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Implication of Opium Replacement Crops to Agro Socio Economic Life of Hilltribe Small Farmer in Ban Pa Loh and Ban San Pa-Kia Chiangdao District, Chiangmai

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Chapter 1. Introduction

1.1 Background

At present, the highland of Thailand consists of hilltribes community, hilltribes refugees community from Laos, Burma and Lowland Thai community which expanded their cultivated area to the highland. There are about 500,000-600,000 hilltribes in Thailand which scatterly located in mountain range majority in northern part of the country.

Hilltribes includes Mhong, Lahu, Yao, Lisu, E-kaw, Karen, Lua, Thin and Khamu. By the nature hilltribes live separately in the remote highland area, each tribes has their own different language, culture, tradition, custom and belief. Their economic activities depend on traditional and subsistence agriculture. Their farming relies on land and family labour. Shifting practices by hilltribes damaged forestry soil and water resources.

Eventhough, the Royal Thai Government through various agencies has been tried to put many efforts and resources to resolve existing problems as mentioned earlier. The problems still exist and become more serious. One of the major inefficient is each governmental and non-governmental agency has their own plan and field operation and they are duplicated and lack of the continuation in development activities which lead to big loss in investment.

For an efficient use of resources the government agencies i.e the Ministry of Interior, Ministry of Agriculture, Ministry of Education, Ministry of Public Health, Ministry of Science and Technology, Office of the Prime Minister and also non-governmental organization should have one Basic National Plan. The cooperation and the coordination at the national, regional, provincial, district and the field level are considered to be essential for an efficient problem-solving and development of the highland project.

1.2 Problems in highland

Eventhough, all concerned governmental agencies have tried to develop highland community in many forms of social welfare for several years but problems still exist and they can be classified into two major categories namely :

1.2.1 Migration

Survey of Hilltribe Population in Tak Province conducted by National Statistical Bureau in 1988 reported that hilltribe population whose age over 11 years old amounting to 4,378 persons or 10.8 percent migrated to reside in new areas at least once and also migrated from nearby countries amounting to 709 persons or 15.2 percent. The characteristic of hilltribes will be scatterly located

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in small village far away from road and government public services would not be able to reach them and therefore the developement target cannot be achieved.

1.2.1.1 Destroy natural resources.

Opium poppy production through shifting cultivation itself have created environmental imbalance : The slash and burn agriculture as practiced by the hilltribes is a major caused of deforestation which leads to soil erosion and degradation, drought, and flooding. Statistical data from the Royal Forestry Department indicated that the forest area in the north has declined steadily from 54,847,500 rai in 1982 to 52,578.750 rai in 1985, or yearly average 756,260 rai. If this rate continues, it is estimated that in 1990 the forest area in the north will be declined about 3,781,300 rai and the total area will be 48,797,450 rai.

1.2.1.2 Growing narcotic crop

Besides slash and burn and shifting cultivation it was found that there were many areas with cultivation narcotic crops especially opium poppy. The survey conducted by Office of Prevention and Control of Narcotic in 1987-1990 reported that opium poppy planted area has decreased from 28,443 ; 30,100 ; 26,109 rai respectively due to several measures implemented by governmental and non-governmental agencies. However, narcotic crops planting still exists in the north of Thailand.

1.2.2 Problems affecting the highland community.

1.2.2.1 Poverty

Hilltribes who reside in the highland are mostly engaged in semi-subsistence agriculture. They lack new knowledge of farming, credit services, and suffered from low price for their produce and poor road etc. causing low income. The study conducted by the Ministry of Education in 1988 revealed that average hilltribe income per year was 6,000 Baht (US$ 240).

1.2.2.2 Education

In general hilltribes are illiterate. The Latest survey conducted by the National Statistical Bureau of hilltribe in Tak, Chiangmai, Chiangrai and Phayao Province reported that the ratio of hilltribe in those province with no education are 85.9 ; 79.0 ; 80.5 and 75.5 percent respectively. Because the community is located in remote area, education services provided by government can not cover the whole highland area.

1.2.2.3 Population increase

Hilltribes' birth rates are still high as compare to the low land people, one survey conducted by Hilltribe Developement and Welfare Center in 1988 showed that the population increasing rate was 3.5 percent per year. There are two peasons, high birth rate (because of their tradition and belief) and also the migration of hilltribe (4,422 persons from neighbor country).

1.2.2.4 Public health

Population in highland especially hilltribes has low level of public health service which can be seen by average hilltribe public health index, such as birth rate 55.5 : 1,000 persons, death rate 20 : 1,000 persons, mortality rate 81.8 : 1,000 persons.

These problems caused by many reasons such as, illness (malaria, aspiration and digestion system), narcotic, malnutrition and lack of public health service.

1.3 Organizations responsible

Several programs have been designed and initiated to prevent opium poppy production and

deforestation. The programs implemented to prevent opium poppy production and to achieve the reforestation of watershed areas have been incorporated so as to promote the social and economic development of encroaching hilltribe villages.

The following are some of the major government and non-governmental agencies involving these programs.

Governmental Agencies

1. Royal Forestry Department
2. Department of Public Welfare
3. Department of Land Development
4. Royal Irrigation Department
5. Office of Accelerating Rural Development
6. Department of Informal Education
7. Department of Public Health

Non-Governmental Agencies

1. Royal Project
2. Thai-German Highland Development Project
3. Thai-Norwegian Church Aid Highland
4. Thai-Australia Highland Agriculture and Social Project
5. United Nations Development Programme

1.4 Study conducted

This study investigated the agro-socio economic activities of Red Lahu hilltribe in Ban Pa-Loh village No. 11, and Mhong hilltribe in Ban San-Pa-Kia village No. 12, Sub-District, Chiang-Dao District, Chiangmai Province which is under the supervision of Chiangmai Hilltribe Development and Welfare Center, Department of Public Walfare, Ministry of Interior.

1.4.1 Objectives of the study

1. To identify problem situation in highland.
2. To determine problems' effect on hilltribes small farmer.
3. To study the agro-socio-economic of hilltribes small farmers.
4. To provide suggestion on alternative option to improve hilltribes' agro-socio-economic welfare.

1.4.2 Study area and data collection

The study areas were as follows:

1. Ban Pa-Lah
2. Ban San-Pa-Kia

The study area located about 100 kilometers north of Chiangmai City. The road condition from Chiangmai-Fang road to the village (about 40 kilometers apart) is quite steep as the village is located at about 1,300 meters from the sea level. It lies on the mountain range with narrow, winding, and poor road condition. It takes several hours to reach the village from Chiangmai-Fang Road.

The survey method employed was a formal interview by using specially designed questionnaire plus observation, with an assistance from two officers of Chiangmai Hilltribe Development and Welfare Center who can speak hilltribe language and they themselves are hilltribes.

The number of household interview classified by location are in Table 1.1.

1.5 Study site description

Ban Pa-Loh (See photo 1)

The village is located in the high mountain with an elevation of 1,300 meters above sea level. This area is relatively remote, about 90 kilometers from Chiangmai City. The ethnic group is Red Lahu. The total land area is 385 rai and 100 percent is being cultivated. Subsistence and semi-commercialized agriculture are practiced by the hilltribes.

Upland paddy, maize, opium, potato and carrot are planted. Sub tropical fruit tree crop such as Japanese apricot improved variety of peach and coffee are introduced.

Ban San Pa-Kia

The elevation is 1,300-1,320 meters above sea level with the flat plateau where lowland paddy can be cultivated. The area is also remote, about 90 kilometers from Chiangmai City. The ethnic group is Mhong. The total land area is 1,025 rai only 519 rai or 50.63 percent is being cultivated. Agriculture in this village seems to be more commercialized than that of Ban Pa Loh village. Type of crops being grown are upland paddy, lowland paddy, maize, potato, carrot and cabbage.

Both areas depend entirely on rain fall.

Chapter 2. Socio-Economic Background of the Hilltribes of the Study Areas

This chapter presents the socio-economic characteristics of hilltribes in the study areas as background information for further investigation. The chapter consists of two major sections which are the overview of Chiangmai hilltribes, and socio-economic background of the study sites.

2.1 Overview of Chiangmai hilltribes

2.1.1 Population Structure

The National Statistical Office survey in 1986 showed that the total number of household of hilltribes in Chiangmai were 24,632. This includes households of Karen, Mhong, Lisu, Black Lahu, Red Lahu, Haw, Akha and Lua etc. Karen, account for 64.52 percent is the total households, Lahu, Lisu and Mhong account for 15.77, 7.15 and 6.71 percent respectively (Figure 2.1). Family sizes range from 4.6 to 8.8 with an average of 5.7 people per household.

Population growth rates are generally higher than those of the Chiangmai lowland areas. The highest rate is Mhong (4.4) followed by Lisu, Akha, Lahu, Karen, Lua and Yao (Table 2.1)

2.1.2 Religions

Numbers of hilltribe households usually believe in spirit-worship, Buddhism or a mixture of the two account for 77.80 percent. Christians 21.60%, Moslems 0.2% and others 0.4%. Religions belief and practice have great impact on the way of life and decision making on crop choices and other economic activities.

2.1.3 Migration

Of hilltribe people born in Chiangmai, 83% live in their place of birth. The numbers of Lua, Karen, Yao and Mhong residing in their birth place are as high as 95.8, 95.1, 80.2 and 72.8 percent respectively while the numbers of Lahu, Lisu, Akha are smaller, i.e, 58.3%, 56.3% and 38.1% respectively.

The remaining 17 percent are migrants. They usually move around within Chiangmai except for some Akha, Lahu and Lisu who sometimes migrate to other provinces.

2.1.4 Occupation

The statistics show that 50 percent of the hilltribes grow upland rice, 26.5 percent paddy rice,

8.8 percent fruit trees, 3.6 percent are wage earners and 0.7 percent are traders. Of those growing paddy rice, Karen accounts for 37.3% followed by Lua 35.4%, Mhong 3.0% and Lisu 2.9%. Most Akha are occupied with field crops i.e., 87.2 percent of the tribe. 68.5% of Lahu, 58.8% of Lisu and 51.9% of Mhong grow both field crops and upland rice which accounts for 76.1 percent of the total households. The Yao people are mainly occupied with vegetable crops.

2.1.5 Consumption

Rice is only staple crop in the highlands. Rice consumption by males aged between 16 and 60 is the highest, that is up to 1,354 liters (1.015 Kg) per day. With an average family size of 5.7 person, the rice consumption is approximately 5.1628 liters (3.87 Kg) which is equivalent to 6.75 kg. of paddy per day and 2,430 kg. per year (Table 2.2).

2.2 Socio-economic background of the study sites.

2.2.1 General description

Population

2.2.1.1 Ban Pa-Loh

Ban Pa-Loh is located at Moo[1] 11 Tambon[2] Mae-na, Amphoe[3] Chiangdao, Chiangmai Province. There are 20 hilltribes households which often called Red Lahu. The village lies on highland with the elevation about 1,300 meters above sea level. There are two main streams flowing nearby the village namely Huay-ngu and Huay-Platu which are the main sources of water for their consumption, household use and for agricultural use.

The village headman is Mr. Pa-Loh Talae and his assistant is Mr. Cha-uae Veda. They were born and migrated to live at this village more than 30 years ago. There are 105 persons 29 male, 29 females, 31 boys and 16 girls.

Ban Pa-Loh consists of 20 households and 21 families.

Climate

The maximum average rain fall is about 65 milliliter. An average temperature ranging from 8 to 35°C. There are three main seasons in a year, namely rainy season usually begin in May-September, cold season from October-January, and hot or dry season from February-April.

Communication

There are 4 temporany gravel roads reaching the village. Distance ranges from 12 to 35 kilometers from Chiangdao district. The roads can be used throughout the year but in the rainy season roads condition are quite bad.

Economic

Agriculture is considered the main source for their household income. They are upland rice and maize for raising hog and chicken for home consumption. Only few cash crops are for sale i.e. cabbage, carrot, coffee, tea and some fruits of lychee tree. Apricot is also one of the economic crop and being promoted by the Chiangmai Hilltribe Development and Welfare Center, Department of public Welfare. Some other sources of income are opium poppy and hired labour and trade.

Religion

Hilltribe in this village believe in Buddhism-Spirit.

[1] Moo = Village
[2] Tambon = Sub-district
[3] Amphoe = District

Housing

There are 15 permanent houses and 5 temporary houses in Ban Pa-Loh village.

2.2.1.2 Ban San-Pa-Kia (photos 2 and 3)

Ban San-Pa-Kia is located at Moo12 Tambon Mae-Na Amphoe Chiangdao Chiangmai Province. There are 40 hilltribes households which is often called Mhong. The village lies on highland in the mountainous area with the elevation about 1,300-1,320 meters above sea level with some flat plateau. There are two main streams flow nearby the village namely Nam Mae-Kok and Nam Mae-Moen, which are the chief source of water supply for agriculture and household use.

The village headman is name Mr. Teng Reong-mai leading village committee. He was born and migrated from nearby village and settle down is this village more than 50 years ago.

Ban San-Pa-Kia consists of 40 households, 71 families. There are 348 persons which can be classified into 85 male, 86 female, 84 boys and 93 girls.

Climate

The maximum average rain fall is about 70 milliliter, an average temperature ranging from 5 -35°C. There are three main seasons yearly, which rainy season start from May-September, Cold season from October-January, and hot or dry season from February-April.

Communication

There is only one temporary gravel road, distance of 28 kilometers from Chiang Dao District connected to the village.

Economic

Agriculture is cosidered the main source for their household consumption such as upland rice and maize for raising hog and chicken. Only few cash crops are for sale i.e. cabbage, potato. opium, carrot, etc. Coffee, tea and some temperate fruit tree crop are being promote by Chiangmai Hilltribe Development and Welfare Center Department of Public Welfare. Some other sources of income are hired labour and tourism.

Religion

Hilltribes resides in this village believe in Buddhism-Spirit. of 39 households only 1 household believe in Christianity.

Housing

Housing usually scatterly located in the village. There are 25 permanent houses and 15 temporary houses in Ban San-Pa-Kia.

Chapter 3. Hilltribes' Decision Making for Economic Activities.

The economic activities of the hilltribes of Red Lahu at Ban Pa-Loh and Mhong at Ban San-Pa-Kia include the production of traditional crops. (e.g., rice, opium, new cash crops,) livestock, and off-farm employment. Non-farm activities e.g., handicrafts, weaving and laboring are considered minor.

Like subsistence society elsewhere, the desision-making for economic activities is not solely dependent on economic factors. Farmers are rational within their environmental and cultural backgrounds. In the highlands, the hill people are heavily engaged in social and traditional activities. Myth and rituals have significant impact on economic activities. For example, the

choice of crops and livestock does not depend as greatly on physical resources and constraints as one would find in lowland societies. Most hill people raises pigs and poultry for ceremonial purposes though a proportion may also be sold. Corn production is required for livestock production.

3.1 The general decision model

It is widely accepted that ethnicity is important in differentiating the ways of life of the hill people. Different tribes have different cultures and beliefs eventhough some of them may be similar. For a given tribe, a household's economic structure may be divided into 3 sectors, namely, resource and constraints, production and consumption. The linkage and interdependency of the three sectors are shown in Figure 3.1. The diagram shows two kinds of relationships. One is the linkage of activities which also display the provision of relationship is represented by solid lines. The other is the direction of determination or demand which affects the decision making process. It is represented by broken lines in Figure 3.1.

3.1.1 Culture and rituals

Most of the sample households believe in spirits.

3.1.2 Resources and constraints

The highlands are categorized as a semi-temperate zone, having the advantage of good climatic conditions for high value vegetable, flower and fruit crops. Labour is considered abundant in the context of traditional agriculture, but land and water are limited resources in the context of both traditional and commercial agriculture in the highlands. Capital is another major constraint for the adoption of cash crops and improved technology.

Good roads and transpotation facilities are prerequisites for the design of alternative crops recommended to the hilltribe farmers.

The Mhong usually have the biggest family size that is an average of 8.70 persons and the Lahu has an average of 5.25 persons. However, labour availability also depends on working culture and diligence of the hilltribes groups. Labour quality is also very much related to ethnicity. The Mhong seems to be more progressive and pragmatic while the Red Lahu is moderate in terms of technology adoption.

Most Red Lahu household have temporary land for field crops (19.48%) and also occupy some permanent land for fruit tree and coffee. The Mhong household have permanent land for lowland paddy and vegetable production (74.37%) and also occupy, some temporary land for field crops i.e. corn, and upland paddy.

3.2 Hilltribes' decision making proccess for economic activities.

3.2.1 Rice

Rice is considered as the most important food for daily cosumption by hilltribe villagers. The villagers cannot live without rice. Therefore they have to grow rice or buy it when their production is insufficient for home consumption. In the hill areas, there are two types of rice in terms of methods of growing, namely, swidden or upland rice in terms of methods of growing, namely, swidden or upland rice and paddy rice. The swidden (upland) rice is one of the major factors causing deforestation. Because of the reduction of soil fertility and serious grass problem after the first harvesting, the hill farmers have to shift to new areas for the new season by slashing and burning trees. On the other hands, paddy rice growing is regarded as parmanent agriculture.

Since the yield of the upland rice is low and the area for paddy fields in highlands is limited, most of the hilltribe households, particularly those without paddy fields would normally cultivate insufficient rice for year-round consumption. These households need to buy rice from lowlanders

who have a surplus of rice. Among basic goods and services which are necessary for household consumption, rice is the most important item. Therefore, rice deficit becomes a major force for the hill villagers to earn cash income.

3.2.2 Opium

Traditionally, opium production is a major and substantial source of cash income. Besides the needs for cash income to buy rice and other goods and services the reasons that the hill villagers prefer to grow opium are the following (Figure 3.2) ;

3.2.2.1 Market certainty.

The hill villagers realize that they can sell their opium at any time.

3.2.2.2 Market convenience and proximity.

The hill villagers can sell their opium at home.
There is no need to travel to sell their opium.

3.2.2.3 Good prices.

The opium price levels are high and yield substantial total income for households.

3.2.2.4 Infinite market absorption for opium with good price incentive.

The market is virtually unlimited. The hilltribe farmers can grow opium poppy as much as they can manage (under their constraints) and can sell all of their product at good price.

3.2.2.5 Price and yield stabilities.

The price and yield of opium are considerably stable. In general, there are no disease and insect problems. These stabilities result in a predictable and stable income.

3.2.2.6 Long storage life span.

The opium can be stored for a long period of time without damage.

3.2.2.7 Light weight and small volume.

Opium is light and takes up little space. It is very convenient to carry and sell in market places if the farm gate price does not satisfy the growers.

3.2.2.8 Use as an exchange medium.

Opium could be used, to some extent, as money, e.g., for hired labour.

3.2.2.9 Liquidity.

Opium is considered as a liquid asset. It can be exchanged for money whenever wanted.

3.2.2.10 Low capital investment.

Under the persent practices, opium cultivation does not require high capital. It is a capital-saving but labour-intensive crop. The input requirement for this crop is naturally consistent with the resource endowment of the hill villagers.

3.2.2.11 Simple production technology.

The production technology is not complicated and is passed from generation to generation. Thus, uhere is no difficulty for them in understanding and practicing cultivation technology.

3.2.2.12 Drug addiction.

This is one of the major factors that drives the hilltribes to grow opium possies.

3.2.3 Corn

The hilltribe people have to grow corn to feed pigs and poultry. The villagers make their decision to grow corn as a result of the necessity of making an offer to spirits. Corn is an upland crop which requires the same cultivation practices as upland rice. Therefore, corn cultivation is another major cause of shifting cultivation.

The villagers spend their time cultivating corn and raising poultry and pigs for low private economic return but with high social cost i.e., damaging natural resources and environment a well as other negative side effects to both uplands and lowlands. The reasons that they grow corn for their poultry and pigs are two fold. They have excess labour and they have no opportunity to earn a cash income regularly. The younger generation report that they would not raise poultry and pigs if they could earn enough cash from other crops. Presently, most of them still grow corn and raise animals so that they can save money which is very difficult for them to earn in any other way.

3.2.4 New cash crops.

Many kinds of new annual and perennial cash crops have been introduced to highland areas at Ban Pa-Loh and Ban San-Pa-Kia in an attempt to compete with and to replace opium. Among these new cash crops, there are many factors influencing the decision making of the hilltribes' villagers about the choice of crops. The factors include the following (Figure 3.3) :

3.2.4.1 Market certainty.

Like farmers else where, the hilltribe farmers give the top priority to market certainty. This is the first question farmers usually ask whenever they are asked to introduce a new crop. An important source of market information are the extension workers and crop specialists. These people have played an important role in convincing the villagers to grow new cash crops. They assure the farmers that there are markets for these foreign crops. The lesser the degree of market certainty the lesser the opportunity for the crops to be adopted. In many cases, the villagers decline to grow the crops again after they have difficulties in selling their produces to the market.

3.2.4.2 Gross margin.

Among the marketable crops, the crop with higher gross margin would be preferred. However, gross margin per unit of output (or per unit of input) may not be a correct indicator for decision making. The crop that yields higher gross margin per unit of input may not provide enough incentives if it does not generate higher total annual income than the others. A crop that can open an opportunity for other subsequent crops would be preferred. The cropping pattern with higher gross income is likely to be chosen.

3.2.4.3 Risk and uncertainty.

Generally, variations in price and yield often discourage the farmers. Price and yield risks are the implicit costs which indirectly affect the expected gross margins and total income. Therefore, the farmers, everything being equal, prefer less variation in price and yield.

3.2.4.4 Land availability and suitability.

There are many cases where the hilltribe farmers do not have suitable land for new crops and some villagers are landless. Perennial fruit crops can be grown on relatively steep land, in moderate soil conditions and without irrigation. Farmers usually conserve soil fertility and

moisture by mulching. Vegetable and flowers are grown in the areas around natural or constructed reservoirs.

Some vegetables and flowers are seasonal and suitable to certain elevation.

3.2.4.5 Credit.

Several crops are relatively more capital intensive than others. They require chemical fertilizers, insecticides etc. Most hilltribe villagers have limited cash income to purchase these high value inputs even though they foresee good returns for the investment. Without credit, the villagers are left with limited crop choice.

3.2.4.6 Labour availability.

In general, the hilltribe households have sufficient labour for their farm sizes. Only in some period they may need some hire-labour to work on their farm.

3.2.4.7 Knowledge of production and inducement.

Production practice of cash-crops is obtained directly from extension workers and crop specialists of the project who are responsible for disseminating the production technology of the appropriate crops at each location. Through various processes of testing and demonstration, farmers are faced to and convinced too adopt these technologies. At the beginning stage of adoption, the efforts to convince farmers is an important factor that influences the decision-making about the choice of crops including newly recommended crops and already known crops. After the first experience with the assistance of the extension people, the farmers will evaluate the production outcome and decide about the next season. Evidence has shown that the success or failure of crop adoption depend on the farmers first experience. It is more difficult to convince the farmers to grow the crops again after a first unsuccessful experience. However, the decision as to whether the farmers will experiment with the new crops is based on the efforts of extension people to persuade them. In each location, farmers will be introduced to more varieties of new crops. Accumulated knowledge of crops and technology provides the hilltribe farmers with a large choice.

3.2.4.8 Road conditions and distance.

The condition of the roads to most villages is extremely poor, especially in the rainy season. The road condition and distance from Chiang Mai predetermines the numbers of crops from which farmers can make a choice. Hilltribes in the remote areas, e.g., Ban-Pa-Loh and Ban San-Pa-Kia can choose only from storable crops such as tea and coffee.

3.2.4.9 Off farm income.

In a few cases, off farm employment generates a steady and high income. Ornament making off-farm employment sometimes competes with cash crop for labour.

3.2.4.10 Labour availability.

In the highland economy, hilltribe farmers have to make a decision about allocating their labour along with other resources on various economic activities in order to optimize their returns. So far, the labour, in general, is not a severe problem.

3.2.4.11 Knowledge of production.

The more accumulated knowledge of crop production, the greater the numbers of crop choices open to the farmers creating better opportunity to earn higher income.

3.2.4.12 Degrees of inducement by extension workers and crop specialists. Two of the duties of the extension workers and crop specialists are to disseminate the production technologies of appropriate crops, through various processes of testing, for the farmers, and to convince and induce them to adopt those technologies to their farm practices. At the beginning stage of adoption, the effort of skillful persuasion is an important factor in determining the decision between switching to recommended crops and continuing with known and familiar crops. After the first time experience of the assistance of the extension workers and crop specialists and of the outcome of adoption, the farmers will evaluate the outcome and make a decision for the next season. Considerable evidence has shown the failures to achieve the targeted outcome in the farmers' first experience of the adoption. The farmers, then, have turned away from those introduced crops. Evidently, it is more difficult to convince the farmers to grow the recommended crops again because of failure with such crops.

Chapter 4. An Analysis of the Reduction of Opium Production in the Study Areas

An analysis of decreasing planted area of opium poppy will provide some facts and figures for comparison between the whole planted areas of opium poppy of Thailand and the total opium planted area and production of Chiangmai Ban Pa-Loh and Ban San-Pa-Kia village, Chiang Dao District Chiangmai province.

4.1 Trends in total planted areas in Thailand.

The total opium poppy planted areas in Thailand during 1980-1990 shows an increasing trend for the first three years between 1980-1982 from 26,440 ; 37,651 ; 46,196 rai, while production has also increasing from 14,005 ; 48,565 and 57,172 kilogram respectively.

In 1983 planted area was dropped to 34,560 rai with production of 33,527 kilogram. From 1984 -1985 planted area were increasing from 43,333 to 56,354 rai with production of 35,949 to 34,674 kilogram. From 1986-1987 planted area were decreasing from 25,709 to 23,470 rai with production of 25,896 to 24,292 kilogram. From 1988-1989 planted area was increasing from 28,442 to 31,000 rai with production of 27,191 to 49,968 kilogram.

In 1990 planted area was decreased to 26,109 rai, with production of 45,951 kilogram. In 1990 Mae-Hong-Sorn Province was ranked first in terms of planted area of 10,120 rai or 38.76 percent of the total planted area of the country, and the total production was 17,811 kilogram or 38.76 percent of the total production of the country.

Chiangmai Province was ranked second planted area 10,047 rai or 38.48 percent of the total planted area of the country, and the total production was 17,682 kilogram or 38.48 percent of the total production of the country (Figure 4.1).

4.2 Opium planted area in Chiangmai Province.

The statistic from the Office of the Narcotic Control Board in 1990 in Table 4.1 shows the total opium planted area and the total production classified by districts indicated the Mae-Cham District ranked first with the total planted area was 3,699 rai or 36.21 percent of the total planted area of Chiangmai Province, and the total production was 6,404 kilogram or 36.21 percent of the total production of Province.

4.3 Trends in total planted area in Chiangmai Province.

In 1989/90 crop year from Table 4.2 indicated that Chiangmai was ranked the second largest opium poppy growing in the country with planted area being 10,047 rai and production of 17,682 kilogram.

The trend in total opium poppy planted area in Chiangmai during crop year 1979/80-1989/90 varied accordingly from 11,484 rai to 10,047 rai. The largest planted area was 24,402 rai in the crop year 1984/85.

Table 4.3 shows there were three major opium poppy producing areas and production, namely Mae-Cham district 3,639 rai (36.21%), Om-Koi 1,988 rai (19.78%), Chiangdao 1,770 rai (17.61%) and Chom-Tong was the least 5 rai (0.05%).

4.4 Investigation of the opium growing households.

It was quite difficult to obtain information on opium production because opium cultivation is illegal. It is also a secret matter among growers.

In the past 60 years, hilltribes have been engaged in opium cultivation. Consumption of opium was an indispensable habit since their ancestors. Opium production influences hilltribes' daily life in terms of economic, social, and traditional way of life.

From Table 4.4 Red Lahu hilltribes in Ban Pa-Loh were engaged in opium production for 3-25 years. There were 7 households or 35.00 percent engaged in opium production for 10 years.

The total opium planted area was 65.5 rai with total production of 50.92 kilogram. An average planted area/household was 3.27 rai with an average production/household was 2.55 kilogram.

Table 4.5 shows that Mhong hilltribes in Ban San-Pa-Kia were engaged in opium production for a long period of time, ranging from 2-51 year. There were 11 households or 27.5 percent engaged in opium production for 10 year.

The total opium planted area was 267 rai with total production of 264.2 kilogram (dried). It can be seen that the total number of opium planted area was decreased from 267 rai to 2 rai as well as the total production was also decreased from 265.2 kilogram to 3.21 kilogram.

An average planted area per household was 6.67 rai with an average production per household was 6.63 kilogram.

4.5 Periods and percentage of households stopped opium production

There are 20 Red Lahu hilltribes households living in Ban Pa-Loh village. Opium is considered as one of the most important crops for hilltribes in this village for more than 25 years and they grow opium for their home consumption, cash income, drug, hired labour and religions rite.

From Table 4.6. There are 17 hilltribes households or 85.00% in Ban-Pa-Loh still engaged in opium production about 24 rai with total production of 21.6 kilogram (dried).

Only 3 hilltribes households or 15.00% quit opium production just recently in 1990 crop year.

There are 40 Mhong hilltribes households living in Ban-San-Pa-Kia village for more than 60 years. Opium is also considered as one of the most important crops in the village. The main reasons to grow opium are most likely the same as the hilltribes in Ban-Pa-Loh village.

From Table 4.6. There are 39 hilltribes households or 97.50% in Ban San-Pa-Kia quit opium production. The number of years reported stopped growing opium were varied from one to five years. The hilltribes households reported stopped growing opium for 1 year was 1 household, 2 years 3 households, 5 years 4 households, 4 years 6 households, 3 years the most 10 households.

4.6 Reduction of opium production in the study areas.

As mentioned earlier, hilltribes' way of life has been connected with opium production. Reduction of opium production is not quite an easy task, because introducing something new to them is long time consuming process. It may require an effective integrated approach by all government and non-government agencies concerned through education, prevention, control, eradication together with agricultural development and infrastructure improvement, health care improvement and marketing.

From Table 4.7. Red Lahu hilltribes in Ban-Pa-Loh village 20 households were engaged in

opium production for more than 25 years.

The original total planted area was 65.5 rai with total production of 50.92 kilogram. An average planted area per household was 3.27 rai, with an average production per household was 2.55 kilogram.

Until crop year 1990 the number of hilltribes in Ban-Pa-Loh who were involved in opium production has decreased from 20 households to 17 households or 85.00 percent of the total households, while the planted area was decreased from 65.50 rai to 24 rai or 63.36 percent, and the total production was decreased from 50.92 to 21.60 kilogram or 57.58 percent.

Also an average planted area per household was decreased from 3.27 rai to 1.41 rai with an average production per household was decreased from 2.55 kilogram to 1.27 kilogram.

From Table 4.7 in Mhong hilltribe in Ban San-Pa-Kia village, 40 households were engaged in opium production for more than 50 years.

The original total planted area was 267 rai with the total production of 265.2 kilogram. An everage planted area per household was 6.67 rai with an average production per household was 6.63 kilogram.

Until crop year 1990 the number of hilltribes in Ban San-Pa-Kia who were involved in opium production has decreased from 40 households to 1 household or 97.50 percent of the total households while the planted area was decreased from 267 rai to 2 rai or 99.25 percent and the total production was decreased from 265.2 kilogram to 3.2 kilogram or 98.79 percent.

Also an average planted area per household was decreased from 6.67 rai to 2 rai with an average production per household was decreased from 6.63 kilogram to 3.2 kilogram (Table 4.7).

4.7 Reasons for stopping opium cultivation

From survey, there are the following 5 major reasons for stopping opium growing as follows :

1) Hilltribes realized that opium cultivation is illegal and prohibited they were afraid of being arrested by the police.
2) At present growing opium is quite risky in the sense it is frequently destroyed by the border police and they will loose their time and money invested in growing opium.
3) There are good opportunity to grow other alternative crops such as potato, carrot during rainy season. Highland areas has an advantage on climatic condition and temperature which are suitable for growing high value vegetables.
4) Scarcity of suitable planted area. Hilltribes usually grow opium on the hidden place for from the house (10-15 kilometers). Due to very active eradication and controlling of planting opium by police and government officers, hilltribes are facing difficulties to find suitable opium planted area.
5) Lack of fund and labour is one reason for hilltribes to stop growing opium. Most of hilltribes are poor and earn their living as hired-labour which is low wage rate of about 50 baht (2 US$) per day, and there is no time available for them to grow opium.

It can be summarized that 17 hilltribes households out of 20 households in Ban Pa-Loh still continue growing opium about 24 rai or average 1.41 rai per household with total production of 21.60 kilogram (dried) or average 1.27 kilogram per household.

An explanation of hilltribes to continue growing opium was very limited opportunity to switch to other suitable alternative crops. They were using opium for traditional medicine, wage payment, relax, religious rites, and exchange with household items.

The hilltribes in Ban Pa-Loh has more limiting factors than those hilltribes in Ban San-Pa-Kia in teams of value system, tribes characteristic, the level of economic status (per capita income) consumption, habit, geographical environment, elevation, climate, soil, amount of rainfall, temperature, road condition, technical knowledge for ather substitution crops, credit availability, market, and favourable price, government and non-government project, etc (Table 4.8).

4.8 Reasons for remaining in opium growing.

Although there was a great reduction in opium production in Ban Pa-Loh and Ban San-Pa-Kia, there are some hilltribes household still remain in producing opium.

There are 5 major reason as follows:

1) For medicine: Opium can be used as a household medicine to relief from stomachache and headache and snake biting. This is widely accepted among hilltribe for a long time, the weight of this reason accounts for 27.40 percent.
2) Wage payment: Many hilltribes are drug addicts and they prefer to accept opium as a wage payment instead of cash. The weight of this reason accounts for 27.40 percent.
3) Religions rite and ceremony: The majority of hilltribes believed in buddhism/ghost. Several religious rite, festival and ceremony i.e. new year, wedding, death, and asking rain for their agriculture require opium smoking.
4) Relaxation: some hilltribes feel smoking opium provide their life with more relax after hard working in the field. This reason accounts for 15.07 percent.
5) Other reasons: there are many other reasons for continuing opium production such as a medium of exchange, exchange opium with cloth and some other household items, and also can be use as a cash. This reason accounts for 2.73 percent (Table 4.9).

4.9 Reasons of growing medicinal plant.

According to the trend of substantial decrease yield per rai of opium production and some other reasons. Hilltribes farmers are looking for other substitute crop.

It is found that hilltribes are interested in growing medicinal plant as a substitution cash crop to replace opium. (see Table 4.10)

Ban Pa-Loh Village

If medicinal plants are being introduced to the hilltribes, there are four major reasons as follows:

Market certainty, the weight of the importance for this reason is 25.92%.
High price and income, the weight of the importance for this reason is 24.08%.
High yield, the weight of the importance for this reason is 20.37%.
Providing seed, fertilizer and insecticide, the weight of the importance for this reason is 14.82%.

Ban San-Pa-Kia Village

There are five major reasons which are as follows:

Market certainty, the weight of the importance for this reason is 23.08%.
High price and income, the weight of the importance for this reason is 19.23%.
Trader to buy, the weight of the importance for this reason is 17.31%.
Substitution crop, the weight of the importance for this reason is 17.31%.
Providing seed, fertilizer and insecticide, the weight for this reason is 13.46%.

Chapter 5. Economy of Hilltribes In The Study Areas.

5.1 The Economy of Sufficiency

The Red Lahu hilltribe in Ban Pa-Loh Village and the Mhong hilltribe in Ban San-Pa-Kia village are engaged in farming for their household keeping. They grow crops and raise hogs and chicken for self consumption rather than profit purposes.

There is forest land available for clearing hill fields. All of hilltribes agreed that the one who clears the land has the right to harvest fruits. Tools are cheap and readily available among

hilltribes. Labour is abundance but capital and technology are limiting factors.

If they cannot produce enough rice for household consumption, they will buy rice. Their cash income derived from other crops such as opium, coffee, peach, apricot potato, carrot, cabbage, hired labour and forest products, etc. will meet this purpose.

There are certain need for pigs and chickens for religious rite, ceremony and social events, household consumption, grass or leaves for repairing the roof, tobacco to smoke, fire wood for cooking, embroidery cloth to prepare dress for their own use.

5.2 Population

The data shown in Table 5.1 indicated that there were 60 household in the two villages. The number of population for each tribe were 105 Lahu, or 23.8 percent, 348 Mhong or 76.82 percent, the total population was 453.

5.3 Household size

Data obtained from survey shown in Table 5.2 shows that total hilltribe households in the two villages were 60, with 453 population. By this number can be divided into two major categories namely adult, children and subdivided by male and female.

Total number of hilltribe population are adult male 114 or 25.16 percent, 115 female or 25.39 percent. Children boy 115 or 25.39 percent, girl 109 or 24.06 percent.

Mhong hilltribe population has the biggest average household size 8.7 persons while Red Lahu has an average family size 5.25 persons. An average hilltribe population for the two villages is 7.55 persons (Table 5.2).

5.4 Religion

The data shown in Table 5.3 indicates that the total number of hilltribes in the two villages were 453 persons. It can be classified into 2 ethnic groups namely Red Lahu and Mhong. They believe in Buddhism and Animism 446 persons or 98.45 percent and Christianity 7 persons or 1.55 percent (Table 5.3).

5.5 Education Status

The education status of the head-family in the two villages were considered uneducated most of them can only speak the local dialect (only about 51 persons or 85 percent), and some of them about 2 persons or 3.33 percent can read and write.

There were small number who educated, only 4 persons or 6.67 percent finished primary school and 2 persons or 3.33 percent finished secondary school and there are only person who attended the special training course (Table 5.4).

5.6 Farm Labour Force

The data derived from Table 5.5 show that the total hilltribe household in the two villages were 60. They consisted of 453 persons. There were slightly different farm. Labour force among the hill tribe in Ban San-Pa-Kia Village has the biggest average farm labour force per household 4. 2 persons. An average farm labour force per household for Red Lahu hilltribe at Ban Pa-Loh Village is 2.9 person (Table 5.5).

5.7 Land Holding

The Red Lahu hilltribe household in Ban Pa-Loh Village, Chiangdao District got their right for holding land by clearing the forest area about 385 rais, so all of land holding of hilltribe in this village have non-legal document.

The Mhong hilltribe household in Ban San-Pa-Kia mostly have the Sor Tor Gor Document.

Table 5.6 shows that the hilltribe in the two villages have the right for holding land by Sor Tor Gor Document about 997 rai or 71.37 percent and no land document exists for about 400 rais or 28.63 percent.

5.8 Land Use

According to land use in the area of each hilltribe household in Ban Pa-Loh village could be classified into 3 categories namely crops, fruit trees and vegetables. In some cases hilltribe used the same piece of land for producing different type of crops.

From Table 5.7 crop year 1990/1991 the total land used for crops grown was 385 rai average land used per household was 19.25 rai. The hilltribes in this village are using their land for local peach 198 rai or 51.43 percent which is the biggest item, apricot 69.5 rai or 18.05 percent and corn 47 rai or 12.21 percent. While the number of land used for upland paddy, vegetable and some other fruit trees are quite small.

The land used in Ban San-Pa-Kia village could be classified into 4 categories lowland paddy, field crops, fruit trees and vegetable.

From Table 5.7 the total land used fro crops grown of the Mhong hilltribes in Ban San-Pa-Kia village was 519 rai. An average land used per household was 12.98 rai. The biggest type of land use is lowland paddy 94 rai or 18.11 percent, the second type of land use is cabbage 92 rai or 17.72 percent, potato 79 rai or 15.22 percent, upland paddy 71 rai or 13.68 percent. While the land use for other crops is quite small (Table 5.7).

5.9 Water Source

Water is one of the most important factors for agricultural production. During crop year most hilltribes in Ban Pa-Loh, and Ban San-Pa-Kia village depend heavily on rain fall in rainy season, begin in May-September. The maximum average rain fall is about 65 milliliter.

In addition, there are two main natural streams flowing near by Ban Pa-Loh village namely Huay-Ngu and Huay Platu which are the supplementary sources of water supply for their household use and agriculture.

There are also two main natural streams flow near by Ban San-Pa-Kia village namely Nam Mae-Kok and Nam Mae-Moen which are the supplementary sources of water supply for their household use and agriculture especially for about 94 rai of lowland paddy which is required more regular water supply than upland rice.

5.10 Farm Tool

From survey and observation by researcher one see quite clear about the general picture of farm tool being used in agriculture of Red Lahu hilltribe in Ban Pa-Loh village and Mhong hilltribe in Ban San-Pa-Kia village are quite simple depending on human labour. There is no labour-saving tool being used by the hilltribes in those two villages.

From Table 5.8 the total value of farm tool of Red Lahu hilltribe in Ban Pa-Loh is 8,210 baht or an average per household is 410.50 baht. The biggest item of farm tool is knife 1,840 baht or 34.35 percent.

The total value of farm tool of Mhong hilltribe in Ban San-Pa-Kia is 46,790 baht of an average per household is 1,169.75 baht. The biggest item of farm tool is knife of 9,975 baht or 36.40 percent (Table 5.8).

5.11 Cropping System

Cropping system has been shown in Figs. 5.5 & 5.6 cropping calendar. Since the land areas in Ban Pa-Loh village and Ban San-Pa-Kia village are mountainous, most of the cultivated areas are the slope complex along the hillside. The types of crop grown varied accordingly.

The main field crops cultivated by Red Lahu in Ban Pa-Loh are upland paddy, maize and opium poppy. Mhong in Ban San-Pa-Kia is also engaged in upland paddy and maize and only small amount of opium poppy is being grown in Ban San-Pa-Kia.

Upland Paddy

Rice is considered the basic staple food for hilltribes who grow rice for their household consumption, but usually it is not enough for consumption for the whole year.

For planting upland paddy, land clearing begins in May and leave the land waiting for rain about a month then the growing period begin in June to the second week of July. For planting rice a digging stick is used to make holes in the ground about one and a half feet apart. Five or six seeds are placed in each hole. Hilltribes use their feet to stamp firmly on the hole to cover the seed. Twice or tree times weeding is done before rice is harvested in September- the second week of October. Threshing is usually done in the field. The paddy is brought to the village by ox, horse or by human labour where it is stored and ultimately milled with wooden rice pounders.

Lowland Paddy

There is lowland paddy cultivation in Ban San-Pa-Kia while Ban Pa-Loh has no lowland paddy. Lowland paddy can be cultivated under irrigated area. Land preparation normally begin in the second week of May to June by draft animal. Transplanting of rice is done by human labour. Fertilizers application were made by some hilltribes. One to two times weedings are practiced before rice is harvested in October. Threshing is usually done in the field and brought to the village by oxen cart or by human labour.

Opium poppy

In the past, the major source of household income for hilltribes in Ban Pa-Loh and Ban San-Pa-Kia derived from opium poppy growing. At present, opium poppy planted area are decreasing.

However, some hilltribes are still growing opium poppy for their home consumption, religious rite, festival and ceremony, etc.

Opium poppy is considered as an illegal and prohibited crop therefore the selection of planted area usually done on the hidden place and far from the village. Poppy planting period of hilltribes in the two villages usually begin from September. Land preparation is done by human labour. Much care is taken in opium poppy cultivation. The soil surface made to fine powder and the poppy seed alone or sometimes mixed with lettuce, parsley and sesame are sown broadcast. The seeds are covered lightly by gently raking the soil surface with the hands. If poppy plant growing to close together some plant will be picked off then leaving a space of some six inches between each plant. The poppy fields have to be weeded two times before the poppy capsules ripen normally about 100 days before harvesting in January and the opium is extracted. For the tapping of the resin special brass knives with 3-5 curve edges are being used. After the poppy capsule is scratched in vertical incisions the resin flows down along the capsule and leave it for one day. The milky white resin changes to a brown and finally blackish colours by exposure to the air and the resin is scrapped from the plants with a half moon shaped iron knife. The collected resin is the raw opium.

Maize

The Red Lahu and the Mhong hilltribes in Ban Pa-Loh and Ban San-Pa-Kia villages cultivates maize as a field crop for feeding chicken and pig for their household consumption, religious rite and social events.

Maize planting period of hilltribes in those two villages normally begin from June. Land

clearing is done by human labour after the first rain has come in May and leave the land idle about one month and then the second soil preparation is done by using hoe follow by a digging stick is used to make holes in the ground about half meter apart. Three or four seeds are placed in each hole. Hilltribes use their feet to stamp firmly on the hole to cover the seed. Two times weeding are done before maize is harvested in September in Ban Pa-Loh village and the second week of October in case of Ban San-Pa-Kia village.

Maize is brought to the village by ox or by human labour for storage near their houses.

Potato

Mhong hilltribes in Ban San-Pa-Kia village begin to prepare the land in May by human labour and leave the land waiting for rain about a month. Soil preparation is done in July by using hoe and planting bed was prepared and make holes to put a piece of potato bud and then covered by the soil surface with the hoe. Spacing between each plant is about 50 centimeter. Chemical fertilizer is applied by the hilltribes. Two times weeding and insect and disease control are practiced before potato in harvested in October.

5.12 Planted Area, production, Yield per rai of various type of crops grown.

The Data shown in Table 5.9 are ...

1. Lowland Paddy

There were total 94 rai of planted area, only in Ban San-Pa-Kia village. Total Production 31, 990 kg. with an average yield per rai 340.32 kg.

2. Upland Paddy

There were total 75 rai of planted area. Total production 15,660 kg. with average yield per rai was 208.80 kg.

3. Maize

There were total 106.5 rai of planted area. Total production 25,100 kg. with average yield per rai was 235.91 kg.

4. potato

There were total 79 rai of planted area. only in Ban San-Pa-Kia village. Total production 92, 950 kg. with an average yield per rai was 1,176.58 kg.

5. Carrot

There were total 18 rai of planted area. Total production 14,000 kg. with an average yield per rai was 777.78 kg.

6. Cabbage

There were total 94 rai of planted area. Total production 84.540 kg. with an average yield per rai was 899.36 kg.

7. Radish

There was total 1 rai of planted area only in Ban San-Pa-Kia village. Total production 1,200 kg.

8. Local Peach

There were total 207 rai of planted area. Total production 69.610 kg. with an average yield per rai 336.28 kg.

9. Apricot

There were total 94.5 rai of planted area and they were at early mature stage.

10. Coffee

Coffee is a type crop among others which is being introduced to the hilltribe. There were total 39.5 rai of planted area. Total production 1,300 kg. (dried) with an average yield per rai 32.91 kg..

11. Tea

There were total 19.5 rai of planted area, at Ban Pa-Loh village 9 rai and Ban San-Pa-Kia

village 10.5 rai. However the tea at Ban San-Pa-Kia village is at early mature stage.Total production 483 kg. with an average yield per rai 53.67 kg.

12. Lychee

There were total 49 rai of planted area, at Ban Pa-Loh village 9 rai and Ban San-Pa-Kia village 10.5 rai. However the Lychee at Ban San-Pa-Kia village is at early mature stage. There were total production 443 kg. with an average yield per rai 29.54.

13. Opium

To decrease opium poppy cultivation the agricultural extension program of various type of crop which marketable is introduced to the hilltribe. As a result there is the tendency for the hilltribe to decrease opium planted area year by year. There were total 26 rai of planted area. Total production 24.6 kg. and average yield per rai was 0.95 kg.

14. Bamboo Shoot

There was total 1 rai of planted area. only in Ban San-Pa-Kia village. However it is at early mature stage.

5.13 Livstock

Livestock is raised by Red Lahu hilltribes in Ban Pa-Loh village and Mhong hilltribes in Ban San-Pa-Kia village as a supplementary economic activity. It is generally practiced in the same extensive method as farming.

Hog are the most important domesticated animal for the hilltribes. The native-breed are being raised in those two villages for their household consumption, religious rite and social events and some left for sale in the village. An improved breeds hog are not accepted among hilltribes because it has a white color hog. It is quite difficult to change their belief in introducing them to raise an improved-breed hog, and also shortage of money to buy feed and lack of technical knowledge are another limitation.

The hilltribesmen take little care of their hog, and only feed them with some left over food, boiled corn and chopped banana stalks once or twice a day. Some of hilltribesmen in those two villages let their hogs roam in the garden searching for food which is reflected in their slim body.

Poultry is also an important domesticated animal among hilltribesmen. Both native and hybrid poultry were found in those two villages. The purpose of raising poultry is for consumption rather than for seling. The raising method still primitive by using rice bran, corn, vegetable and let their poultry searching for food in the garden. Diseases and epidemics are also an obstacle due to proper veterinary treatment is not known to the hilltribesmen. The damage loss involved in raising livestock are perhaps one of the main reasons why thehilltribesmen do not take more intensive care to their livestock due to lack of knowledges in prevention and control of diseases and epidemics.

5.14 Income

The data shown in Table 5.11 are cash income, non cash income from agriculture and other activities.

The total income of Red Lahu hilltribe in Ban Pa-Loh village was 656,270 bath which consists of cash income 505,490 baht (99.77% of the total income) which includes income from crops and livestock. The total income derived from crops were 595,470 baht (90.74%) and livestock 59,300 baht (9.03%).

The total income derived from non-agriculture was 1,500 beht (0.23%).

From Table 5.13 an average total income /household/year was 32,813.50 baht. An average total income from agriculture/household/year was 32.728.50 baht (99.77%) which consist of income from crops 29,773.50 baht (90.74%), income from livestock 2.965.00 baht (9.03%).

An average total income from non-agriculture/household/year was 75.00 baht (0.23%).

The total income of Mhong hilltribes in Ban San-Pa-Kia village was 1,278,920 baht which consists of cash income 1,061,595 baht and non-cash income 217,325 bath.

The total income from agriculture accounted for 1,133,120 baht (88.59%) of the total income, which can be divided into two categories crops and livestock, The total income derivived from crops 1,064,860 baht (83.26%), livestock 68,260 baht (5.34%).

The total income derived from non-agriculture was 145,800 baht (11.40%)

From Table 5.13 an average total income/household/year was 31,973.50 baht. An average total income from agriculture/household/year was 28,328.00 baht (88.60%), which consists of income from crops 26,621.50 baht (83.26%), income from livestock 1,706.50 baht (5.34%).

An average total income from from non-agriculture/household/yaer was 3.645 baht (11.40%) (Table 5.11).

5.15 Expenditure

The data shown in Table 5.12, there are two main items of expenditure, and non-agriculture.

The total expenditure of Red Lahu hilltribe in Ban pa-Loh village was 608,780 baht, which consists of cash expenditure 588,845 baht and non-cash expenditure 19,935 baht.

The total expenditure for agriculture accounted for 40,680 baht (6.68%), non-agriculture accounted for 568,100 of 98.32%.

There were no expenditure for livestock dus to the method of raising which was very traditional by letting their chickens and hogs roam and searching for food.

An average total expenditure/household/year was 30,439 baht.

An average total expenditure for agriculture/household/year was 2,034 baht or 6.68%.

An average total expenditure for non-agriculture was 28,405 baht or 93.32%.

The total expenditure of Mhong hilltribe in Ban San-Pa-Kia village was 830,156 baht. Which consists of cash expenditure 760,188 baht and non-cash expenditure 69,968 baht.

The total expenditure for agriculture accounted for 372,696 baht or 44.89%.

There were also no expenditure for livestock due to the same reason of Rad Lahu hilltribe in Ban Pa-Loh.

An average total expenditure/household/year was 20,753.90 baht.

An average total expenditure for agriculture/household/year was 9,317.40 baht or 44.89%.

An average total expenditure for non-agriculture was 11,436.50 baht (Table 5.12).

5.16 Net Income

As shown in Table 5.13, the total net income of Red Lahu hilltribe in Ban Pa-Loh village was 88,170 baht.

An average net income /household/year was 4,408.50 baht.

The total net income of Mhong hilltribe in Ban San-Pa-Kia village was 448,784 baht.

An average net income/household/year was 11,219.60 baht (Table 5.13).

5.17 Asset

The data are shown in Table 5.14. The total assets value of Red Lahu hilltribe in Ban Pa-Lon village was 869,050 baht. The three major type of assets value were 11 unit of motorcycles accounted for 222,500 baht or 25.60%, 14 unit of houses 208,000 baht or 23.94%, 3 unit of car (pick-up) 197,800 baht or 22.76% respectively.

There are 136 rai of land for cultivation which is belonged to the government. It is not consider as the hilltribes' property.

An average asset value per household was 43,452.50 baht.

The total assets value of Mhong hilltribe in Ban San-Pa-Kia village was 2,059,680 baht. The two major type of assets were 8 unit of car (pick-up) accounted for 1,500,000 baht or 72.83%, 45

unit of houses valued 274,500 baht or 13.33%. There are 519 rai of land for cultivation which is belonged to the government. It is not considered as the hilltribes' property. An average asset value per household was 51,492 baht (Table 5.14).

5.18 Debt

The data are shown in Table 5.15. The total amount of debt of hilltribe in Ban Pa-Loh village accounted for 12,075 baht provided by Public Welfare Fund using for fertilizer, pest and insect control for fruit tree crop. Interest rate is 24 percent per annum.

An average debt of hilltribe per household was 603.75 baht.

The total amount of debt of hilltribe in Ban Sal-Pa-Kia village accounted for 90,490 baht. The major source of loan from wholesale trader accounted for 77,360 baht or 85.49%, from Public Welfare Fund 10,470 baht or 11.57%.

An average debt of hilltribf per household was 2,262.25 baht (Table 5.15).

5.19 Marketing

In studying, cropping calendar of the Red Lahu hilltribe in Ban Pa-Loh village and the Mhong in Ban San-Pa-Kia village , one can see quite clear that agriculture in those two village are subsistence in some respect i.e., upland, lowland paddy, maize, chicken and hog are produce for household consumption. Potato, carrot, cabbage, local peach and coffee are produced for sale as a source of cash income.

Therefore, there were no problem for subsistence crops and livestock. Potato and carrot are also has no marketing problem as those two commodities are produced by the hilltribes as a contract farming. Wholesale trader in Chiangmai City will provided potato bulb, seed, fertilizer and pest and insecticide to the hilltribes who want to grow potato and carrot. Minimum price guarantee is determined by trader. After harvesting the trader will collect the product.

For local peach, cabbage and coffee are still facing with low price due to over production supply during harvesting time.

In general, the hilltribes in those two villages sell their products through local trader who command price exploitation.

Chapter 6. Recommendations

Hilltribes problems in those two villages involved economic, social and political aspects.

In solving existing problems of the hilltribes an intensive integrated approach should be carefully designed and implemented immediately through government and non-governmental concerned agencies. Cooperation and coordination among them are considered necessary for successful operation.

The Red Lahu hilltribe in Ban Pa-Loh village and the Mhong hilltribe in Ban San-Pa-Kia village are supervise by Chiangmai Hilltribe Development and Welfare Center, Department of Public Welfare.

6.1 Short-Term

1. Encouragement of growing upland and lowland paddy, by selecting the suitable areas. Rice is a basic staple food for the hilltribes' in those two villages.

The result of study indicated that in terms of planted area and production of both upland paddy and lowland paddy were insufficient for household consumption for the whole year. These households need to buy rice from their neighbors should be made so thet hilltribes cultivate more upland and lowland paddy for enough rice for household consumption. Emphasis should be placed

on increasing yield per rai through use better seed, composed fertilized, manure, proper weeding, pest and insect control by using local raw-material.

2. Diversified farming should be introduced to serve the primary need of hilltribes. In short-run due to hilltribes farmers are self-sufficiency, therefore, rice, maize, chili, typical vegetables, and fruit trees, hogs and chicken are also important and essential for their household need.

3. Technical knowledge in agriculture should be recommend by extension worker.

In the first place, an existing crops and livestock in those two villages should be improved, particularly local peach, coffee, apricot, upland paddy, maize, chickens and hogs.

A proper simple technology involving selection of deed, improving soil fertility, planting method, pest and insect control, an improved breed of chicken and hog suited to local environment, method of raising, feeding and animal hygiene are also important to improve the existing agriculture.

One to two days training course of particular crops and livestock should be conducted in the village by agricultural extension worker in cooperation with an officer of Chiangmai Hilltribe Development and Welfare Center. Also farm demonstration for crops presently grown in those two villages should be operated.

4. Strengthening of social psychological matter.

In order to gained fruitful result of introducing of other technical innovations to the hilltribes society in those two villages the social structure and human or social factors are to be taken into account, since the degree of adoption of technical innovations depends upon the cooperation of hilltribes men.

Leader is considered as a key person in the hill village. Hilltribes always follow to their leader, therefore, close and regular contact with their leader by concern government officers are necessary.

6.2 Long-Term

Once hilltribes in those two villages have enough rice, vegetables, chicken and hog to consume in the household and use for religious ceremony and social event.

The introduction of the alternative cash crops, livestock and some non-agricultural activities for the market should be considered.

1. Survey and construction of small farm pond.

Water is essential for agricultural production. At present agriculture in those two areas depend largely on rainfall. Water is a limiting factor. Most of hilltribes can grow crops only in the rainy season (May-September) and only few areas have water in dry season.

Therefore, construction small farm pond should be considered.

2. Road improvement.

Due to very poor road condition from Chiangdao district connected to Ban Pa-Loh and Ban San-Pa-Kia village during the rainy season, it is difficult to transport the agricultural products from the highland to the market in the lowland.

Therefore, road improvement is considered necessary before introducing and implementing commercialized agriculture for hilltribes.

3. Promotion of production and marketing group among hilltribes.

Usually, hilltribes in those two villages are working individually therefore, they are facing with lack of technical knowledge in production and low price for their agricultural produces. Therefore, the basic concept to be working together as a group in order to take an advantage in lower cost of production and better price for their produce should be introduce to the hilltribes through formal and informal meeting by project authorities.

4. New high value cash crops.

Highland area has an advantage in climatic condition which is favourable for high value cash crops such as potato (rainy season) carrot, head lettuce, sweet pea, etc. and Temperate fruit trees such as improved peach, Japanese apricot, persimmon, coffee, etc., flowers such as carnation, gladiolus, gerbera etc. They are in high market demand and good price.

5. Efficient agricultural extension program.

Success of recommending new high value cash crops to the hilltribes depend largely on several factors i.e. the readiness of hilltribes, well-trained and competent agricultural extension worker, cooperation of hilltribe, technical knowledge adopted by hilltribes, production and marketing credit availability, proper production and marketing plan, good management.

An intensive commodity training course in production and marketing aspects should be conducted in the village. The scope of training should cover farming techniques, soil and water improvement, cover crop, fertilizer application, improved seed and livestock etc. Besides, field practice, farm visit, and pilot farm demonstration are also necessary for them to gain more technical knowledge and experience.

Furtheirmore, basic idea, objective, an advantage of group marketing, simplified marketing knowledge and practices such as cleaning sorting, grading, quality improvement, packaging and also market imformations should be provided.

6. Production and marketing credit availability.

In turning from self-sufficiency agriculture to commercialized agriculture, without capital it is not possible to achieve. Presently, production credit is scarce factor among hilltribes in the two villages.

In changing from traditional subsistence agriculture to high value vegetables, temperate fruit trees and flowers cultivation require more production credit with low interest rate. Hilltribes has no land property to use as a mortgage for guarantee with the Bank for Agriculture and Agriculture Cooperatives. Therefore, the possible solution for them would be group guarantee. Not only production credit is needed, marketing credit is also necessary.

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タイ北部山岳農民の社会経済生活に対するケシ置換作物導入における問題点

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摘　　要

チェンマイ北部の山岳地帯のパロウ村およびバンサンパキア村には約400人の山岳民族が居住し，陸稲栽培を中心とする零細自作自給農業を営んでいるが，現金収入の主要源としてのケシ栽培は政府の取締り強化に伴い減少し，1980年に比して1990年には栽培面積は40%となった。しかし，ケシ栽培の根絶は困難と思われる。その最大の理由は，阿片が薬用として，また賃金支払いのための現金に代って利用されていること，また，宗教儀式に多用されることなどがある。

ケシの代替作物として，薬草を含めて換金作物(果物，野菜など）が導入されつつあるが，市場性の低さ，貯蔵施設の不足，道路の不備などの利用のため，いまだ山岳民族の間に普及していない。

Table 1. Number of household interview classified by locations.

Study sites	Actual household	No. of household interviewed
Ban-Pa-Loh	20	20
Ban-San-Pa-Kia	40	40
Total	60	60

Table 2.1 Household numbers, family size and population growth rates classified by tribes.

Tribes	No. of household		Family size	Population Growth rate
	number	percent		
Karen	15,888	64.52	5.5	2.6
Lahu	3,882	15.77	5.6	2.8
Lisu	1,761	7.15	6.0	3.2
Mhong	1,652	6.71	8.8	4.4
Lua	535	2.17	5.3	2.4
Akha	431	1.68	5.6	3.0
Yao	158	0.64	7.4	2.2
Others	334	1.36	4.6	4.2
Total	24,632	100.00	5.7	2.9

Source: Chiangmai Hilltribe Population Survey: 1986 National Statistical Office.

Table 2.2 Daily consumption of rice classified by sex and age.

Age (Year)	Consumption (litre/day)	
	Male	Female
Lower than 6	0.232	0.240
6-10	0.472	0.548
11-15	0.924	0.815
16-20	1.324	0.947
21-60	1.354	1.216
Older than 60	0.616	0.332

Source: The Social Research Institute Chiangmai University.

Table 4.1 Opium Planted Area and Production 1980-1990

Province	Year																					
	1980		1981		1982		1983		1984		1985		1986		1987		1988		1989		1990	
	Area (rai)	Pro-duction (kg.)	Area (rai)	Pro-duction (kg.)	Area (rai)	Pro-duction (kg.)	Area (rai)	Pro-duction (kg.)	Area (rai)	Pro-duction (kg.)	Area (rai)	Pro-duction (kg.)	Area (rai)	Pro-duction (kg.)	Area (rai)	Pro-duction (kg.)	Area (rai)	Pro-duction (kg.)	Area (rai)	Pro-duction (kg.)	Area (rai)	Pro-duction (kg.)
Chiangmai	11,484	5,105	17,234	22,605	22,216	30,931	13,618	13,739	17,946	17,470	24,492	16,207	12,263	13,888	13,646	14,119	11,701	10,531	14,042	23,280	10,047	17,682
Mac-Hong-Sorn	6,659	4,223	9,549	11,550	4,772	7,226	3,959	3,663	5,680	4,480	8,253	4,803	4,259	3,995	4,078	4,793	10,737	10,737	10,411	17,282	10,120	17,881
Chiangrai	7,863	4,144	4,319	6,292	11,454	11,315	10,262	9,009	11,760	7,610	12,389	7,694	4,603	4,521	3,023	2,373	3,648	3,648	2,523	4,188	2,586	4,551
Tak	—	—	1,767	2,541	1,664	1,863	2,925	2,925	4,978	3,470	7,377	4,546	4,078	3,048	1,889	2,224	1,576	1,576	1,357	2,553	1,319	2,321
Nan	—	—	1,583	1,518	3,128	2,502	1,914	1,903	1,380	1,380	1,220	610	35	29	458	458	439	439	897	1,489	1,236	2,175
Lampang	—	—	2,179	2,794	352	988	390	583	488	488	335	139	129	119	115	94	109	54	168	279	152	268
Pitsanuloke	—	—	172	165	171	165	330	264	260	210	165	99	104	52	177	177	90	56	16	26	4	7
Phayao	411	507	859	1,100	1,939	2,188	1,170	1,441	841	841	712	576	318	244	42	32	59	71	97	161	152	268
U-Thaitani	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	54	64	82	136	62	109
Loei	—	—	—	—	—	—	—	—	—	—	—	—	—	—	42	21	30	15	107	178	148	261
Prae	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30	50	—	—
Kam-Pang-Phet	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	350	581	266	468
Petchaboon	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	38	63	17	30
	26,440	13,979	37,662	48,565	45,696	57,178	34,568	33,527	43,333	35,949	54,853	34,674	25,789	25,896	23,470	24,291	28,443	27,191	30,100	49,966	26,109	45,951

Source : Office of the Narcotic Control Board

Table 4.2 Planted area, production and yield per rai of opium poppy in Thailand, classified by province in 1989-1990.

No.	Province	Planted area		Production		Yield/Rai (kg.)
		(rai)	(percent)	(kg.)	(percent)	
1	Mae-Hong-Sorn	10,120	38.76	17,811	38.76	1,76
2	Chiangmai	10,047	38.48	17,682	38.48	1.76
3	Chiangrai	2,586	9.91	4,551	9.91	1.75
4	Tak	1,319	5.05	2,326	5.05	1.76
5	Nan	1,236	4.73	2,175	4.73	1.76
6	Kam-Pang-Phet	266	1.02	468	1.02	1.76
7	Lam-pang	152	0.58	268	0.58	1.76
8	Phayao	152	0.58	268	0.58	1.76
9	Loei	148	0.57	261	0.57	1.76
10	U-Thaitani	62	0.23	109	0.23	1.76
11	Petchaboon	17	0.07	30	0.07	1.76
12	Pitsanuloke	4	0.02	7	0.02	1.75
	Total	26,109	100	45,951	100	176

Source: Planted area, Production
Office of the Narcotic Control Board.
Percent and yield per rai.
By researcher.

Table 4.3 Planted area, production and yield per rai of opium poppy in Chiangmai Province classified by District 1989/1990.

No.	Province	Planted area		Production		Yield/Rai (kg.)
		(rai)	(percent)	(rai)	(percent)	
1	Mae-Cham	3,639	36.21	6,404	36.21	1.76
2	Om-Koi	1,988	19.78	3,499	19.78	1.76
3	Chiang Dao	1,770	17.61	3,115	17.61	1.57
4	Wiang Haeng	600	5.97	1,056	5.97	0.57
5	Mae-Tang	521	5.18	917	5.18	1.76
6	Sa-Moeng	337	3.35	593	3.35	1.76
7	Prao	294	2.92	517	2,92	1.76
8	Mae-Ai	292	2.91	514	2.91	1.76
9	Chaiprakarn	214	2.13	377	2.13	1.76
10	San-Pa-Tong	140	1.39	246	1.39	1.76
11	Mae-Rim	113	1.12	199	1.12	1.76
12	Hod	85	0.85	150	0.85	1.76
13	Fang	49	0.49	86	0.49	1.75
14	Chom-Tong	5	0.05	9	0.05	1.80
	Total	10,147	100	17,682	100	1.76

Source: Planted area, Production
Office of the Narcotic Control Board.
Percent and yield per rai.
By researcher.

Table 4.4 Number of years of household growing opium percentage, planted area and production Ban-PaLoh village.

No. of year growing opium (year)	Frequency (household)	Percent	Planted area (rai)	Production (kg.)
3	2	10.00	5.00	3.20
4	2	10.00	3.50	3.20
6	4	20.00	14.00	12.00
10	7	35.00	23.00	15.40
15	1	5.00	6.00	5.00
20	3	15.00	10.00	10.12
25	1	5.00	4.00	2.00
Total	20	100.00	65.5	50.92
Average/household			3.27	2.55

Source : Survey.

Table 4.5 Number of year of household growing opium percentage planted area and production Ban San-Pa -Kia Village.

No. of year growing opium (year)	Frequency (household)	Percent	Planted area (rai)	Production (kg.)
2	1	2.50	3	0.80
3	5	12.50	29	30.00
4	4	10.00	30	30.50
5	5	12.50	27	20.00
7	2	5.00	5	5.00
8	3	7.50	20	15.50
10	11	27.50	71	72.60
15	1	2.50	8	10.00
20	4	10.00	26	25.80
30	3	7.50	28	35.00
51	1	2.50	20	20.00
Total	40	100.00	267	265.20
Average/household		—	6.67	6.63

Source : Survey.

Table 4.6 Classification of the hilltribe experienced in growing opium.

Village	Number of household	No. of household stop growing opium		No. of household remain growing opium		percent
		Number	percent	Number	percent	
Ban Pa-Loh	20	3	15.00	17	85.00	100
Ban San-Pa-Kia	40	39	97.50	1	2.50	100
Total	60	42	70.00	18	30.00	100

Source: Survey.

Table 4.7 Decreasing number of household, planted area, production of opium of hilltribes Ban Pa-Loh, Ban San-Pa-Kia.

Village	Original household	Household growing	Original planted area (area)	Percent planted area	Planted area decrease (rai)	Percent	Original Production (kg.)	Percent Production (kg.)	Production decrease (kg.)	Percent
Ban Pa-Loh	20	17	65.5	24.0	− 41.5	63.36	50.92	−21.60	− 29.32	57.58
Ban San-Pa-Kia	40	39	267.0	2.0	−263.8	99.25	265.20	3.20	−262.00	98.79
Total	60	56	332.5	26.0	−305.3	—	316.12	24.80	−291.32	—

Source: Survey.

Table 4.8 Hilltribe household reason of stopping growing opium.

No.	Reasons	Village			
		Ban-Pa-Loh		Ban-San-Pa-Kia	
		Frequency	%	Frequency	%
1.	Planting of other substitution crops	2	7.42	6	25.00
2.	Illegal and prohibited	10	37.03	2	8.33
3.	Destroying by border police	10	37.03	1	4.17
4.	Do not smoke opium	—	—	2	8.33
5.	Lack of labour force	—	—	4	16.67
6.	Scarcity of suitable planted area	5	18.52	5	20.83
7.	Lack of fund	—	—	3	12.50
8.	Believe in Christ	—	—	1	4.17
	Total	27	100.0	24	100.0

Source : Survey
Note : One respondent may answer more than one reasons.

Table 4.9 Household reasons for continuing growing opium.

No.	Item	Frequency	percent
1	Traditional medicine	20	27.40
2	Wage payment	20	27.40
3	Religious rite and ceremony	20	27.40
4	Relaxation	11	15.07
5	Others	2	2.73
	Total	73	100.00

Source : Survey.

Table 4.10 Household reasons of growing medicinal plant.

No.	Resons	Ban Pa-Loh		Ban San-Pa-Kia	
		frequency	%	frequency	%
1	Market Certainty	14	25.92	12	23.08
2	High Price and Income	13	24.08	10	19.23
3	High Yield	11	20.37	1	1.92
4	Trader to buy	—	—	9	17.31
5	Substitution crop	—	—	9	17.31
6	Providing Seed, Fertilizer and Insecticide	8	14.82	7	13.46
7	Adaptability to the highland area	5	9.26	—	—
8	Price Guarantee	3	5.55	—	—
9	Perenial Crop	—	—	2	3.85
10	New Crop	—	—	1	1.92
11	Household Use	—	—	1	1.92
	Total	54	100.00	52	100.00

Source : Surey.

Table 5.1 Hilltribe Population Classified by Ethnic group.

No.	Villages	No. of household	Hilltribe		
			Red Lahu	Mhong	Total
1	Ban Pa-Loh	20	105	—	105
2	Ban San-Pa-Kia	40	—	348	348
	Total	60	105	348	453
	Percent	—	23.18	76.82	100.00

Source : Survey.

Table 5.2 Number of Hilltribe Population Classified By Sex.

Village	No. of household	Population					Average/ household
		Adult		Children		Total	
		Male	Female	Boy	Girl		
Ban Pa-Loh	20	29	29	31	16	105	5.25
Ban San-Pa-Kia	40	85	86	84	93	348	8.70
Total	60	114	115	115	109	453	7.55
Percent	—	25.16	25.39	25.39	24.06	100.00	—

Source : Survey.

Table 5.3 Religion of Hilltribe Classified By Type.

No.	Village	Relegion		Total
		Buddhism and Animism	Christianity	
1	Ban Pa-Loh	105	—	105
2	Ban San-Pa-Kia	341	7	348
Total		446	7	453
Percent		98.45	1.55	100.00

Source : Survey.

Table 5.4 The Number of Hilltribe Head Family Classified By the Level of Education

No.	Village	Illiteracy	Read & Write	Primary	Secondary	Special training	Total
1	Ban Pa-Loh	17	—	2	1	—	20
2	Ban San-Pa-Kia	34	2	2	1	1	40
Total		51	2	4	2	1	60
Percent		85.00	3.33	6.67	3.33	1.67	100.00

Source : Survay.

Table 5.5 Hilltribe Farm Labour Force.

No.	Village	Total Family	Farm Labour force		Total	Average/family
			Male	Female		
1	Ban Pa-Loh	20	29	29	58	2.9
2	Ban San-Pa-Kia	40	85	86	171	4.2
Total		60	114	115	229	3.8

Source : Survey.

Table 5.6 Land Holding of hilltribe Classified By Land Document.

No.	Village	Sor Tor Gor	No Document	Total	Average
1	Ban Pa-Loh	—	385	385	19.20
2	Ban San-Pa-Kia	997	15	1,025	25.30
Total		997	400	1,397	23.28
Percent		71.37	28.63	100.00	

Note : Sor-Tor-Gor = Right For Planting

Table 5.7 Land used and percentage classified by type of crops grown.

No.	Type of Crops grown	Ban Pa-Loh		Ban San-Pa-Kia	
		Planted Area (rai)	Percent	Planted Area (rai)	Percent
1	Lowland Paddy	—	—	94	18.11
2	Upland Paddy	4	1.04	71	13.68
3	Corn	47	12.21	59.50	11.46
4	Potato	—	—	79	15.22
5	Carrot	2	0.52	16	3.09
6	Cabbage	2	0.52	92	17.72
7	Radish	—	—	1	0.19
8	Local Peach	198	51.43	9	1.73
9	Apricot	69.5	18.05	25	4.83
10	Coffee	14.5	3.77	25	4.83
11	Tea	9	2.34	10.50	2.02
12	Lychee	15	3.90	34	6.55
13	Opium	24	6.23	2	0.38
14	Bamboo Shoot	—	—	1	0.19
Total		385	100.00	519	100.00
Average/Household		19.25	—	12.98	—

Source : Suvey

Table 5.8 Number, value and percentage of farm tool classified by type.

No.	Type of farm tool	Ban Pa-Loh			Ban San-Pa-Kia		
		No. (Unit)	Value (Baht)	Percent	No. (Unit)	Value (Baht)	Percent
1	Hoe	43	2,800	32.82	147	9,745	27.73
2	Harrow	3	180	2.29	28	5,910	5.28
3	Spade	5	300	3.82	59	1,530	11.13
4	Knife	45	1,840	34.35	191	9,975	36.04
5	Axe	27	2,170	20.61	62	5,595	11,70
6	Sprayer	8	920	6.11	10	6,740	1.89
7	Plough	—	—	—	33	7,295	6.23
Total		131	8,210	100.00	530	46,790	100.00
Average/Household		—	410.50	—	—	1,169.75	—

Source : Suvey

Table 5.9 Planted Area, Production Yield/Rai Crop Year 1990.

Type of Crop	Ban Pa-Loh			Ban San-Pa-Kia			Total		
	Planted Area (Rai)	Production (Kg.)	Yield/Rai (Kg.)	Planted Area (Rai)	Production (Kg.)	Yield/Rai (Kg.)	Planted Area (Rai)	Production (Kg.)	Yield/Rai (Kg.)
Lowland Paddy	—	—	—	94	31,990	340.32	94	31,990	340.32
Upland Paddy	4	1,050	202.50	71	14,610	205.77	75	15,660	208.80
Maize	47	13,215	281.10	59.5	11,885	119.75	106.5	20,100	235.68
Potato	—	—	—	79	92,950	1,176.58	79	92,950	1,176.58
Carrot	2	2,800	1,400	16	11,200	700.00	18	14,000	777.78
Cabbage	2	400	200	92	84,140	914.57	94	84,540	899.36
Radish	—	—	—	1	1,200	1,200	1	1,200	1,200.00
Local Peach	198	64,560	326.00	9	5,050	561.1	207	69,610	336.28
Apricot[1]	69.5	—	—	25	—	—	94.5	—	—
Coffee	14.5	950	65.52	25	350	14.00	39.5	1,300	32.91
Tea	9	483	53.67	10.50	—	—	19.5	483	*53.67
Lychee	15	443	29.53	34	—	—	49.00	483	*29.54
Opium	24	21.4	0.89	2	3.2	1.6	26.00	24.6	0.95
Bamboo Shoot[1]	—	—	—	1	—	—	1	—	—
Total	385	—	—	519	—	—	904	—	—

Note : [1] Bamboo-shoot and Apricot is at early mature stage.
* Yield/Rai average only Ban Pa-Kia because Tea and Lychee at Ban Pa-Kia is at early mature stage.

Table 5.10 Hilltribe Livestock Inventory Classified By Type.

No.	Item	Ban Pa-Loh		Ban San-Pa-Kia		Total		Remark
		No. (Head)	Value(baht)	No. (Head)	Value(baht)	No. (Head)	Value(baht)	
1	Ox	13	40,690	22	83,200	35	173,580	No. of household
2	Buffalo	2	9,000	100	495,500	102	504,500	Ban Pa-Loh 20
3	Horse	—	—	48	191,000	48	191,000	Ban San Pa Kia 40
4	Ass	—	—	8	79,000	8	79,000	Total 60 persons
5	Elephant	—	—	1	15,000	1	15,000	
6	Chicken	250	—	328	—	578	—	Sold and consuming
7	Hog	28	—	137	—	165	—	Sold and consuming
	Total	—	49,690	—	784,700	—	963,080	
Average/Household		—	2,484.50	—	19,617.50	—	16,051.33	

Source : Survey

Table 5.11 Total cash, non cash income, percentage Classified by type of crops and livestocks.

Item	Ban Pa-Loh						Ban San-Pa-Kia						Remark
	Production (Kg.)	Price /Kg.	Cash	Non Cash	Total	%	Production (Kg.)	Price /Kg.	Cash	Non Cash	Total	%	
Total Income	—	—	505,490	150,780	656,270	100.00	—	—	1,061,595	217,325	1,278,920	100.00	
1. **Agriculture-Crop**			503,990	150,780	654,770	99.77			915,795	217,325	1,133,120	88.59	
Lowland Paddy	—	—	—	—	—	—	31,990	3	—	95,970	95,970	7.50	
Upland Paddy	1,050	3	—	3,150	3,150	0.48	14,610	3	—	43,830	43,830	3.43	
Maize	13,215	2	—	26,430	26,430	4.02	11,885	2	—	23,770	23,770	1.86	
Potato	—	—	—	—	—	—	92,950	7	650,650	—	650,650	50.87	
Carrot	2,800	8	22,400	—	22,400	3.46	11,200	8	89,600	—	89,600	7.01	
Cabbage	400	1	400	—	400	0.06	84,140	1	84,140	—	84,140	6.58	
Radish	—	—	—	—	—	—	1,200	6	7,200	—	7,200	0.56	
Local Peach	64,560	4	258,240	—	258,240	39.34	5,050	4	20,200	—	20,200	1.58	
Apricot	—	—	—	—	—	—	*	—	—	—	—	—	Early mature stage
Coffee	950	50	47,500	—	47,500	7.23	350	50	17,500	—	17,500	1.37	
Tea	483	30	14,490	—	14,490	2.20	*	—	—	—	—	—	Early mature stage
Lychee	443	20	8,860	—	8,860	1.35	*	—	—	—	—	—	Early mature stage
Opium	21.4	10000	128,400	85,600	214,000	32.60	3.2	10000	19,200	12,800	32,000	2.50	
Bamboo Shoot	—	—	—	—	—	—	1	—	—	—	—	—	Early Mature stage
Total	—	—	480,290	115,180	595,470	90.74	—	—	888,490	176,370	1,064,860	83.26	
-Livestock													
Chicken/Duck	250	30	3,000	4,500	7,500	1.14	328	40	4,985	7,475	12,460	0.97	
Hog	28	1,850	20,700	31,100	51,800	7.89	137	407	22,320	22,480	55,800	4.36	
Total	—	—	23,700	35,600	59,300	9.03	—	—	27,305	40,955	68,260	5.34	
2. **Non-Agriculture**													
Hostel	—	—	—	—	—	—	—	—	116,000	—	116,000	9.07	
Hire-labour	—	—	1,500	—	1,500	0.23	—	—	29,800	—	29,800	2.33	
Total	—	—	1,500	—	1,500	0.23	—	—	145,800	—	145,800	11.40	

Table 5.12 Total cash and non-cash expenditure, percentage classified by type of crops and livestocks.

Item	Ban Pa-Loh				Ban San-Pa-Kia			
	Cash	Non-Cash	Total	%	Cash	Non-Cash	Total	%
Average	29,442	996.75	30,439	—	19,004	1,749.2	20,753.9	—
Total Expenditure	588,845	19,935	608,780	100.00	760,188	69,968	830,156	100.00
Agriculture	20,745	19,935	40,680	6.68	302,728	69,968	372,696	44.89
-Crop								
Lowland Paddy	—	—	—	—	—	1,660	1,660	0.20
Upland Paddy	—	—	—	—	—	1,155	1,155	0.14
Maize	3,540	5,530	9,070	1.49	—	513	513	0.06
Potato	—	—	—	—	214,450	66,200	280,650	33.80
Carrot	1,800	200	2,000	0.33	14,200	440	14,640	1.76
Cabbage	2,000	1,000	3,000	0.49	73,438	—	73,438	8.85
Radish	—	—	—	—	—	—	—	—
Local Peach	5,450	5,850	11,300	1.86	—	—	—	—
Apricot	—	—	—	—	—	—	—	—
Coffee	3,685	1,370	5,055	0.83	640	—	640	0.07
Tea	500	750	1,250	0.21	—	—	—	—
Lychee	1,600	300	1,900	0.31	—	—	—	—
Opium	2,170	4,935	7,105	1.16	—	—	—	—
Bamboo-Shoot	—	—	—	—	—	—	—	—
Total	20,745	19,935	40,680	6.68	302,728	69,968	372,696	44.89
Average	1,037.2	996.75	2,034	—	7,568.2	1,749.2	9,317.4	—
-Livestock	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—
Non-Agriculture								
Food	101,700	—	101,700	16.71	227,650	—	227,650	27.43
Cloth	74,900	—	74,900	12.30	161,400	—	161,400	19.44
House	305,300	—	305,300	50.15	—	—	—	—
Medical care	25,200	—	25,200	4.14	64,310	—	64,310	7.75
Religion	3,500	—	3,500	0.58	4,100	—	4,100	0.49
Rites	25,100	—	25,100	4.12	—	—	—	—
Others	32,400	—	32,400	5.32	—	—	—	—
Total	568,100	—	568,100	93.32	457,460	—	457,460	55.11
Average	2,690.5	—	28,405	—	11,436.5	—	11436.5	—

Table 5.13 Average net income per household.

Item	Ban Pa-Loh		Ban San-Pa-Kia		Total		Average	
	Baht	%	Baht	%	Baht	%	Baht	%
Total Household	20		40		60			
Total Income	656,270	100.00	1,278,940	100.00	1,935,210	100.00	32,253.50	100.00
Agriculture	654,700	99.77	1,133,120	88.60	1,787,890	92.39	29,798.17	92.39
Crop	595,470	90.74	1,064,860	83.26	1,660,330	85.80	27,672.17	85.80
Livestock	59,300	9.03	68,260	5.34	127,560	6.59	2,160.00	6.59
Non-Agriculture	1,500	0.23	145,800	11.40	147,300	7.61	2,455.00	7.61
Hostel	—	—	116,000	9.07	116,000	5.99	1,935.00	5.99
Hire-labour	1,500	0.23	29,800	2.33	31,300	1.62	521.67	1.62
Total Expenditure	608,780	100.00	830,156	100.00	1,438,936	100.00	23,982.27	100.00
Agriculture	40,680	6.68	372,696	44.89	413,376	28.73	6,889.60	28.73
Crop	40,680	6.68	372,696	44.89	413,376	28.73	6,889.60	28.73
Livestock	—	—	—	—	—	—	—	—
Non-agriculture	568,100	93.32	457,460	55.11	1,025,560	71.27	17,092.67	71.27
Food	101,700	16.71	227,650	27.43	329,350	22.89	5,489.17	22.89
Cloth	74,900	12.30	161,400	19.44	236,300	16.42	3,938.33	16.42
House	305,300	50.15	—	—	305,300	21.22	5,088.33	21.22
Medical care	25,200	4.14	64,310	7.75	89,510	6.22	1,491.83	6.22
Religion	3,500	0.58	4,100	0.49	7,600	0.53	126.67	0.53
Rites	25,100	4.12	—	—	25,100	1.74	418.33	1.74
Others	32,400	5.32	—	—	32,400	2.25	540.00	2.25
Net Income	88,170		448,784		496,274		8,271.23	
Average Net Inc.	4,408.5		11,219.6		8,271.23			

Source: Survey

Table 5.14 Number, value and percentage of asset classified by type.

No.	Type of Assets	Ban Pa-Loh			Ban San-Pa-Kia		
		No. (Unit)	Value (Baht)	%	No. (Unit)	Value (Baht)	%
1	House	14	208,000	23.94	45	274,500	13.33
2	Land (rai)	136	*	—	519	*	—
3	Barn	—	—	—	19	31,050	1.51
4	Car (Pick-up)	3	197,800	22.76	8	1,500,000	72.83
5	Motocycle	11	222,500	25.60	2	55,000	2.67
6	Television	8	29,400	3.38	1	2,000	0.09
7	Radio	14	19,450	2.24	35	30,130	1.46
8	Sewing Machine	6	20,000	2.30	24	55,650	2.70
9	Cash on hand	—	27,900	3.21	—	94,350	4.58
10	Bank A/C	—	144,000	16.57	—	17,000	0.83
Total		—	869,050	100.00	—	2,059,680	100.00
Average/Household		—	43,452.50	—	—	51,492.00	—

Note : *Land belong to the government.
Source : Surwey.

Table 5.15 Amount of loan, Percentage classified by sources.

No.	Source of Loan	Ban Pa-Loh		Ban San-Pa-Kia	
		Amount of Loan (Baht)	Percent	Amount of Loan (Baht)	Percent
1	Public welfare Fund	12,075	100.00	10,470	11.57
2	Neighbour	—	—	500	0.55
3	Wholesale Trader	—	—	77,360	85.49
4	Relative	—	—	400	0.44
5	Agricultural Extension Fund	—	—	960	1.07
6	Public Health Fund	—	—	800	0.88
Total		12,075	100.00	90,490	100.00
Average/Household		603.75	—	2,262.25	—

Source : Survey.

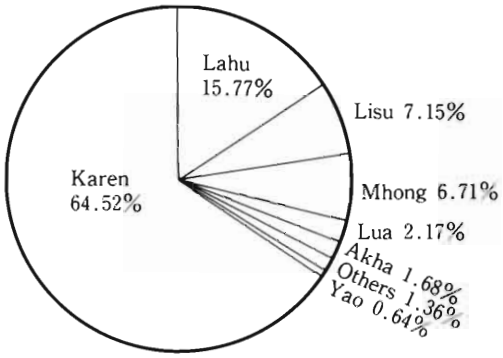


Fig. 2.1 Percentage of household classified by tribes.
Source: Chiangmai Hilltribe Population Survay: 1986 National Statistical Office.

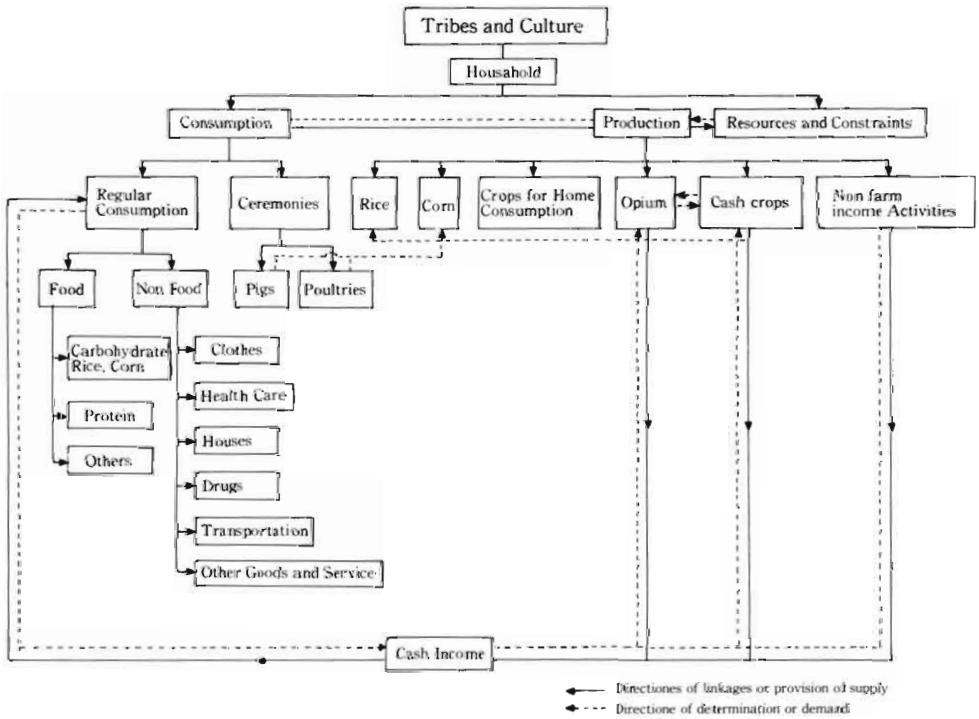


Fig. 3.1 Hilltribes' Decision Making Model.

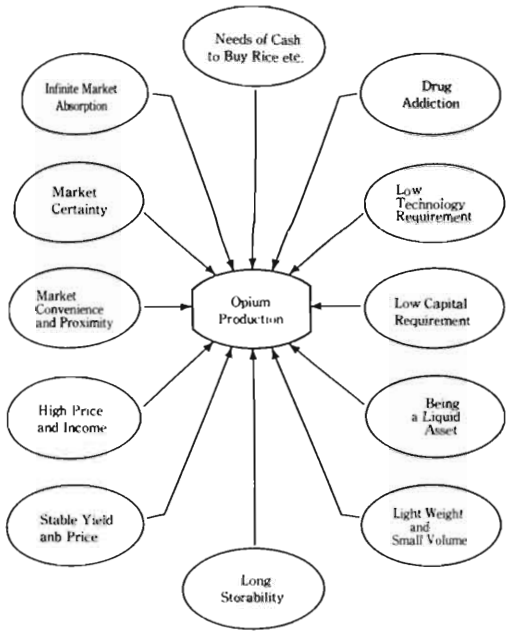


Fig. 3.2 Factors Determining Decision Making on Opium Production.

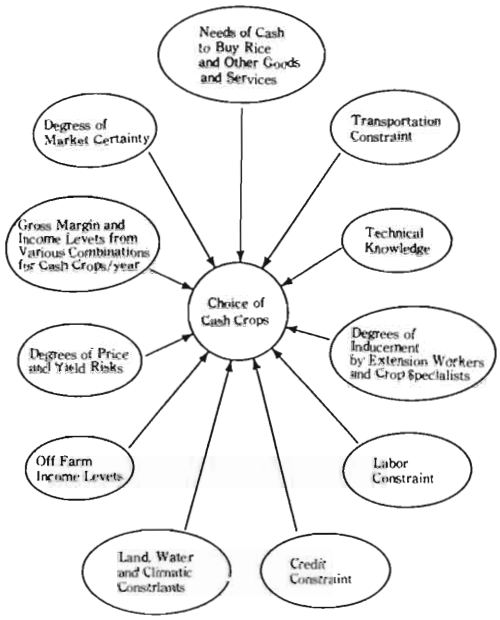


Fig. 3.3 Factors Determining Decision Making on the Choices of Cash Crop Production.

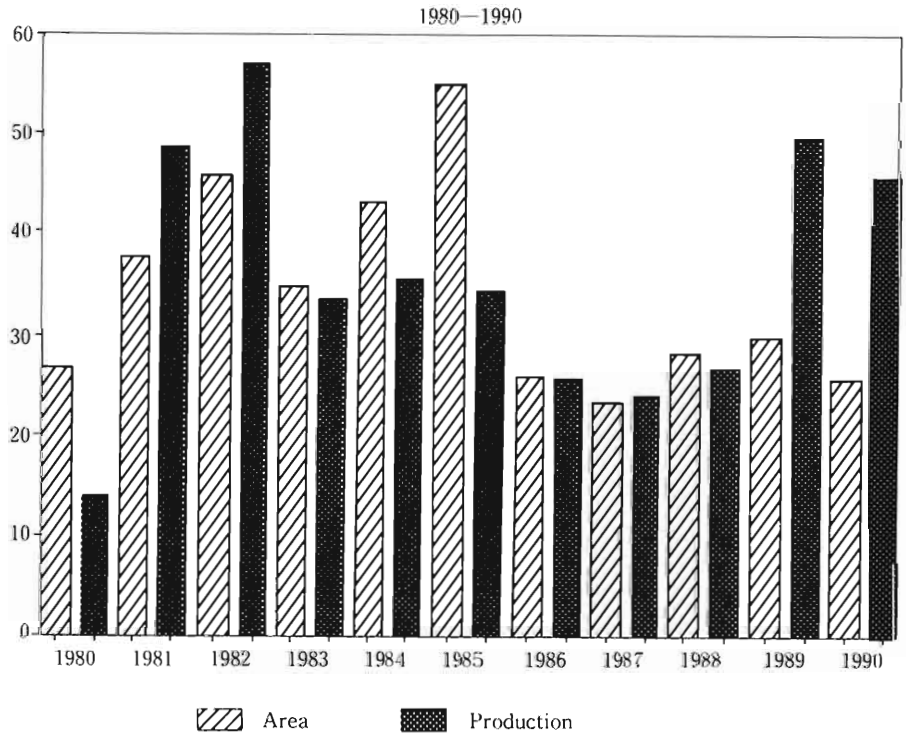


Fig. 4.1 Planted Area and Production for Opium.

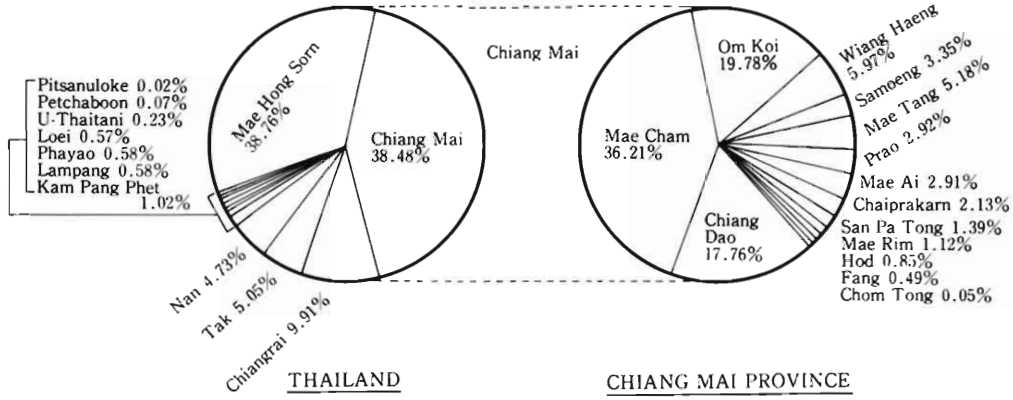
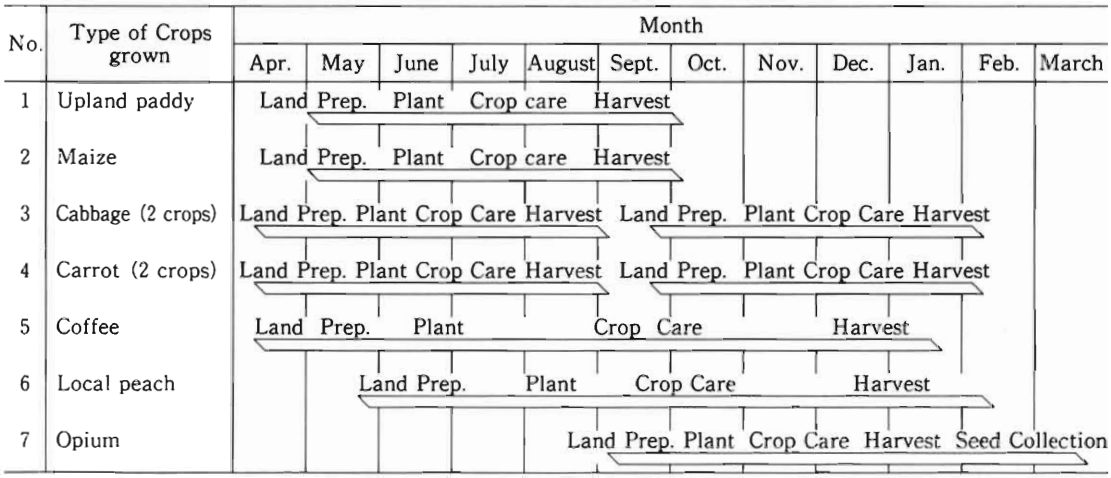
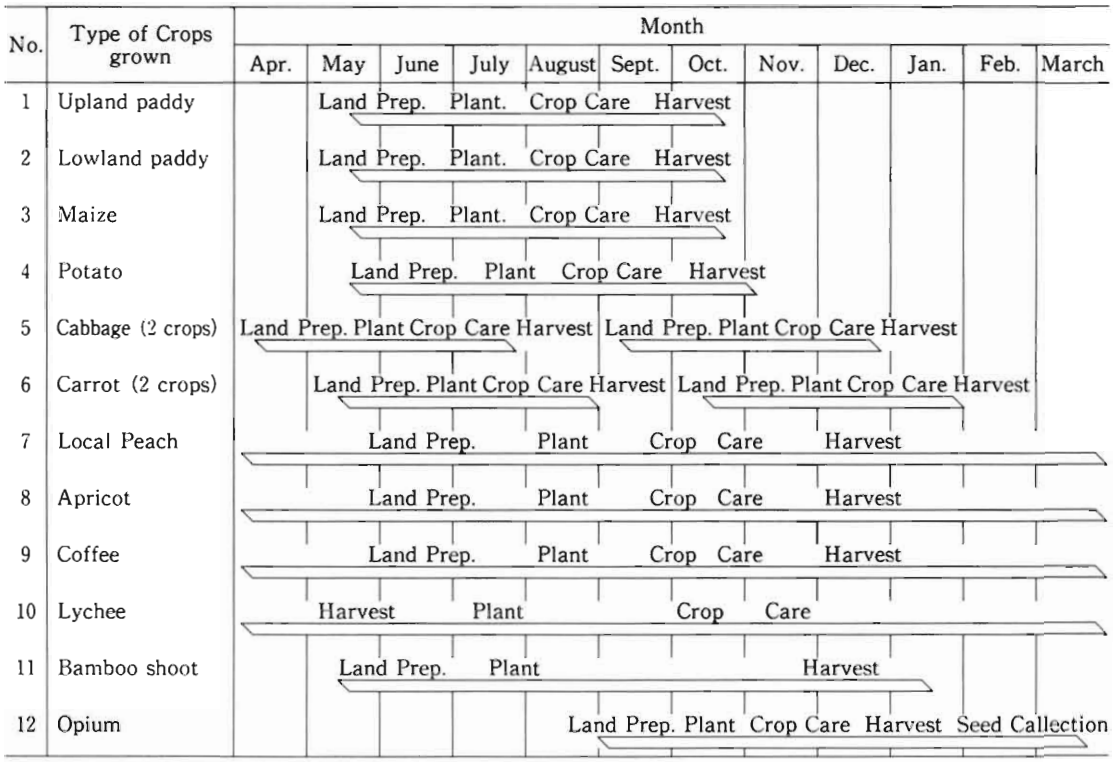


Fig. 4.2 National and Chiang Mai Province of Planted Area of Opium THAILAND. 1989/1990.
Source; From Table 4.2 and 4.3.



Source : Survey

Fig. 5.5 Ban Pa-Loh Cropping Calendar.



Source : Survey

Fig. 5.6 Ban San-Pa-Kia Cropping Cclendar.

Photo 1. Ban Pa Loh Village

Photo 4. Opium Poppy

Photo 2. Retail Shop at Ban San Pa-Kia Village

Photo 5. Traditional Hog Raising

Photo 3. Mhong Hilltribe at Ban San Pa-Kia Village

Photo 6. Loading of Cabbages for Marketing