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Introduction and Growth of Betel Vine Cultivation in Tentleberia

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テントルベリア村におけるベテル栽培の導入と発展

荒　木　一　視*

CONTENTS

Preface

In this study the author turned his attention to the growth of betel vine cultivation in Tentleberia, a village in the lower reaches of the Hooghly River, Medinipure, West Bengal, india. The first half of this paper focuses on betel cultivation and the latter half investigates the mechanism of the introduction process of betel.

There have not been many studies or reports about the betel vine cultivation of India. In Japan Usami(1989) is the only one to my knowledge. Usami focuses on analyzing the socio-economic structure of a highly commercialized village through the case study of Dariala village in West Bengal. He minutely investigated the cost and income of betel cultivation and price of betel leaf in the markets.

In contrast to Usami's study the author put more emphasis on the introduction process of betel cultivation. The important point was what had changed through this introduction or been transformed and why. The mechanism and background of the change were elucidated through the discussion of the invasion process of market

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economy over the Indian rurel village in this 25 years.

The research study of Tentleberia was held during October and November in 1992.

This study referred to "Marketing of Betel Leaves in India" edited by Directorate of marketing and inspection, Ministry of Rural Development, Govrmment of India(1983) about the statistics of betel vine on the Indian side and also referred to Yonekura ed.(1973) about village date in last survey of 1967.

I. Betel leaf vine

Betel vine belongs to the family *piperaceae* and the places of origin of this plant are India, Sri Lanka, Malaysia and Indonesia. The geographical distribution of this plant covers with tropical Asia, Madagascar and eastern Africa. It is called *kinma* in Japan and *pan* in India.

Leaves of betel vine are chewed along with arecanut and lime as a masticatory. This habit is so widespread in India that betel leaves are an integral part of Indian traditions and intimately connected with the economic and cultural life of the Indian people. The estimated area and production of betel leaves in 1980 are presented in Table 1. Betel vine is grown mostly in the southern states of India, such as Tamil Nadu, Karnataka and Andhra Pradesh and western states, such as West Bengal, Nagaland and Assam. On the whole southern states show higher productivity than western states. One of the reasons for this difference may deped on the varieties of betel vine. In West Benal the dominant varieties are *Bangla, Sanchi, Mitha* and *Kali Bengal.* The details of these varieties are shown in Table 2.

II. Betel cultivation in Tentleberia

Methods of betel cultivation are strange to us, so in this chapter the author descrides the cultivation of betel vine in Tentleberia in details.

The agricultural calendar of betel vine is shown as Figure 1, in case of *Mitha* which is the most popular variety of this village. Generally the price of betel leaves rises up in winter and subsides in the monsoon and post-monsoon season. The *Mitha* variety needs to be supplied water in summer and soil in April and Sepermber. In addition to this, September is the month when the sunshades of betel vine need repairing, so the need for labour is increased in this season.

Table 1 Estimated area and production of betel leaves (1980)

state	Area (ha)	%	Production (Lakhs)	%
Andhra Pradesh	2868	8.53	343695	13.57
Assam	3080	9.16	13675	0.54
Bihar	685	2.04	52213	2.16
Karnataka	6682	19.87	400920	15.83
Kerala	1231	3.66	64012	2.53
Madhya Pradesh	531	1.58	1692	0.07
Maharashtra	3500	10.40	78545	3.10
Nagaland	3517	10.45	700	0.03
Orissa	1750	5.20	76000	3.00
Rajasthan	35	0.10	360	0.01
Tamil Nadu	5348	15.90	1176560	46.47
Tripura	200	0.60	1785	0.07
Uttar Pradesh	2000	5.95	60000	2.37
West Bengal	2000	5.95	250000	9.88
Arunachal Pradesh	8	0.02	2	neg.
Goa, Daman & diu	65	0.20	435	0.02
Mizoram	71	0.21	26	neg.
Pondicherry	59	0.18	11328	0.45
all India	33630	100.00	2531978	100.00

Table 2 Characteristics of different commercial types of betel leaves grown in West Bengal

Type /variety	colour	Length (average in cm)	Breadth (average in cm)	Taste	Aroma	Texture	Thickness	Chewing quality	Keeping quality
Bangla	green	10－15	7－12	Pungent	non－aromatic	fine to coarse	thin to thick	can withstand excessive mastication	10－25 days
Sanchi	deep spotted green	10－15	6－10	Pungent (hot)	Camphor like	med. coarse	thin	delicate	15－30 days
Mitha	Blackish green	10－15	6－10	Sweet	non－aromatic	med. coarse	thick	delicate	15－30 days
Kali Bengal	Blackish green	10－18	8－12	Pungent	non－aromatic	coarse	thick	can withstad excessive mastication	15－30 days

bengal calender	Poush	Magh	Phalgun	Choitro	Boisha	Joystro	Ashar	Shravon	Bhadro	Assim	Kartik	Ogrohayon	Poush
month(12)	1	2	3	4	5	6	7	8	9	10	11	12	1
wholesale price in Calcutta* (Rs)	27.00	22.50	21.00	20.00	17.50	15.00	13.00	11.00	17.50	20.00	22.50	23.00	

planting : .....
soil supply : ═══
repairing boroj: •▬••▬

* Baithak Khana Market, 1980, Medium size

Fig. 1 Agricultural calender of betel vine

Betel leaves can be harvested year around but not in the first six months after planting. In the next six months the betel garden yield no profits because the vine is so young that small profits are countervailed by maintenance fees. It takes about one year after planting until the vine begins to yield profit.

Before planting betel vine the cultivator must make the land high since wet land is not suited to betel cultivation. The ordinary way of making high land is by dividing low land into two parts and on the one side digging soil to heap on the another side. Making two *katha* of high land costs 1500 rupees and 60 man-days. But this does not include the cost of the soil. If the operator did not have enough soil, he might spend 150 to 200 rupees for 1000 cubic feet of soil.

The next opration is the making of the *boroj* (see Photo 1). *Boroj* is a sunshade for the betel vine and veils it on all sides like a shanty. Making *boroj* on two *katha* high land requires 200 pieces of timber (800 rupees), 20 pieces of bamboo (500 rupees), 80 sheaves of straw(1280 rupees). For only this operation the employer has to pay 28 rupees per labourer per day, beside the 25 rupees paid for other operations of betel cultivation. And 1500 seedlings are needed for two *katha* of new field. The cost of one betel seedling is two rupees for the standard *Mitha* variety but seven rupees for early the repening semi-variety.

The betel garden needs constant maintenance. The maintenance cost is divided into four categories. The first category is the paymant for labour. Generally the employer must pay 25 rupees for one labourer per day including two maels,though the

payment for other general labour is only 22 rupees in this area. They say this distinction is due to the special skills of betel cultivation. The second category is the maintenance of the *boroj*. It costs 1000 rupees or more per year to renew the straw and as well as the *khari* that is used for propping up the betel vines for a two *katha* field. The cost for fertilizer and agricultural chemicals are included in the next category. This cost varies according to the methods of the cultivator. But 1000 to 2000 rupees are need per year except in the case of those cultivators who use no fertilizer and chemicals. The last is the cost of soil. 1500 cobic feet is needed for two *khata* field per year and it costs about 200 rupees for 1000 cubic feet. This soil is using for bury the betel vine. When the vine has creeped up the top of the props, the vine is taken off props. Then the tip of betel vine is set on the lower part of the props again and the rest of the vine is buried under the ground with new soil (see Photo 2). The cultivator keeps readjustiong the vives on the props continually and the ground level of betel garden rises higher every year. The higher ground level indicates an older garden. Eventually the ground level will rise up to the height of the farmer's pointed finger in Photo 3.

In contrast to expenses, the following are the income from the betel vine. Usually betel leaves are shipped by units nemed *goach*. It means a sheaf and includes 50 to 60 leaves of betel vine. It is possible to yield 40 *goach* per month in two *khata* field. In 1992, 20 goach sold for 100 to 150 rupees on the average, 400 rupees maximum and 25 rupees minimum. As a whole they get a net gain of 100 to 150 rupees a month down from 200 rupees then years ago. This is because the price of betel leaves have changed little in these two decades. Twenty years ago 20 *goach* sold for 70 rupees and in this decade the price has not risen. In contrast to this, the cost of maintenance has risen rapidly, for example the cost of one kind of organic fertilizer is 3.5 rupees per kilogram but was one rupee ten years ago and the cost of another fertilizer is 3.9 rupees per kilogram but only 0.6 rupees 20 years ago.

III. Growth of betel cultivation

There were no betel cultivating farmers in 1967 in Tentleberia. But in 1992 our survey listed 61 households who cultivated betel vine. It can be considered that some change has been experienced on the agricultural structure in this 25 years. In fact in the 1970s about one third of the village land was purchased by P.H.E(Public Health

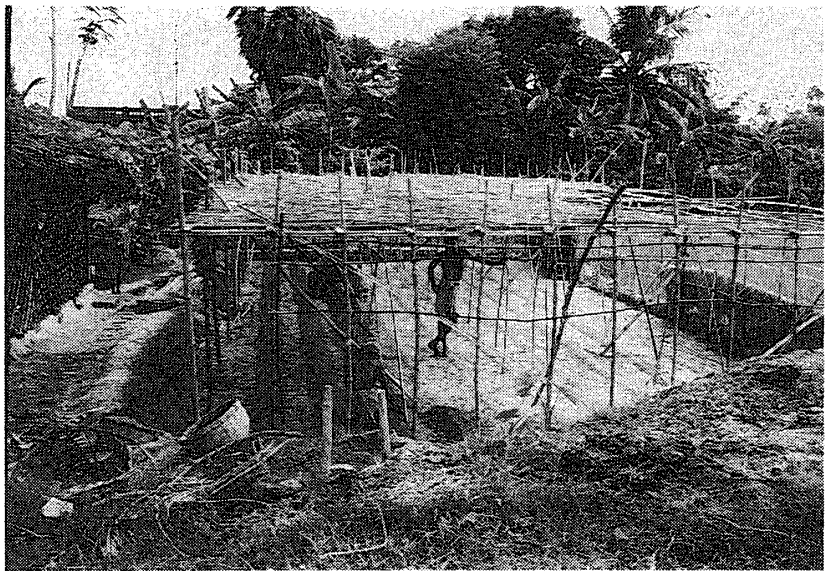

Photo 1

Photo 2

Photo 3

Engineering). P.H.E. was a gigantic water treatment plant for Haldia industrial water supply and its capacity was 20 million gallons per day. It was constructed between 1981 to 1992, at the cost of 44 crore (one crore = 100 lakhs = 10,000,000) rupees. This expropriation is considered to have caused farmers in this village to choose crops that have higher productivity than the crops cultivated up to that time. With this as a background the author investigated the introduction process of betel vine by looking at each cultivating household on a micro scale.

1973 was the year betel cultivation was introduced in Tentleberia. The first household was Seni's family who migrated in 1971 from Ichapur village. At first they purchased 2.25 *bigha*(45 *katha*) low land because they ware new comers and had no land. At that time the purchasing price was 4000 rupees per *bigha* and they raised the money by selling the land that they had in the previous village. Then they made that land into roughly ten *katha* high land and 16 *katha* low land and started betel cultivation on the high land. In 1973 they built up two *boroj* on the seven *katha* high land. In 1975 they added five *katha* more high land and built up two more *boroj*. And in 1976 they started to construct their new two-story house with *pucca* horizontal roof and next year they finished making the house which is called a betel mansion. Between 1979 and 1981 their land was also expropriated and they purchased another 4.5 *bigha*(90 *katha)* low land. In 1987 Seni's family separated into three families but the families continued betel coutivation despite some troubles.

After Seni's introduction some other farmers started betel cultivation. Jharu Pramanik is the second man to engage in betel farming in this village and Sachin Pramanik is the the third man. These two persons were lived near Seni's familly. According to the interview of Sachin Pramanik, the economic factor was the main reason for cultivating betel. He said that Seni got a lot of money from betel leaf so he tried to start cultivating betel. In the 1970s 14 households were confirmed to have begun betel cultivation in this village by our follow-up survey. During this period the engaged households were found to be in southwest part of the village where Seni's family lived (Figure 2). In early the 1980s the distribution of engaged households spread north and east and this tendency continued until late in the 1980s. Today we can see betel cultivation all around the village.

Accouding to figure 2, the betel cultivation diffused rapidly in one decade after its

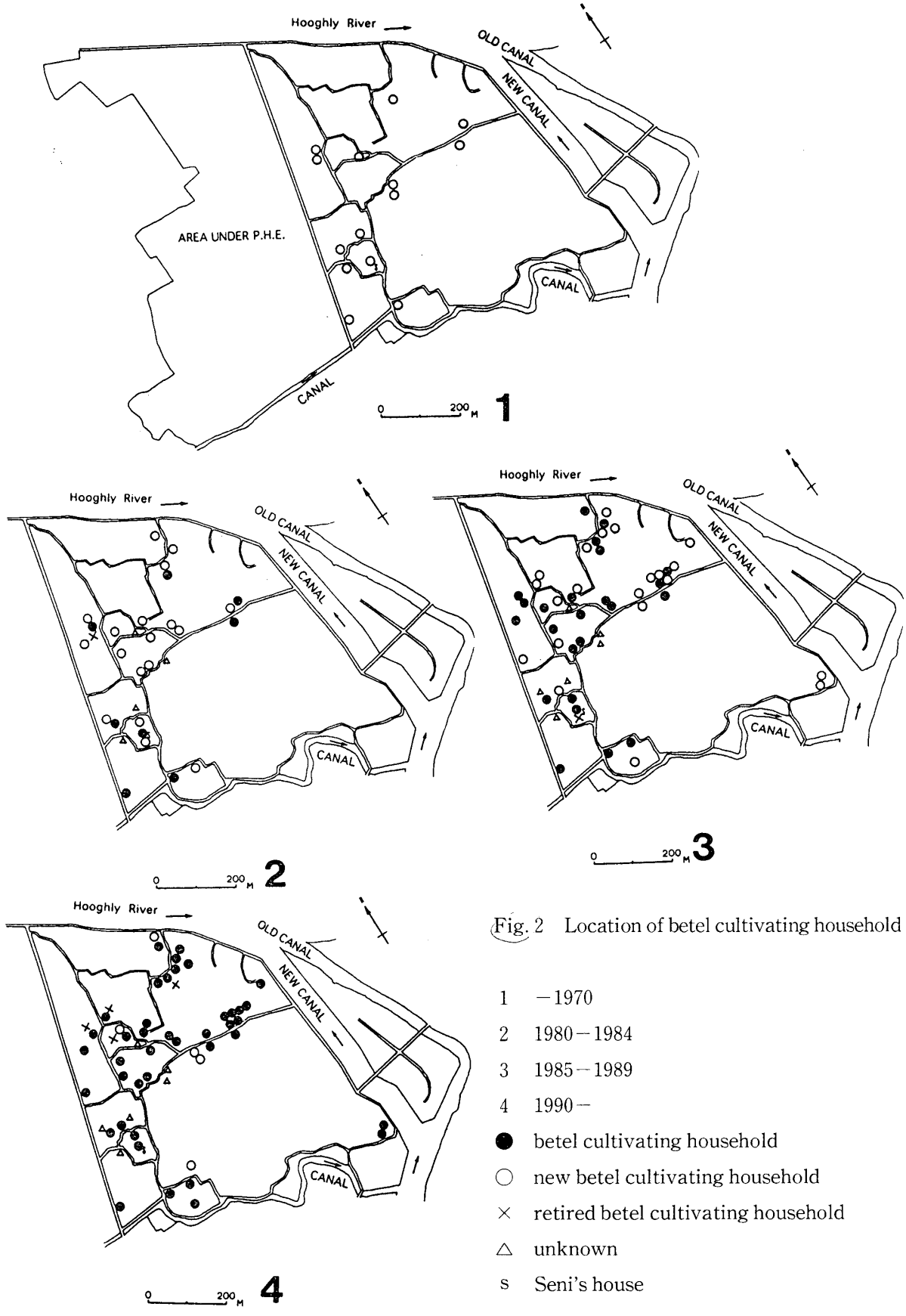

Fig. 2 Location of betel cultivating household

1 −1970
2 1980−1984
3 1985−1989
4 1990−
● betel cultivating household
○ new betel cultivating household
× retired betel cultivating household
△ unknown
s Seni's house

first introduction to this village. It followed the biggest event of this quarter-century, the expropriation of land for 4000 to 6000 rupees per *bigha* by P.H.E..

In this process there were persons who preformed an important roles. They were instructors or advisors as we understand it. Betel cultivation requires specialized skills for cultivators. Twenty years ago betel vine cultivation skills were unknown in Tentleberia. The man named Tulsi Das was the first man who imparted knowledge of betel cultivation to this village. He was a villager of Hadia 30 kilometers away from Tentleberia which had the longest traditional of betel cultivation in Medinipure district. His instruction continued for about ten years and 20 villagers learned from him in Tentleberia. His brother, Sudharson Das, and about ten other persons came from Hadia village to teach betel cultivation. The villagers of Tentleberia paid for this instruction, for example Subadh Seni the first man to cultivate betel vine in this village paid all living expenses, including food and three rupeers per day to Tulsi Das the first man to impart knowledge of betel cultivation. Thereafter this three rupeers raised to five rupeers per day. There could have been no introduction of betel cultivation without this transfer of skills.

Today there are no instructors from other villages, because some of the villagers have mastered the skills tolerably enough to instruct others within the village. Since the late 1980s betel cultivation has been established in the village. Farmers who started betel cultivation since this time could learn the skills from villagers. Such a villager was a betel labourer in many cases. Independent betel farmers do not usually work in another farmer's betel fields. Only laborers have the chance to work at various betel fields. And such laborers could be medium of transmitting betel cultivation skills. The author surveyed three expert betel cultivators of this village: Shyam Barai, Dharma Dalai and Kshudiram Mondal. They have over 15 years experience of betel cultivation and know the circumstances of betel labour in this village and how to gather and employ laborers. The farmer who wants to start betel cultivation would ask advice of such persons rather than of his relatives or his friends. But they are not always independent farmers and are rather laborers of betel cultivation. As for experts of betel cultivation, Seni is a expert but hi does not teach skills to other villagers. He is a independent farmer and not a labourer of betel culture. There would have been no rapid growth of betel cultivation without such expert labour.

IV. Mechanism of betel introduction

The ordinary way of classifying farmers was by area of low-land land holding. The number of households engaged in betel cultivation is shown in Table 3. According to this table we can see the households engaged in betel cultivation in all classes of landholding. There is no remarkable concentration in any class. We can racognized a slight trend in that the bigger land holders have bigger betel cultivated areas, but there are two households who cultivate ten *katha* in the group that have no low-land.

In addition to this there is one household who cultivates eight *katha,* two household who cultivate six *katha* and others who are landless. We can also find the biggest betel farmers who cultivate 15 *katha* in the group of farmers who have only two to three *bigha* of low land and one to two *bigha* of low land. This prove that farmers who belong to the lower classes in the usual landholding structure can get more income from betel cultivation than higher classes engaged in usual paddy cultivation. Indeed it is possible to get 15000 rupees profit from five *katha* of betel land per year. And this profit is the same as the *karif* profit from ten *bigha* paddy land of high yielding variety. It seems that betel cultivation has no relation to usual landholding class system.

But the introduction of betel cultivation is not so easy because, as mentioned above, much money was needed in making *boroj* and learning the skills of betel growing. So it is impossible for villagers to starting betel cultivation without prospect of great returns or plenty of savings. The author investigates the mechanism of the introduction of betel cultivation in this chapter.

Table 3 Number of household by holding area (law land)and number of betel cultivating households

area (bigha)	number of households	number of betel cultivating households of each size of betel field (katha) 0-, 1-, 2-, 3-, 4-, 5-, 6-, 7-, 8-, 9-, 10-, ?, total													betel total /lowland total (%)
0	101	1	3	6		1	2	2		1		2		18	17.8
0-0.5	31		5	1		1	2	1		1				11	35.5
-1	11			1		2						1		4	36.4
-2	26		1	3	4	4	1					2		15	57.7
-3	8			1			1		1			1		4	50.5
-4	13						2		2			1	1	6	46.2
-5	7											1		1	14.3
-10	4						1					1		2	50.5
10-	201	1	9	12	4	8	9	3	3	2	0	9	1	61	30.3
total															

Some aspects were considered as the possible reasons for this introduction. In the early years, that is in the 1970s, big returns from betel leaves could be considered the main reason of the betel introduction, as farmer S. Pramanik attested. There are no reports of household economy of this village for these days. But among the early betel -cultivating households we can indentify some families who built new block houses after a few years of betel farming. There are 16 households who lived in *pucca* house, that is block houses with horizontal roofs (see Table 4). Though *kacca* houses, with mud walls and tiled or thatched roofs, are the popular style in this village, *pucca* houses are the symbol of wealth. Eight of the 16 *pucca* householders were engaged in betel cultivation. Three of the eight are Seni's family and the other five households belonged to another family that was a subject of this research. Seni was the first man to introduce betel cultivation in 1973 and the latter family had started betal cultivation about 1975. Since then there have been no other betel farmers who built *pucca* houses. During this initial period betel cultivation was profitable as villager told villager that betel cultivation was a lucky business.

But today things are different. As mentioned abouve the costs of betel cultivation have increased greatly but the returns have not gone up so much. Our next cuncern is why villagers took up betel cultivation in the early 1980s (as shown in Figure 2) and how the villagers got enough money to start betel cultivation. The big reason the P.H.E. projects done during these 20 years. It is natural to suppose that the villagers whose low land was expropriated then chose a more intensive and profitable form of agriculture. Before P.H.E. the straw business was extensively carried on in this village. The straw from paddy fields was gathered and purchased, shipped by boat to calcutta, and sold in the Calcutta markets. But after P.H.E's expropriation the land under paddy decreased somewhat and the production of straw also decreased.

Table 4 socio-economic aspect of betel cultivating households

	number of households	solding land		loan		
		number of households	average of area	number of households	average of amount	number of *pucca* house
total	201	84	4.35 bigha	68	5291 Rs	16
betel cultivated households	61	34	5.27 bigha	32	6793 Rs	8

Seni's experience is the most typical of the village. The existence of new crops to replace of straw appeals to them. As Table 4 shown, 84 of the total 201 households (41.8%) sold their agricultural lands in this village. In contrast to this, 32 of the 61 betel－cultivating households had sold land (52.5%). And while the average area sold per household is 4.35 *bigha* but the average for betel cultivators was 5.27. The betel cultivating group surpassed the average both in number of households and the area expropriated by P.H.E.. These defferences can support the argument of a connection between betel introduction and land expropriation.

Loans also support the hypothesis of preinvestment. According to table 4 the number of households who got loans is 68 of the total 201 households (33.8%) but 32 of the 61 betel cultivating households (52.5%). This shows that the betel farmers depend on loans more than other households. It indicates the amount of money used in betel introduction and the way the farmers got funds. According to these facts, it could be considered that the loan and the indemnity from P.H.E. had been appropriated for starting up betel cultivation.

The need for labour for betel cultivation increased considerably. An appropriate labour market was needed in order to allow more than a few famers to engage in betel cultivation which is a more intensive form of agriculture than the former rice farming. The growth of the labour market may have been caused by the increase of landless people. Because the farmer lost his land would become no one without labour to keep his livelihood in a village where there are few chances of full-time employment around the village and little capital to start new business or new agriculture. According to Table 5, there were 31 landless households in 1967, 29.8% of the total 104 houiseholds. But now 101 landless household are listed making 50.2% of total households. This remarkable increase of landles households could support the demands of agricultural labour.The expropriation of P.H.E. could have had momentous influence upon this increase. Thirty-six households from the landless group had sold their low land as in Table 6. The partition of households and land also played an important role in this change. As Nakayama(1993) pointed out, the partition could be considered to be caused by an increase in the households and population of this village. This partition of property set the man-land ratio high and it appeared the farmers who could not gather in enough harvest to satisfy his livelihood from his small

Table 5 Number of households by holding area (low land)

area (bigha)	1967 households	%	1992 households	%
0	31	29.8	101	50.2
- 0.9	14	13.4	42	20.9
1- 1.9	13	12.5	26	12.9
2- 2.9	7	6.7	8	4.0
3- 3.9	11	10.5	9	4.5
4- 4.9	1	0.9	4	2.0
5- 9.9	16	15.3	7	3.5
0-19.9	2	1.9	4	2.0
20-29.9	4	3.8	-	-
30-39.0	2	1.9	-	-
40-49.9	3	2.8	-	-
50-	-	-	-	-
total	104	100.0	201	100.0

Table 6 Number of households by the causes of landlessness

causes	households	%
sold	36	35.6
establishing the branch family	2	2.0
landless in 1967	34	33.7
newcomer	18	17.8
unknown	11	10.9
total	101	100.0

pieces of land. We can infer that such farmers would become the laborers unless there were landlords who had lots of tenant land to rent them. As shown in Table 5, the landed classes also had disappeared during this 25 years.

V. Concluding remarks

Profit was the primary reason for the introduction of betel vine in 1970s. But in the next period P.H.E. expropriation strengthened the necessity of more intensive agriculture than formerly. Causing betel cultivation to be selected by the villagers.

The important factors in the mechanism of this growth were the funds to start up betel cultivation, the skills of the cultivation and the labour force to sustain the cultivation. Loans and the P.H.E. indemnity played a remarkable role in the funding,

instructors from another village brought in the skills and landless people supplied the labour market. The P.H.E. expropriation and the partition of households and land holdings increased the number of farmers who had no land or small pieces of lands. Such farmers became laborers who sustained the betel cultivation. Some of them become the experts of betel growing and established the skills inside of the village. And some of them started betel cultivation with loans or the indemnity.

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