

# FOREST AND FALLOW PRODUCTS IN A ROTATIONAL SWIDDENING SYSTEM IN NORTH CENTRAL VIETNAM

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## ABSTRACT

*Rotational swiddening practised by ethnic minorities in the north-central uplands of Vietnam is currently causing major transformations in forestland use and forestland cover. In order to avoid further forest fragmentation and degradation, the Vietnamese government has implemented certain programmes and policies to bring an end to this trend. Consequently, farmers have been allocated certain fixed areas set aside for swiddening – areas which often are too small to provide the necessary food supply. As a way to increase food production in the uplands, farmers are encouraged by extension officers to invest in paddy rice cultivation. However, natural conditions are not always suitable for this shift in practice, hence farmers must rely on other natural resources in their livelihood strategy. Collection of forest and fallow products, especially bamboo shoots and bromgrass, provide households with cash income which increases their possibilities for maintaining food security.*

## I. Introduction

Agroforestry, the practice of growing trees on farms for the benefit of the farm family and for the environment, is now recognised as an applied science, instrumental in assuring food security, reducing poverty and enhancing ecosystem resilience on small farms in the tropics (Sanchez, 1999a). Swiddening practised by ethnic minorities in the uplands of north central Vietnam can be classified as an agroforestry system, since farmers clear and burn the trees growing on fallow land to enrich the soil's nutrient content before cultivation.

Sequential swiddening prevents any direct competition between trees and crops (Huxley, 1999). It is sometimes forgotten that the natural vegetation sprouting up on fallow land before clearing and burning contains many products of economic importance to swidden farmers. The collection of products from fallow areas and forests contributes significantly to local farmers' livelihood. Thus, swidden cultivation plays an important role in providing food security for rural households in a region where most of the land is mountainous, and weather conditions fluctuate between draught and flooding. Consequently, expansion and intensification of agricultural practices, especially paddy rice cultivation, is difficult. Farmers therefore rely heavily on resources extracted from forests and fallow areas in order to maintain food security.

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Agroforestry researchers have begun to focus on the role of forest and fallow products in the livelihood strategy of swidden farmers in Third World countries in order to achieve a more sustainable management of forests, conserve biodiversity and improve food security (Fui, 1998; Haeruman, 1998; Cairns *et al.*, 1999). This paper attempts to document the importance of these products to the livelihood strategy of swidden farmers in north central Vietnam.

## **1. Forest and Fallow Products**

Agroforestry systems provide both products and services. Agroforestry products include fuelwood, poles, timber (all wood products); and livestock fodder, food, fruits, poles, timber and medicines. Agroforestry services include erosion control, soil fertility replenishment, improved nutrient and hydrological cycles, boundary delineation, [poverty reduction as well as enhanced food security, household nutrition], watershed stability, biodiversity and carbon sequestration (Sanchez, 1999b). Forest and fallow products have attracted considerable global interest in recent years due to increasing recognition of their contribution to household and national economies, poverty reduction, food security<sup>2</sup> and environmental objectives, including the conservation of biological diversity (Vantomme, 1998).

Forest products and fallow areas constitute an important component in swiddening systems all over the world. They can bridge the "hunger periods" in the agricultural cycle and smooth out other seasonal fluctuations. In Laos, (Rigg, 2003), fallow areas and surrounding forests provide buffers against hunger and places to obtain products sold for cash. The collection and selling of forest and fallow products to traders or at local markets play an important role in the livelihood strategy, since population growth has intensified more pressure on natural resources. Livelihood strategies are sustainable only when they are able to cope with and recover from stresses and shocks and maintain or enhance capabilities and assets both now and in the future without undermining the natural resource base (Chambers & Conway, 1988 cited in Frankenberger, \_?\_\_\_).

So far in Vietnam, only a few studies have been conducted on forest and fallow products as components of the livelihood strategy of Vietnamese swidden farmers. In mountain communities in northern Vietnam, forest vegetables, bamboo shoots and mushrooms collected are eaten in richer households, but in poorer households they have to be sold to buy rice (Nguyen Thi Yen *et al.*, 1994 in Arnold, 1995). In both cases they increase food security.

Along with the cultivation of cassava and other agricultural crops, the exploitation of medicinal plants by Dao people in Ba Vi National Park in northern Vietnam constitutes a major economic activity for the farmers (Tran Van On *et al.*, 2001).

## **2. Swiddening in A Regional Context**

Population growth, land allocation programmes, expanded infrastructure and increased access to markets are some of the major driving forces behind the current changes in land use

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<sup>2</sup> The concept of food security for rural households in developing countries encompasses all factors affecting a household's access to an adequate year round supply of food. Thus it is concerned not just with the household's production of food crops, but with the availability of income to the household with which to purchase food, when this is necessary (Arnold, 1995).

and land cover in the uplands of north central Vietnam (Nam et al., 1999; Quang, 2003). The Vietnamese government, in its most recent attempts to improve the situation, has issued Decree 163/ND-CP in November 1999 on the allocation of forestland to organisations, local households, and individuals<sup>3</sup>. Consequently, the land for traditional swiddening used by ethnic minorities to maintain food security has recently been allocated permanently to forest through various government programmes. With their swidden land reduced, farmers have been forced to grow paddy rice in valley bottoms as a way to keep up rice production. Rotational swiddening system is thus changing into a composite swiddening system, whereby farmers use landscape diversity in the uplands to manage permanent paddy rice fields in the valley bottoms, shifting swidden fields on the hill slopes and the wild resources of the forest (Fox *et al.* in Fox *et al.*, 2003). This system has existed for centuries in many villages, but is now found in villages that formerly based their living on exclusively swidden agriculture. Pure rotational swiddening may become extinct in South-East Asia within 50 years (Padoch *et al.*, 2003).

However, many uncertainties surround the establishment of composite swiddening systems, especially when it comes to the cultivation of paddy rice. Lack of experience, weather fluctuations, limited land and irrigation water are just a few of the limitations to this shift in practice. Hence, farmers frequently rely on collection of forest and fallow products as a way to generate income and maintain food security.

### **3. Objective**

Based on a case study of a Thai hamlet in the uplands of north Central Vietnam, this paper describes the economic value of certain forest and fallow products, and what role they play in the livelihood strategy of swidden farmers. It seeks to answer the following questions:

- What products are collected from forests and fallows provide cash income?
- Who in the household is responsible for collecting these products?
- How do farmers generate income from these products?
- How important are forest and fallow products in the livelihood strategy of swidden farmers?

### **4. Methodology and Study Site**

Fieldwork was carried out in December 2003 with participation of researchers from Hanoi Agricultural University, the National University of Laos and the University of Copenhagen. Que hamlet, one of 8 hamlets in Binh Chuan Commune, Con Cuong District, Nghe An Province in north Central Vietnam, was chosen for the study.

The research team lived in the hamlet for 10 days, where farmers, traders, hamlet and commune officials provided the necessary information. A variety of participatory rural appraisal (PRA) methods were used in order to obtain the required data. This paper uses the data collected from focus group discussions, ranking-exercises, semi-structured interviews, and direct observation.

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<sup>3</sup> Decree 163/ND-CP is actually the amended version of Decree 02/CP issued in 1994 by adding provision in the lease of production forestland.

## **II. Overview of que hamlet's history and land use system**

Que hamlet is situated about 7 kilometers south-east of Binh Chuan commune center, and is relatively isolated in comparison with other hamlets in the commune. The road between Con Cuong and the commune center cuts through the hamlet, and is very important for communication and exchange with other hamlets. However, the road is in such poor condition that it is only accessible in good weather.

The rainy season begins in April and lasts until October, and the dry season spreads from November to March. The yearly average temperature is 23.5°C and the average amount of precipitation is 1,791 mm.

In terms of other natural conditions, the landscape surrounding Que hamlet can be characterised as steep and undulating. The hamlet is located in the bottom of a small valley along a stream. The stream is very important to the households since it provides water for cooking, bathing, irrigation for paddy fields. Additionally, several households catch small fish and shrimps.

There are 69 households in the hamlet, with a population of 409 people, of which 99% are ethnic Thai. The hamlet is considered to be the poorest in the commune, where 38 households are classified as poor, 16 as average and 15 as well-off. On average, poor households lack food for between four and seven months per year. The government has launched assistance programmes such as Programme 135 with the purpose of providing medicine, school books, notebooks, and iodized salt. Furthermore, the poorest farmers are being subsidised 50–80 % of the price of crossbred rice and maize seeds.

Three households own a television and 18 households have purchased a motorbike. Because there is no major market in the hamlet, the villagers have to travel 35 km to Con Cuong to purchase and sell goods. Yet, there are four small shops in the hamlet selling different goods such as salt, cooking oil, fish sauce, and soap. When weather conditions permit, a motorbike driver also comes from Con Cuong to the hamlet to sell pork, egg, soya curd, vegetables and so forth.

### **1. History of Que Hamlet**

Que hamlet was established in the early 19<sup>th</sup> century. In 1930, all inhabitants were evacuated to another place due to a severe drought. In 1942, only 28 residents from 5 different households returned to the hamlet. In terms of agricultural production, Que hamlet's residents based their livelihood mainly on swiddening, and crops grown were rice, maize, cassava and cotton. Nevertheless, in 1947 and 1948, some farmers tried to cultivate paddy rice – a practice they learned during the evacuation. Yet low productivity put an end to the experiment after two years. As for animal husbandry, before 1960, local farmers only raised pigs and chickens, but from 1960 the first cattle purchased through a State Credit Program were being raised. Later on, buffalos were widely raised as well.

From 1975 to 1980, all households in the hamlet participated in a State Cooperative. The yield from swiddening decreased from 2 tons to only about 800 kg per ha. Forest and fallow products were collected throughout the year. Bamboo shoots, firewood, broomgrass, *day hem* (for dyeing clothes), betel chewed by women, palm leaves for roofing, taro, honey and timber were collected. Hunting of wild animals in the forest was an important component in the livelihood strategy. Tigers, wolves, bears, monkeys, gayals, deer, jungle fowl, squirrels,

fox, toitorse, snake, and gecko were hunted and trapped frequently. Through over-exploitation, tigers, wolves, bears, and monkeys no longer exist in the area.

In 1998, realising the serious damage of random swidden activities, and together with the application of Decree 02/CP on the allocation of forestland to individual households in the area,<sup>4</sup> the commune authorities in collaboration with the Con Cuong District Forest Protection Unit allocated fixed areas for Que hamlet farmers to practice swiddening to limit the extent of forest destruction. The allocated areas are categorised as “forestland for production of food,” ; thus local officials categorize swidden fields as a kind of agricultural land.

Paddy rice cultivation has not taken place since 1948, but it was resumed in 1999 by one household. The paddy field measured only about 300 square meters only. By 2003, the paddy area has increased 4 ha, belonging to 40 households. Farmers stated that they were encouraged by commune extension officers to start paddy rice cultivation. Yet, the major reason for re-introducing paddy rice in to the system was the inadequate amount of land available for swiddening. The implementation of Decree 02/CP in 1998 reduced the area where swiddening could take place, and as a way to avoid a severe decrease in food production, farmers started growing paddy rice.

The population of Que hamlet has increased rapidly over time. In 1942, as mentioned, only 5 households were settled in the hamlet. In 1960 the number had increased to 25 households; in 1984 to 44 households and in December 2003 the number had grown to 69 households.

## **2. The Land Use System in Que Hamlet Today**

Most households in the hamlet base their livelihood strategy on a great number of different activities. Today, the land use system of in Que hamlet is primarily based on the following components: rotational swiddening, paddy rice cultivation, livestock and collection of forest and fallow products. Homegardens and aquaculture constitute minor elements of the system. Table 1 below shows the land use pattern in Que hamlet; and the next sections sequentially present the four main components in the land use system: rotational swiddening, paddy rice cultivation, livestock and collection of forest and fallow products.

### **2.1. Swiddening**

The rotational swiddening system is practised by 93% of the households in the village. Upland rice, maize, and cassava are the staple crops in the system, with upland rice accounting for most cultivated land. Farmers clear and burn fallow land on steep slopes before cultivation. After cultivating a plot for one or two years, farmers move on to a new plot since the nutrient pool at this stage is exhausted. After 3-5 years of fallow, the plot will once again be cleared and cultivated. Yet the fallow length has been heavily reduced over the last couple of decades from 10-15 years to only 3-5 years. In particular the land allocation through Decree 02/CP in 1998 contributed to this reduction. The purpose of that land allocation was to avoid further fragmentation and degradation of the forests in the commune. As a result, the hamlet was allocated a certain area where swidden agriculture is allowed to take place. Que hamlet was allocated 80 ha for swiddening with a fallow cycle of five years - meaning each year local farmers are allowed to cultivate one sixth of the area or a little more than 13 ha.

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<sup>4</sup> As mentioned above, Decree 02/CP was issued in 1994 by the Government of Vietnam. However, not until 1998 was it implemented in Binh Chuan commune where Que hamlet is located.

The size of the allocated land, however, does not fulfil the demand from the whole hamlet, and as a result 40 of 69 households have begun cultivation of paddy rice in the valley bottoms. Farmers can freely choose which area within the allocated area they want to cultivate. However, the size of the field is based on the cultivation ability of the specific household, regardless of the number of members/heads in the households. This means that one household can select a larger area to cultivate than other households as long as they are able to cultivate the entire selected area. If no other farmer claims the area, the farmer can begin leasing the field. If two farmers plan to cultivate the same area, they meet and negotiate about who can cultivate what area. Conflicts on land use seldom arise in the hamlet.

**Table 1. Landuse pattern in Que hamlet**

Type of land	Area (ha)	Type of land	Area (ha)
<b>Total</b>	<b>2,196</b>	<b>III. Forest land</b>	<b>2,070</b>
<b>I. Agricultural land</b>	<b>111,7</b>	1. Production forest	843
1. Swidden land	80	2. Protection forest	1,221
2. Dry land	13	3. Special forest	6
3. Paddy land	4	<b>IV- Special used land</b>	<b>4.0</b>
4. Home garden	5.7	1. Infrastructure	2
5. Surface water	8	2. Land for irrigation system	0.5
		3. Sacred land	1.5
<b>II- Residential land</b>	<b>2.3</b>	<b>V- Unused land</b>	<b>9</b>

*Source: Que Hamlet Statistical Data, 2003.*

Most households practising swiddening (61 out of 64 ) have organised themselves into six different groups. The smallest number of household members in one group is two households, while the biggest group comprises 21 households (see Table 2). The remaining three households practise swiddening independently since they have sentry houses and only cultivate near those houses.

The major purpose of creating these groups is to support each other in making fences to protect the cultivated swidden area from being destroyed by cattle. Farmers who cultivate in the same area form a group, and together they make fences in areas where the cattle may enter the fields, i.e. along streams and the borders between forests and the cultivated area. The fence is made from bamboo trees. Each household in the group has to take part in making the fence – even though the field does not border streams or forests. Various decisions are also made together about when to start clearing and burning the fields, and when harvesting should begin.

The group normally exists for one year only. The following year, most households move on to a new area and then become members of a new group. Households might group together again or might create a totally new group. Some households might decide to continue cultivating the same plot due to good soil quality. However, often the other group members have left the area, and then they have to make the entire fence by themselves. This makes one-year cultivation more lucrative.

**Table 2. Number of households and size of swidden fields in each swiddening group – 2003 season**

Group number	Number of households	Size of cultivated area (ha)
1	2	0.4
2	2	0.4
3	9	3.0
4	12	4.0
5	15	4.0
6	21	10.0
<b>Total</b>	<b>61</b>	<b>21.8</b>

*Source: Direct interview and focused group discussions, Que hamlet, 2003.*

The amount of rice seeds planted on 1 ha of swidden field varies greatly, depending on the steepness of the slope, farmer preferences, soil quality, humidity level, and rice varieties. In most of the cases, between 30-35 kg of seeds are used for 1 ha, but some farmers also stated they used as much as 50 kg/ha. It is necessary, however, to note that 50 kg is actually the amount recommended by extension officers in the commune, but only a few households responded that they used as much as 50 kg of seeds for 1 ha. The average yield of swidden rice in Que hamlet is 1.2 tons per ha. Farmers sometimes also plant pumpkin, gourd, bean, and sweet potato intercrops swidden rice. Table 3 below presents some characteristics of swidden rice cultivation in Que hamlet.

**Table 3. General characteristics of one ha upland rice cultivation (on average)**

		Unit	1 <sup>st</sup> year	2 <sup>nd</sup> year*
1	Amount of seedlings	Kg	30	40-50
2	Yield	Ton	1.2	1.2
3	Labour days	Day	134	130
4	Productivity	Kg/labour day	8.95	9.23

\*: 2<sup>nd</sup> year cultivated on the same area.

*Source: Focus group discussion with 5 women and 5 men, Que hamlet, 2003.*

In Que hamlet, no farmers apply fertilisers on their swidden fields. They explained that because most of the swidden fields in the hamlet are located on steep slopes (30-40 degrees), it is pointless to apply fertiliser since heavy rainfalls during the rainy season will wash away the fertilisers before they are dissolved by the soil surface.

It is interesting that in terms of labour productivity - continuing swiddening the second year in the same field is more beneficial than moving on to a new area. If, for example, a farmer decides to continue cultivating a field one more year, he would only have to spend 20-24 days on weeding during the growing season. The first year the farmer spends twice as much time during the growing season on weeding. However, the second year the farmer spends almost twice as many days on preparing the field for cultivation compared to the first year.

After finishing cultivation of upland rice, some farmers plant cassava or maize on their swidden fields. The majority of farmers, however, plant cassava rather than maize since maize needs quite some preparation of the land and requires relatively good soil quality. Farmers usually use cassava as fodder for chickens and pigs. That is also the reason why farmers do not harvest cassava in a field at one time. Cassava is a crop that be harvested three or four years after being planted which makes it very flexible to use. Some households also eat cassava as a supplement to rice. Yet this occurs only in times where rice supplies are low.

## **2.2. Paddy rice cultivation**

In the year of 2003, 40 out of 69 households in the hamlet have established and cultivate paddy fields in the valley bottoms. The head of the hamlet was the first farmer who began experimenting with paddy rice cultivation in 1999. Cultivating paddy rice is a completely new practice for the households in the hamlet. To solve some of the obstacles in this shift in practice, some farmers hire men from the lowlands to establish and prepare the paddy fields at eligible places along streams where water is most accessible. Nevertheless, farmers in the hamlet complain about the quality of the seedlings, lack of water for the spring crop, and limited land for further expansion.

Farmers cultivate paddy rice twice a year (spring and summer crop). The average yield of paddy rice cultivated in Que hamlet was about 600 kg/0.1ha/year - depending on the variety planted, local or hybrid. Farmers already apply chemical fertilisers for paddy rice, but only very little amount. They normally use manure from cows, buffaloes and pigs to fertilise the paddy field. According to the farmers, the biggest limitation to paddy rice cultivation is lack of water during spring and lack of high quality seeds. Compared to the swiddening system, return to labour is quite low. Rats are also a problem.

**Table 4. general characteristics of 0.1 ha paddy rice cultivation in one year** (on average)

	Unit	Spring season	Summer season
1 Amount of seedlings	Kg	40-50	40-50
2 Yield	Ton	0.3	0.3
3 Labour days	Day	65*	47
4 Productivity	Kg/labour day	4.61	6.38

\*: Farmers spend a lot of time irrigating the field in the springtime.

Return to labour the whole season is: (600 kg/112 labour days) 5.36 kg/labour day.

*Source: Focused group discussion with 5 women and 5 men, Que hamlet, 2003.*

## **2.3. Livestock**

Cattle raising is important for many households in the hamlet. Having cattle is as a kind of an economic safety net for the majority of farmers. In other words, cattle, buffalos, and pigs play an important role to the economy in a great number of households in the hamlet. If the harvest of a crop fails or sickness occurs in the household, they can sell a cattle, a buffalo, or a pig or two to overcome the problem. In the hamlet, one relatively small cow was sold at the price of 2.6 million VND (Direct interview, 2003.) Additionally, cows and buffalos are used as draft power when plowing the paddy fields, carrying things, and even pulling timber from the forest.

Livestock raising in Que hamlet is quite developed. As of December 2003, Que hamlet had 130 cattle, 123 buffalos, 145 pigs, 7 goats and around 1,600 chickens and ducks. In terms of cattle raising and grazing, cattle get their fodder from the forest, swidden area, and wherever they find things edible. During the fieldwork, researchers observed cattle grazing in all sorts of land use and land cover, and most of the time without any herdsman looking after them. Some farmers complained about the cattle grazing in the fallow areas. The first reason was vegetation loss: cattle ate much of the vegetation in the fallow areas, which prolonged the time for vegetation to reach the necessary height before cultivation. The second was benefit loss: one broomgrass trader expressed his frustration about the cattle destroying and eating the broomgrass.

Most households in the hamlet rear pigs and ducks, while all households raise chicken. Pigs are kept in a fenced pigsty and are mostly fed with cassava, banana stems, taro, sweet potato, husks from rice and waste from alcohol processing (made from cassava or rice). One farmer informed that he sold 4 pigs at the price of 1 million VND – a big amount of money for them as well.

#### ***2.4. Forest and Fallow Products***

Collection of products from forests and fallows takes place in most households in the hamlet. People from the hamlet gather the products at any time: on the way to the swidden or paddy fields, when looking after the cattle or visiting neighbors and family. There is no doubt that products from forests and fallow areas contribute significantly to the livelihood of local people in Que hamlet. In order to understand the importance of different forest and fallow products to the local people's livelihood, the researchers set up two focus group discussions: one with 8 women and another with 5 women and 5 men. The discussions focused on why, where and when each forest product was collected - from fallow areas or in the forest. The discussions gave a list of products local people usually collected from the forest. Another list of products collected from fallow areas was also made. Several products collected from one place were found in the other. Tables 5, 6, 7 and 8 show the different products collected from forests and fallows throughout the year; which products are sold to generate income, which are used for own consumption, or both; a ranking of how important the products are to individual households' income and their daily living; which specific household members (men or women) gather what products; and the ratio of male and female work in an activity.

**Table 5. Products collected from the forest (lunar calendar)**

No	Product	Purpose	Month											
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Bamboo shoots (1)	S + C*	X	X	X	X	X	X	X	X	X	X	X	X
2	Broomgrass	S* + C	X											X
3	Local medicinal plant	S* + C				X	X	X						
4	Local medicinal plant	S						X	X					
5	Local edible fruit	S* + C						X	X					
6	Firewood	C	X	X	X	X	X	X	X	X	X	X	X	X
7	Banana (fruit, flower, stem)	C	X	X	X	X	X	X	X	X	X	X	X	X
8	Rattan	C	X	X	X	X	X	X	X	X	X	X	X	X
9	Fish, snail, mussel	C	X	X	X	X	X	X	X	X	X	X	X	X
10	Edible tuber	C		X	X									
11	Pherynium leaf	S* + C												X
12	Bamboo	C	X	X	X	X	X	X	X	X	X	X	X	X
13	Vegetable used to feed pig	C	X	X	X	X	X	X	X	X	X	X	X	X
14	Local edible vegetable	C	X	X	X	X	X	X	X	X	X	X	X	X
15	Chili, pepper	C	X	X	X	X	X	X	X	X	X	X	X	X
16	Egg plant	C	X	X	X	X	X	X	X	X	X	X	X	X
17	Root for betel chewing	S* + C	X	X	X	X	X	X	X	X	X	X	X	X
18	Mushroom	C	X	X	X	X	X	X	X	X	X	X	X	X
19	<i>Moc nhi</i>	C							X	X				
20	Local edible fruit	C								X	X	X	X	X
21	Plant used to make brooms	C	X	X	X	X	X	X	X	X	X	X	X	X
22	Palm leaf	S + C*	X	X	X	X	X	X	X	X	X	X	X	X
23	Root used to make incense	S	X	X	X	X	X	X	X	X	X	X	X	X
24	Plant used for dyeing cloth	S* + C	X	X	X	X	X	X	X	X	X	X	X	X
25	Timber	S* + C	X	X	X	X	X	X	X	X	X	X	X	X
26	Honey (2)	S* + C												
27	Birds, wild animals	S* + C	X	X	X	X	X	X	X	X	X	X	X	X

Note: S: for sale; C: for own consumption;

S\*+ C: amount of the product sold is more than that of own consumption;

S+ C\*: amount of the product used for own consumption is more than that of for sale.

(1): Bamboo shoots are actually collected throughout the whole year, but the major harvest time is in July and August.

(2): Honey gathering happens only infrequently.

**Table 6. Products collected from fallow areas (lunar calendar)**

No	Products	Purpose	Month											
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Local medical plant	S						X	X					
2	Bromgrass	S*+ C	X	X	X									X
3	Egg plant	C		X	X									
4	Local edible fruit	C								X	X	X	X	X
5	Plant used to make brooms	C	X	X	X	X	X	X	X	X	X	X	X	X
6	Banana (fruit, flower, stem)	C	X	X	X	X	X	X	X	X	X	X	X	X
8	Rattan	C	X	X	X	X	X	X	X	X	X	X	X	X
9	Mushroom	C	X	X	X	X	X	X	X	X	X	X	X	X
10	Moc nhi	C							X	X				
11	Plant used to dye clothes	S* + C	X	X	X	X	X	X	X	X	X	X	X	X

Note: S: for sale; C: for own consumption;

S\*+ C: amount of the product sold is more than that of own consumption.

Tables 5 and 6 above show that most of the products (25 out of 27 products) from fallow or forests can be used directly for daily consumption of the households. Specifically, bamboo shoot, *moc nhi*, mushroom, banana, *co pat*, egg plant, honey, and wild animals can be used as food for people; while some other products can be used for other household needs of such as palm leaf for proofing, *day hem* for dyeing clothes, timber for house building, and *khoai mon* and banana for pig raising. Only *Qua Bo* and *Re Huong* cannot be used directly by households, but they are sold to generate income. Of the 27 products, 13 products are sold to generate income

Regarding forest and fallow gathering activities, men and women in Que hamlet work differently. Table 7 shows the specialised tasks of each (man or woman), as well as the work done by both with the specific ratio.

**Table 7. Forest and fallow product-related activities and gender division of labour**

Woman's work	Joint work (done by both man and woman)		Man's work
	Activity	Ratio between man/woman	
Collecting Re huong (Root used to make incense)	Collecting bamboo shoots (dense natural forest, 5 year old fallow)	2/8	Collecting timber
Collecting Khoai mon	Collecting fire wood (everywhere)	2/8	Hunting
Collecting Mon thuc	Collecting mushroom (dense natural forest)	5/5	Collecting honey
Collecting Khoai mai	Collecting broomgrass (mostly from 2-3 year old fallow)	5/5	Collecting rattan
	Collecting root of Chay	5/5	
	Collecting Pherynium leaf	5/5	
	Catching fish	7/3	
	Collecting Day hem	5/5	
	Collecting bamboo (tre, nua)	7/3	
	Collecting Sa nhan	4/6	
	Collecting Qua Bo (a kind of medicine plant)	5/5	
	Collecting Qua Song	5/5	
	Collecting Pet mon	5/5	

*Source: Focused group discussion, Que hamlet, 2003.*

### **III. Forrest and fallow product prices , trading, and distribution channels**

#### **1. Forest and Fallow Product Prices**

Products from forest and fallow areas of Que hamlet undeniably contribute extensively to the living standard of Que people. Notably, their contribution to income generation provides households with the oppurtunity to purchase other goods and needs which are not available in the forest or in fallow areas. Table 8 lists prices of the most important products collected from forest and fallow lands.

**Table 8. prices of the most important products**

No	Product	Unit	Selling price
1	Dried bamboo shoots	VND/kg	12,000
2	Dried broomgrass	VND/kg	2,500
3	Local medicinal plant	VND/kg	7,000
4	Local medicinal plant	VND/kg	5,000
5	Local edible fruit	VND/kg	5,000
6	Pherynium leaf	VND/leaf	100
7	Root for betel chewing	VND/kg	500
8	Palm leaf for roofing	VND/leaf	500
9	Root used to make incense	VND/kg	2,000
10	Plant used to dyeing clothes	VND/kg	500

Note: In exchange, 1 US dollar equals to 15,600 VND, or 1 VND equals to 0.000064 US dollar (as of December 2003).

Source: Focus group discussions and direct interview, Que hamlet, 2003.

Many households are able to sell at least 200-300 kg dried bamboo shoots per year in the hamlet to neighbours and traders at the price of 12.000 VND/kg. Additionally, farmers collect and sell fresh broomgrass (*Thysanolaena maxima*) to traders at 500 VND/kg. The trader then dries the broomgrass and resells it at of 2,500 VND/kg. According to one trader, more than 20 ton of dried broomgrass was collected last year in Que hamlet.

**Table 9. Level of cash income contribution of some main forest and fallow products**

No	Products	Cash income (value) contribution level
1	Bamboo shoot	1
2	Broomgrass	2
3	Local medicinal plant	6
4	Local medicinal plant	5
5	Local edible fruit	7
6	Phyrium leaf	3
7	Root for betel chewing	4
8	Palm leaf for roofing	9
9	Root used to make incense	6
10	Plant used to dyeing clothes	8

Note: Level 1 - Most important; Level 9 - Least important.

Source: Focus group discussions, Que hamlet, 2003.

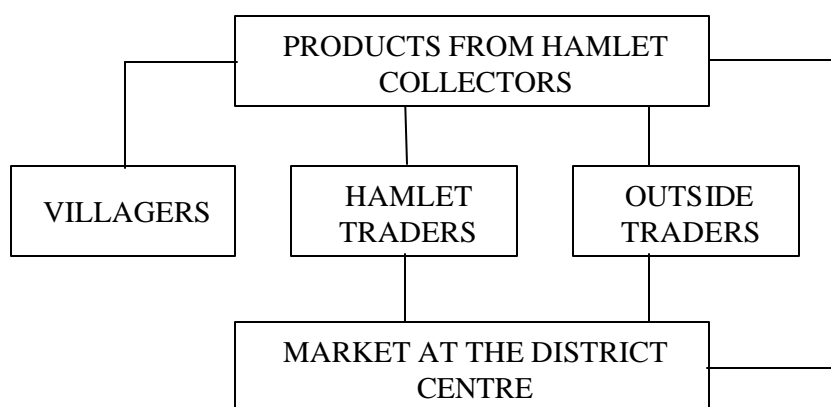
Table 9 shows that bamboo shoots and broomgrass are ranked as the most important income generating products collected in forests and fallow areas. Next are *La dong* and *Re chay*. *La co* and *Day hem* contribute the least among the products mentioned since *Day hem* is getting scarcer, whereas *La co* is mainly used for roofing and seldomly sold.

Broomgrass is primarily collected from 1 – 4-year old fallow areas during the months of December – January. However, the highest quality broomgrass is found in 3-year old fallows. Bamboo shoots are harvested throughout the year, but the major harvest takes place

in July and August. Most bamboo shoots are collected in dense secondary forest and 5 year old fallow areas. Farmers dry bamboo shoots in the sun or put them next to the fireplace in the kitchen area to preserve both quality and taste. During the major harvest of bamboo shoots in July and August, collectors sell bamboo shoots to traders, whereas the bamboo shoots collected in other months are sold to neighbours and other villagers.

## 2. Forest and Fallow Products Trading and Distribution Channels

The products collected by farmers are sold to three types of buyers: (1) Que villagers; (2) Que traders/ middlemen; and (3) outside traders/middlemen. Products bought by other villagers are for own consumption, while products sold to traders are transported to the market in Con Cuong district centre, which is located about 35 kilometers from Que hamlet. Chart 1 below summarises the distribution channels that bring forest and fallow products to the villagers and market.



**Chart 1 - Distribution channels of forest and fallow products collected by farmers in Que hamlet**

Usually, only farmers who own or have access to a motorbike are able to directly bring their collected products to market in the Con Cuong district centre. Other collectors have to sell their products to hamlet or outside traders. Table 10 lists some main kinds of forest and fallow products that are sold to different buyers.

**Table 10. Persons buying forest and fallow products**

No	Products	Buyers
1	Bamboo shoot	Market at Con Cuong District, Villagers, Middleman / Trader
2	Broomgrass	Middleman / Trader
3	Local medicinal plant	Middleman / Trader
4	Local medicinal plant	Middleman / Trader
5	Local edible fruit	Middleman / Trader
6	Phyrium leaf	Middleman / Trader
7	Root for betel chewing	Middleman / Trader
8	Palm leaf for roofing	Middleman / Trader
9	Root used to make incense	Middleman / Trader
10	Plant used to dyeing clothes	Middleman / Trader

*Source: Focused group discussions and direct interview, Que hamlet, 2003.*

There are currently 5 traders in Que hamlet who directly buy products from farmers. In addition, several outside traders purchase products in great quantities in the hamlet and transport them by car or motorbike to bigger markets, e.g. Con Cuong. Traders often generate large profits when reselling the products on larger markets. Table 11 shows how traders and middlemen profit from buying and selling different species of bamboo shoots.

**Table 11. Traders and middlemen profit significantly from buying and selling different species of bamboo shoots**

<b>Species of bamboo shoots:</b>	<b>Traders buy dried bamboo shoots in hamlet at the price of:</b>	<b>Traders sell dried bamboo shoots in Con Cuong at the price of:</b>	<b>Dried bamboo shoots sold at market in Con Cuong:</b>
Nua	10,000 VND/KG	14,000 – 16,000 VND/KG	25,000 VND/KG
Giang	10,000 VND/KG	14,000 – 16,000 VND/KG	25,000 VND/KG
Luong	14,000 VND/KG	18,000 VND/KG	35,000 VND/KG
Tre	14,000 VND/KG	18,000 VND/KG	Not available

*Source: Focused group discussion and direct interview, Que hamlet, 2003.*

#### **IV. Conclustions**

The forests and fallow areas surrounding Que hamlet contain resources and products of significant importance to the livelihood strategy of swidden farmers. These areas provide fodder for livestock raising in the hamlet, which is an important component in the agroforestry system. Keeping livestock can be seen as a guarantee of a certain level of economic security in times of shocks and crisis.

The same areas provide enormous quantities of fuelwood to the households. Fuelwood is collected on a daily basis as the sole source of energy for cooking and heating.

More importantly, some products extracted from forest and fallow areas play a significant role in the livelihood strategy of many households in the hamlet. As a supplement to swiddening, paddy rice cultivation, and animal husbandry, products such as bamboo shoots and broomgrass constitute an important component in the household income, and act as economic buffers in times of insecurity.

These collected products are mostly sold to traders due to their economic value, and traders benefit heavily from reselling these products at district markets. However, when farmers sell these products, households are provided with a cash income which gives them the opportunity to purchase rice, meat, salt, clothing, furniture, construction materials, school books, and so on.

Women are often mentioned as being responsible for collecting forest and fallow products. Nevertheless, this study shows that women and men share almost equally in the burden of collecting products of economic value (see Table 7).

The introduction and encouragement of cultivating paddy rice in the area have not filled the food demands emerging after land re-allocation in the hamlet in 1998, where farmers lost access to land that used to be part of the rotational swiddening cycle. The reason for this failure can be ascribed to the difference in return to labour in the two components. The labour productivity in the swidden system is almost twice as high as in the paddy rice system: 8.95 kg/labour day compared to 5.37 kg/labour day.

Besides the irreplaceable role of forest and fallow products in the livelihood strategy of local people, another point should be mentioned here in order to avoid shortcomings: the application of forest protection policies. In 2000, taking advantage of the application of Decree 163/ND-CP on allocating forestland to local organisations and individual households, local authorities, in collaboration with the District Forest Protection Unit, decided to allocate a fixed area of forest to local people to practise swiddening. This is, according to the local authorities and forest rangers themselves, to prevent further destruction of the forest by local people, and to ensure food security, since the land area suitable for paddy rice cultivation is limited. This “official acceptance of food cultivation on forestland”, gives local people access to the forest. As a result, local people are given more opportunities to exploit certain forest products which, as everyone agrees, are getting scarce.

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