

The Benefits and Problems of Cash Crop Farming in Eastern Nepal: A Case Study of Ilam District

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Abstract

Farmers in the hill region of Nepal face many challenges in trying to attain food security. The first part of this paper outlines the problems facing farmers in the hill region and examines how the changes in the policies of the Government have affected agricultural production in the hills since the First Five-Year Plan in 1956. Since the 1990s, agricultural policies in Nepal have focused on the growing of cash crops, as a way to increase the incomes of farmers and thus enable them to buy food to meet their food sufficiency needs. The second half of this paper takes a look at the development of agriculture in Ilam District, which is undergoing a change towards cash crop production. The benefits and problems of cash crop farming are examined with the help of data collected in the field. It is found that while traditional cereal crops play an important part of farmer's incomes, cash crops can provide a good source of income and some of the crops had beneficial effects on the environment. However, problems with extension services and price instability still have to be overcome if this form of farming is to provide a stable living for farmers.

1. Introduction

Nepal is a landlocked mountainous country surrounded by China to the north and India to the west, east and south. Agriculture employs over 80% of the population but the mountainous nature of the country allows for only about 20% of its total land to be cultivated. (Nepal Research Associates, 1999) The main components of the subsistence farming system in Nepal are land, livestock and forest resources. A proper balance between these components is necessary in order for this system to be sustainable. However, population pressures on the land have made it difficult for farmers to earn a living. With 42% of the population living below the poverty line, farmers are faced with a desperate situation and "food shortages in mountain areas has set in motion a chain reaction towards an integrated process of poverty - resource degradation - scarcity - poverty." (Partap, 1995, 2)

Despite this deterioration of both the economy and environment of mountain areas in Nepal, the growing of cash crops is seen as one way to help farmers improve their current situation. (Sharma, 1997, Partap, 1995) Ilam District in eastern Nepal is one region that is experiencing a change from subsis-

tence to cash crop farming. Not only are cash crops helping farmers achieve food security, some of the crops grown are also increasing the vegetation coverage of the land. The purpose of this paper is to firstly provide a brief outline of the problems that farming in the hill region of Nepal has faced. Secondly, the development of farming in Ilam District will be examined, supplemented with some field level data collected from one Village Development Committee (VDC), in order to give an idea of the current situation of farmers. The experiences of this district are important to examine in order to understand the benefits and problems that farmers face in making a success out of cash crop production. It will be shown that although cash crop farming can help farmers to improve their food security situation while helping to preserve the environment, institutional deficiencies that have existed in extension and marketing services for many years need to be overcome for this concept of hill farming to see any sustainable success.

2. Importance of Hill Agriculture in Nepal

Nepal is divided into three distinct geographical regions: mountain, hill, and terai (plain). (see **figure 1**)

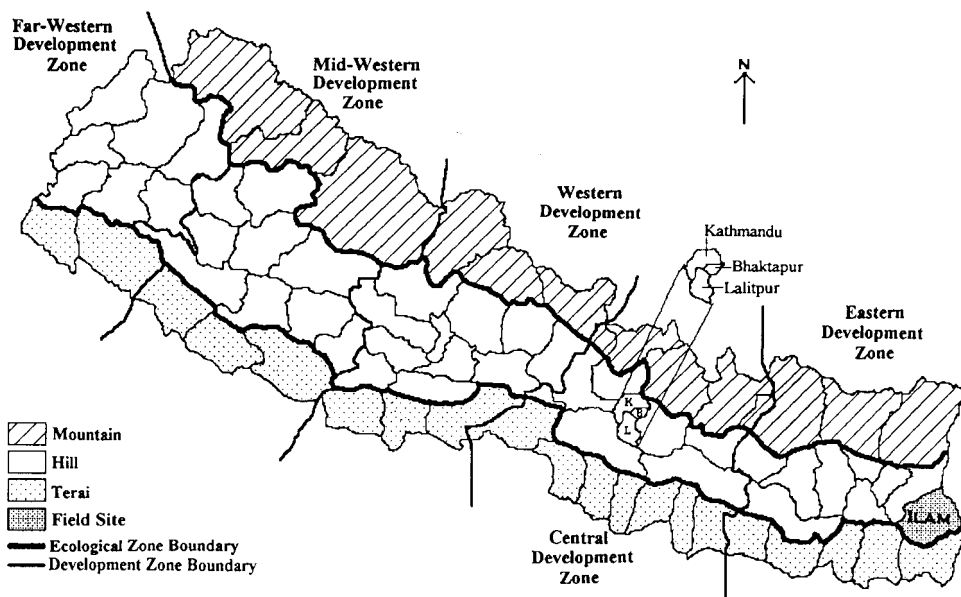


Figure 1: Map of Nepal

The mountain region covers one-third of total area of which only two percent is cultivable. This is a very rugged region, ranging in altitude from 4877m to 8848m, and people earn a livelihood by raising sheep and yaks, which provide milk, hides and wool. The hill region constitutes 42% of the total land area of Nepal but only about 10% of this is suitable for farming. With an altitude variation of 610m to 4877m, the hill region is home to about 46% of the total population. The terai region is the plain area of Nepal constituting 23% of total area of which 40% is under cultivation. The subtropical climate and fer-

tile soil has made the terai the grain belt of the country. (Nepal Research Associates, 1999)

In the hill and mountain regions, population pressures were low up until the first quarter of the twentieth century. Whenever population pressures were felt, people would migrate to places such as "Assam, Meghalaya, or Manipur to earn cash or to the terai for a better livelihood (Caplan 1970 and Dahal 1983)." (Dahal, 1994, 17) However, migration to the terai did not occur prior to the 1950s because it had not been habitable due to problems with malaria.¹

With the start of a malaria eradication program in 1952, people were able to clear and settle land in the terai, which helped to alleviate some of the population pressures in the mountain and hill regions. This migration is evident when looking at the population and population growth rate figures for Nepal (see **table 1**). During the 1981 census, the hill region had the greatest number of people living in it but as of 1991, the terai became the most populous region, consisting of 46.7% of the total Nepalese population. The population growth rate figures are also extremely high for the terai at 4.2% and 2.8% during the 1970s and 1980s respectively and this has been attributed to the migration of people from the mountain and hill areas.

Table 1: General Population Figures for Nepal (1971-1991)

Population	Nepal	Mountain	Hill	Terai
1971	11,555,983	1,138,610	6,071,407	4,345,966
1981	15,022,839	1,302,896	7,163,115	6,556,828
1991	18,491,097	1,443,130	8,419,889	8,628,078
% (1991)	100	7.8	45.5	46.7
Growth Rate (%)				
1971-1981	2.7	1.3	1.7	4.2
1981-1991	2.1	1	1.6	2.8
Population Density				
1971	78.5	3.97	98.97	127.75
1981	102.1	4.54	116.77	192.74
1991	125.6	5.03	137.25	253.63
Land Area (km ²)	147,181	51,817	61,345	34,019
%	100	35.21	41.68	23.11

Source: CBS 1971, 1981, 1991

The development of hill agriculture is of extreme importance to Nepal because this migration trend to the terai is something that is not sustainable. The land area of the terai is limited and high population growth is leading to "reckless destruction and encroachment of forest resources and uncontrolled resettlement in Tarai regions by in-migrants have resulted in improper land utilization practices and thereby environmental stress (Ojha, 1983; NCP, 1988; Rana and Thapa, 1975)." (Siwal, 1995, 86) More importantly, however, the "out-migration of a large number of people has so far made no significant impact on improving economic conditions in the hill and mountain regions." (Siwal, 1995, 86) Since the climate and topology of the mountains is not conducive to food production, the development of hill agriculture is of utmost importance to the future of the Nepalese people.

3. Problems with Farming in the Hill Region

The farming practices of the hill region in Nepal are primarily subsistence in nature, with the growing of cereal grains and rearing of livestock as its main activities. Livestock provide the manure that is needed to fertilize the fields. Forests are the main source of fodder for livestock as well as provide fuel for cooking purposes. The figure below shows the relationship between land, livestock and farmers of the subsistence agriculture system prevalent in the hill region.

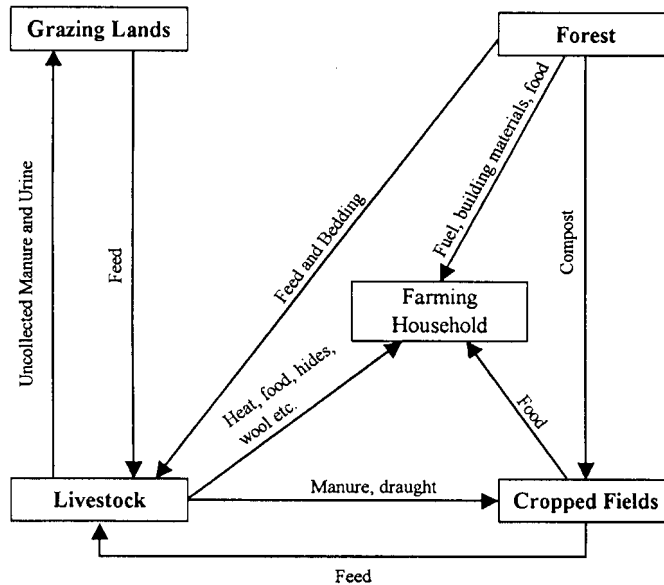


Figure 2: Interrelationship of livestock with forests, agriculture and human subsistence in typical middle hills agriculture area

Source: LRMP (1986)

Taken from: Basnyat (1995, 20)

Population pressures on the land, however, has led to the clearing of forests and adversely affected the balance between the main components of farming. Uncontrolled clearing of land can wreak havoc especially due to the fragile nature of mountain environments. Deforestation of hillsides results in many problems such as erosion of soils causing landslides, reduction in watershed areas causing shortages in drinking and irrigation water supplies, and loss of forested areas which are desperately needed for fuel and fodder purposes. On top of these environmental problems, it is very difficult and expensive to build roads and thus many villages remain isolated making it difficult to provide desperately needed marketing, credit, and extension services to the farmers.

Development planning in Nepal is conducted through a series of Five-Year Plans, the first of which started in 1956. While the first three Plans had objectives to increase agricultural production by improving input supply and extension services, the 1960s were characterized by stagnant growth in production while the population continued to grow. Seddon (1987, 44) notes that by the beginning of the 1970s, "given the relative stagnation in agricultural production, the growing pressure of population, and a rapidly increasing trade deficit, Nepal faced an economic crisis. At the center of this general economic crisis was a crisis of food production."

Given these circumstances, the Fourth Plan (1970-75) put the development of the agriculture sector as its top priority. This Plan emphasized the development of agriculture by exploiting the comparative advantages of each of the ecological regions; livestock in the mountains, horticulture in the hills, and cereal and cash crop production in the terai. A fundamental problem with this Plan and that of the Fifth Plan (1975-1980) was that it did not take into consideration the fact that even within one ecological zone, there are variations in the climates and types of crops that can be grown in them. (Basnyat 1995, 33) This focus on developing horticulture in the hill region can be seen as a major reason for the slow growth in the area under cultivation for cereal crops throughout the 1970s. (figure 3)

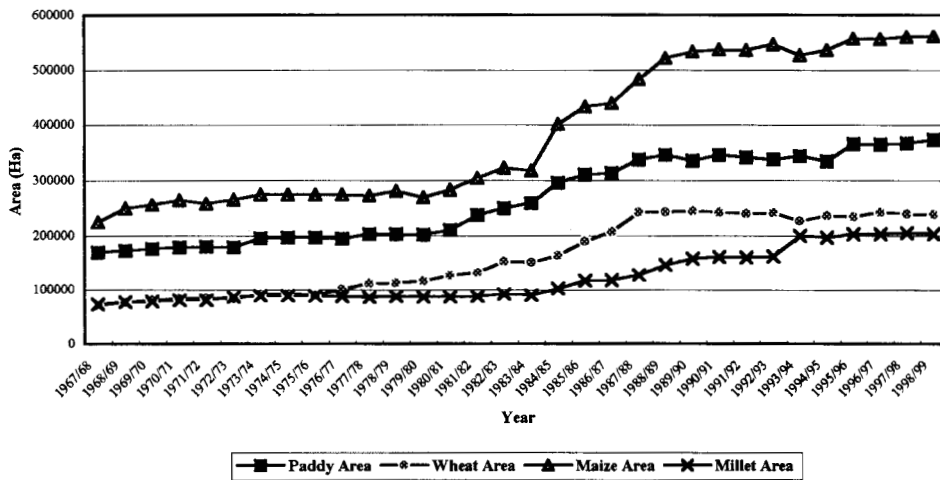


Figure 3: Estimated Area under Cultivation for Selected Cereal Crops in Hill Region (1967-1998)

In fact during the Fifth Plan, the production levels for paddy, maize, and millet saw marked declines of 4.06%, 6.78%, and 3.79% annually. Wheat was the only crop to experience significant increases in area and production levels at 5.27% and 5.52% per year, respectively.

With the start of the Sixth Plan (1980-1985), the attainment of food self-sufficiency in the hill region was emphasized. This had the effect of increasing the area of land under cereal crops. As can be seen in figure 3, the area under cereal cultivation grows at a faster pace after 1980. Annual growth rates in the area under paddy, wheat, maize, and millet cultivation during the Sixth Plan grew at 7.07%, 5.28%, 7.28%, and 3.35% respectively. While such increases in cropped area led to consequent increases in overall production, a look at the estimated yield of cereal crops (see figure 4) reveals that the productivity of the land had not changed and declined quite drastically in the case of maize (-3.34% annually between 1980-1985).

A reason for this decline in maize yield (almost half a ton/hectare) can be attributed to the marginal land that it was being grown on. Farmers faced with a desperate food security situation were forced to clear even the most marginal lands, such as steep slopes and upland areas, to try to gain as much production as they possibly could. This was done without concern for the long-term environmental consequences and led to the marginal yields.

Therefore, the Seventh Plan (1985-1990) tried to address the environmental problems that were

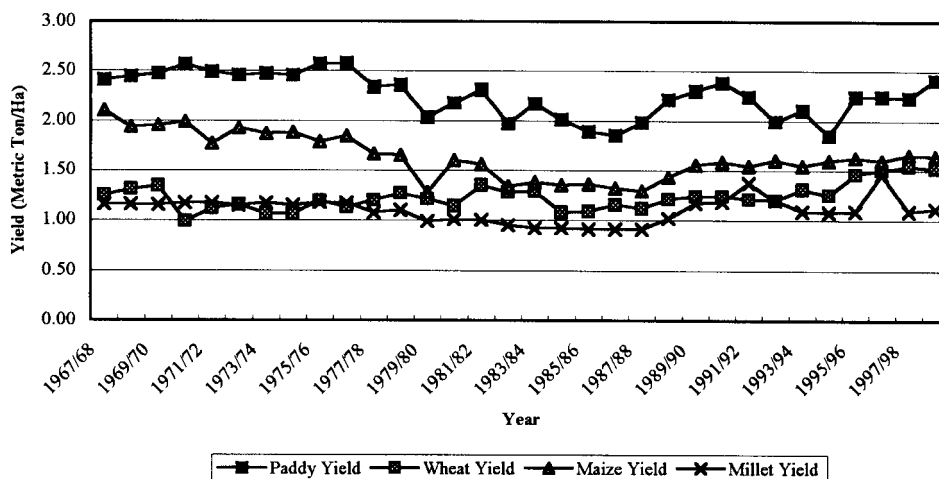


Figure 4: Estimated Yield of Selected Cereal Crops in Hill Region (1967-1998)

occurring due to the clearing of land for agriculture, while still trying to maintain the objective of increasing agricultural production. As Basnyat (1995, 240) notes, "attempts were made to stabilize agriculture and the natural resource base and promote local and regional self sufficiency in food production and other essential commodities in the hills." Despite these efforts, the area of cereal crops continued to grow especially for wheat, maize, and millet, which grew at annual rates of 5.32%, 4.25%, and 6.18 % respectively.

This idea of keeping a proper balance between land, forests, and farming households was also continued in the Eighth Plan (1992-1997), but a fundamental change in the method of achieving this occurred. A multi-party system of democracy was established in Nepal² and the new direction taken by the Government was one of liberalization of the economy and decentralization of power. The Government shifted its focus to the provision of physical infrastructure and social services, while leaving the development of the economy to the private sector. The Eighth Plan realized that "although food security is an important aspect of agricultural development, it is equally important to build capacity to buy food grain available on the market...agriculture needs diversification and commercialization to raise income and employment opportunities of farmers by identifying high value, low weight crops which have a comparative advantage." (National Planning Commission, 1992) This liberalization was also accompanied with the decentralization of power, thus shifting "from a 'top down' approach with heavy government involvement, to a more participatory approach where people would have a key role in making decisions affecting their day-to-day life." (Basnyat, 1995, 38-39)

The Ninth Plan (1997-2002) has shifted the focus of the Government to poverty alleviation while continuing the path of decentralization and liberalization. With this in mind, the development of human resources has become an important goal in order to enable local institutions to have a more leadership role. In keeping with the idea of supporting physical infrastructure, the Plan calls for the supporting of "small irrigation schemes, chemical fertilizer, rural roads and electrification, agricultural technology as production input and high value horticultural products, intensive crop farming, increased livestock productivity with improved animal feed and animal health, the development of agro-business and the provision of community and lease-hold forest." (National Planning Commission, 1998, 88) Since the Ninth

Plan is still ongoing, the successfulness of its implementation is yet to be known.

This section has tried to briefly outline the development of farming in the hill region of Nepal by looking at how the various policies have affected the area and yield of cereal crops. While the Government has tried to increase production of cereal crops, poor yields have meant that any gains in production that have been made have been due to increases of area under cultivation. This is troublesome trend due to the fragile nature of the environment in the hill region. Since the implementation of the Eighth Plan, the Government has tried to focus its efforts on the diversification of agriculture through the promotion of cash crops so that farmers can earn money to meet their food deficits. The following sections will look at development of farming in Ilam District, which is experiencing a shift from subsistence to cash crop farming, to see how farmers are benefiting and also the problems that they are facing in attaining food security.

4. Development of Farming in Ilam District

Ilam District is located in the easternmost part of Nepal bordering the Darjeeling District of West Bengal, India. (see **figure 5**) The District is comprised of forty-seven Village Development Committees (VDCs), forty of which are accessible by roads but many of these can only be used during the dry months of the winter. Farming is highly dependent on the monsoon rains, which falls between June and September, for its agricultural production. Only 13% of farmland is irrigated³ while the remaining 87% are rain-fed. (Sharma, 1997)

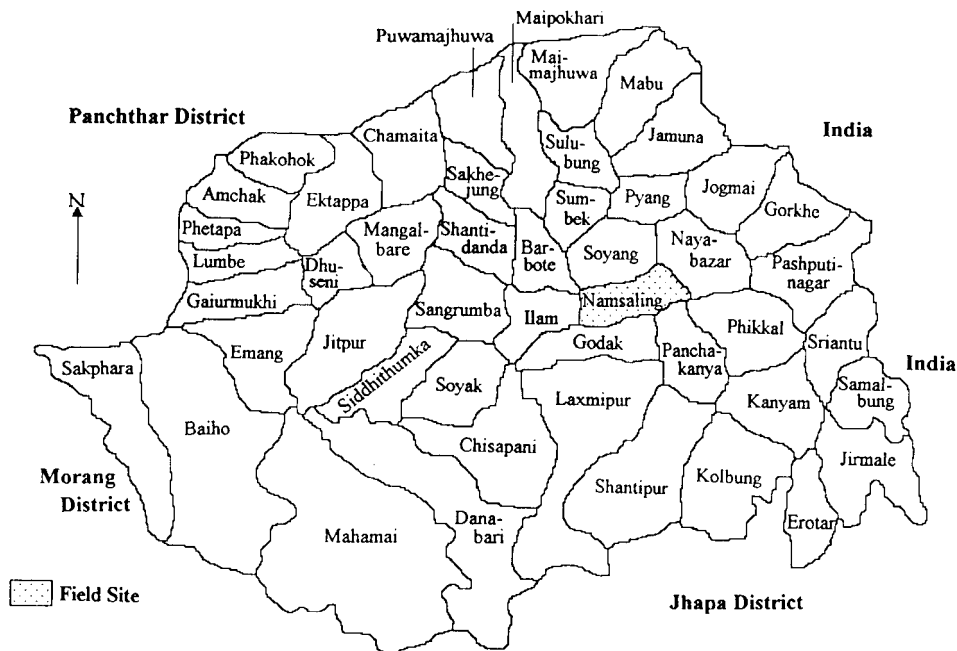


Figure 5: Map of Village Development Committee's (VDCs) in Ilam District

Ilam Bazaar, located in the middle of the District at an altitude of 1200m, is the district headquarters and only municipal town with a population 13,197 (1991). The spread of cash crop production, especially since the late 1980s, has helped to increase the economic activity in this area. Even between the time of the first field visit in late 1999 and second visit in early 2001, the increase in the number of stores, restaurants and hotels in the Ilam bazaar area was noticeable.

Historically, Ilam District was a part of the Limbuan, or country of the Limbus, who are just one of the many ethnic groups found in Nepal.⁴ The land tenure system⁵ practiced by the Limbus, called *kipat*, was a form of communal landownership with the *subba* or chieftain having absolute power over the land.⁶ (Caplan, 1970) Population pressures felt in the Eastern Hill region was not solely due to the numbers of people but that "a few people controlled a large portion of the land resources and most of the people had to survive on the basis of the little cultivable land available to them. As forests were controlled by the *subba* and *thari*, it was not possible to expand agricultural land by clearing forests in the hills." (Dahal, 1994, 17). Dahal (1994, 18) also notes that the process of deforestation only accelerated after the 1960s due to the weakness of the Private Forest Nationalization Act in 1957 to control cutting, the relative inaccessibility of Ilam until 1960 which prevented commercial logging, and malpractices of loggers and forestry staff.

Looking at the population census data, Ilam District has experienced low population growth during the 1960s; this has increased quite markedly to 2.5% annually during the 1970s and 1980s. (**table 2**)

Table 2: Selected Demographic Figures for Ilam District (1961-1991)

	Ilam
1. Population Census	
1961	124,525
1971	139,538
1981	178,356
1991	229,214
2. Growth Rates (%)	
1961-1971	1.1
1971-1981	2.5
1981-1991	2.5
3. Average Household Size	
1991	5.5
4. Population Density	
1981	104.7
1991	134.6

Source: CBS 1987 and 1991.

Note: This table was taken from Dahal (1994, 28) but the figures for the year 1961 have been added by the author.

As mentioned earlier, while the presence of *kipat* land had forced some people to farm small plots of land or leave for other areas to earn a living, it had also helped to preserve forests because land could not be cleared without the permission of the *subba*. Thus land clearing had a later start in Ilam in comparison to other areas, which did not have such a system. The effect of this is reflected in the growth rate of land clearing for cereal crops seen in **figure 6**. As was discussed earlier, during the period of the Fourth

Plan (1970-75), the growth rate of area under cereal crop cultivation was low in the hills as a whole. In Ilam District, however, the growth rates were extremely high. The areas of paddy, wheat, maize, and millet grew at phenomenal annual rates of 13.56%, 16.12%, 7.06%, and 9.86%, respectively. However, despite this growth in area, the growth rates in the yield of cereal crops saw very little increases and were similar to that of the hills as a whole. (Figure 7)

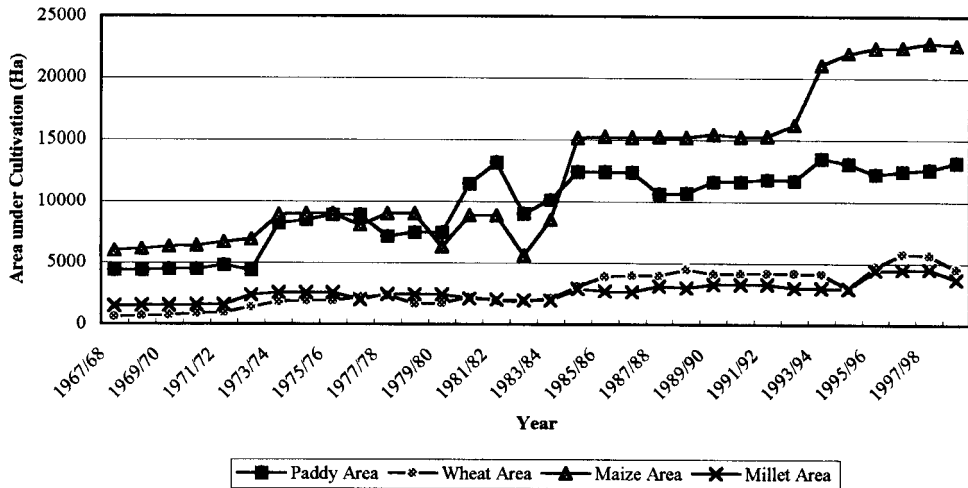


Figure 6: Estimated Area under Cultivation for Selected Cereal Crops in Ilam District (1967-1998)

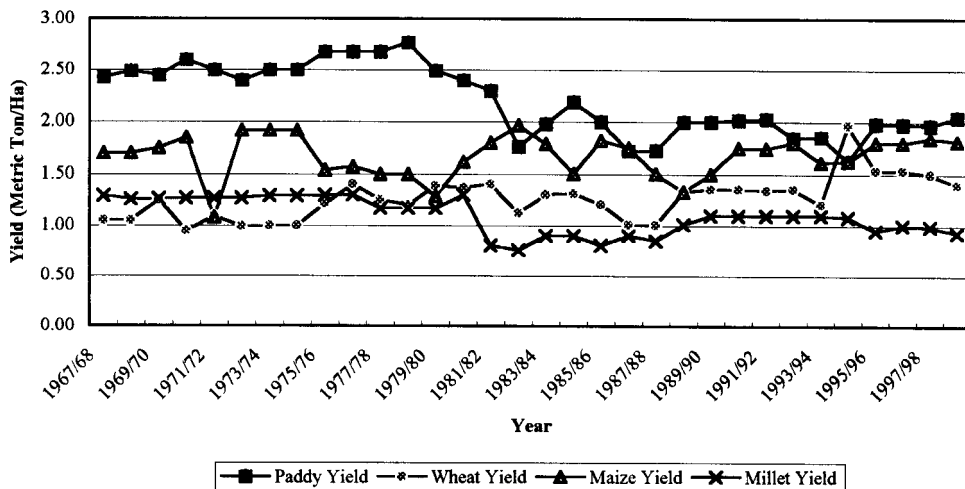


Figure 7: Estimated Area Yield of Selected Cereal Crops in Ilam District (1967-1998)

During the latter half of the 1970s, however, there was an actual decline in the area cultivated, which resulted in an overall decrease in production and yield. It was only until the start of the Sixth Plan (1980-85), which emphasized food sufficiency in the hills, that area under cultivation began to increase

again. From the mid-1980s to the start of the Eighth Plan there was a complete stagnation in the growth of area under cereal crop cultivation. This may be indicative of the fact that there was very little land left to cultivate but may also be a sign that the introduction of cash crops reduced the need to open more land.

A disturbing trend, however, is stagnating and declining yields for all cereal crops. An explanation for this might be that farmers were farming very marginal lands, which led to the decline in yields. In order to get an idea of how the availability of land has changed over time, the table below shows the landholding status of farmers in Ilam District for 1981 and 1991 and for Namsaling VDC in 1999.

Table 3: Landholding in Ilam District and Namsaling VDC

Land Holding Category	Ilam (1981)		Ilam (1991)		Namsaling VDC (1999)	
	Number	%	Number	%	Number	%
Holdings without land ¹	75	0.29	547	1.44	43	3.86
Under 0.1 ha			452	1.19	27	2.43
0.1 ha and under 0.2 ha	4,460 ²	17.36	1,308	3.45	42	3.77
0.2 ha and under 0.5 ha			6,872	18.14	224	20.13
0.5 ha and under 1 ha	3,553	13.83	10,486	27.68	334	30.01
1 ha and under 2 ha	6,161	23.99	10,201	26.93	287	25.79
2 ha and under 3 ha	4,286	16.69	4,423	11.68	109	9.79
3 ha and under 4 ha	2,615	10.18	1,926	5.08	30	2.70
4 ha and under 5 ha	1,844	7.18	832	2.2	11	0.99
5 ha and under 10 ha	2,373	9.24	594	1.57	5	0.45
10 ha and over	317	1.23	238	0.63	1	0.09
Total	25,684	100	37,879	100	1,113	100

Note: 1) Holdings having area under crops less than 0.01355 ha (8 Dhurs) in Terai or 0.01272 ha (4 Aanas) in the Hilly and Mountain region, but raising at least two productive animals or 20 poultry birds are included in the category "Holdings without land" ; Data for Namsaling also includes a "holdings without land and animals" category overlooked by the census.

2) The 1981 census uses a slightly different categorization for land holdings. The "under 0.1ha" to the "0.2 and under 0.5 ha" categories were introduced during the 1991 census, while the 1981 census had these land holding groups combined into one category. This table utilizes the land holding categories of the 1991 census

Source: CBS (1985, 1993) and Field Survey 1999, 2001

If it is assumed that the figures for the study village are representative of the District, the population pressures on land are quite evident. The landholding data clearly shows that since the 1980s, the percentage of people living on small plots of land has increased over the last two decades. For example, looking at the percentage of people who have less than 0.5 ha of land, the numbers have increased from 17.65% in 1981 to 24.22% and 30.19% in 1991 and 1999 respectively. With such a trend, it is obvious that farmers relying on subsistence farming will face difficulties in meeting their food needs

5. Cash Crop Farming in Ilam District

Despite these pressures on the land, the growth in the popularity of cash crops has allowed farmers to earn money in order to buy food and other necessities of life and thus increase their ability to achieve food security. The changes that are occurring in this District are therefore in line with the Government policies of the Eighth and Ninth Plans of trying to diversify and commercialize agriculture to increase incomes. It is important to note, however, that cash crops were introduced prior to the changes in

Government policies. Thus the pioneering nature of Ilam District makes it an interesting and important one to study.

Prior to the building of a road linking Ilam to Jhapa in the terai in the 1960s, Namsaling was an important center located along the trade route connecting Ilam bazaar to India. Interviews conducted with the people of Namsaling found that many farmers felt that their life had improved ever since the introduction of cash crops in the late 1980s. This roughly coincides with the paving of the main road linking Ilam to Jhapa, which has improved communication links, especially during the monsoon season, allowing for easier movement of goods to the terai and India

While the blacktopping of the road may have been the big turning point in allowing for farmers to have better access to markets for their cash crops, it is important to understand that the roots for this change were developed many years before that. Ilam District, being located next to the world-renowned tea growing area of Darjeeling, India, is well known in Nepal for its tea⁷ cultivation. In fact, Pashputinagar, located along the Indian border (see figure 5), is only 15 km away from Darjeeling. Tea was introduced into Ilam in the 1860s and the close links that the Ilamese have with Darjeeling have benefited them in terms of education and awareness. During the time the British controlled India, missionaries had built up a good educational structure in Darjeeling. Many people of Ilam have family living in Darjeeling and there has always been frequent and unrestricted movement of people across the border. Over the years, the people of Ilam were exposed to education, living styles and, most importantly, made aware of the development options and possibilities. (Sharma, 1997)

Another reason why Ilam has been able to expand its cash crop farming is due to its geographical proximity to the terai and Indian cities. They provide outlets for a variety of cash crops grown in the district. Birtamod, a rapidly growing urban centre in Jhapa, 55km from Ilam Bazaar, is a key trading location from where the products are distributed to other commercial centers in Nepal and India. Silguri, 85 km from Ilam Bazaar, is a vibrant commercial city in Darjeeling District, which is rapidly becoming the principal commercial center for northeastern India.

5.1 Types of Cash Crops Grown

In Ilam there are many types of cereal and cash crops being grown. Table 4 shows some of the main crops being grown in Ilam along with their area of cultivation, yield, and market prices. As can be seen from the table, cereal crops of paddy, wheat, maize, and millet make up a large portion of the total cultivated area. Despite the fact that the cash crops shown above constitute a relatively small portion of cultivated land, they have a high value per hectare of land in comparison to cereal crops. It is this high value that is helping farmers to purchase food and thus improve their food security status.

Some of the cash crops being grown in Ilam are also having a positive impact upon the environment. Tea, for example, can be grown on marginal lands and since only the leaves of the tea plant are picked, the plant acts as an excellent soil stabilizer. Broomgrass is another popular crop that has positive environmental features. This grass was originally planted for fodder purposes but can also be used for fuel wood and roofing material. The part of the grass that is used to make brooms can also earn farmers a cash income. In terms of the environmental benefits, it has a deep root system and thus helps to stabilize the soil. The fact that it grows well on marginal land, such as bunds and ridges of farm terraces, means that it does not compete for land with cereal crops, though some farmers have allocated cereal lands for its cultivation. With a big market for broom in both Nepal and India, broomgrass has become an important income source for farmers.

Table 4: Main Crops, Area of Cultivation, Yield, and Market Prices in Ilam District

Crops	Area (Ha)	%	Yield in MT/ha	Market Price (NRs/Kg)
Paddy	17,252	24	1.95	21
Wheat	4,730	7	2.36	15
Maize	31,450	44	2.19	15
Millet	4,025	6	1.08	15
Tea	1,452	2	0.78	700
Potatoes	5,585	8	9.85	10
Ginger	950	1	14.68	23
Cardamom	2,980	4	1	350
Broomgrass	300	0.4	6	10
Sericulture	150	0.2	0.53	
Vegetable	2,158	3.4	3.3	

Source: District Agricultural Office, Ilam 1996

Note: This table was taken from Sharma (1998, 7); Market prices are for July 2000.

Cardamom is one of the oldest commercial crops in Ilam district and has been undertaken as an enterprise for more than 3 decades. (Sharma, 1997) Cardamom can grow well in agriculturally unsuitable gullies, shady, and moist lands that can be found throughout Ilam. In fact, the need for shade has also induced the plantation of trees, which help to further stabilize soil and also provides a source of fodder for animals. Due to its water and shade requirements, cardamom can only be grown in certain areas of the VDC but farmers who are fortunate enough to own such land are fond of this crop because it requires very little care and labor once planted and receives a very high price on the market.

Finally, in terms of positive environmental effects, sericulture has been recently introduced into Ilam due to the ideal climatic conditions for this type of farming. The mulberry bushes that are needed to feed the silkworms are also an excellent soil stabilizer since they can be grown on steep slopes and ridges of terraces. The bushes can also be used as a source of fodder for livestock and fuel wood for household purposes. While it is still too early to determine the successfulness of this endeavor, sericulture does have good potential in stimulating the economy and creating jobs.

5.2 Consequences of Cash Crops on Farming in Namsaling

In order to examine the farming situation in Ilam, Namsaling VDC was chosen as a field site due to its location along the former trade route to India. A general survey of all households was conducted in order to obtain basic demographic, educational, occupational, and economic data. A detailed sample survey of sixty-one households was also conducted to provide a better understanding of the costs and outputs associated with each of the components of the farming system. A food sufficiency survey was also conducted of 251 households whereby farmers were asked how many months they were food sufficient from the production of cereal crops from their own land. This section will attempt to analyze some of this data, with a particular focus on the effects that cash crops have on farming households.

5.2.1 Production and Income from Crop Cultivation

The first important thing that needs to be examined when studying the farming situation of a village is to see the types of crops grown, the proportion of farmers growing them, and the overall production levels. Table 5 attempts to do this by looking at the production of crops in terms of their purpose, i.e., self-consumption and sale.

Table 5: Production of Crops by Purpose in Namsaling VDC

Crop ¹	Self-consumption				Sale				Total ²	
	No. HH	% of HH	Production (Kg)	%	No. HH	% of HH	Production (Kg)	%	No. HH	Production (Kg)
Paddy	50	98	42,203	90.9	5	9.8	4,200	9.1	51	46,403
Maize	59	98.3	41,418	93.4	8	13.3	2,939	6.6	60	44,356
Wheat	37	94.9	5,152	85.6	6	15.4	868	14.4	39	6,020
Buck wheat	32	69.6	4,406	61	16	34.8	2,812	39	46	7,218
Other cereals ³	3	100	230	100	0	0	0	0	3	230
Banana ⁴	14	82.4	2,350	72.9	4	23.5	875	27.1	17	3,225
Cardamom	3	17.6	78	1.9	17	100	4,032	98.1	17	4,109
Dal/beans	33	94.3	941	47.8	12	34.3	1,029	52.5	35	1,969
Garlic	21	95.5	180	80.7	4	18.2	43	19.3	22	223
Ginger	17	39.5	3,296	18.7	31	72.1	14,285	81.3	43	17,581
Green veg.	33	100	1,236	91.7	2	6.1	112	8.3	33	1,348
Mustard	34	100	1,448	97	1	2.9	44	3	34	1,492
Potato	37	94.9	8,795	66.2	11	28.2	4,498	33.8	39	13,293
Red chili	31	93.9	193	80.1	4	12.1	48	19.9	33	241
Other crops ⁵	37	88.1	1,611	93.8	5	11.9	106	6.2	42	1,717
Total	441	85.8	113,537	76.0	126	24.5	35,890	24.0	514	149,426

Source: Field Survey 1999

Sample size = 61

Note: ¹The scientific names of the crops can be found in the appendix.²The number of households do not add up because many households grow crops for both self-consumption and sale purposes.³Other cereals includes millet and barley.⁴The units for banana are in pieces, not in kilograms. For example, the self-consumed production is not 2,350 kg but 2,350 bananas.⁵Other crops include citrus fruit, herbal medicine, honey, jute/tobacco, other fruits, peanuts, roots/tubers, silk, soyabean, sugarcane, tea/coffee.

As can be seen from this table, the cereal crops are grown mostly for self-consumption or subsistence purposes. Farmers, however, sell about 40% of the buckwheat production to earn cash income. The other major crops are for the most part grown for subsistence needs. Any surplus production that a farmer produces typically gets sold on the market. Dal/beans and potato also see a fair amount of their production sold due to the fact that they are both integral parts of the Nepalese diet. Approximately 27% of bananas grown in Namsaling are sold. The perishable nature of this crop means that any production farmers cannot consume by themselves is sold on the market to earn cash income. Spices such as garlic and red chili see about 20% of their production sold.

The main cash crops⁸ that can be found in Namsaling are cardamom and ginger, which have 98% and 81% of their total production sold, respectively. Ginger is one of the most preferred crops of farmers given the fact that it can be grown throughout the village⁹. One problem with this crop is that it is a high nutrient requiring crop and thus has a tendency to exhaust the soil. Since the use of chemical fertilizers is limited, heavy manuring is required for its cultivation and the long-term effect that this crop will have on the soil is something that requires further study.

Cardamom is grown solely for cash income purposes with only 2% of its production being kept for self-consumption. Despite the fact that cardamom can only be grown in certain regions of the village, it is a preferred crop of farmers due to its high price and low labour requirements. A problem currently

facing both cardamom and ginger is that of diseases which are reducing their productivity. During the first field visit, farmers were complaining of a disease known as *jujure* that had hit the cardamom crop. In the most recent field visit, it was found that ginger farmers were also facing a disease, which they called *pahele*. The problem is not so much the diseases themselves, but the lack of knowledge about the type of diseases and measures that need to be taken to combat and prevent them from occurring in the future.¹⁰

While the examination of the overall production of various crops helps to provide a picture of the farming situation of a village, the importance of crops to the livelihood of farmers is best judged by looking at the income they create for farmers. Table 6 shows the contributions of crops to the total income earned from crop cultivations in Namsaling.

Table 6: Income Earned from Crop Cultivation for Namsaling VDC (NRs.)

Crop	Self-consumption			Sale			Total		
	Avg. income	Total income	%	Avg. income	Total income	%	Avg. income	Total income	%
Paddy	8,441	422,034	90.9	8,400	42,000	9.1	9,099	464,034	100.0
Maize	8,115	54,092	85.6	4,246	9,117	14.4	8,546	63,210	100.0
Wheat	1,462	478,790	93.4	1,520	33,970	6.6	1,621	512,760	100.0
Other Cereals	41	41	100.0	0	0	0.0	41	41	100.0
Banana	196	2,350	72.9	219	875	27.1	215	3,225	100.0
Cardamom	6,935	20,804	1.9	63,540	1,080,188	98.1	64,764	1,100,992	100.0
Dal/beans	917	29,344	47.8	2,675	32,097	52.2	1,862	61,440	100.0
Garlic	308	6,470	80.7	386	1,543	19.3	364	8,013	100.0
Ginger	2,698	43,171	18.7	6,037	187,136	81.3	5,617	230,307	100.0
Mustard	1,245	39,824	97.3	1,102	1,102	2.7	1,279	40,926	100.0
Potato	1,876	69,394	66.2	3,226	35,486	33.8	2,689	104,880	100.0
Red chili	608	18,227	80.1	1,133	4,533	19.9	711	22,760	100.0
Avg. Income per Household	19,419		45.3	23,411		54.7	42,829		
Avg. Income per crop	3,590			13,865			6,839		

Source: Field Survey (1999)

Sample size = 61 households

Note: 1) Buckwheat, green vegetables, and other crops have been left out of the income calculations due to difficulties in converting weights to kg and lack of reliable market price data

2) Income has been calculated by utilizing the 1997-98 average yearly market prices for Ilam district.

Looking at the total average incomes earned from each crop, the importance of paddy and maize to the overall income of farmers can be seen by the fact that these crops both earn average incomes that are higher than the total average income per crop of NRs. 6,839. Given the popularity of ginger as a cash crop, the average income earned from ginger cultivation was rather low, earning only NRs. 5,617. The lower than average income earned from ginger cultivation can in part be explained by fluctuations in the market prices. For example, the incomes from table 6 were calculated utilizing the 1997-98 average yearly market price in Ilam district, which stood at NRs. 13.10/kg. The average yearly market price in Ilam for ginger in 1996-97, however, was NRs. 20.14/kg. Such fluctuations in prices are a common occurrence, creating some insecurity in the ability of cash crops to provide a steady income.

A second feature that is noticeable from table 6 is the average income earned from cardamom, which

is almost ten times the total average. The effect that this crop has upon the income of farmers can be seen when comparing the total percentage of production sold in table 5 and the total cash income earned from farming in table 6. In table 5, only 24% of the total crop production was sold on the market. At the same time, however, this production constituted 55% of total income earned from crop production. If one were to remove the income of cardamom from table 6, cash income earned from sale of crops would decline to 23% of total income. This difference shows the degree to which cash crops are contributing to farming incomes in Namsaling.

5.2.2 Food Sufficiency

Another important factor that one needs to examine when looking at the farming situation of a village, is the food sufficiency of farmers, i.e., the number of months farmers can feed themselves from the cereal crops produced on their land. The table below utilizes food sufficiency data collected by the Namsaling Community Development Centre (NCDC), a local NGO, in 1996 and compares these figures with those collected in a field survey conducted in 2001 to see the changes that have occurred in the past five years.

Table 7: Food Sufficiency in Months for Namsaling VDC

Year	Food Sufficiency					
	0 to 6 Months		7 to 12 Months		Total	
	No. of HH	%	No. of HH	%	No. of HH	%
1996	594	60.4	390	39.6	984	100.0
2001	138	63.9	78	36.1	216	100.0

Source: NCDC (1996) and Field Survey 2001

As can be seen from this table, the percentage of households that are food sufficient for less than six months has increased by 3.5% in the past five years. Such decreases in food sufficiency are understandable when one considers the fact that some crops, such as ginger, compete with cereal crops for land. Thus when the ginger crop is planted, cereal crops cannot be grown on that land and this can lead to decreases in food sufficiency levels from cash crop production.

One advantage that farmers in Ilam have lies in the fact that cash crops such as cardamom and broomgrass can be grown without sacrificing cereal crop production; cardamom typically grows in regions that are not suitable for cereal crop cultivation and broomgrass can be grown along terrace bunds. These crops are therefore excellent activities to supplement farmers subsistence farming activities and any extra income that farmers can earn will help them to meet their food security needs. At the same time, the positive environmental aspects of these cash crops can help to halt the problems associated with land degradation of fragile mountain environments.

5.2.3 Problems Facing Farming

There are, however, various hurdles that still need to be overcome in order for cash crop farming to help farmers attain food security. As was noted in the first half of the paper, the Government of Nepal has instituted a wide range of policies to try to increase cereal crop production, but production increases in the hill region were only due to increases in area cultivated and that the productivity of land had not changed and actually declined in the case of Ilam District. One of the reasons that could account for this is the inadequacy of extension services available to the farmers, which was a problem that was noticed

in the study village. The introduction of cash crops into Namsaling was for the most part due to the efforts of the farmers as opposed to promotion by government agricultural extension workers. An interview with a long-time farmer revealed that the source of the ideas for growing cash crops came from travels villagers made to India and other parts of Nepal. By seeing what people in other areas were doing, farmers experimented in their own fields and if they found it to be viable, extended it to a greater area.

The problem in extension services has been something that has existed for a long time. Difficulties in accessing villages and lack of manpower to carry out extension activities have helped to hamper improvements in productivity of land. As Basnyat (1995, 36) notes,

the goals of meeting production targets for extension has encouraged it to deviate from its main task of educating and facilitating the efforts of farmers...extension programs too often appear to be aimed at meeting certain preordained quantitative targets such as number of trials, demonstrations, tours, trips and training sessions without regard to their impact on agricultural production.

At the same time, there tends to be a lack of coordination among the various ministries and departments. These institutions have their own set of programs that are funded by foreign aid but the lack of communication between various services has led to "an approach towards hill farm development that is fragmented and does not take into account the integrated nature of all the necessary components of hill farming systems. (Abington 1992)." (Basnyat 1995, 34)

While the policy goals stipulated in the Eighth and Ninth Plans seem to be headed in the right direction in terms of trying to involve people at the local level in the decision-making processes it should be noted that Nepal has had a long history of top-down decision making and the changing of the way institutions work and people's thinking is something that cannot happen overnight. Also, in order for local people to be able to participate in a meaningful way and help to influence policy decisions, there is a need for heightened awareness levels. In this sense, Ilam District as a whole is fortunate to have a relatively high rate of literacy.¹¹ In fact, Namsaling is home to one of the first secondary schools built in Nepal and with an overall literacy rate of 66.7%. (Field survey 1999, 2001) Despite the comparative advantage that Namsaling has in terms of education levels and NGO activities, problems were still seen in the lack of access farmers had to various agricultural extension services.

A third problem is the volatility of the prices of cash crops. Although merchants play an important role in buying agricultural produce from the farmers and getting them to markets in Nepal and India, the prices are vulnerable to the whims of the markets. As was seen in table 6, the average income earned was rather low for ginger due to the low market price of 1997-98. The creation of marketing cooperatives or similar types of institutions is needed to organize the farmers and create some stability in the prices that farmers receive for their goods.

6. Conclusion

This paper has outlined the problems that have faced agriculture in the hill region of Nepal. While the policies of the Nepalese government have tried to boost the production of cereal crops, any gains in production have largely been due to increases in area under cultivation and the yields have stagnated for the past thirty years. Due to the subsistence nature of agriculture in Nepal, the clearing of new lands has

come at the price of cutting forests and thus brought an imbalance to the agricultural system. Environmental degradation is particularly acute in the hill region due to the fragile nature of mountain environments.

Since the 1990s, the government has embarked upon a process of liberalization and decentralization. The strategy now being taken by the Nepalese government is to promote the production of cash crops in order to enable farmers to buy grains to meet their food sufficiency needs. In doing so, it is hoped that this will also halt the environmental degradation occurring in the hills due to the clearing of land for cereal crops. Also, the policy goal of decentralization is to try to involve the local people in the decision-making processes and bring about development from the bottom-up.

Ilam District was used as a case study as it is undergoing the transition from subsistence to cash crop farming. Some of the crops being grown had beneficial effects on the environment in terms of promoting vegetation coverage. Looking at village level data, it was found that the production of paddy and maize was still a very important part of farmer's incomes. While 24% of crop production was sold on the market, this production contributed to 55% of total income indicating the large role that cash crops can play in improving the income of villagers. It was also found that food sufficiency from cereal crop farming had decreased 3.5% over the past five years. The growing of cash crops that do not compete for land with cereal crops can help to keep food sufficiency levels stable while providing extra income with which to procure food.

The problems associated with the provision of agricultural extension services to farmers have plagued Nepal for many years. These problems still have to be overcome if farmers are to be able to make a success out of cash crop farming. Most of the cash crops being grown in the research village came from the efforts of farmers themselves. Problems with diseases have also brought about losses in production and highly volatile market prices make the future uncertain for farmers. Effective dissemination of information pertaining to the proper techniques of growing different cash crops as well as what crops grow best in the various climates of the village are needed. The development of better marketing institutions are also needed to try and bring stability to prices farmers receive for crops and thus hope to make this form of hill farming sustainable into the future.

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Endnotes

- ¹ It should be noted that the terai was not totally inhabited prior to the malaria eradication program. The indigenous people of the terai, known as the Tharu, have been able to live in this region due to their natural immunity to malaria.
- ² The political turmoil caused by this change accounts for the delay in implementing the Eighth Plan
- ³ This figure includes those irrigation schemes, that are only active during the rainy season.
- ⁴ The Lapchas are known to be the first inhabitants of the Ilam region. It is thought that the Limbus who came afterward drove out or intermarried with the Lapchas. Today, there are only a few people of Lapcha descent left in Ilam. For more information see Schwerzel, Tuinstra and Vidya (2000) The Lapcha of Nepal, Kathmandu: Udaya Books.
- ⁵ Other than kiptat, there are other forms of land tenure in Nepal. These include *raikar* (form of state ownership), *guthi* (lands used for temples and charities), and *birta* (Land given to priests, nobility, and military officers). For more information see Regmi, M.C. (1978) Land Tenure and Taxation in Nepal, Kathmandu, Ratna Pustak Bhandar.
- ⁶ The Kiptat system of land tenure was abolished in 1968.
- ⁷ The scientific names for the crops in this paper have been provided in the appendix.
- ⁸ Data for broomgrass was not picked up in the sample survey due to the fact that it is not an edible crop. There are also difficulties associated with estimating the area of production thus further study will be required to collect data specifically for this crop.
- ⁹ In a study conducted by NCDC, farmers ranked ginger, broomgrass, and cardamom as their most favored crops to grow, respectively.
- ¹⁰ Despite efforts to find out the exact nature of the diseases, the lack of pathological testing facilities in the region have made it difficult for the local people to find out causes of the diseases.
- ¹¹ ICIMOD (1997) in its study of the various Districts of Nepal has found that Ilam has the eighth highest rate of literacy at 52.35%.

References

- Agricultural Statistics Division. (1999), Statistical Information on Nepalese Agriculture 1998/99, Kathmandu, HMG Ministry of Agriculture.
- Agricultural Statistics Division. (1977), Agricultural Statistics of Nepal, Year 1977, Kathmandu, HMG Ministry of Food, Agriculture, and Irrigation.
- Basnyat, Birendra Bir. (1995), Nepal's Agriculture Sustainability and Intervention: Looking for New Directions, Wageningen, Wageningen Agricultural University.
- Caplan, Lionel. (2000), Land and Social Change in East Nepal: A Study of Hindu-tribal Relations, 2nd Ed., Lalitpur, Himal Books.
- Central Bureau of Statistics. (1985), National Sample Census of Agriculture 1981/82 Nepal, Kathmandu, HMG.
- Central Bureau of Statistics. (1987, 1993, 1999), Statistical Yearbook of Nepal, HMG, National Planning Commission.
- Dahal, Dilli Ram. (1994), Review of Forest User Groups: Case Studies from Eastern Nepal, Kathmandu, ICIMOD.
- Department of Agriculture. (1997), Agricultural Marketing Information Bulletin (Special Issue - 1997), Lalitpur, HMG.

- Department of Agriculture. (1998), Agricultural Marketing Information Bulletin (Special Issue - 1998), Lalitpur, HMG.
- Economic Analysis and Planning Division. (1972), Agricultural Statistics of Nepal, Kathmandu, HMG Ministry of Food and Agriculture.
- Hartkamp, A.D. (1993), Black Gold: A Study on Large Cardamom in the Eastern Hills of Nepal, Wageningen, Wageningen Agricultural University.
- ICIMOD. (1997), Districts of Nepal: Indicators of Development, Kathmandu, ICIMOD.
- Maharjan, Keshav Lall. (1995), A Study on Agriculture and Migration of Nepal, Annual Report Research Center for Regional Geography (Hiroshima University), 4, 1-27. (Japanese)
- Namsaling Community Development Centre. (1996), Environmental Profile and Plan for Namsaling Village Development Committee, Ilam District, Ilam, NCDC.
- National Planning Commission. (1972), The Fourth Plan (1970-1975), Kathmandu, HMG.
- National Planning Commission. (1985), The Seventh Plan (1985-1990), Kathmandu, HMG.
- National Planning Commission. (1992), The Eighth Plan (1992-1997), Kathmandu, HMG.
- National Planning Commission. (1998), The Ninth Plan (1997-2002), Kathmandu, HMG.
- Nepal Research Associates. (1999), Nepal District Profile, Kathmandu: Samudayik Printers.
- Partap, Tej. (1995), High Value Cash Crops in Mountain Farming: Mountain Development Processes and Opportunities, Kathmandu, ICIMOD.
- Regmi, M.C. (1978), Land Tenure and Taxation in Nepal, Kathmandu, Ratna Pustak Bhandar.
- Schwerzel, Tuinstra, and Vaidya. (2000), The Lapcha of Nepal, Kathmandu, Udaya Books.
- Seddon, David. (1987), Nepal: A State of Poverty, New Delhi, Vikas Publishing House Pvt. Ltd.
- Sharma, S. (1997), Agricultural Transformation Processes in the Mountains of Nepal: Empirical Evidence from Ilam District, Kathmandu, ICIMOD.
- Sharma, Udaya. (1998), Development of Microenterprises: Ilam and Bhojpur Districts, Kathmandu, ICIMOD
- Shrestha, Keshab. (1998), Dictionary of Nepalese Plant Names, Kathmandu: Mandala Book Point.
- Silwal, Uma Kant. (1995), Population Growth and Agricultural Change in Nepal, New Delhi, Vikas Publishing House Pvt, Ltd.

Appendix

Scientific Names of Crops Found in Ilam

Crop name	Scientific Name
Paddy	<i>Oryza sativa</i> L.
Wheat	<i>Triticum aestivum</i> L.
Maize	<i>Zea mays</i> L.
Millet	<i>Eleusine coracana</i> (L.) Gaertn.
Barley	<i>Hordeum vulgare</i> L.
Buck wheat	<i>Fagopyrum esculentum</i>
Banana	<i>Musa paradisiaca</i>
Broomgrass	<i>Thysanolaena maxima</i>
Cardamom	<i>Amomum sublatum</i> Roxburgh
Garlic	<i>Allium sativum</i> L.
Ginger	<i>Zingiber officinale</i> Rosc.
Mustard	<i>Brassica rapa</i> L.
Potato	<i>Solanum tuberosum</i> L.
Soyabean	<i>Glycine max</i> (L.) Merr.
Sugarcane	<i>Saccharum officinarum</i> L.
Tea	<i>Camellia sinensis</i>

Source: Shrestha (1998)