

*Population Growth, Land Pressure and Development of  
Cash Crops in a Nepali Village<sup>1</sup>*

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Introduction

Much socio-economic and demographic research conducted in Nepal, based on both micro and macro-level data, basically focuses on the negative impact of population growth and the deteriorating resource situation (particularly land) in the country (see Caplan 1970; Macfarlane 1976; Shrestha and Jain 1978; Poffenberger 1980; HMG/MCH 1980; Blakie et. al 1980). Similarly, a lot has been written about crops grown in permanently cultivated fields, as well as various aspects of agricultural development in Nepal, such as introduction of horticulture, and use of improved seed varieties (see Amatya 1975; Rockefeller Foundation 1976; HMG 1981), but no researchers have paid any serious attention to why and how Nepalese farmers utilize their marginal lands (i.e. steeply-sloped, boulder-filled waste-land or swamp-land) to grow subsistence or cash crops. Marginal lands can provide good yields if properly taken care of (Plucknett et. al 1982). A modest increase in crop yields in these areas can greatly alleviate food shortages.

This paper is an attempt to explain why cash crops like big cardamon (*Amomun subulatum*)<sup>2</sup> have been introduced in waste or marginal land in a village in Eastern Nepal. Big cardamon is a sub-tropical, exclusively cash crop for Nepalese farmers. It is normally used as a spice or as a flavoring agent for sweets, coffee and tea and also as medicines in many parts of the world (see Subedi 1979).

My discussion in this paper is organized within the framework of Boserup's (1965) and Brookfield's (1972) pioneering population-based theories of agricultural intensification. According to Boserup, agricultural techniques respond adaptively to population pressure, and thus population growth is the positive force stimulating changes in the productive methods of the community. She brings materials from India, China, Africa and Latin America to support her arguments. Brookfield, citing material from the Pacific area, argues that intensification of agriculture is caused by such factors as markets, social production, and other forces in addition to population pressure. As heuristic devices, both theories help to explain the pressure of population on resources, particularly the utilization of land in agrarian societies like Nepal. Considering both theories, I show that though population pressure is clearly observable at the local level, farmers still have not taken the "risk" of growing big cardamon in their permanently cultivated fields. Finally, I argue that

population growth as well as favorable markets are the primary factors leading farmers to cultivate big cardamon in their marginal lands, and both theories are complementary to each other.

### Ethnographic Setting

In recent years, some Nepalese farmers have seriously utilized not only their permanently cultivated fields but also their marginal lands to grow cash crops. Ilam, a hill district in Eastern Nepal, provides an example in which cash crops are grown in both good as well as in marginal lands. In Ilam District, three major cash crops are grown: potatoes, tea and big cardamon. Potatoes are always grown in the permanently cultivated good land; similarly tea growing is done in relatively good land, where other staple crops can be easily grown. By contrast, big cardamon is grown on marginal land, where no other crops can grow.

Tea growing in Ilam District is not an individual enterprise; it is organized at the corporation level and caters to both the domestic and international market. Potato farming, though normally practised by the individual farmer, is also cultivated in at least one place in Ilam District through government administration (Jaubari in Ilam District, aided by the Indian Government). Potatoes are grown for both consumption and sale, though its markets are local. Big cardamon, on the other hand, is grown entirely by individual farmers, is exclusively a cash crop, and has only an international market. Therefore, it is an ideal crop to analyse from the perspective of individual choice and decision-making as influenced by population growth and market factors.

Barbote Panchayat, the field area of my article, lies in Ilam District of Eastern Nepal. The total area of Barbote Panchayat is about eight square miles. Most of the settlements are located 1-4 miles away from Ilam bazaar, the headquarters of Ilam District. The settlements are dispersed at various altitudes ranging from 3,000 to 5,800 feet above sea level. Barbote Panchayat was recently linked by a motorable road to Ilam bazaar. There are 14 ethnic groups living in this panchayat. The total population and number of households based on three major ethnic communities in 1964 and 1981 are given below.

Table 1

#### Households and Population in Barbote Panchayat by Ethnicity

	1964-1981				1981			
	1964		1981		1981		1981	
	Total Households	%	Pop.	%	Total Households	%	Pop.	%
High caste Hindus <sup>3</sup>	260	51.58	1539	53.88	302	51.09	1881	52.52
Matwalis <sup>4</sup>	202	40.08	1093	38.27	240	40.61	1426	39.82
Untouchables <sup>5</sup>	42	8.34	224	7.85	49	8.30	274	7.66
Total:	504	100.00	2856	100.00	591	100.00	3581	100.00

The above data show that the population in Barbote Panchayat is growing at the rate of about 2 per cent per annum. At this growth rate the population will double by 2015 A.D.

The cultivable land area in Barbote Panchayat has also increased over time along with population growth. However, prior to 1971 no exact land measurements, except for irrigated lands, were available in the hilly regions of Nepal. Therefore only the total area of irrigated land is given here to establish comparisons over time. Three land surveys have been conducted to date in Ilam District: the 1912, 1936 and 1971 land surveys and their records are available in the Mal (Treasury) Office, Ilam. To provide uniform units of land measurement, I have used the *ropani* (1 *ropani* = 0.051 hectare) to calculate the total land area.<sup>6</sup> Irrigated land areas in Barbote Panchayat over time were approximately as follows.

Table 2

Irrigated Land Area in Barbote Panchayat, 1912-1971<sup>7</sup>

<u>Year</u>	<u>Total Irrigated Land (in ropanis)</u>
1912	1334
1936	2837
1971	8708

In other words, the area of irrigated land increased 112. % in the 24 years between 1912-36 or 4.70% per year. Between 1936-1971, the increase was 206.94% per year. That translates into 167 additional *ropanis* of land put into irrigation each year.

There are a number of reasons for the increase of cultivated land in Barbote Panchayat. Bajracharya (1981) shows that the major cause of deforestation is the opening of new areas for food production, even in the hilly regions. While this may be the case elsewhere, such a chain of events does not accurately describe the increased land area in Barbote panchayat. Forest areas as defined by the Forestry Department, HMG, remain intact, even though many trees from these areas have been cut down (Personal Communication, Sarad Kumar Rai, District Forest Officer, Ilam District). It is likely, though, that occasional cutting of trees has always taken place in the river basin areas in unused and unowned lands (locally known as *Jagar-bagar*).

The other most likely reason is as follows: Prior to absorption of Ilam District into Nepal, there were mostly Limbu settlements in Ilam District. When Ilam District was merged into Nepal in 1774, King Prithivinarayan Shah gave a measure of internal rule and guaranteed the land rights of the Limbus in the name of *Kipat*.<sup>8</sup> In the government record, *Kipat* included only the irrigated lands and the Limbu households where they inhabited. In reality, *kipat* included all cultivated lands,

plus uncultivated forests, streams and rivers within the boundaries. In the earlier period, when there was virtually no pressure on land, the Limbus used the best land (both irrigated and unirrigated) and left the marginal land fallow. In Ilam District, for example, in 1964-65, 39.7 per cent of the total irrigated land was part of the *kipat* system (Caplan 1970). This means that the Limbus, who comprise only 9.16 per cent of the population of Ilam District (1971 census) had access to 39.7 per cent of the irrigated land. Similarly, more than 90% of the irrigated lands of Barbote Panchayat were part of the *kipat* system as of 1968. But as this area was slowly penetrated by the immigrant Hindu groups (Caplan 1970), pressure on the land increased. In both Ilam District as well in Barbote Panchayat, the population growth rate was about 2 per annum in the past two decades. So, over time all of the more fertile areas was put under cultivation, and any subsequent increase in farming had to come from the poorer marginal land.

As pressure on the land grew, local farmers responded to increased pressure on land by adopting alternative agricultural strategies. One of their responses was the utilization of marginal land for producing cash crops like big cardamon.

#### Big Cardamon

Big cardamon looks like the ginger or turmeric plants and grows to five or six feet. It is not cultivated in lower altitudes (below 2,000 feet) because of the danger of water-logging. Normally, northfacing fields and gentler slopes are good for cardamon since it should not be directly exposed to strong sunlight. It is well suited to moist and shaded areas. Uttis (*Alnus Nepalensis*) and Siris (*Albizia labbek*) are considered not only good shade trees for big cardamon but as they are a deciduous species, their leaves provide natural compost for the cardamon plant.

The plant can be harvested in three to four years depending upon the planting period. If cardamon is planted in June (Jestha) it may be harvested in three years, but if it is planted in August (Bhadra), it takes four years to mature. Once planted, it can be harvested for 15-20 years if properly looked after.

#### Cultivation of Big Cardamon in Barbote Panchayat

Though the history of big cardamon farming in Nepal goes back as far as 1868-69 (see Ojha 1980), it was not an important crop until 1964. Today, there are 8-10 districts in Nepal which grow and produce cardamon. Ilam was the first district to grow cardamon in Nepal, and in 1974-75 produced 470m. ton of cardamon, 62 per cent of the total cardamon production in Nepal (Trade Promotion Centre 1974-75).

Big cardamon is grown in most of the villages in Ilam District today, including the villages of Barbote Panchayat, whose farmers are also making serious efforts to grow big cardamon. It is a newly adopted cash crop in comparison to other crops in the area. Informants point

out that some patches of big cardamon were observed as early as 5-6 decades ago, but serious cultivation started sometime in 1965-70 and expanded rapidly in the area after 1975. Today, local farmers are trying to grow big cardamon in all those lands which are just marginally suitable for cultivation.

Official records of total land cultivated for big cardamon are not available. In my 100 sample households in Barbote Panchayat, only 32 households grow big cardamon in nearly 76 *ropanis* (approximately four hectares) of their marginal lands. Such waste land constitutes about 1.25 per cent of the total land area owned by these sample households. In Barbote Panchayat, perhaps 50-60 households (from the 100 household sample) own marginal lands for growing big cardamon, but many have not started growing it yet. Even those farmers who have already utilized their marginal land to grow cardamon have yet to expand their cultivated areas to the maximum.

The production in these areas was approximately 33.95 maunds (1358 kilograms) in 1980. When this production was sold, it yielded an income of nearly 28,857 rupees (when I was in the field, the price was rupees 850.00 per maund). If this amount were distributed equally over 32 households, each household would receive about 902.00 rupees per annum, good money as supplemental income by Nepalese standards.

In comparison to other staple crops, this income is significantly higher per *ropani*. For example, a *ropani* of dry but relatively good land in this area yields only about  $\frac{1}{2}$  *muri* (31.6 kilograms) of maize. Irrigated land yields about a *muri* or a little more. A half *muri* of maize brings 70-80 rupees while a *muri* of paddy can bring 120 to 130 rupees depending on the season of the year. The average yield of cardamon in the area is about 15-20 kilograms per *ropani*, so that a *ropani* of big cardamon cultivation fetches an income of about 400.00 rupees. This cash value is nearly 300 per cent higher than that of paddy and about 500 per cent higher than that of maize.

This being the case, we can now ask: why have not local farmers introduced big cardamon into their fields before? Why are they not now utilizing their paddy and maize fields for cardamon? There are a number of reasons why:

- i) Big cardamon is not a staple crop, and even if it were not grown, there would be no direct effect on the subsistence activities of farmers. It is a cash crop which farmers produce exclusively for sale.
- ii) The market for cardamon: Cardamon has always had an international market and is not consumed locally. The price of cardamon fluctuates locally according to demand and quality. For example, in 1964, the price of cardamon was rupees 60.00 per maund; it rose to 800.00 in 1970 and 1400.00 in 1978. After this the price slowly declined to rupees 850.00 by the last week of December 1980. In other words, though the market is an important factor, it is not just the market

which has determined big cardamon cultivation in the area. Local farmers have been growing cardamon in their waste or marginal lands over the past 4-5 decades whether there was a favorable market or not. The area of cardamon has also been expanded over time without seriously considering the market value of cardamon. According to local farmers, only about a dozen farmers were involved in growing cardamon a decade ago; today thirty-two grow it.

iii) There is "risk" involved in growing cardamon in relatively good land, whereas there is "satisfaction" and "prestige" involved in growing other staple crops. "Risk" and "satisfaction" factors can be analysed following Sutti Ortiz' material from Columbia (1967, 1973). Ortiz analyzes the production strategies of the Paez farmers of Columbia, showing that their decisions concerning what and how much coffee to grow do not depend on the cash value alone, but also on how much land they can spare to grow coffee and how much land they need for subsistence cropping. Similarly, in the Barbote area, even if the price fluctuates, farmers are not going to lose their initial or total cost of growing cardamon. For example, when the total input for growing one maund of cardamon was analyzed, the costs did not exceed rupees 150 to 200 on the average. Most farm work is of a seasonal nature. A large labor input is required only in weeding, picking, kilning and associated works (irrigation, hoeing,, manuring etc.) and the work schedules do not conflict normally with those for other staple crops. So the incentive is not simply the cash value alone, and growing cardamon, in some cases, is a spare time activity. Unlike the Columbian farmers, the farmers of Barbote have not yet been forced into the much higher risk situations of growing cardamon in their permanently cultivated fields. The farmers know that growing food for survival is more important than having cash for luxuries. Cash has value only when it is used to purchase staple foods. In the local context, a farmer earns respect when he has more paddy and maize fields than waste or marginal land where cardamon is grown. Moreover, unlike the market for cardamon, other staple and domestic products can be sold easily in the local market without any delay. In other words, it is still far from acceptable thinking for villagers to utilize their permanently cultivated fields to grow cardamon, and the question of how a farmer would allocate his permanently cultivated fields either to grow subsistence or cash crops does not arise.

iv) Population Pressure

I agree with Boserup's hypothesis and argue that population growth was a primary variable leading to serious cultivation not only of subsistence crops (from mono-cropping to culticropping; for details see Dahal 1983) but also of cash crops like big cardamon in marginal land in the Barbote Panchayat area. As mentioned above, the population of Barbote Panchayat has grown two per cent per annum over the last two decades. As the population increases, the demand for resources also increases, and some newer adaptative strategy has

to be adopted if the available resources are limited. As the history of big cardamon cultivation shows, when there was not enough pressure on land, the cultivation of big cardamon was not taken seriously, though cardamon growing began at least 50 years ago. But the process of population growth has meant that the limits of expanding land cultivation for subsistence crops have been reached. Slowly, the cultivation of big cardamon increased until by 1970 it had become a serious crop. This process was enhanced as more and more people needed cash to meet the costs of schools and college, modern medicines, transportation, and better clothes and other consumer goods. In other words, the demands of a growing population brought pressure on land which could be met only by growing cash crops. As the staple crops have always been given top priority in their permanently cultivated fields, marginal land was the only available alternative to grow cash crops such as big cardamon.

### Conclusion

This paper is an attempt to show how farmers of Barbote Panchayat are adopting a new adaptive strategy rather than sticking to a traditional model of subsistence agriculture. But the important research question still remains: since population pressure is evident throughout the hill regions of Nepal, why have the people of Barbote adopted such measures for alleviating the increased land pressure? What makes this question difficult to answer is the lack of comparable data from other areas of Nepal, particularly dealing with the problem of population growth and increased pressure on land. Perhaps Barbote is not an isolated case, this type of adaptive strategy can be found elsewhere in Nepal. On the other hand, the case of Barbote or Ilam is not necessarily a model of adaptation of people to increased pressure on land. It is true that in regions with an environment or ecology similar to that of Ilam District, the growing of cardamon has yet to take place. For example, there are many hill districts in western Nepal such as Lamjung, Tanahu, Kaski and Palpa whose environments, market facilities and population growth rate are similar to those of Ilam District. Farmers in these districts, however, have yet to grow cardamon in their fields. Why they have not done so is an interesting & urgent question for further research. Perhaps in these districts the pressure of more people on land is not as serious as it is in Ilam District or, such factors as climate, terrain and soil type for intensification are not exactly right. Another likely reason is simply the lack of knowledge; in one culture people know about cardamon and thus it is readily adopted and spread; in other areas people have not yet heard about it, innovation always take time to spread. But at least in the Ilam case (Barbote Panchayat) possible reasons for cultivating cardamon include disturbance of the population density equilibrium over time in relation to cultivable land, and the existence of available market facilities which have helped the development of cardamon production in this context.

So, Boserup is right when she says population is the major factor for determining agricultural development. But she has to modify her

arguments if she considers population the only variable per se. The farmers of Barbote Panchayat always took advantage of the market of Ilam bazaar: the pursuit of material self-gain through market participation has provided incentives to the farmers to grow cardamon. So Brookfield (1972) is also right when he thinks that intensification of agriculture may take place due to such factors as markets, social production and other forces in addition to population pressure. I argue that population growth as well as market factors mutually interact to lead to the serious cultivation of big cardamon in the area.

To sum up, the direction of adaptation which the people of Barbote Panchayat will take is dependent on the nature of future population growth, the introduction of other types of cash crops, and the existence of a favorable market for cardamon. I expect that subsistence production will decline without the introduction of better technology than is available today in Barbote Panchayat, and that when there is more pressure on land, the production of big cardamon will increase dramatically. I show that demographic conditions have caused people to develop an innovative strategy to cope with the pressure of more people on the land, a positive adaptation to the problem of population growth.

Finally, a note on the policy concern. Because of the rapid population growth in Nepal, there is a growing concern as how people respond to the increased pressure on land. Barbote provides a model example of how existing land resources can be utilized to alleviate the pressure: farmers grow big cardamon, a cash crop, in their marginal land without competing with the cultivation of other staple crops. Such an adaptive strategy, in fact, alleviates the existing pressure on land and also generates cash income at the household-level. This type of adaptation has special significance for land and population policy. The response to population pressure by the people of Barbote is interesting in itself, but it may be of practical value for understanding how to deal with the problem of rapid population growth elsewhere in Nepal.

#### NOTES

1. This research is an offshoot of my dissertation research conducted in Barbote Panchayat, Ilam District, Eastern Nepal. Material was collected from October 1980 to September 1981. The study was made possible under a grant from the Population Institute, East-West Centre, Honolulu, Hawaii. The writer is grateful to Dr. James F. Fisher, for his helpful comments on this paper.
2. Small cardamon is not grown in Nepal.
3. High caste ethnic groups are: Brahmins, Jaisi Brahmins and Chhetries.
4. Matwalis are Newars, Magars, Gurungs, Limbus, Rais, Sunuwars, Tamangs and Jogis.
5. Untouchables are Kamis, Sarkis and Damais.



6. In the traditional system, lands were measured in terms of *Khet*, *Matomuri*, *Pathi* and *Mana* (1 mato muri = 0.25 *ropani*). As of 1971, all lands are measured in *ropanis*.
7. For details on the distribution of land by ethnic groups see Dahal 1983.
8. *Kipat* - A communal form of land tenure prevalent among many groups such as Limbus, Rais, Yakhas, Majiyas, Tamangs, Sunuwars, Chepangs, Thamias and some other groups of Nepal (see Regmi 1963: 28-29).

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