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Changes in the Composite Swiddening System in Tat Hamlet in Vietnam's Northern Mountains in Response to Integration into the Market System

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In 1992, when we began our research at Ban Tat, it was still a very remote and isolated settlement. The narrow road that connected it to the district town was passable only by jeeps or heavy-duty trucks. Only two or three vehicles passed through the settlement each week. People had to walk half a day to reach the nearest market at Cao Son town, about twelve kilometers (km) away from the hamlet. Most household production was for subsistence purposes and trade in commodities was limited to a few essential items and production tools. Like 'a closed autonomous economy', the Tay produced almost all of the things needed in their daily lives and had extremely limited involvement in the larger market system. At that time, almost no manufactured consumer goods were to be seen. There was only one very poorly stocked shop selling salt, matches and kerosene; and prices of these things were quite high. People used kerosene lamps for light within their houses and used bamboo torches when walking outside in the dark. Sale of cassava and bamboo was the main source of cash income.

Today, barely nine years later, the hamlet has become much less isolated. The economy of the whole of Ban Tat has been transformed into a heavily market-oriented one. Seven well-stocked shops offering a wide range of goods have been established, and local people have reoriented their production activities to generate the cash needed to meet new consumption patterns. Several factors have contributed to this transformation. Among these were the improvement of the road and a great increase in motor vehicle traffic. Government policies have also had a major impact. The allocation of long-term land use rights to

individual households, for example, was a major stimulus for change.

A daily bus service today links Ban Tat to the outside world. A private motorcycle-for-hire service easily and quickly takes people to the market at Cao Son. Local people have become deeply involved in the market economy. They have developed much greater dependence on manufactured consumer goods in their daily existence. For example, battery-powered flashlights have almost entirely replaced bamboo torches. Virtually all houses now have electric lights powered by micro-hydropower generators. Many houses have transistor radios and some have television sets. Young people have largely abandoned wearing traditional dress in favor of blue jeans and T-shirts, attempting to follow styles seen on the national television programs. More significantly, being more closely connected to the larger world and subsequently more aware of the real demands of the market, households in the hamlet now devote much of their effort to the production of goods for sale in accordance with market demands. Agricultural patterns have changed accordingly.

Definition of the composite swiddening system

The defining characteristic of composite swiddening as practiced in Ban Tat is that households simultaneously manage permanent wet rice fields in the valley bottoms and shifting swidden fields on the hill slopes and also exploit the wild resources of the forest (Rambo 1998). Similar composite systems are found among the Muong of northern Vietnam, the Shan of Burma and northern Thailand, the Hani of Xishuangbanna Prefecture in southwestern China and the Ifugao of the Cordillera in the Philippines.

For a long time, the Tay of Ban Tat have been 'composite swiddeners'. As Rambo (1998) has observed, the distinctive characteristic of this system is that swiddening comprises an integral component of the total system. It is not a gradually vanishing survival of an earlier, more primitive, pure swiddening adaptation that is in the process of being replaced by more advanced irrigated farming. Nor is swiddening present as a recent response to rapid population growth that has exceeding the carrying capacity of the wet rice fields and forcing people to expand their farming onto the forested slopes. Instead, composite swiddeners such as the Tay have practiced both wet rice farming and swidden agriculture as an integrated system of subsistence for a very long time; certainly for generations and probably for centuries. In Ban Tat, it is said that people employed both systems when they first began to settle the valley at least one

hundred years ago. At that time, the entire area was covered by primary forest and there was ample land on which to make paddy fields in the valley bottoms. Even in the mid-1950s, with only seven households in the hamlet, the area of paddy fields was much smaller than it is now, and good forest land was abundant and free for the taking. Thus, it would have been possible, indeed it would have been very easy, for households to have cultivated only paddy fields or only swiddens. But they chose to do both. Now, of course, their situation has changed.

The Tay cultivate several different types of monoculture swiddens: rice, cassava, corn, canna and ginger. Rice swiddens are the most valued, and that is probably why they are located on the most fertile land available. Other swiddens with less fertile soil are planted with cassava, corn, canna or ginger. Most households cultivate several swidden plots at the same time. Some households have as many as eight different swidden plots under cultivation at the same time, each planted with a different crop.

As shown by many recent changes in response to the market economy, the composite swiddening system is quite dynamic. When we began our study in 1992, only rice (especially glutinous rice) and cassava swiddens were cultivated. As access to larger markets has improved recently and people have learned more about market demand, canna and corn have become important swidden crops and the area devoted to their cultivation has rapidly expanded. Ginger production has also fluctuated due to its unstable price in the market and the problem of protecting this crop from thieves.

In response to its integration into the market system, composite swiddening has evolved to produce more cash crops (such as ginger, canna, corn) in the swidden fields. Collection of bamboo and bamboo shoots from the fallowed swidden fields has also become a major source of cash income. Unfortunately, illegal logging has become another major source of cash.

However, there are many difficulties involved in swidden agriculture. State law prohibits villagers from clearing new areas for rice fields and most of the forest land has been allocated to households for protection. Thus, the swidden fields have been used continuously for many years and the fallow period has shrunk dramatically, causing the quality of soil to become poorer and poorer. As in the paddies, rice swidden fields also suffer crop destruction from stem borers, leaf rollers, stinkbugs and rats.

At present, due to the system of land allocation, the area available to make

swidden fields is very limited. Permission cannot be obtained to clear forest to make more swidden fields. Consequently, local people now cultivate swiddens with shorter fallow periods. Lands are exhausted much more rapidly than before. Ideally, land would be left in fallow for eight to twenty years during a swidden cycle. But now many households cut, burn and plant their swidden fields after only three or four years of fallow. This has a direct negative influence upon environmental security and soil quality.

To meet their food needs and to get the cash they need to buy consumer goods, villagers have to intensify their wet rice or paddy cultivation, as well as grow more cash crops in their swidden fields and tree gardens.

Physical characteristics of the Tat hamlet (Ban Tat)

Located in the mountain and valley realm of the northern mountain region (NMR), Ban Tat's total surface area is 737 hectares. Cultivated land comprises only around 44 hectares, or six per cent of the total land area. The rest of the area of the hamlet, 693 hectares, or 94 per cent of the total area, is covered by natural vegetation. Most of this land consists of hill slopes and mountains, with some extremely steep and inaccessible peaks. Less than 20 per cent of the hamlet's land surface has a slope of less than 25 degrees, and only a few hectares of land are flat enough for the construction of bunded wet rice fields. Ban Tat has a population of 432 persons divided into 91 households (Census 1998). In late 1998, the mean population density of Ban Tat was 58.6 persons per square kilometer.

Apart from the small areas of extremely steep and inaccessible peaks covered with primary forests, and hill tops and ridge lines covered with mature secondary forest with a slight degree of canopy differentiation, most slopes are now covered with swiddens or fallowed plots covered with grasses, herbs and scattered patches of bamboo and small trees (Rambo and Vien 2001).

Ethnic identity of the Tay of Ban Tat

The Tay are one ethnic minority group out of the fifty-four officially recognized ethnic groups in Vietnam. With a population of some 1,190,000 people (Census 1999), they are considered to be the largest of Vietnam's ethnic minority groups. Most of the Tay live in the central and northeastern parts of the NMR and are

divided into several branches based on the specific characteristics of each group in different places.

The Tay in Ban Tat are culturally and linguistically quite distinct from the main body of the Tay. They belong to a smaller, geographically isolated, Da Bac Tay population of approximately 17,000 individuals found only in the province of Hoa Binh, and primarily in Da Bac District. Some ethnologists classify them as a distinct Thai group.

The actual origins of the Tay community of Ban Tat are obscure, but it is said that the hamlet was settled a little over a hundred years ago, when a small group of people belonging to a clan coming from Son La (another province in the NMR of Vietnam) joined with other people already living in the area to form Ban Tat. Although they have long practiced rotational swiddening, these people are not by any stretch of the imagination nomadic. They have lived at the same site and farmed the same territory for a full century.

Changes in the composite swiddening system of Ban Tat

Ban Tat's economy is primarily based on animal husbandry, the collection of forest products and have especially, on farming, including swidden agriculture. Some households supplement their incomes from other sources, such as work as government cadre, occasional employment as wage laborers, shop keeping and handicraft production. In the past, the households were largely self-sufficient in terms of basic needs, but in recent years, owing to closer connection to the outside world, they have become increasingly dependent on the market for the supply of many material needs, even rice. Because of this increasing inter-connectedness, the structure of farms themselves, as well as cropping patterns, are changing in some ways.

Wet rice fields

Ban Tat has a total of 7.6 hectares of wet rice or paddy area, which amounts to around 169 m2 per capita on average (1998 village statistics; Cuc and Rambo, 2000). Almost all of this paddy area is comprised of terraced fields. About six hectares (or 78.9 per cent) of the paddy area is relatively low lying, and is capable of producing two crops (spring and summer crops) per year. The rest of the paddy land (1.6 hectares or 21.1 per cent) is higher and only one crop (summer crop) per year can be grown there. The crop calendar for spring rice is from 20 March to 10 June, and for the summer crop, is from 20 July to 30

October.

Wet rice cultivation activities of the hamlet have changed remarkably in recent years, especially with regard to pesticide use and the selection of rice varieties. In the beginning of the 1990s, pests and diseases, such as stinkbugs, stem borers, and leaf rollers, caused considerable difficulties for wet rice production. The productivity of crops was not ensured. Rats and other mammalian herbivores (*dui*) also destroyed and ate the rice before it could be harvested. There was only one piece of pesticide-spraying equipment in the hamlet and the use of pesticides was still not very common. Now, with relatively easy access to bigger markets and more distant places where pesticides and rat poison are abundantly sold, Tat villagers use these and other chemicals more frequently to protect their fields from losses due to harmful pests, rats and diseases.

At the beginning of the 1990s, local people cultivated only traditional rice varieties (glutinous and non-glutinous) in their paddies. In the view of local people, these varieties are of good quality, but they produce very low yields. Among the six traditional varieties of glutinous rice and seven traditional varieties of non-glutinous rice cultivated, the average yield is only 1,112 kg/ha/crop if planted in paddies. The productivity of the spring crop is usually higher than that of the summer crop. Surveys conducted in 1998 showed that most households had shifted to using new high-yielding rice varieties such as *CR203, Tap giao 5*, C70 and *Chiem den* to cultivate in their paddies. Information on yields of some rice varieties in Ban Tat is shown in table 23.1.

Early in the 1990s, villagers used only manure from water buffaloes and pigs to fertilize their paddy fields. They did not even know about chemical fertilizer. In recent years they have started using chemical fertilizers. The 1998 survey investigated the use of chemical fertilizers such as urea, phosphorous, and potassium in Ban Tat. The data showed that, on average, the Tat villagers used 6.88 kg urea/1,000 m^2; 31.68 kg phosphorous/1,000 m^2; and 3.2 kg potassium/1,000 m^2 (derived from Table 3-11, Cuc and Rambo 2000).

Table 23.1 Yields of some paddy rice varieties in Ban Tat

Seeds	Yield (kg/ha/crop)	No. of households growing the variety
CR203	1,326	19
Tap giao 5	2,140	40
C70	2,290	30
Chiem den	1,120	5
Local seeds: Khau khuong, khau pha tro	1,112	5

Recently, although the total area of paddy land of the hamlet has increased slightly, the amount of paddy land per person has actually been decreasing. Villagers have utilized the foothills and the lands along a stream to make new terraces. This expansion of paddy fields was not done solely to meet the food needs of a growing population, but also to produce a surplus to sell in the market as people became increasingly aware of marketing possibilities. Both their need and their desire for a wider range of consumer goods has increased, stimulating them to strive for high cash incomes by intensifying agricultural production in the paddies.

Swidden cultivation

Swidden cultivation is the main type of agricultural production in Ban Tat. According to village statistics, the total area for swidden agriculture in the hamlet was 47.25 hectares, but the actual swidden area is much bigger, because local people use the term 'dry rice' instead of `swidden` when they have to report to the village leader. One hamlet leader said that he estimated the area under swidden cultivation was at least about 63 hectares. This figure matches data that we collected in our 1998 survey.

Swiddens can be divided into several types, as follows:

Rice swidden

In 1998, there were 12.5 hectares of rice swidden fields, occupying 19.92 per cent of the hamlet's total swidden area, which amounted to around 5,400 m^2 per household, on average. Rice swiddens are planted in late May and harvested in November.

The crop varieties planted in the swidden areas are rather diverse. We found twenty-two varieties of rice (both non-glutinous and glutinous), but most households plant only five or six varieties in their swidden fields. All are local

Table 23.2 Area and productivity of different types of swidden in 1998 in Ban Tat

Swidden type	Area per household (m^2)	Productivity (ton/ha)
Rice	5,400	0.85
Cassava	1,900	9.70
Corn	1,750	0.50
Canna	1,550	6.80
Ginger	420	3.40

varieties. Small quantities of squash, pumpkin, taro, maize and other vegetables are interspersed with the rice around the field hut in the swidden.

Beyond their labor input and seed, local people do not make any investment in manure or chemical fertilizer in their rice swiddens. The yields of rice swiddens fall dramatically after the first year. On good soil, in the first year people can get in to about 1.5 ton of dry grain/hectare. In the second year they get about one ton, and by the third year, they get only about 0.4 to 0.6 ton/hectare. On poor soil, in the first year people can get about 0.8 ton of dry grain per hectare, but in the second year they get only about 0.1 ton per hectare, or even less.

Corn and canna swidden

Corn and canna have similar yields and economic value. Recently, since people learned of the great demand for canna (which is used to make a clear noodle that is a very famous traditional food in the lowlands), they have begun to grow canna for sale on a large scale.

The area for corn is estimated around 15 hectares, which amounts to, on average, about 1,750 m^2 per household. Varieties of corn are local varieties. They are usually cultivated in fields with good soil located near a stream or other water source. Beyond labor and seeds, people do not invest in any fertilizers for their fields. They do not yet use high-yield varieties, because new varieties need investment for both manure and chemical fertilizers. Productivity is also low if compared to the Red River Delta. It is around 0.5 ton of dry grain per hectare, but in some areas it can reach 1.2 ton per hectare. Seeding takes place in March and harvesting in mid-June.

Canna first appeared in the hamlet more than ten years ago, beginning with a small area. Now most households in the hamlet cultivate it. The total area for canna in the hamlet is 2.7 hectares, which amounts to around 1,550 m^2 per household. Productivity is around 6.8 tons of fresh tuber per hectare. There are two main varieties: one is *dot* (local name), that has tubers that look like ginger tubers; the second one is called *hoang tinh* (local name). Almost all areas for canna are cultivated with *dot*. People usually plant it in February and harvest it from November to December to sell to traders from the lowlands.

Cassava swidden

Cassava is often planted on nutrient-depleted soils. It is always planted on the swidden fields after one or two crops of corn and canna have been harvested. Before 1986, when there was still some old-growth forest and the soil was still

good, villagers would grow cassava in the third year of their agricultural cycle after one or two years of growing rice. At that time, cassava was grown for household consumption, winemaking, pig fodder and for sale to the government through the cooperative system. The villagers also used cassava to pay their taxes, using a certain amount of cassava to substitute for the standard amount of rice. Today, because of easier access to the market, villagers grow cassava for sale and purchase rice with the money they make, since they prefer to eat rice. Even though the price is low and the market is unstable, the villagers still grow cassava for sale.

All households in the hamlet cultivate cassava, planting a total area of more than 15 hectares, which amounts to around 1,900 m^2 per household. People usually plant cassava after the Tet holidays, in February, and harvest it in November. On average, productivity is around ten tons of fresh tubers per hectare. In good soil, people can get up to fifteen tons of roots in the first year, and about ten tons per hectare in the second year. All of the leaves and stems are deposited on the fields. As in other swiddens, apart from their own labor input, people only add seedlings cut from cassava stems.

Ginger swidden

Villagers often grow a small amount of ginger in their swidden fields and in home gardens. But in 1995, there was a large demand for ginger in Japan and the price went up to VND 2,000 per kg. At that time, many households planted their entire swidden fields with ginger for sale. Soon after that, however, the price of ginger rapidly fell to only VND 700 per kg, due to instability in the Japanese market. This sudden drop in the price of ginger caused economic difficulties for the many local people who had allocated much of their crop land to ginger production. Theft of ginger roots from unguarded swiddens is also a constraint on production of this crop.

Two varieties of ginger are planted, both from the lowlands. One is normal ginger (*gung te*), and the other is glutinous ginger (*gung nep*).

The area for ginger is now about 1.6 hectares, which amounts to, on average 420 m^2 per household. Productivity is around 3.4 tons of fresh tubers per hectare. Beyond labor and pieces of tuber used as seed, people do not add anything to their ginger fields. Ginger is planted in February and harvested in December.

Minor swidden crops

In addition to the above-mentioned crops, the villagers also grow taro,

pumpkins, squash, beans and green vegetables in their swiddens. Taro is sold and its leaves are used for pig food. In the past, taro was sometimes planted with swidden rice or corn. Now it is grown separately and in small quantities, because there is no market for it. Most minor crops are cultivated for home consumption.

Tree gardens (or forest gardens)

Some households have established tree gardens in the lower parts of hills located just above their houses or near streams. Some of the tree species observed were melia, palm, styrax, and bamboo, among which melia is predominant. Melia is grown for use at home and for sale. Palm leaves are grown as a roofing material. Melia is planted at the same time as the first year rice crop. Later, people grow cassava, following the rice crops in between the small trees. Thereafter people stop cultivating agricultural crops, as the trees become bigger and their canopy shades the spaces between the tree rows. Melia takes about seven to eight years before it can be cut. Some farmers have shown interest in tree gardens. Others, however, who have large families, continue to swidden. Households have tree gardens with areas between 140 m^2 and 4,000 m^2 per person.

Home gardens

Almost all households have small home gardens. Home gardens are located around houses. A variety of trees make up the home garden and the biodiversity is rather high. Some of these trees include litchi, longan, jackfruit, orange, mandarin, bananas, papaya, pomelo and lemon. Some vegetables can be found in the gardens, but they are not popular. The economic benefit that households get from these gardens is very low. Some households also apply manure and phosphorous to the fruit trees in their home garden. People do not know about the productivity of their trees in the home garden and almost all products from home gardens are for home consumption.

Local government, with support from some development projects, is just starting to try to improve home gardens by introducing suitable fruit trees that can contribute to the household economy.

Collection of forest products

All households in the hamlet collect many products from the forest. When we walk around the hamlet, we frequently meet people carrying firewood, medicinal herbs, bamboo shoots, bamboo or bundles of broom grass. Some of the many forest products collected and the uses that are made of them are presented in table 23.3.

From observation we came to realize that many Tay men have become illegal

Table 23.3 Forest products collected by households

Kind of forest product	Per centage of households utilizing forest product for different purposes		
	For sale	For home use	For sale and home use
Wood	30	40	30
Fuel wood	0	100	0
Bamboo	47	18	35
Bamboo shoot	16	32	51
Mushroom	7	46	47
Medicinal herb	5	95	0
Broom grass	66	17	17
Other (leaves,...)	80	0	20
Wild animal	0	57	43

loggers, seduced by the easy money they can get from outside timber dealers. Young men want to purchase motorbikes, TVs and the other manufactured goods that they see the lowland people have. Perceptions of life styles in the lowlands have a serious influence on the people of Ban Tat.

The increasing need and desire of Tat hamlet people for cash has changed the character of the collection of forest products in recent years. Bamboo shoots and mushrooms were formerly collected primarily for home consumption. But now, because of the stronger connection to the wider world, people mainly sell them to traders. The aromatic root of one kind of forest tree, called '*vu huong*,' was neither used nor sold before. But since 1997, we have met many men who go to the forest to look for these roots in order to sell to Chinese traders, who sell them for medicinal purposes. Within a period of one month, there were almost no '*vu huong*' trees remaining in surrounding forest areas. The collection of forest products used to be orderly and limited. But now people gather whatever resources they think will bring benefit to them. This is a very big and very important change that has taken place in a very brief period of time.

Sideline occupations

A small per centage of households engage in some sideline occupation on a part-time basis. Sideline occupations include working as cadre for the government (7 per cent of households), shop keeping (7.1 per cent), wage labor (12 per cent), motorbike-for-hire drivers (2.4 per cent), and production of handicrafts. It is obvious that without connection to the outside world, no such jobs would exist. This leads to corresponding changes in the labor structure of agricultural activities.

Table 23.4 Cash income and sources per year of the Tay

Source	Per centage of income in hh's total income	Average income per hh (VND'000)
Agricultural crops	22.1	738
Livestock	20.7	690
Timber from tree garden	1.1	38
Timber from forest	4.0	133
Non-timber forest products	23.6	786
Wage labor	1.7	56
Handicraft	0.1	32
Shop and service	9.3	310
Government salary	10.0	333
Government pension	2.2	74
Government assistance	4.2	138
Total	100.0	3,328

Household incomes

It is impossible to meaningfully compare the incomes of the Tay in Ban Tat - a remote highland community - to those of people in the lowlands. However, the sources and the size of Tay incomes usefully reflect the changes in this community since the increase of both economic and social relations with other people in different places. Table 23.4 shows us their cash incomes and the sources of these incomes per year (data collected in 1998).

Of various cash income sources, the sale of timber and non-timber forest products is the most important, accounting for 27.6 per cent of the total income of a household. But these figures include amounts from the sale of illegally logged timber. Sale of agricultural crops is the next in importance, accounting for 22.1 per cent of total income. Of this amount, 55 per cent is derived from swidden crops and 45 per cent from wet rice agriculture.

Conclusion remarks

As an important part of its national development strategy, the government of Vietnam has directed special attention to the problems of upland development. Very significant resources have been devoted to a large number of ambitious programs and projects in the uplands of Vietnam. At the heart of these efforts has been a sustained effort to encourage ever-closer connections between people living in remote mountainous areas and the people and activities of the lowlands.

These efforts have had a very big impact on the uplands and, in recent years,

the rate and extent of change resulting from this effort have dramatically increased. The mountainous region is developing day by day. The lives of most upland people are improving in many ways. And people living in communities that just ten years ago were relatively remote and isolated are now adjusting their productive activities in response to distant markets. These growing linkages between communities like Ban Tat and the outside world are leading to great changes in the mountainous regions of Vietnam. Farming systems are changing, as we have discovered in Ban Tat. But change is extending far beyond farming systems.

This broader change is beyond the scope of this chapter, but it has become very clear to us that change is taking place in the entire livelihood system of Ban Tat. The composite swiddening system we have been studying must be understood within this broader context. Labor structure, consumption patterns, how people dress, the entire way of life and the nature of the community itself are changing.

It has also become clear to us that while bringing much improvement to the lives of the people of Ban Tat, these changes are exacting a high cost. There are negative impacts on the natural resource base, on levels of biodiversity and on the maintenance of soil fertility levels. At the same time, changes are also taking place in the social structure, in aspirations and even in identity. Integration into the market system is only one dimension of a much larger set of interconnections with the outside world that are transforming Ban Tat and threatening its environment. As its people are driven to more and more intensive exploitation of the natural resources around them, they are creating an imbalance in the ecosystem on which they depend for survival.

Through our studies, we have come to appreciate an increased need for awareness and understanding of this growing interconnectedness and of its impact. The types of changes that are taking place in Ban Tat are happening all around the world. Attention must be directed beyond market relations, consumption patterns and the technology required to keep intensifying production. People in Ban Tat, and many millions of other people like them in the northern mountain region, need the benefits that development can bring. But it must be recognized that this quest for a better standard of living brings with it a growing need for more widely shared concern with sustainability and a more widely shared awareness of the growing extent to which we are all dependent on each other and on the complex web of relationships that constitutes our environment.

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