accordingly, the indicators used could have to be adapted. Here are some possible criteria that could instead be used for stratification:

- New migrants vs. old migrants
- Subsistence farmer vs. commercial farmer (“agribusiness”)
- Poor farmer vs. rich farmer
- Old farmer vs. young farmer
- Any other strata which is particularly relevant for the village in which the study take place

Moreover, the data to be collected and the methodology presented in this synopsis are plenty. However, it was preferred to leave it extensive, as this would open up for more possibilities and flexibility. The formation of the final research plan will take place after meeting the Thai counterparts or latest after arriving to the village. Therefore, some of the methods planned might have to be left out.

Planned collaboration with Thai-counterparts

The field research for this course will be done as collaboration between the Kasetsart University, Thailand, and The Royal Veterinary and Agricultural University, Denmark. Hence this synopsis will be merged with the synopsis of the Thai students and compromises will have to be made for meeting the research objectives of both groups. Furthermore specialised knowledge in different areas will be considered. If the Thai-students have knowledge or experience of other methods, there will be much openness to this, as more emphasis will be put in negotiating the output wanted from the field research than which methods are to be used.

Time schedule

Date	Task	
	Morning	**Afternoon**
Monday 6th. March	Submitting of research proposal draft and field activities	
Tuesday 7th. March	Meeting with Thai counterparts. Preparation fieldwork	
Wednesday 8th. March	Meeting with Thai counterparts. PRA preparation.	
Thursday 9th. March	Arrival to study site. First interview with key informant i.e., head of the village	Own observations in village Arrange PRA
Friday 10th. March	PRA: Community mapping	Pre test of semi-structured interview Restructure of semi-structured interview
Saturday 11th. March	Semi-structured interview Household PRA	Semi-structured interview Household PRA
Sunday 12th March	Semi-structured interview Household PRA	Preparation of presentation for Monday.
Monday 13th. March	Presentation of progress of research work	
Tuesday 14th. March	Semi-structured interview. Household PRA.	
Wednesday 15th. March	Additional research activities	
Thursday 16th. March	Soil erosion (RUSLE)	
Friday 17th. March	Follow up on interesting information discovered in the field	Preparation of community meeting
Saturday 18th. March	Community meeting	
Sunday 19th March	Community meeting	Return to Bangkok

References

Brasselle, A.-S., F. Gaspart and J.-P. Platteau. 2001. Land Tenure Security and Investment incentives: puzzling evidence from Burkina Faso. Centre de Recherche en Économie du Développement (CRED), Namur, Belgium. [Online] Available : http://www.fundp.ac.be/eco/cahiers/filepdf/c201.PDF Accessed: 26-2-2006

DFIF. 1999. Sustainable Livelihoods Guidance Sheet. [Online] Available: http://www.livelihoods.org/info/info_guidancesheets.html Accessed: 27-2-2006

Pitiyont B., R. Kaveeta, P. Srijantr, N. Waramit, V. Jintana, P. Narangajavana, R. Potitan, P. Kantangkul, N. Mungkung, P. Jongkroy, T. Kamya, P. Promchote and T. Wisarat. 2006. Basic information for the SLUSE field course 2006 in Nakhon Ratchasima Province Northeastern Thailand.

Rigg, J. 1998. Rural-urban interactions, agriculture and wealth: a Southeast Asian perspective. Progress in Human Geography, 22(4), 497-522.

Singzon, S.B. and G.P. Shivakoti. 2005. Farmers in debt: Who cares? The case of rain fed upland farmers in Northeast Thailand. School of Environment Resources and Development, Asian Institute of Technology, Pathumthani, Thailand. 20 pp.

Tokrisna, R., (ed). 2002. An interdisciplinary study on existing land use in Klong Sathorn village. In collaboration with Thai University Consortium on Environment and Development-Sustainable Land Use and Natural Resource Management and Kasetsart University Research and Development Institute.

Appendices

Appendix A

Sampling strategy

Many different indicators will be investigated at the household level. Before starting the investigation, a careful sampling of households has to be done. In the case of land owners and land renters, three levels of stratification will be used in the sampling:

1) Only agriculture-based households should be selected.
2) An equal amount of land owners and land renters should be selected
3) Among all the possible households corresponding to the first two criteria, households showing motivation and/or interest and availability to participate in the project will be selected.

At this point, the number of individual households to be investigated is still uncertain. It is believed that selecting 5 households who own their land and 5 households who rent their land should be a reasonable sample size.

Moreover, some non-farming households or people (in case no household is available) will be selected for a semi-structured interview. Once again, three levels of stratification will be used in the sampling:

1) Only households, which do not own agricultural land, should be selected.
2) Households who used to own agricultural five years or more ago should be selected.
3) Among all the possible households corresponding to the first two criteria, households showing motivation and/or interest and availability to participate in the project will be selected.

Once again, the exact number of individual households of this category to be investigated is uncertain. With the available time and resources, it is estimated that 1-2 households should be a reasonable sample size.

Appendix B

Semi-structured interview guide: Farmers

Introduce yourself: Explain why you are there and for which reason the data are being collected.

Date of interview_____

Household number____ Land owner____ Land renter____

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1. Basic data about respondents

1.1. Name

1.2. Sex Female____ Male____

1.3. How many members in this household: Adults____ Children____

2. Household size and labour availability

2.1. How many members are included in the household?

2.2. How many people in your household are part of the working force? How many of these people work on the farm?

3. Land tenure

3.1. Number of fields cultivated by this household_____

3.2. Area of farmland cultivated by this household (Rai)?

3.3. OWNER: For how long have you owned your land? (years/month/generations)

3.4. OWNER: How did you get your land? Inherited/ bought/ given/ Other please specify_____

3.5. OWNER: What kind of land title do you have?

3.6. OWNER: Do you feel it guarantees your rights to your land?

3.7. OWNER: Have you considered selling your land?

3.7.1. WHY did you consider it?

3.8. RENTER: For how long have you been renting your land?

3.9. RENTER: From whom are you renting the land?

3.10. RENTER: For how long is your rental contract?

3.11. RENTER: Would it be possible for you to buy the land you are cultivating?

3.12. RENTER: How much do you agree in the following statement?

"The risk of loosing the rental contract is high:

A	B	C	D	E
Highly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

3.13. Do you know anyone who has lost their right to cultivate their land?

3.14. How much do you agree in the following statement?

"I would improve my life if I did own land!"

A	B	C	D	E
Highly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

3.15. Have you ever owned land?

3.16. YES: What was the reason for selling it?

3.17. YES: To whom did you sell?

4. Market access

4.1. Where do you sell your harvest?

4.2. To whom do you sell your harvest?

4.3. How strongly do you agree in the following statement?

"It is difficult for me to get my harvest transported to the market!"

A	**B**	**C**	**D**	**E**
Highly agree	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly disagree**

5. Financial situation

5.1. Are you depending on loans to maintain your actual agricultural practices?

5.2. If ever you need it, do you think you could have access to a loan?

5.3. From where do you take your loan?

A	B	C	D	E
Bank	**State**	**Middle-men, please specify_____**	**Family**	**Other credit providing institution. Please specify___**

5.4. Do you feel safe taking them?

5.5. Do you agree with the following statement:

"It is risky to take a loan"

A	B	C	D	E
Highly agree	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly disagree**

6. Off farm income

6.1. Do you collect any products from the forest, other than timber? Please specify_____

6.2. How much of the NTFP you collect are for your own household consumption? Please specify unit (kg, litre, bag, tin).

6.3. How much of the NTFPs collected do you sell?

6.4. When do you go to the forest to collect products

A	B	C	D
All year around	In case of shocks	Occasionally according to seasonal variation	Other, please specify___

7. Wage working

7.1. How many of the members in this household are occupied with off-farm work?

7.2. What is their occupation and where do they work?

7.3. What was the reason for them to choose to work off-farm?

8. Crops

8.1. Which crops do you find most important to your household as cash crops & consumption. Please fill in table.

System / Crop	Cropping system 8.1	Why this system 8.2	Last years yield 9.1	Use of residues 9.2
Cash crops				
Consumption				

8.2. Do you prioritize a.) cash crops or b.) crops for your own consumption on your farm?

8.3. Why do you cultivate these cash crops?
Market price? Tradition? Advice from outside? Other?

8.4. Why do you cultivate these consumption crops?
Tradition? Advice from outside? Other?

9. Cropping system (Please fill in the table above)

9.1. Which type of cropping system do you use for the crops listed above? -Monoculture, intercropping, mixed cropping, agro-forestry. Other, please specify_____

9.2. Why do you use this kind of cropping system: -Best yield, tradition, soil fertility reasons, land suitability. Other, please specify____

10. Soil fertility (to use for nutrient flow map) (Please fill in the table above)

10.1. Last years yield (table above)?

10.2. What did you do with the residues from the crops (table above)? Burning, mulching, field left fallow, fodder. Other please specify_____

10.3. Did you use mineral fertilizers on your fields? On which fields_____

10.4. YES: How much? Please specify unit

10.5. Did you add manure to your fields? Which fields_____

10.6. YES: How much? Please specify unit

11. Conservation practices

11.1. Do you think that your soil has become richer or poorer over the years?

11.2. How do you observe the change?

11.3. What have you done to improve the soil fertility?

11.4. Do you have problem with soil erosion in any of your fields?

11.5. What have you done to decrease the impact of the soil erosion

12. Investment

12.1. Do you use an irrigation system?

12.2. YES: Did you construct yourself? If yes, when did you construct it?

12.3. NO: Why not?

12.4. Have you planted any trees on your farm?

12.5. Are you planning to plant any trees?

12.6. Why or why not?

13. Land size

13.1. How much land do you have under each crop?

14. Status

14.1. Which type of villagers do you think have most influence in the village? Please rank the following (using stones?)

Villagers owning land	Villagers having free capital	Villagers having off farm jobs	Villagers with a higher education	Villagers with important relationships	All of these are irrelevant

15. Networks

15.1. Does any group for agricultural information exchange exist in the village? If so do you participate?

15.2. How do you otherwise access agriculture-related information?

15.3. Is knowledge shared between farmers informally (as contrary to above question of groups)? In which way is it shared?

15.4. If you need extra help in your household, do you get help from other villagers? If yes, on what are these relationship based? A: friendship, B: relatives C: Agreements within a certain group of people.

Appendix C

Semi-structured interview guide: Non-farmers

Introduce yourself: Explain why you are there and for which reason the data are being collected.

Date of interview_____

Household number____

---

1. Basis data about respondents

1.1. Name

1.2. Sex Female____ Male____

1.3. How many members in this household: Adults____ Children____

1.4. When did you stop farming?

1.5. Why did you stop farming?

1.6. Did you sell or rent out your land?

1.7. What is your occupation now?

1.8. Do you work in the village? If not, where do you work?

1.9. How much do you agree with the following statement?
"My current employment allows me to have a better quality of life"

A	B	C	D	E
Highly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

1.10. Have you considered changing back to agriculture?

1.11. Why or why not?

Appendix D

RUSLE equation

Because it is very difficult to measure soil erosion (Nair, 1993), this predictive model is often used to estimate the rates and quantities of soil erosion. The RUSLE (Revised Universal Soil Loss Equation) states that:

A= R*K*L*S*C*P

Where, A = soil loss t/ha/yr
R = the rainfall factor (ca ½ mean annual rainfall in mm)
K = the soil erodibility factor (range: 0-1)
L = the slope length factor
S = the slope steepness factor
C = the cover factor (range: 0-1)
P = the support practice factor

Calculations of the R factor usually require detailed information of the rainfall patterns of the study site. However, as it is suggested by Nair (1993), "half of the annual rainfall in mm is taken as a good approximation of the R factor in the tropics".

Different variables affect the K factor: soil texture, soil organic matter content, soil structure, water permeability and soil's seasonal fluctuation (Agriculture and Agri-Food Canada, 2002). There are however some tables available to estimate the K factor based on the soil texture. Therefore, soil samples should be taken and analysed in order to determine its texture. Another solution could also be to consult soil maps in order to find out about soil textures in specific sites.

Different variables also affect the LS factor: terrain inclination, slope length and type of slope. (Agriculture and Agri-Food Canada, 2002). The slope length and steepness can be calculated with the help of a compass or a clinometer and a measuring tape.

Many different variables also affect the C factor. It represents the ratio of soil loss from a specified crop cover and management to that from bare fallow and can thus range from 0 (when soil is covered throughout the year) to 1 (for bare fallow) (Nair, 1993). Tables are also available to estimate this factor, based on the management system used on a farm (Agriculture and Agri-Food Canada, 2002).

P factor takes into account the efficacy of anti-erosion practices and of plant cover on the soil. Tables are available to determine the P factor based on different practices (Agriculture and Agri-Food Canada, 2002).