

CHAPTER IV

LAND USE AND ECONOMIC ACTIVITIES IN HUAY KHANG VILLAGE

4.1 Land-Use

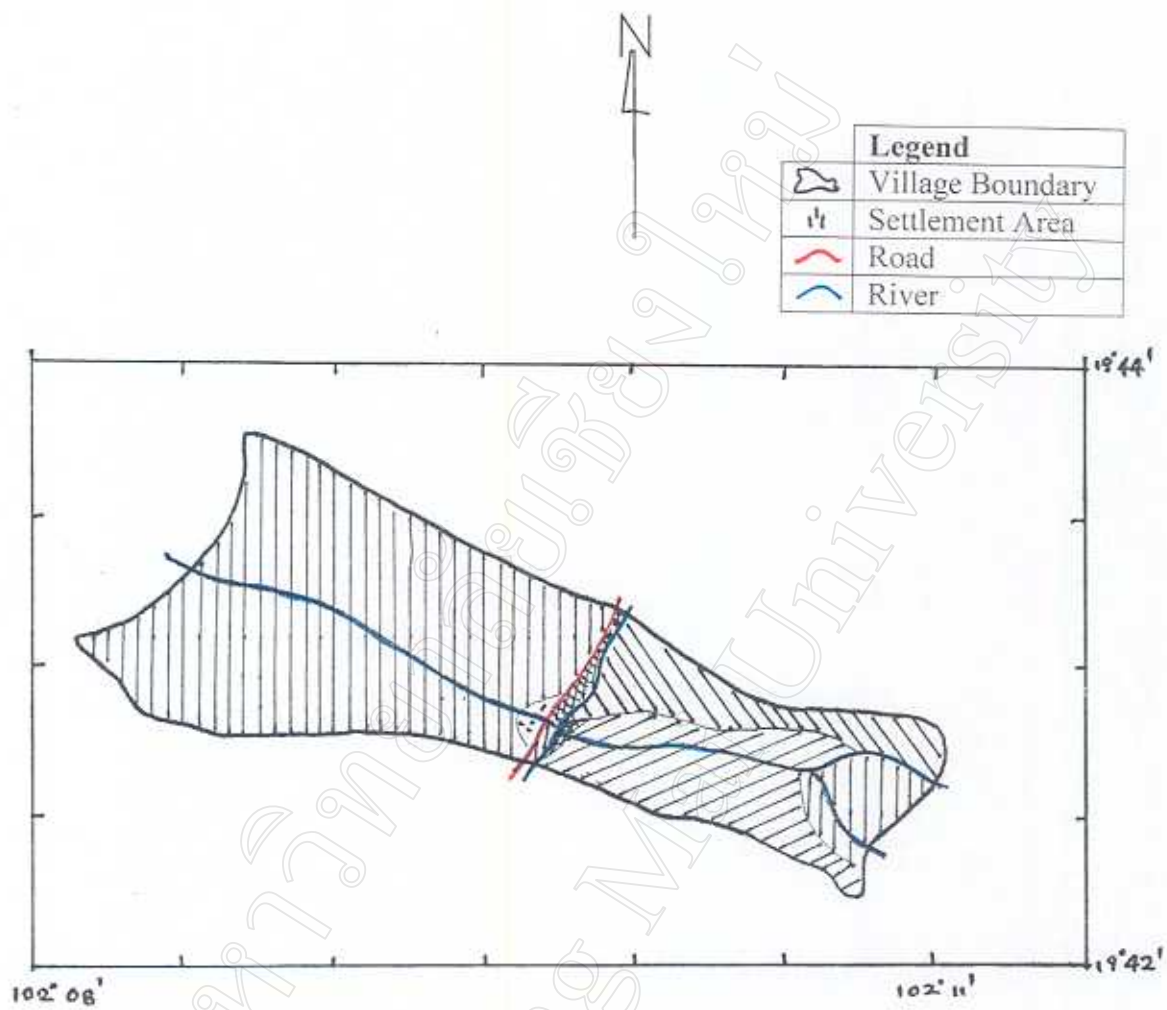
The land-use map drawn from the field survey is the result of a) the practiced shifting cultivation system with its fallow cycle and b) the land allocation in 1998. The area available for cultivation by the villagers (upland field and fallow area) represents about half of the village area. During the fallow period, various bamboo species dominate a big part of the area.

The remaining area is mainly production forest and, to a limited extent, protection forest. Areas used for community and religious purposes (cemetery and "ghost forest") are part of the protection forest. The production forests can be considered as village forests but are under the administration of the district and provincial authorities. Timber is only allowed to be extracted for house construction in the village. The use of the other forest products is free.

Figures 4.1, 4.2, and 4.3 show land use in 3 different periods (1982, 1989, and 1998). Figure 4.4 shows land types by using purposes in 1999.

In the past from 1982 to 1989, the land use in this village was only for subsistence purpose. Since 1993 they began to plant teak, banana and porsa as plantations. But they could not have plantation any more, because of the remnant land areas are not suitable for plantation.

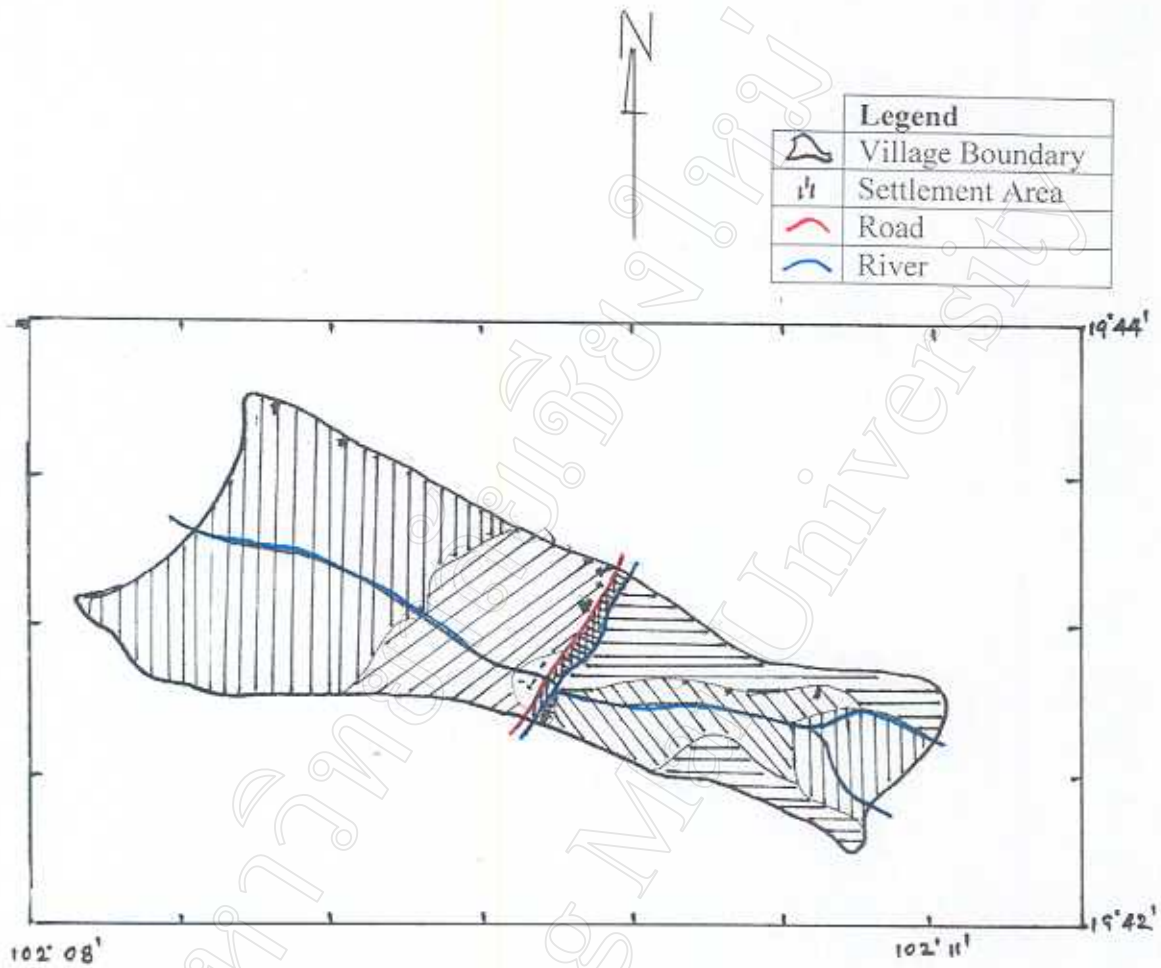
Figure 4.1 Huay Khang Village Land-Use in 1982



Land-Use Types	Area (ha)	%
Current Forest	467.10	67.70
Forest Fallow	0.00	
Bush Fallow	81.25	11.70
Active Swidden Field	112.50	16.30
Paddy Field	10.15	1.50
Plantation	0.00	
Other Uses	19.50	2.80
Total	690.50	100.00

Scale- 1:50,000

Figure 4.2 Huay Khang Village Land-Use in 1989

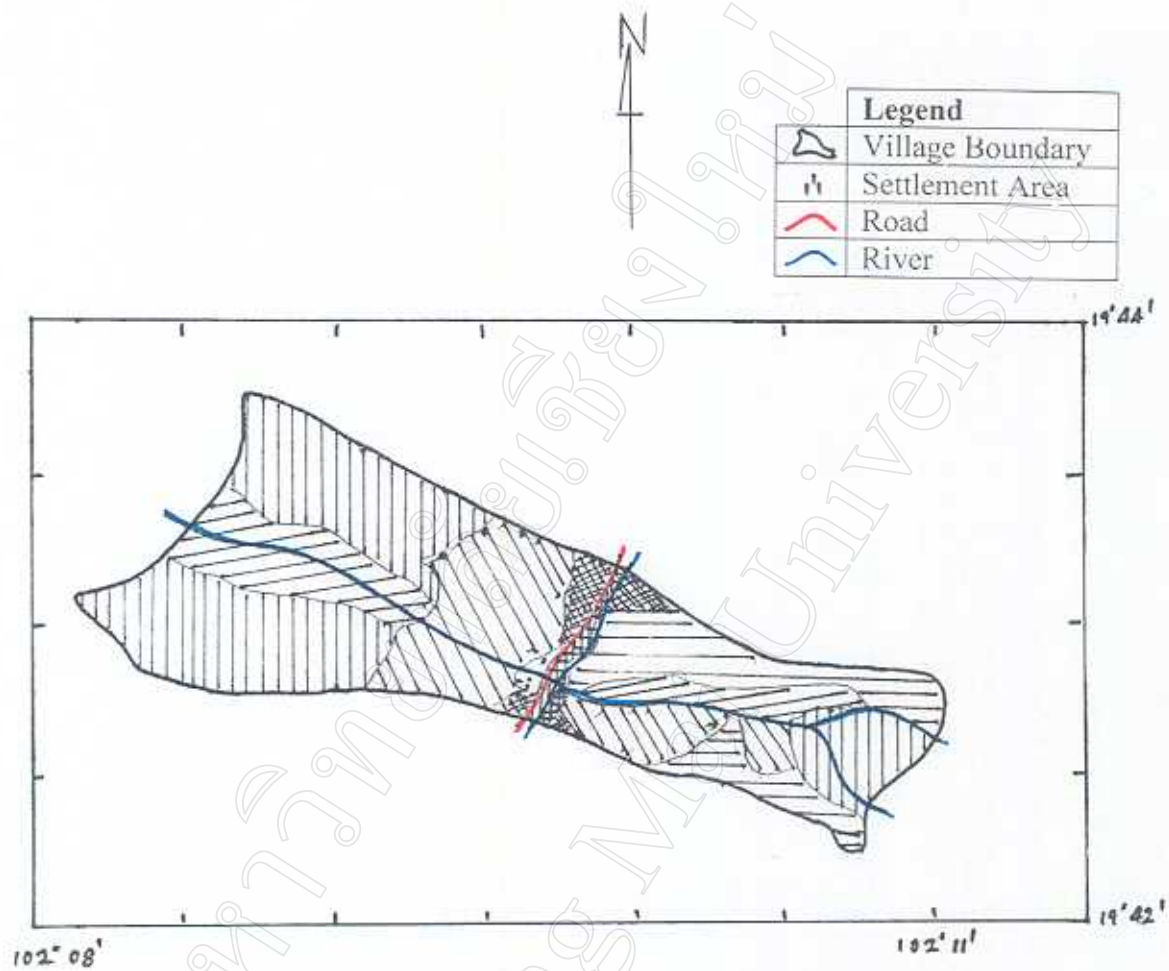


Land-Use Types	Area (ha)	%
Current Forest	315.50	45.70
Forest Fallow	112.30	16.30
Bush Fallow	115.50	16.70
Active Swidden Field	113.60	16.40
Paddy Field	10.15	1.50
Plantation	3.75	.60
Other Uses	19.50	2.80
Total	690.50	100.00

Scale- 1:50,000

0 1 2 km

Figure 4.3 Huay Khang Village Land-Use in 1998



Land-Use Types	Area (ha)	%
Current Forest	210.05	30.40
Forest Fallow	115.75	16.70
Bush Fallow	137.50	19.90
Active Swidden Field	134.50	19.60
Paddy Field	10.15	1.50
Plantation	63.05	9.10
Other User:	19.50	2.80
Total	690.50	100.00

Scale- 1:50,000

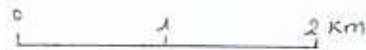
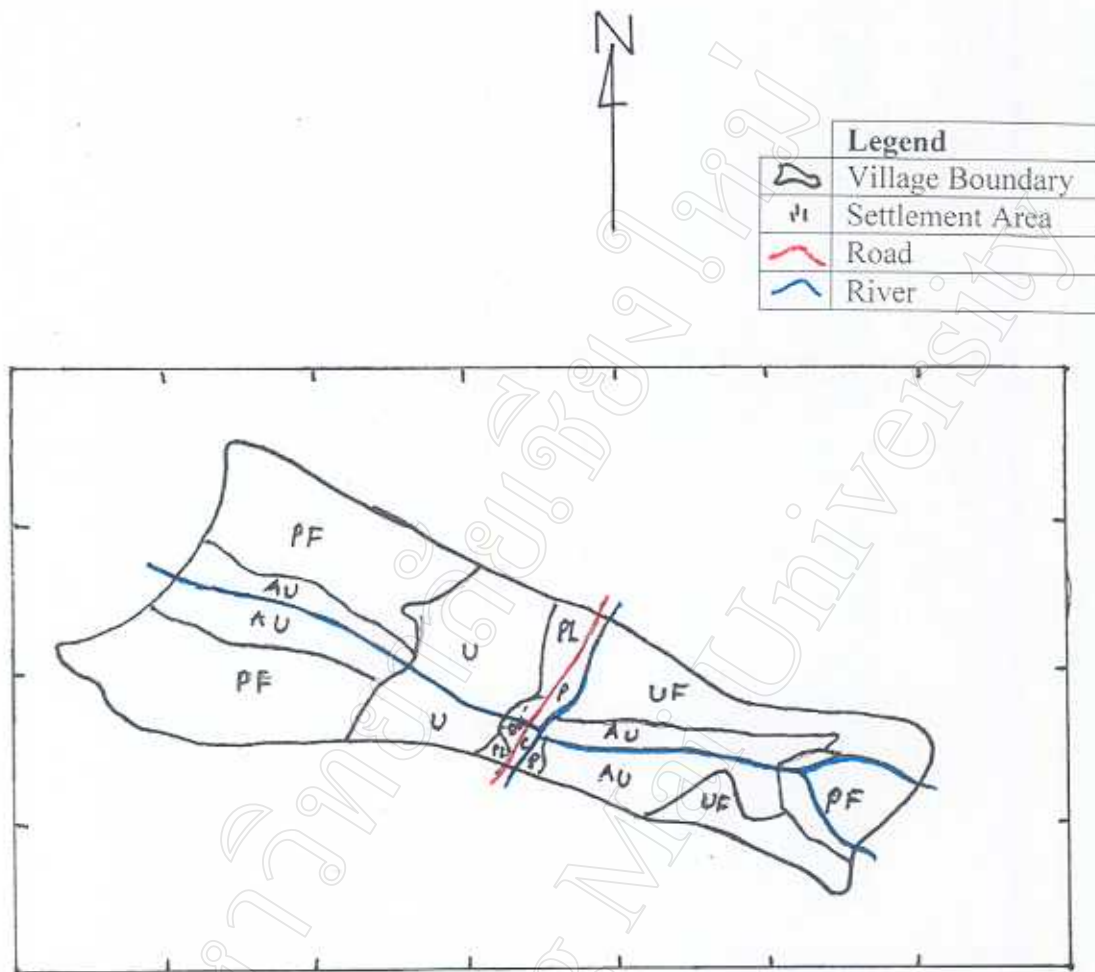


Figure 4.4 Huay Khang Village, Land Use Types in 1999



Land-Use Types		Area (ha)	%
PF	Protected Forest	207.05	30.00
C	Cemetery	3.00	.50
UF	Utilized Forest	115.75	16.80
U	Upland Field	159.00	23.00
AU	Active Swidden Field	113.00	16.30
P	Paddy Field	10.15	1.50
PL	Plantation	63.05	9.10
OU	Other Uses	19.50	2.80
Total		690.50	100.00

Scale- 1:50,000

0 1 2 km

Figure 4.5 Climatic Data and Crop Calendar

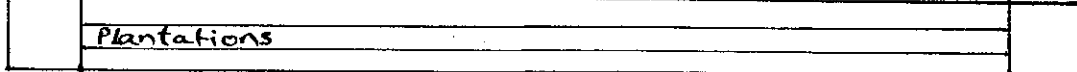
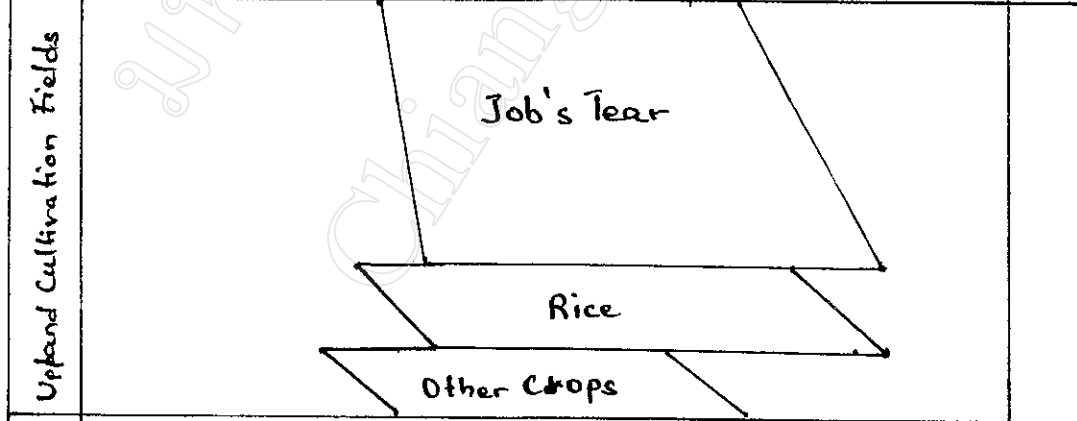
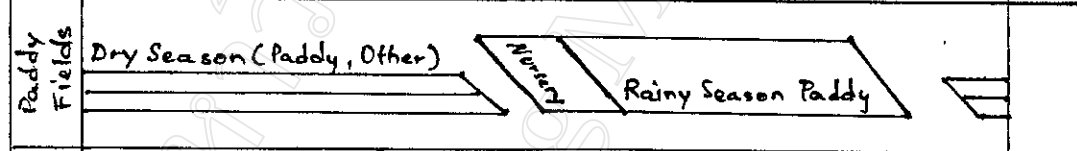
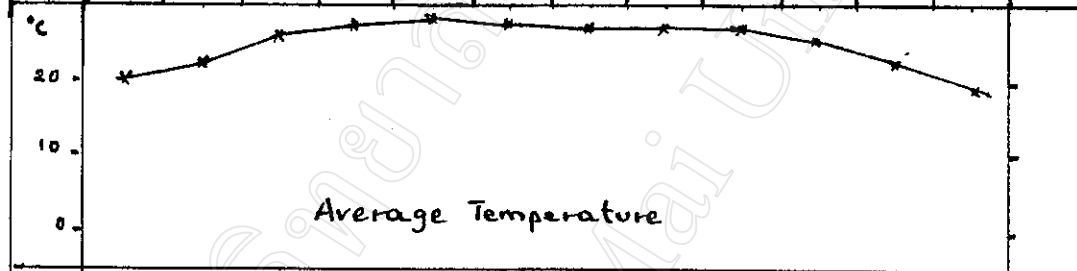
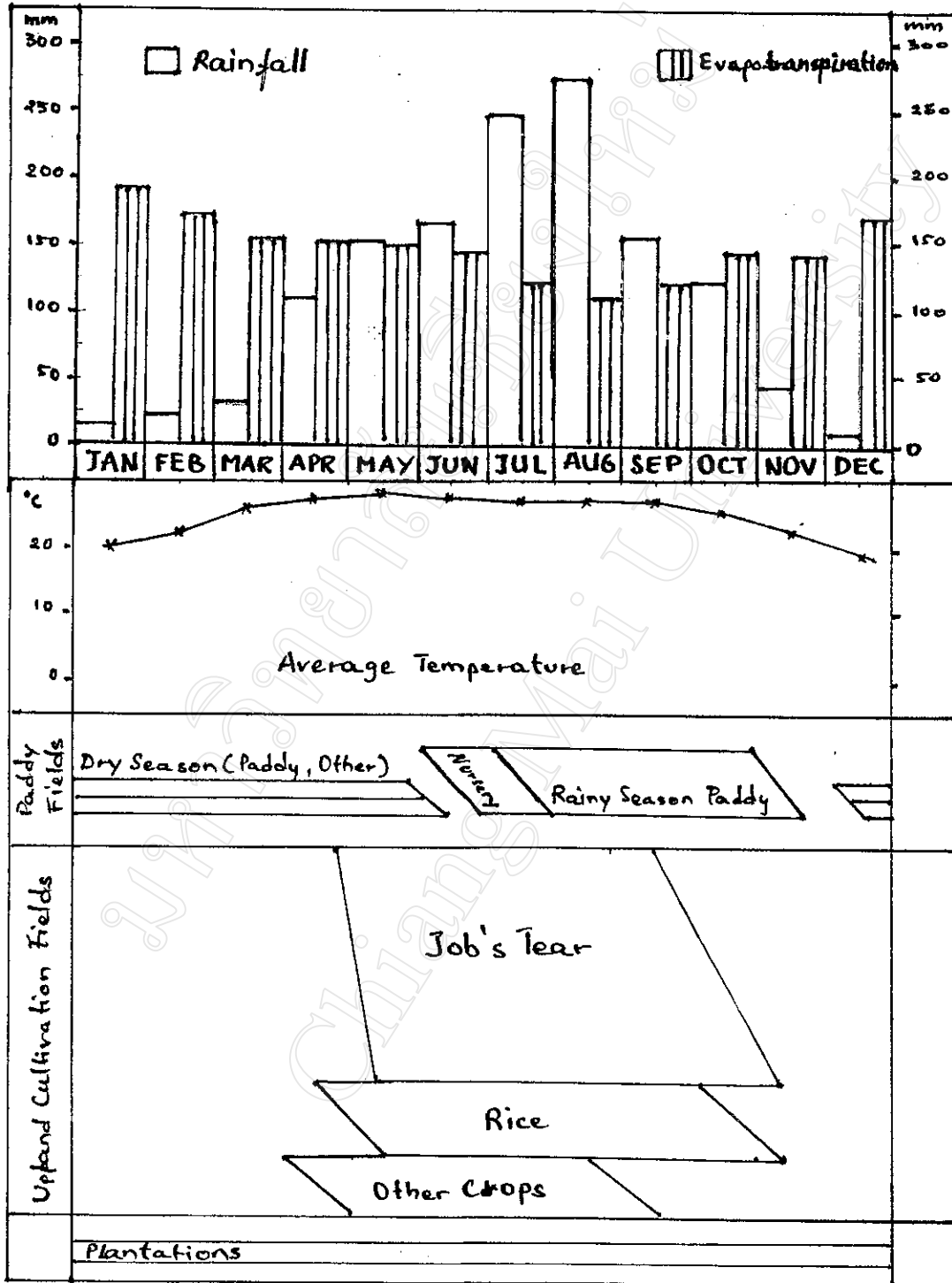


Table 4.1 Land Types, Land Use and Land Ownership of Huay Khang Villagers, 1999

No	Name of Family Head	Types of land	Area (ha)	Location	Land Use
01	Mr. Inh	Upland field	1.70	Huay Leuk	Rice & cash crops
		Upland field	1.16	Tin Pha Daeng	Rice & cash crops
02	Mr. Phout	Plantation	0.59	Huay Khang	Banana&Porsa
		Upland field	0.76	Huay Leuk	Rice & cash crops
		Upland field	0.38	Huay Khang	Rice
03	Mr. Louang	Plantation	0.84	Huay Leuk	Porsa
		Plantation	0.80	Huay Khang	Porsa
		Upland field	1.43	Phou Kok Kha	Rice & cash crops
		Paddy field	0.5	Khaem Nam Khan	Rice
04	Mr. Phouang	Upland field	0.66	Huay Khang	Rice
		Upland field	0.65	Huay Khang	Cash crops
		Upland field	0.65	Huay Khang	Cash crops
05	Mr. Thiang	Upland field	0.79	Tin Phadaeng	Rice
		Upland field	0.79	Tin Phadaeng	Cash crops
06	Mr. My	Upland field	0.40	Huay Khang	Rice
		Upland field	0.81	Huay Khang	Rice
		Upland field	0.34	Huay Khang	Cash crops
07	Mr. Lom	Upland field	1.75	Phou Kok Kha	Rice & cash crops
		Upland field	0.83	Huay Paen	Cash crops
08	Mr. Linh	Upland field	1.07	Huay Leuk	Rice
		Plantation	0.93	Huay Khang	Teak
		Upland field	1.03	Huay Paen	Cash crops
09	Mr. Chanh	Upland field	1.49	Tin Phadaeng	Rice & cash crops
		Upland field	0.60	Tin Phadaeng	Cash crops
10	Mr. Oun (A)	Upland field	0.53	Huay Leuk	Cash crops
		Upland field	0.60	Huay Khang	Rice & cash crops
11	Mr. Pheth	Upland field	1.01	San Huay Paen	Rice
		Upland field	0.94	Phou Kok Kha	Rice
12	Mr. Seum	Upland field	0.84	Phou Phadaeng	Rice
13	Mr. Oun (B)	Upland field	0.91	Huay Khang	Cash crops
		Paddy field	0.12	Khaem Nam Khan	Rice
14	Mr. Mao	Upland field	0.57	Huay Paen	Cash crops
		Upland field	1.01	Huay Paen	Cash crops
		Paddy field	0.50	Khaem Nam Khan	Rice
15	Mr. Khamsing	Upland field	0.09	Huay Khom	Rice
		Upland field	0.68	Phadaeng	Cash crops
16	Mr. Hack	Upland field	0.58	Huay Paen	Rice
		Upland field	0.80	Huay Paen	Cash crops
17	Mr. Mot	Upland field	1.20	Huay Khang	Cash crops
		Upland field	1.20	Phadaeng	Rice
18	Mr. King	Upland field	0.83	Huay Nhathao	Cash crops
		Upland field	0.51	Huay Khang	Porsa

Table 4.1 continued.

19	Mr. Khamsaeng	Plantation	2.45	Huay Leuk	Teak
		Upland field	0.43	Huay Khang	Cash crops
		Paddy field	0.13	Khaem Nam Khan	Rice
20	Mr. Houmphanh	Upland field	3.73	Huay Paen	Rice & cash crops
		Upland field	1.32	Theungban	Cash crops
		Upland field	0.39	Pholkhaemna	Cash crops
		Paddy field	1.00	Khaem Nam Khan	Rice
21	Mr. Khammy	Upland field	1.00	Huay Leuk	Cash crops
		Upland field	2.02	San Huay Nhom	Rice & cash crops
22	Mr. Khamphane	Upland field	4.76	Huay Paen	Rice
23	Mr. Amphay	Upland field	0.82	Huay Leuk	Cash crops
		Plantation	0.80	Huay Paen	Teak
		Upland field	0.83	Huay Paen	Cash crops
		Paddy field	1.00	Khaem Nam Khan	Rice
24	Mr. Phet	Upland field	1.93	Huay Khom	Rice & cash crops
25	Mr. Kham Ouan	Upland field	0.51	Huay Paen	Cash crops
		Plantation	2.39	Huay Khot	Teak
		Upland field	0.26	Huay Paen	Cash crops
26	Mr. Xeu	Upland field	5.00	Huay Paen	Rice
		Upland field	1.97	Huay Paen	Cash crops
27	Mr. Lay	Upland field	2.28	Huay Paen	Rice
28	Mr. Xiang Tan	Upland field	1.80	Huay Leuk	Cash crops
		Upland field	1.08	Huay Paen	Cash crops
29	Mr. Sivone	Plantation	1.43	Huay Nhatao	Teak
		Upland field	1.13	Huay Paen	Cash crops
		Plantation	1.15	Huay Paen	Rice
		Upland field	0.61	Theung Khai	Teak
30	Mr. Xay	Upland field	1.08	Huay Paen	Rice
		Upland field	0.70	Huay Paen	Rice
31	Mr. Somchine	Plantation	0.78	Huay Paen	Teak
		Upland field	0.21	Huay Paen	Cash crops
32	Mr. Khamphaeng	Upland field	1.40	Huay Paen	Rice & cash crops
33	Mr. Phoumy	(No land)			
34	Mr. Onechanh	Plantation	3.00	Huay Leuk	Banana
		Plantation	0.28	Huay Paen	Porsa
35	Mr. Chanthavone	Upland field	1.45	Huay Paen	Cash crops
36	Mr. Xieng Phaeng	Plantation	0.72	Huay Paen	Banana

The lands which belong to the Huay Khang villagers are upland cultivation fields 58 plots (66.33 ha), paddy fields 6 plots (3.25 ha), teak plantations 7 plots (8.71 ha), porsa plantations 4 plots (2.43 ha), banana plantations 3 plots (4.31 ha), and home-garden 1 plots (3.75 ha); and the other fields are belong to the outsiders such as upland fields 82 plots (68.20 ha), paddy fields 9 plots (6,90 ha) and teak plantations

17 plots (47.60 ha). Thus, the agricultural lands in this village cultivate by outsiders more than 50 percent of the total agricultural land and teak plantations.

4.1.1 Cropping System

Most farmers in this village practice upland farming based on a mixed cropping system. They grow various crops in the upland fields. Upland rice is inter-cropped with other crops such as maize, cucumber, chilies, sesame, job's tear, etc. Usually the farmers grow cassava along the border of the field.

Most of the farmers finished their upland rice seeding between the third week of May and the first week of June. The average rice yield was recorded as 800 kg/hectare which is considerably lower than that of the normal yield in the province (1,300 kg/ha). Present average bush-fallow rotation is 3 years. But in the recent year, the majority of the farmers (70%) were found to grow job's tear because of the higher income generation 800,000 kip/ha compared with 200,000 kip/ha for swidden rice.

Various legume crops such as soil-bean, sesame, mung-bean, and job's tear were introduced in this village by private companies. As mentioned above, they are inter-cropped with upland rice. Thus the area covered with grain leguminous crops is increasing in the village due to market facilities with access to transportation. Lowland paddy fields are cultivated in two seasons because they can use irrigation system from the Nam Khan river.

The existing cropping calendar for both farming systems – upland and lowland are shown in Figure 4.5 and Table 4.2 and 4.3.

Table 4.2 Upland Cultivation Calendar

Activity	Month
Slash/cutting	February-March
Burning	April
Fencing	Late April
Planting	Late May-June
Weeding	July-August
Harvesting	October-November

Table 4.3 Lowland Rice (Paddy) Cultivation Calendar

Activity	Rainy season	Dry season
Seed bed preparation	June	December
Transplanting	Late June-Early July	Late January-February
Weeding	August-September	March-April
Harvesting	Late October-Early November	Late May-Early June

4.1.2 Livestock and Animal Production System

Most of the farmers raise poultry and some pigs in small temporary cottages or huts, built near upland fields. They do this only during the upland rice cycle period; usually they raise poultry (chicken and duck) and pigs at their permanent house.

Usually shifting cultivators raise and own different kinds of animals such as cattle, buffalo, horses, pigs, goats, chickens, and ducks, but the shifting cultivators in this area, especially the Khamu ethnic group in this village, were mostly found to raise and own only small animals such as poultry (480), goats (14) and pigs (12).

Although, large animals such as cattle and buffaloes (27) are raised by 11 Khamu households in this village. Mostly, they are not fully owned by the villagers; their offsprings will be half-shared between the owners and the caretakers. Livestock is an important part of the farming system in the study area. There is a high population of cattle and buffalo because of the relatively large grazing areas. The use of buffaloes as draught animals is increasing. The farmers are raising only local breeds of poultry, cattle and other livestock. Farmers were not found to adopt improved animal husbandry techniques. Small animals receive some supplementary feeding mainly from household scraps plus rice husk and cassava whenever available. The large animals are allowed to graze freely over the land and generally their condition is good throughout the year; but grazing land are being lost each year to intensive agricultural production.

The management system for grazing animals is extensive in the dry season. Owners simply release their stocks to graze in the lands surrounding the village (including paddy fields). Buffaloes, however, are contained in the evening by shepherding or tethering cattle. Hand feeding with rice straw is practiced and no green forage is fed. Farmers expressed their opinion that the quality and quantity of food for

grazing animals is adequate. The villagers have adopted the practice of fencing all cropping land, both upland and lowland, as a protection against grazing animals.

Animal deaths through diseases are common, with serious epidemics occurring in all animals. The main animal diseases are *hemorrhagic septicemia* in cattle and buffaloes, cholera, and fever in pigs, and *newcastle fever*, *newcastle M*, fowl pox and fowl cholera in the smaller animals.

4.1.3 Silvicultural Forestry System

Establishing private tree plantations is a relatively new possibility for farmers in Laos, especially in Huay Khang village, but has expanded rapidly during the past 5-7 years. This has been facilitated by changes in tenure laws, the depletion of wood supply from the natural forest and the emergence of markets for relatively young trees such as teak (*Tectona grandis*), porsa (*Broussonetia papiersa*) and banana (*Musa sapientum*).

In Ban Huay Khang the main plantation species is teak, because it is relatively easy to manage and propagate, grows fast in the early years, and is tolerant to fire. The potential income and economic spin-offs from teak planting are high, particularly compared with current land use.

Teak and porsa are usually established in taungya systems, i.e., inter-planted with agricultural crops during the first one to three years. This normally ensures adequate weeding and protection of the teak or porsa in the early years.

Until recently, the government strategy has been to promote as much tree planting as possible, but various problems and constraints have become apparent. Thus, the rapid expansion of teak and porsa planting during the past seven years is to a large extent related to the possibility of selling the 1-3 year-old teak plantations to outside investors. Consequently, almost all plantations are established along the major roads, as investors are almost exclusively interested in such land. While selling their plantations can give farmers a high and quick return on their investment, they may eventually lose access to the land, especially when land allocation schemes have been introduced.

Another problem is farmers' preference of the flatter land for their plantation, which therefore competing with crop production for the scarce flat lands and push arable farming up on the steeper slopes. However, the use of flat land for the plantations may result in faster growth of trees and may ease mechanized weeding and harvesting in commercial plantation.

When inter-planting with agricultural crops ends after 1-3 years, little management is applied except the slashing of taller weeds and, sometimes, controlled burning early in the dry season.

4.2 Economic Activities

4.2.1 Income generation

Table 4.4 shows the ranking of the main sources of cash income separately for men and women group. As mentioned earlier, NTFPs play a major role as a source of cash income. Both groups think cardamom at the highest importance, followed by livestock, paper mulberry and broom-grass. Agricultural products like rice, sesame or chili are economically of less importance, which indicates a high level of agricultural subsistence production.

With some exceptions the ranking of men and women is similar. Obviously, for women many more products are of economic value than for men. The most significant difference is that women give importance to more agricultural products (ginger, sweet potatoes, and taro) and NTFPs (bamboo shoots).

The villagers are very well aware of the possibility to gain a higher price for their products by selling them directly to customers or traders in the respective market places. Gaining a higher trade margin by direct selling is mainly a matter of individual calculations and the availability of means of transport.

Table 4.4 Ranking of Main Sources of Cash Income in Huay Khang Village

Importance	Men	Women
1	Cardamom, livestock	Cardamom
2	Paper mulberry, broom-grass	Livestock
3	Poultry	Poultry
4	Rice	Paper mulberry, broom-grass
5	Sesame	Bamboo shoots
6	Job's tear	Chili, sesame
7	Chili	Rice
8	Teak tree	Vegetables, taro, sweet potato

Table 4.5 shows in form of a calendar the needed input of labor force per month, divided for men and women. The highest labor input is necessary around middle and end of the year which is the time for weeding, harvesting and collection of NTFPs. The calendar does not show significant differences in the perception of work needs between men and women. What it shows very much is the interrelationship between the villagers and their natural environment, i.e. upland fields, fallows and forests. A big part of the raw material for their daily life comes from their direct environment.

Table 4.5 Calendar of Activities and Labor Input

MEN	Calendar –Months		WOMEN
	International	Khamu	
Build new houses	1	2	Build new house
Prepare tools; slash fallows	2	3	Slash fallows; harvest Broom-grass, paper mulberry and bamboo shoots
Fencing; build a hut	3	4	Harvest broom-grass, paper mulberry
Burn fallow fields	4	5	Clear fallows
Rice sowing; fencing; growing chili and ginger	5	6	Grow rice, job's tear and corn; weeding
Weeding and hunting	6	7	Weeding
Weeding and hunting	7	8	Weeding; harvest corn
Harvest cardamom	8	9	Making baskets;
Harvest cardamom and chili	9	10	Starting home garden; harvest cardamom and chili
Home gardens, prepare rice storage	10	11	Harvest rice
Harvest rice and job's tear	11	12	Harvest rice and job's tear
Rice transport	12	1	Rice transport and garden work

Table 4.6 shows a calendar of expenses and income. It seems that women are more aware of the different sources of income and expenses. In particular the income side of the women's group calendar includes more products than the one of the men's group. Again it becomes evident how big the importance of forest and fallow products is for cash income generation.

The income of the most important NTFPs (paper mulberry, cardamom, and broom-grass) occurs at the time when there is, besides some vegetables, barely any other source of income. This is also the time when rice is getting short and often people have to borrow money or sell livestock to fill the gap in rice supply. The income from NTFPs has a buffer function in this sense. With the exception of expenses for festivals, the families spend their money mainly on rice, medicine, clothes and tools. There is no tradition in the production of clothes.

Table 4.6 Calendar of Income and Expenses

EXPENSES	Calendar-Months		INCOME
	International	Khamu	
Knives, axes	1	2	Bamboo shoots, poultry
Food	2	3	Paper mulberry, broom-grass
Rice	3	4	Broom-grass
Lao New Year Festival	4	5	Paper mulberry, broom-grass
Rice	5	6	
Medicine and rice	6	7	
Medicine and rice	7	8	Cardamom
Medicine, rice and clothes	8	9	Cardamom
Rice	9	10	Cash crops
Household tools	10	11	Cash crops
Household tools	11	12	
Khamu New Year Festival	12	1	

4.2.2 Crop Production

Shifting cultivation is the traditional way of agricultural production in Huay Khang village. The production patterns are very much subsistence-oriented. In May 1999 the area which was cultivated by the 36 households of Ban Huay Khang consisted of 54 ha. This is the area which was re-allocated to them in 1998. As already mentioned, every household received not more than four rotated upland fields

for cultivation according to their available labor force. On average every household received approximately 3.23 ha.

The main agricultural crop is rain-fed upland rice (glutinous rice). Local varieties are used. The yield per ha of upland rice varies from 0.6 to 1.2 tons with an average of 0.8 ton/ha, depending very much on the length of previous fallow period. The duration of the fallow period determines the nutrient status of the soil but also the amount of weeds to be shaded out, and through this, how much labor input for weeding is necessary later. The Khamu people are aware of this fact. They always look for a forest area with not too big trees but with limited undergrowth.

Table 4.7 provides a list of the crops cultivated in Ban Huay Kharg divided into subsistence and cash crops. However, the table can only give an indication of the general tendencies. Of course every product is for sale as long as the well-being of the family is assured. In particular corn and root crops are important during the period of rice shortage.

Table 4.7 List of Subsistence and Cash Crops (No Ranking in Importance)

Main Subsistence Crops	Cash Crops
Paddy rice	Ginger
Upland rice (glutinous rice)	Sesame
Corn	Pumpkin
Taro	Chili
Sweet potato	Cucumber
Cassava	Job's tear
Eggplant	
Long bean	
Sugar cane	

4.2.3 Forest Products

Table 4.8 shows the ranking of forest / fallow products according to their importance for self-consumption. Bamboo is by far the most important product. Numerous species of bamboo shoots serve to broaden the nutrition basis. Additionally, bamboo canes are used for several purposes--house construction or

producing handicrafts like baskets or mats. The main uses of wood are for fuel-wood and for construction.

Table 4.8 Ranking of Forest Products according to their Importance for Self-Consumption in Huay Khang Village

Importance	NTFP
1	Bamboo (shoots and canes)
2	Wood (fuel-wood, construction)
3	Broom-grass
4	Paper mulberry
5	Cardamom

The management of the village forest area is up to the village forest volunteer in co-operation with the village head-man. The village forest volunteer, jointly selected by the district forestry service and the village head-man, receives training for two weeks per year.

Besides the NTFP traders, who regularly come to Ban Huay Khang, there are also some villagers acting as middlemen. They pre-collect the products and sell them to other traders either directly in the village or in Xieng Ngeun town. The collecting of most of the NTFPs is the task of women, children and elderly people.

1) Wood

As mentioned before, wood extraction is just allowed for use within the village (house construction) and limited to a certain quantity per family. As a source of cash income wood does not play a role in the life of villagers.

2) Non Timber Forest Products (NTFPs)

Table 4.9 gives an overview over the most important forest and fallow products in Ban Huay Khang. A detailed interpretation is given in the next chapter.

The income gained from forest and fallow products varies from family to family. It ranges between 50,000 and 150,000 Kip per year depending on the harvest, prices and available labor force. It is difficult

to assess the share of these products on the whole family income. In general the share of these products increases when a family is poorer. At the maximum it is estimated to be up to 50%.

Table 4.9 Huay Khang Village, The Most Important Forest and Fallow Products

Lao Name	Latin Name	English Name	Commercial Value	Subsistencial Value	Farm-gate Price
Mak Naeng	<i>Amomum ovoideum</i>	Cardamom	XXX	(X)	Up to 25,000 Kip/kg
Por Sa	<i>Brussonetia papyrifera</i>	Paper Mulberry	XXX	(X)	1,000-1,800 Kip/kg
Mai Xang	<i>Bambusa ssp</i>	Bamboo	XX	XXX	Depending on product
Khaem	<i>Thysanolaen amaxima</i>	Broomgrass	XX	X	1,200 Kip/kg

Cardamom (*Amomum ovoideum*): At the moment cardamom is the most important non timber forest product for income generation in Ban Huay Khang. One person can harvest cardamom seeds up to 6 kg per year, depending on the season. In the area of Ban Huay Khang two kinds of cardamom grow: white and red cardamom. White cardamom grows more on moist soil, yields less and receives higher prices than red cardamom. It is mainly used for medicinal purposes. Red cardamom has lower requirements to soil properties and yields more.

The harvest period is between late August and early October. It can be done individually or collectively. In case of collective harvest, the head of the village will announce the day of the harvest. After the harvest the seeds are dried for a few hours, peeled and finally dried for 2 - 3 days.

Traders are more interested in white cardamom. But its availability is limited. Normally the villagers mix both kinds of cardamom for selling. Since it is easy to distinguish both varieties from each other, the traders are aware of this fact.

Cardamom starts producing fruits after having grown for three years. It produces fruits every second year. Now, cardamom is just gathered from the forest and cultivation has not been experimented.

Paper mulberry bark (*Broussonetia papyrifera*): The production of mulberry bark has increased significantly during the past years. Also in Ban Huay Khang its economic importance is comparable to the one of cardamom.

Mulberry bark is the raw material used for producing paper which is traditionally used for wrapping all kinds of products. Nowadays, a big portion of the bark is exported to Thailand where it is processed into high quality paper and sold to other countries, mainly Japan. The smaller local production of paper is, apart from its traditional uses, often sold in various kinds of form to tourists.

The raising of paper mulberry is possible in two ways, in plantations or in the forest. In Ban Huay Khang people grow mulberry less intensively in the forests. The prices they gained in 1999 ranged from 1,000 – 1,800 Kip/kg, depending on the grade. Paper mulberry is one of the most promoted products in Luang-Prabang province. Ban Huay Khang seems to have a great potential for expanding its production.

Bamboo: Bamboo is probably the most important forest / fallow product. The high number of bamboo species allows ample uses, with more emphasis on self-consumption. Several finished and semi-finished products (mats, floor, baskets, thatch, etc.) are made of bamboo and, to a certain extent, are sold either in the village or in the market.

Broom-grass or Khaem in Lao (*Thysanolaena maxima*): Broom-grass is more a fallow plant than classical NTFP, but it plays an important role in providing cash income. The harvest time is from January till March. The 1998 farm-gate price for one kg of broom-grass was 1,200 Kip, and 1,500 Kip in Luang-Prabang.

4.2.4 Horticulture

Most of the households have home-gardens. However, their sizes are very small and so are the number and quantity of crops cultivated there. Due to the location of Ban Huay Khang which is on a mountain saddle, it is difficult to increase the home-garden area close to the village. The most frequent garden crops are ginger, pumpkin, eggplant, chili, long bean and cucumber.

Six families cultivate fruit trees on a very small scale (a few trees per garden). The fruit trees found in the village include tamarind, papaya, mango, jack-fruit,

banana, guava, and coconut. Slow returns and the uncertain market are probably the main constraints for fruit-tree cultivation.

4.2.5 Off-Farm Activities

Trade and service: Business activities are limited in Ban Huay Khang. There are only two shops offering limited variety of necessities for daily life. Two families act as the traders for agricultural and forestry products on relatively large scale than the others. Three rice mills offer their services. Evening entertainment is provided by one family which shows video films.

Handicraft: Most of the goods produced by the villagers like baskets, mats and woven bags are more or less for self-consumption. Trade in these products is barely developed; selling happens by coincidence. Five men are skillful in doing work as blacksmiths.

Nevertheless, there is a number of raw materials or semi-finished products with existing marketing possibilities. Most of them are collected from the forest or fallow fields and sold to traders regularly visiting the village. The production and selling of roofing material (thatch) of bamboo and of *Imperata cylindrica* has reached the level of a cottage industry in Ban Huay Khang, mainly because of its easy access for traders.

Wage labor: For men it is not uncommon to sell their labor force when there is less work on their own farms. Traditionally, they are hired as farm workers by farmers from neighboring villages, mainly belonging to the Lao Soung and Lao Loum ethnic groups.