

CHAPTER-ONE

Introduction

1.1 Background

Nepal is a predominantly an agricultural country engaged in this sector. Agriculture has contributed to over 42% of the gross domestic product (Economic, Survey 2004). On the other hand, only 18% of the total land is cultivable of which major portion is concentrated in the Terai region. Therefore, agriculture plays a vital role to maintain the livelihood of the rural people of Nepal.

With this scenario as the backdrop, a rapid development of agriculture has become even more essential in order to expedite the process of development of Nepal. Agriculture is indeed a precondition for the development of Nepalese economy. Although, agriculture sector occupies a dominant place in the Nepalese economy there is very little divergence in the terms of sector importance (Economic, Survey 2004). Potatoes, broom plants, cardamom, fruits are grown and animal rearing is done in the hilly region maize, rice and oil seeds are the main crops of the Terai region.

Agriculture in the hilly and mountainous areas of Nepal is subsistence oriented. The primary objectives of this farming in the areas (it means, to sell agriculture product and buy necessary goods) are therefore, to meet family consumption requirements like salt, kerosene and clothes. This subsistent nature of agriculture system of the hill and mountain has given rise to the integrated systems such as livestock, horticulture and agro forestry and it constitutes the basic component or subsystem of the overall agriculture system of the area.

Cash crop farming, which is considered a branch of agriculture, has been increasing over the years because of its brighter prospects in the forcing

market. The cash crops such as jute, tea, tobacco, etc have already been introduced in our country. These crops have played a crucial role in the foreign trade of Nepal. But cardamom, on the other hand, is one of the recently introduced cash crops in our country, which is particularly cultivated in the eastern part of Nepal. Therefore, cardamom is accepted as a major cash crop and an exportable crop of the country. Cardamom is a spice which belongs to the family of zingiberace and grows underground rhizome. The seed of cardamom has commercial value.

1.2. DEVELOPMENT OF CARDAMOM CULTIVATION IN NEPAL

The cardamom plantation was first introduced in Ilam district about 95 years ago. Thereafter, cardamom cultivation is being done in different parts of the eastern districts of Nepal.

Cardamom is one of the tropical cash crops which is cultivated under the shade & evergreen forest with enough water flow mostly in hilly, sloppy & terrace land and altitude of 1000m to 2000m (Bhatta 2059). The cardamom plant doesn't perform well under the direct sunlight because cardamom needs shading management. Utis trees proved necessary shade. (Alder or Alnus Nepalanses) .Generally cardamom is cultivated on waste land where other crops can't be grown. (Ghimire 1985). It grows well where the annual rainfall is 60 to 70 inches. The temperature on the other hand, should not drop below 8⁰ 'C'. in winter and should not rise above 25⁰ 'C' in summer(Ward 1976).

Pakhribas Agriculture Center (PAC) has listed eleven cardamom cultivating districts, such as Ilam, Panchthar, Okhaldunga, Taplejung, Bhojpur, Khotang, Terathum & Sankhuwasava. (PAC 1992).

For the development of cardamom cultivation, the Cardamom Development Program (CDP) was commissioned in 1976 whose office is in

Fikkal, Ilam. It covers an area of 347 ropanis of land (17.35 H.). Cardamom Development Program (CDP) is the agency responsible for cardamom research in the country. Its main aim is to undertake different researches in order to develop cardamom in our country.

Generally, there are different types of cardamom spices which are cultivated in our country such as:-

Dambersahi:- It has light red with greenish stem, it is larger in size than others. It contains more seeds in a fruit capsule and grows well in 700m-1200m altitude. The leaves are short and it is sweet. It normally fetches a high price.

Golsai:- Fruit capsule oval in shape, plant taller than Dambersahi, branch light green with reddish, fringe, seeds similar to Dambersahi.

Churumpta:- A wild cultivar spice grown in Ilam.

Ramsahi and Golasahi varieties are predominantly grown in Ilam district because of its favourable condition and superior quality as well as higher quantity yield. Ramsahi spices are grown in different parts of eastern Nepal. (Pandey and Yonjon 1992).

The cardamom blooms from Magh to Chaitra according to its height. Its fruit develops within 3/4 months after it blooms. It is picked between the third week of Shrawan and first week of Mangshir.

List of Table no. 1.1

Cardamom type	Flowering time	Harvesting time	Production per ropani
Ramsahi	Falgun- Chaitra	Bhadra- Aswin	35/ 40 kg
Golsai	Falgun- Chaitra	Bhadra- Aswin	35/ 40 kg
Dambarsai	Magh- Falgun	Shrawan- Bhadra	30/ 35 kg
Saune	Magh- Falgun	Shrawan- Bhadra	30/ 35 kg
Chibesai	Magh- Falgun	Shrawan- Bhadra	30/ 35 kg

Source: PUBS (2067)

Weeding and Care Method

The cardamom plants should be weeded and their unnecessary branches need to be cut time to time. To get maximum benefits this is to be done twice a year (Chaitra/ Baishakh & Shrawan/ Bhadra). Unnecessary dry leaves might cover the flowers so those should be removed. The broke twigs inside the cardamom plantation should be removed. So that mice, birds, squirrels can't hide there.

During the second weeding time the fruit laden twigs are to be cut short, so that picking the fruit would be easier. This process is called *Nal Hanne*.

After picking the fruit the old twigs should be removed from the area and the bush should be cleaned and cleared to get well irrigated.

Phaktep VDC is the pioneer VDC of cardamom cultivation of this district, where cardamom cultivation was initiated 2 decades ago. The cardamom cultivation seeds have been brought from Darjeeling, Sikkim and Ilam district. It the neighbouring VDC's Phidim, Phaktep, Pouasartap,

Angsarang, Sarangdanda are the main cardamom cultivating VDC of Panchthar district. The rest of other area also have cardamom farm.

1.3 Statement of the problem

Agriculture system varies in accordance with the topography & socio-economic factors.

Nepal, being a hilly country, hill farming system is widely practiced by the farmers.

There is a saying that cardamom is one of the major exportable cash crops which plays a crucial role in the economic prosperity of the country. Although, cardamom cultivation is rapidly expanding over the years, producers are facing problems in marketing facility, transportation, traditional drying system, loan facility, lack of modern techniques, technicians, insecticides & seeds etc. So it has become important to identify the problems & prospects associated to cardamom cultivation. On the other hand the overwhelming presence of the so called cardamom buyers (middleman) is proving favourable to cardamom buyers. As to these reasons, cardamom producers are always deprived of their actual rewards.

Market price of large cardamom has fluctuated since the export of cardamom began. Such type of price fluctuation is caused by the absence of factories. Price fluctuation is directly influenced by the Indian market; demand by overseas countries of real return of their labour, increases in production is motivated by an increase in market price. To sum up the whole of cardamom production is uncertain. They are deprived of the real value though they produce more. Recently, small farmer development program was established at the study area to provide loan to the local cardamom farmers in order to improve cardamom's quality as well as quantity. But the Agriculture

Development Bank, which is situated near the market centre at Yashok provides loan at high rate of interest. (i.e. 17% to 18%)

SFD & ADB/N has also been providing loan to the farmers to improve cardamom farming in the study area but according to farmers, the loan is not much sufficient because interest rate is so unbearable, but there are many problems in cardamom cultivation, such as, growth of viral disease and lack of knowledge about how to control it etc. The Cardamom Development Program has been established in the eastern district, but lack of state of art technology in systematic cardamom cultivation. Therefore, this study will try to seek plausible answers to the following questions:-

- To what extent do Utis trees fulfil the firewood supply planted around the cardamom farming?
- What are the reasons behind the price fluctuation of cardamom farming?
- What kind of measures should be taken to improve cultivation by the government?

1.3 OBJECTIVES OF THE STUDY

The broad objective of the study is to shed-light on the development and the past performance of cardamom cultivation in Nepal. With a view to the above stated objective, the research carried out detailed study of different aspects of cardamom cultivation in theory and in practice with special reference to the particular research area.

- (i) To analysis the overall socio-economic condition of the cardamom cultivators Phaktep VDC.
- (ii) To analyse the marketing condition as well as prospect of cardamom cultivation in the study area.

- (iii) To explore the extent of fuel-wood supply from the Alnus trees planted on the terrace and slopes of the cardamom planted area.

1.4 RATIONALE OF THE STUDY

The cardamom production activities have substantially affected the socio-economic status of people residing in remote areas of the country. The cultivation is considered as a major source of income for poor farmers in rural areas where other crops can't be grown sufficiently. By analyzing the research findings, the concerned with authorities will have data information regarding whether the existing strategy is appropriate or not for cardamom cultivation & marketing condition in the study area. This study will also attempt to identify the strengths & weakness of cardamom cultivation in our country.

The cardamom farming in Panchthar district was conducted on a micro level study. So, findings of this research study will help to planners and policy makers of cardamom experts and also help to develop cardamom production in other potential area of the country. On the other hand, it will also help to provide some guidelines to local farmers about the cardamom cultivation. Likewise, it will also benefit cardamom specialists in order to formulate & implement new policies to cardamom production and farming .It would be useful to people who would like to conduct research on cardamom farming system they will also get benefit from this findings of this research.

CHAPTER -TWO

REVIEW OF THE LITERATURE

What is cardamom?

Cardamom is one of the flora diversity whose flora groups is zingiberceac. The scientific name of cardamom is Ammomum sabulatum and it is called Large cardamom in English. It is estimated that the origin of its is Indian (Bharat). This is one dimensional and multi years crops among the high quality of crops. The fruits which comes out from flower of cardamom in the lap is called cardamom. In our country there is not large industry, so people import it to foreign country for using it in industrial production and consumption after sunning it. Cardamom is used to make good varieties of food for digestion and treatment for other disease. (Source PUBS Panchthar)

In this chapter available literature regarding cardamom cultivation activities has been reviewed. Documented article, books and reports are limited in Nepal. Cardamom cultivation is considered as one of the new type of crop defined as the cash crops which are produced for sale not for consumption by the farmers and their families.(Anatya 1957)

There are various types of cash crops such as tea, jute, sugarcane, mustard, ginger, potatoes, oil seeds, chilly which have made considerable contribution in the economy of in our country. The principal cash crops have been categorized in two groups such as traditional cash crops: mustard, oilseeds & sugarcane and new cash crops-tobacco, jute, cardamom, tea etc.

The economic survey has mentioned that cash crops contribute about 6% in total agriculture production of the country. Production index of these cash crops recorded as increase of 3% in the fiscal year 1993/1994, as compared to fiscal year 1992/1993. The index of jute production declined (eco. survey 1994/1995). The above data shows that cash crops production is growing year by year except jute production because of unfavourable monsoon and market situation.

Indian writers (Maithi & Chattopadhyay) have express their views on 'disease and vetelvine of spices' the cardamom plant is rhizomatic herb about 60-90cm tall, found in the foot hills of Nepal, West Bengal, Sikkim and Assam. It is grown in the West Bengal & Assam and hills of Himalayas and other mountain range and in the moist & shady side of mountain streams bank along hill slope usually at elevation of 765-1675m above sea level. Similarly seeds have properties i.e. good taste and have medical value, white oil extracted from seeds is aromatic and stimulant 'Fruits are also eaten raw and used for flavoring agent (Maithi & Chattopadhyay, 2007)

One the other hand, APROSC had conduced (1978) report on about the cardamom farming of the middle hill areas on the basis of labour advantages as well as profits. Cardamom is an established cash crop of Nepal and the crop is exported. The crop is durable and requires little input. The most important advantages of the crop from the point of view of erosion control and preserve fertility requirements; it can be grown without irrigation if the soil becomes dry at any time of the year. Because lack of water result in stunted growth chloroform, appearance

of leaves and a less of about half the yield within few years (APROSC, 2007).

Subedi (1998) has expressed his views on land used system of cardamom farming. Substantial change in the land use has occurred in different areas. The present large cardamom growing areas and marginal land with low economic return are continuously change into the large cardamom field Subedi (2052) Likewise, Zomer has emphasized that on the basis of production/farming of cardamom throughout the middle hill of eastern Nepal, small alder cardamom plantation are commonly established on waste land such as gullies, stream banks, or shaded sites where other crops grow poorly. Recently, to achieve their initial success in marginal sites, farmers have been covering both their upland maize and irrigate rice terraces for cardamom (zomer: 2006: 40). These scholars have focused on general land use pattern which of the middle hill of eastern as well as western Nepal.

Around a century ago cardamom cultivation was started in Nepal, but its commercial activities are short. Cardamom began to be cultivated for commercial purposes from Ilam district 3-4 decades ago by influencing of Sikkim and Darjeeling and spread neighbouring hilly districts of eastern Nepal (Ojha: 2049: 19). Although, cardamom being more profitable than other crops, small farmers generally have hesitated to convert from cereals to cash crops (Zomer: 2006: 41). Because, cardamom profit will be grown once or twice a year, which is helpful for them for domestic consumption.

In terms of foreign export, Nepali industrial commercial association published an article which mentions that about 5% of the total cardamom production is consumed for domestic purposes & the rest of 95% is exported to India as well as other countries of the world (NICA: 2051: 2) cardamom plant (bulbs) was brought from Bhutan, Sikkim and Darjeeling after the farmers there reportedly profited from the cultivation. Nowadays it has been established as the foremost cash crop of Nepal.

Furthermore, Indian agriculturist has published “Agriculture in India 1963” and highlighted about the physical aspect and its cultural parameters of cardamom. Cardamom is very important because of demand and the high market value it commands. Cardamom is cultivated to a large extent as a pure crop on a plantation scale similar to that of tea, coffee, orange and rubber. In some areas cardamom is grown along steep plant land. The soil must be loamy for cardamom planting. The crop requires cool shade and abundant moisture in the soil but it doesn't tolerate water logging, therefore, when planted on land, drainage system should be provided Kumar, (1990). It seems to some extent reality in the context of study area as well as other parts of Panchthar district.

The cardamom cultivation system is like an intercropping and agro forestry system in highly successful system in our country. The intercrops are apparently done as old practice introduced from Sikkim in to the Ilam district of eastern Nepal 40-60 years ago Zomer, (2006). This sort of plantation system (Alder and cardamom) is planted in where ever

cardamom production. In this way Leslie has mentioned in his book 'An introduction to the botany of tropical crops (1693)'. Cardamom cultivation is carried on where environmental conditions similar those of its natural habitat exists. The plant grows based where the rainfall of 100/200 inches is and is spread evenly throughout the year on rich soil under light shade. At elevation of 1000/4000 feet above sea level, if it is somewhat woody, irregularly shaped underground rhizome, will supply with fibrous adaption roots Leslie, (1963).

Cardamom cultivation is also kept under the ground forestry system and it is becoming popular in the middle hill of eastern Nepal and understores with Nepalese elder (utis) and cardamom. Some horticulturist (Niroula, Ojha, Pokhrel have placed cardamom in the spices. According to Niroula(2052) Nepalese spices have been mentioned and categorized into 1000 groups such as domesticated and non domesticated and non –domesticated spices. Domesticated spices constitute cardamom, ginger, onion, garlic, coriander, fenugreek, chilies and turmeric which are cultivated in the field by the people. The non–domesticated spices literarily chingphing (Nepali name) and cassia china etc. which is found in the forest (Niroula 2052 BS).

Marketing on the other hand, plays a very important role to determined foreign export from Nepal. Marketing of cardamom was not suitable of Nepal since the very beginning because it was directly affected by the Indian market. APROSC conducted a study 1987 in Ilam district has remarked that of existing system of cardamom marketing is not in favour of the producers. Local money lenders are the one who

harvest the benefits, producers are compelled to sell the crop at predetermined price immediately after the harvest because of the advances they receive from the lenders. Due to the inadequate storage facilities, small producers cannot withhold the produce for long for a better price, since the crop in poor and unscientific storage could be damaged by the insects (APROSC 1987). Furthermore, the report has mentioned market prospect and price in the crop has limited domestic market but has encouraging market in overseas countries and much of the product has been exported in recent years. Similarly, production of cardamom in Nepal is not so large compared to productions of the same quality cardamom grown in Indian and other countries and it is thought that increases in cardamom production in Nepal could have a negligible effect on price of the cardamom in the international market.

Export promotion centre also added that utility of cardamom and ginger both are kept in spices. Spices are dried aromatic vegetable products used for seasoning and flavouring matters. Due to the presence of essential oil, they consist of properties of aroma, preservative and antiseptic. It can be used for liqueurs, medicines and also in perfume. Among the spices of Nepal, cardamom and ginger are the most important spices which are exported to overseas countries.

The international trade centre has mentioned (1992) about the different spices of the world and their production in terms of consumption and its price. These spices include cardamom, turmeric, chilies, pepper, ginger etc. The report noted that spices are traded in a variety of forms. It is estimated that over 90% is traded internationally.

as the whole form of the ground paprika, spices, mixture and curry powder. The survey further added that the importance of spices differs from the importing to another. Moreover the survey conducted as providing mentioned Nepal, Bhutan, Sikkim, about 1000 tons each.

Along with international trade centre has referred in terms of import. Kuwait is one of the largest importer of spices in the world. Annual import average 1850 tonne of which some 33% consist of cardamom. Not only cardamom other spices are imported i.e. pepper, cassia, ginger, turmeric spices seeds being relatively prominent with annual imports from varying 50-150 tonnes each.

Cardamom has an agreeable aromatic dour and is largely used for flavouring and medical purposes. In the eastern countries it is chewed with betel leaves in northern Europe particularly in Sweden, Norway, Germany and the former USSR. The cardamom seeds are powdered and widely used for flavouring cakes and pastries and for the culinary purposes.

CHAPTER– THREE

METHODOLOGY

In this chapter Rational of the selection of the study area, Research design, Universe study samples and sampling producers, Nature and sources of data, Techniques of data collection, Interview, case study, Processing and data analysis, Limitation of the study area described.

3.1 THE STUDY AREA

Cardamom cultivation doesn't have a long history in Nepal. Compared with Darjeeling and Sikkim of India & Bhutan, it has recently accepted as a main cash crop as well as exportable product of Nepal. Cardamom cultivation is flourishing particularly in the eastern part of Nepal over the years. Therefore, this study is concentrated in Phaktep VDC of Panchthar district. Being an inhabitant of the village the researcher became very much interested in studying about cardamom cultivation because it is cultivated everywhere in Panchthar district. The researcher didn't have any difficulties to obtain data from the study area, for being a local resident of the area and also for being conversant with the languages of ethnic group & their culture.

3.2 RESEARCH DESIGN

The present study is a descriptive one. The descriptive research design is more appropriate to describe & analyze the quantitative as well as quantitative primary data collected through different techniques of data collection. Quantitative data such as socio-economic condition of the farmers, land holding size, cardamom production etc has been described to show the effect of cardamom production on the living standard of the farmers. Qualitative data such as changes in food habits, housing, clothing, and schooling also described.

3.3 UNIVERSE STUDY SAMPLES AND SAMPLING PROCEDURS

Phaktep VDC of Panchthar district was selected as the study area. There are 725 households in all 9 wards of this VDC (Village profile 2067). A list of cardamom cultivation in the VDC was made available in VDC office. As a resident, the researcher is familiar with the setting of the VDC. The ward no. 4,5,6,7,8 wards have 75,96,68 & 80 households, total 455 where cardamom has first been cultivated. They were selected purposively for the convince of data collection. After acquiring the list of cardamom farmers about 36 household sample size in 36 households was taken from the wards and selected randomly by lottery method.

3.4 NATURE AND SOURCES OF DATA

The purposed study is based on both primary & secondary data. Primary data were obtained by conducting about one months' field work in the study area, by using different method of data collection such as interview and (structured and unstructured) case study as well.

3.5 TECHNIQUES OF DATA COLLECTION:

3.5.1 INTERVIEW:

Structured Interview was used in order to collect quantitative data, i.e. demographic information, personal identification, sources of income, size of cardamom cultivated land, fuel wood supply & cardamom production & their income level.

Unstructured Interview was conducted with the key information i.e. local leader, old & experienced cardamom cultivators, and businessmen, to obtain qualitative information such as general historical development of cardamom cultivation and problems & prospects of cardamom cultivation of study area.

3.5.2 CASE STUDY:

Some cases studies were conducted for in dept-study. Two cases from each ward were selected for detail study of the cardamom cultivators, to know the actual history of cardamom cultivation. The farmers were asked to respond to some of the relevant issues such as what was the condition of cardamom farming at the beginning? What sort of problems have they facing recently? How many persons participated to cultivate cardamom at the beginning? What the major factors which affect the spread of cardamom cultivation and so no.

3.6 PROCESSING AND DATA ANALYSIS :

Both qualitative and qualitative data have been orderly processed and analyzed with the help of statistical method such as; frequency & percentage distribution by presenting them in tables and charts.

3.7 LIMITATIONS OF THE STUDY:

This study is confined to particular underdevelopment VDC in the eastern hill district of Nepal. The findings of the research may not be able to represent and cover others sectors (agro forestry, silviculture) because of the small size and on the other hand the researcher is not professional. This study is part of course requirement of M.A. Rural Development Department. As a student there may be many difficulties in the data collection considering time and financial constraints. Although, efforts were made to make the study scientific & empirical as far as possible, the findings may not be generalized to the whole cardamom cultivation & production system in the country.

The above table clearly reveals that 14 households have turned their rice field into cardamom land. Likewise 13 households of land dry field (Bari) have been converted into cardamom land. While 5 households waste & marginal land and forest bushes have been cleared for cardamom cultivate.

CHAPTER - FOUR

INTRODUCTION OF THE STUDY AREA

In this chapter, Location settlement-Patten, Natural resources, forest, water, communication, Health, electricity, Religions structure of VDC soil, Utis tree as a source of fuel- wood, situation of fuel wood collection before cardamom cultivation, fuel -wood collection pattern are described.

4.1 Location

The present study was carried out in Phaktep VDC which is located in Panchthar district Mechi Zone. The study area is a hilly region which is situated at an altitude of about 1500m. from the sea level. Taplejung and Tehrathum lie to the east, Phaktep VDC to the west, Angshrang VDC to the north side Nawamidanda VDC; south and east side Ilam district of Phakphok VDC.

4.2. Settlement pattern

Settlement pattern of the study area is heterogeneous in terms of ethnic as well as caste groups. Phaktep VDC generally 95%Limbu community while, all lower altitude areas of the VDC is populated by different ethnic group, Rais, Damais, Kamis and other occupational groups.

4.3. Natural Resources

There are no adequate natural resources such as water, forests, mineral etc. in study area.

4.4. Forest

The VDC has about 500 Ropanis (25hec.) of forest land (Phaktep Profile- 2057). Three kinds of forests are found in Phaktep VDC such as

private, protected and Government protected forest. Evergreen forest is found only at higher altitude of VDC.

4.5. Water

The VDC is not sufficient in water resources. During the monsoon season, the volume of streams increases and helps to cultivate summer crops. The main sources of water are small streams i.e. Nigura Khola, Lachhawai Khola, Patale Khola etc. which are used to irrigate cardamom farms & other crops during the dry season.

4.6 Communication

Communication is essential for the development of village. All the telephone services are available here. NCELL tower, CDMA and NTC tower are built at Sellowati hill. These three towers are giving mobile services. All kinds of mobile telephone can give service in this area.

4.7 Health, Electricity:

On health Post, One Aurba bdiok Medica center, with an auxiliary health worker at phaktep VDC is providing primary health care services, other three private medicine clinics are located in Ghurbise Panchami bazaar. They provide additional primary Health services to the people. About Ninety Percent people of Phaktep VDC are facilitated with electricity services.

4.8 Religious Structure of VDC:

Religion is the major parts of the Nepalese society. Different religious People are performing different behaviour and activities and the religion also preserved the various cultural norms and values. Here Eighty percent people are kirant, and less people are other religious people of the study area.

4.9 Soil

There are different types of soil found in this area i.e. sandy, loam, slit, clay etc. Sandy loam is found on the bank of streams which has fertile leaf mould and favourable for cardamom as well as crops. This dark-grey soil contains huge amount of humus and is known as mailomato. Locally the varieties of soil are known as chimtyailo mato and Kamere mato.

4.10 Utis tree as a source of fuel-wood

Utis trees have been rapidly growing day for the plantation of cardamom. Cardamom cultivation is done under the shade of utis trees. Utis trees are not only planted for shading purposes but also for providing fuel-wood, pillar and wood to make furniture for the people. Therefore, we can say that it is the main source of fuel-wood in the study area.

4.11 Situation of fuel-wood collection before cardamom cultivation

The practice of cardamom cultivation does not have a long history in Nepal. Generally, it was limited in Nepal compared to neighbouring Sikkim, Darjeeling & Bhutan. Farmers did not have any fuel-wood problem about three decades ago because there had been sufficient forests in the VDC. But the population boom on a limited agriculture land resulted in the depletion of the forest resources. Consequently, fuel-wood problem was created. Not only the fuel-wood problem but also agriculture field was affected. People had to collect fuel-wood from far away forests.

4.12 Fuel wood collection pattern

Phaktep VDC is suffering from fuel-wood because there is not adequate forest for the local people. Three hundred households have their private forest land including cardamom farm to fulfil their fuel-wood

requirements. To some extent the shortage of fuel-wood supply from forest has been fulfilled by Utis trees planted around the cardamom farms.

In the context of the study area more than 80% households have been able to acquire fuel-wood. From the following table we can observe about the fuel-wood sufficient respondents (households) & non-sufficient respondents of the study area.

Table No. 4.1

Sufficiency in fuel-wood requirements

Fuel-wood sufficiency	No. of households	Percentage
Sufficient	30	83.35
Non-sufficient	6	16.65
Total	36	100

Source:-Field survey, 2010

By the above table we can observe that most of households are able to maintain their fuel-wood supply during the year from cardamom garden. Sufficient respondents covered about 83.33% and no sufficient households have occupied only 16.66%. It refers those non – sufficient households are unable to maintain their fuel-wood demand, but the households (cardamom farmers) have small area and have just started to cultivate cardamom.

CHAPTER -5

SOCIO-ECONOMIC CONDITION OF THE STUDY AREA

In this Chapter, Social problems of the study area, population composition, age or sex structure, Ethnic composition, Educational structure, economy, land holding sizes of households, main crops of the study area, cardamom land holding, cardamom production the study area, change in cropping pattern since cardamom cultivation are described.

5.1 Social problem of the study area

Untouchability is prevalent in the society. The rich are always found suppressing the poor. The poor are deprived of rights provided by the state due to inequality between the rich and the poor. However, due to new educated generation, social problems like untouchability, discrimination and inequality are slowly decreasing.

5.2 Population composition

About 4000 people have been living in Phaktep VDC. Out of them 95% are Limbus and Rais and so-called lower caste people are also living. But in the bazaar area (Ghurbise Panchami Bazaar) Brahmin, Rai, Chhetri and Tamang are the other people. Main cardamom plantation areas are ward No 2, 4,5,6,7 and 8. Cardamom is the main source of income in these wards. Oranges, lemons and gingers are taken as main source of income in other wards. The income of people seems to be below average and the so-called Dalits are backward in economy.

5.3 Age and sex structure

Sampling the population condition of the study area the population condition of 0 to 71 + age group is mentioned below:

Table No 5.1

Age and sex structure of the study area.

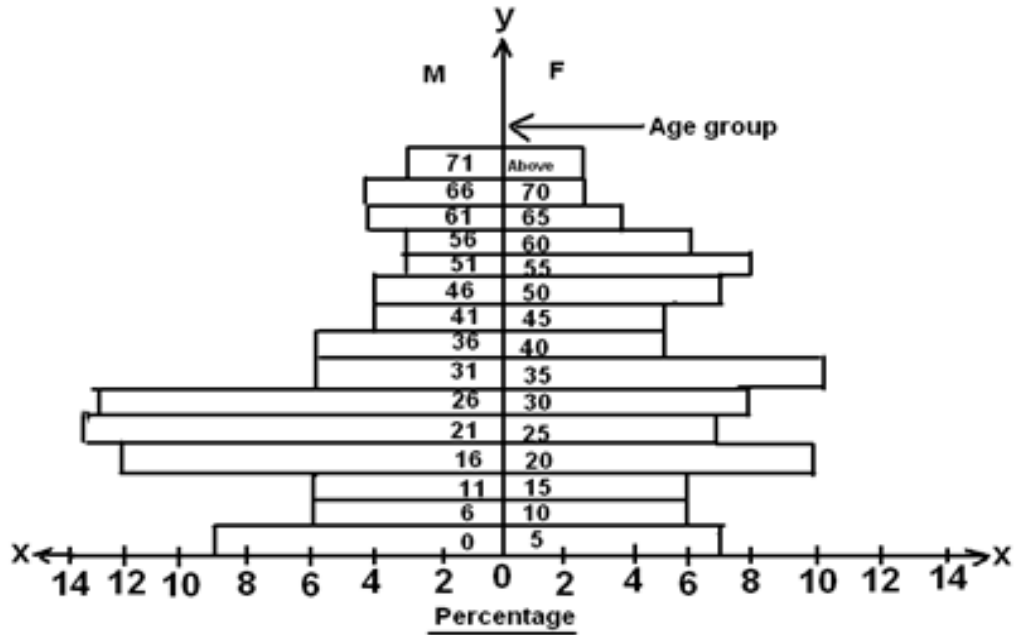
S.N.	Age group	M.	%	F.	%	Total	Percentage
1.	0-5	6	9.23	6	7.5	12	8.28
2.	6-10	4	6.15	5	6.25	9	6.20
3.	11-15	4	6.15	7	8.75	11	7.59
4.	16-20	8	12.30	8	10.00	16	11.04
5.	21-25	9	13.84	6	7.5	15	10.35
6.	26-30	8	12.30	7	8.75	15	10.35
7.	31-35	4	6.15	8	10.00	12	8.28
8.	36-40	4	6.15	4	5	8	5.52
9.	41-45	3	4.62	4	5	7	4.82
10.	46-50	3	4.62	6	7.5	9	6.20
11.	51-55	2	3.07	7	8.75	9	6.200
12.	56-60	2	3.07	5	6.25	7	4.82
13.	61-65	3	4.62	3	3.75	6	4.14
14.	66-70	3	4.62	2	2.5	5	3.45
15.	71-Above	2	3.07	2	2.5	4	2.75
		65	99.96	80	100	145	99.99

Source: - Field survey, 2010

Above 22 percent of population is under the 16 years age group but 2.75 percent population is 71 years above 75.17 percentage population is between 16 to 70 years group. It is evident the economically active population constitute about 67.58 percent (0-15, less than 60 years age group) and 24.827. (Less than 0-15 and above 60 years age group) comes under the inactive age group population.

Fig.no.1

Pyramidal diagram



5.4 Ethnic Composition

There are number of ethnic and caste groups who reside in Panchthar district. They are Limbu, Rai, Brahmin, Chhetri, Tamang, Gurung and Magar and occupational group. i.e. Kami, Damai, Sarki etc. In number, Damai and Kami are the last.

Table no. 5.2

Ethnic composition of the study area

Ethnic group	No. of households	Percentage
Limbu	32	88.88%
Rai	2	5.56%
Damai	1	2.78%
Kami	1	2.78%
		100%

Source:- Field survey, 2010

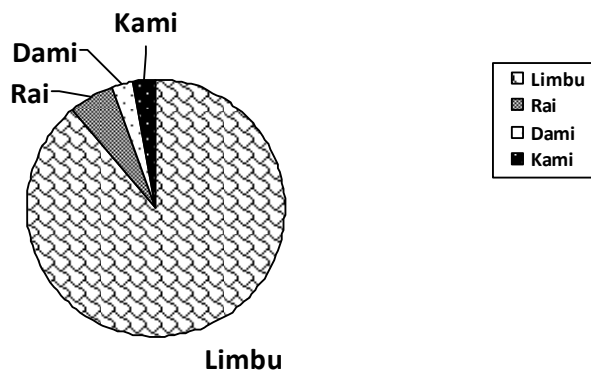
The majority of ethnic composition of the study area is basically covered by Limbu (88.88%) because they are indigenous people of that study area and Rai (5.56%) Damai (2.78%) and Kami (2.78%) are less number than the Limbu & Rai.

Ethnic group	No. of households	degree
Limbu	32	$\frac{32}{36} \times 360 = 320^\circ$
Rai	2	$\frac{2}{36} \times 360 = 20^\circ$
Damai	1	$\frac{1}{36} \times 360 = 10^\circ$
Kami	1	$\frac{1}{36} \times 360 = 10^\circ$
Total	36	360°

Let us now draw a circle of suitable size and divide 4 sectors:

Fig. no. 2

Pie Diagram



5.5 Educational structure

Panchthar district is located in northern part of Mechi Nepal. Undulating hills and mountains have dominated the topography of the district. There has been a great problem to maintain educational system. In the study area 36 persons (under 0-5 age group 5 persons have not made enrolment in school) 20 persons are illiterate and 16 persons are literate. They can be categorized on this table:-

Table No.-5.3

Literacy level	No. of Respondents	Percentage
Illiterate	20	55.56
Literate	16	44.44
	36	100

Field survey, 2011

Educational status of the respondents

Table no: 5.4

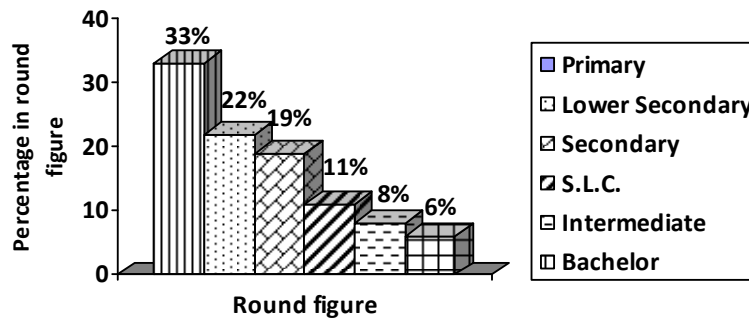
Educational level	No. of respondents	Percentage	% in round figure
Primary	12	33.33	33.00
Lower Secondary	8	22.22	22.00
Secondary	7	19.45	19.00
S.L.C.	4	11.11	11.11
Intermediate	3	8.33	8.00
Bachelor	2	5.56	6.00
Total	36	100	

Field survey,2011

According table no. 5.3, a large number of persons are illiterate in the study area. Total respondents (out of 36), 55.56% are illiterate and 44.44% literate.

There are seven school including 3 secondary and 4 primary schools with 1725 students (field survey 2010).It was observed that joint families have been facing major problems such as education, health, economic, hard ships etc. because of low income and large families.

Fig. no. 3 **Educational Status of the respondents**



5.6 Occupational structure

There are various types of people residing that VDC and occupational have been accepted accordingly different in nature such as agriculture, business, foreign service, understandable agriculture is the dominant occupational rather because most of the people are engaged in agriculture activities. Some occupations are seasonal too. The main occupations are given in the table below.

Table no: 5.5

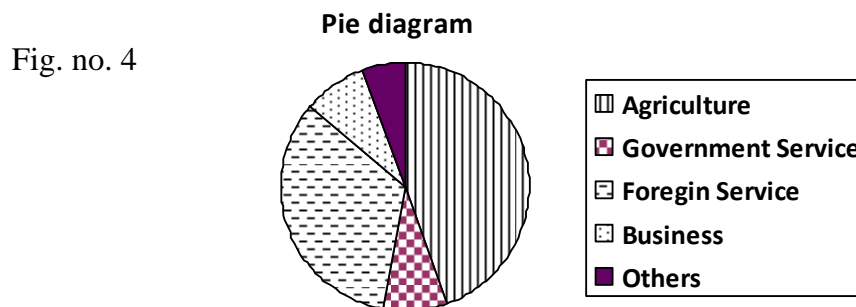
Occupational structure of the study area

Occupational	No. of Respondents	Percentage
Agriculture	16	44.45
Government service	3	8.33
Foreign service	12	33.33
Business	3	8.33
Other	2	5.56
Total	36	100

Source: - field survey, (2011)

Occupational	No. of respondents	Percentage
Agriculture	16	$\frac{16}{36} \times 360^\circ = 160^\circ$
Government service	3	$\frac{3}{36} \times 360^\circ = 30^\circ$
Foreign service	12	$\frac{12}{36} \times 360^\circ = 120^\circ$
Business	3	$\frac{3}{36} \times 360^\circ = 30^\circ$
Other (S.L.C.)	2	$\frac{2}{36} \times 360^\circ = 20^\circ$
Total	36	360°

Let us now draw a circle of suitable size and divide it into 5 sectors.



- (i) Agriculture: - Agriculture is indeed the backbone of the rural areas, but also of almost all sector of the country. Because most of the Nepalese industries are based on agriculture products, agriculture influences people residing in rural and remote area likewise there are member of people 44.45% are engaged in this sector of the study area.
- (ii) Foreign service: - Foreign Service is generally known as work is done abroad mostly engaged are the Limbu, Rai, Kami, Damai.

The people of this area are engaged in the foreign service at the time of world war first. About 33.33% people are involved in this sector.

(iii) Business: - Business is not accepted culturally and traditionally critical shop cardamom business in this area. There are 8.33% people who are engaged in this sector some are seasonal businessmen. They take up cardamom business only in this time of harvesting some are engaged in small scale market shop in the local area.

Table no. 5.6

Land use pattern in the study area.

Land category	cultivable area in hector	Area in %	Round figure
Rice field (Khet)	40.75	41.26	41.00
Dry field (Bari)	35.50	35.95	36.00
Cardamom	22.50	22.79	23.00
Total	98.75	100	100

Source:- field survey, (2011)

Rice field (Khet) occupied higher position (41.26%) followed by cardamom covered land 22.79% rice is cultivated for domestic consumption. Dry field and cardamom covered less than half percentage of the total area of rice field.

Fig. no. 5

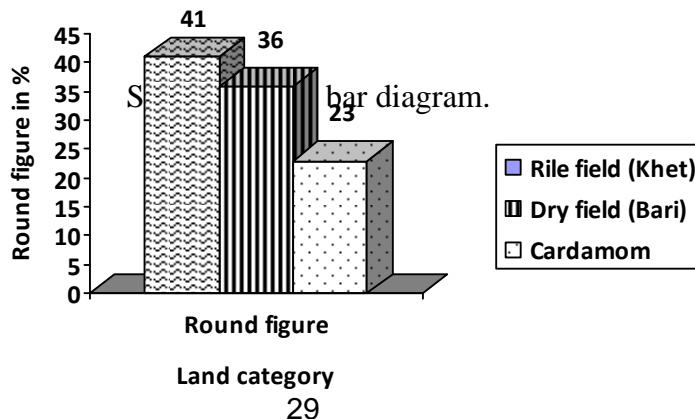


Table No. 5.7

5.7 Land holding size of the households

S. No.	Land holding size (in hec.)	No. of respondents	Percentage
1	0.00 – 0.50	1	2.78
2	0.51 – 1.00	2	5.56
3	1.01 – 1.50	2.5	6.95
4	1.51 – 2.00	3.5	9.73
5	2.01 – 2.50	4.0	11.11
6	2.51 – 3.00	4.5	12.5
7	3.01 – 3.50	2.0	5.56
8	3.51 – 4.00	6.0	16.66
9	4.01 – 4.50	5.0	13.88
10	4.51 – 5.01	5.5	15.27
	Total	36	100

Source:- field survey, (2011)

Above this table 3.51 – 4.00 category of land holding households are large number than overall household respondents occupied 16.66 and 2nd position 4.51 – 5.01 land holding categories constitute 15.27 each. Among this categories of land holding 0.00 – 0.50, 0.51 – 1.00 and 3.01 – 3.50 land categories of household respondents are last number in this area.

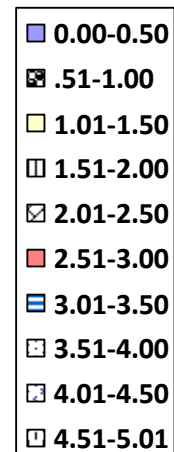
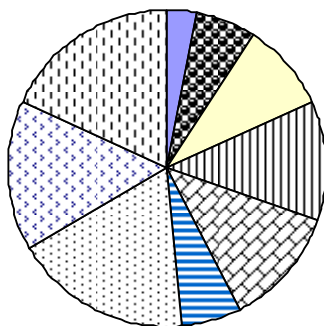
Land holding size (in hec.)	No. of respondents	round figure	degree
0.00 – 0.50	1	1	$\frac{1}{38} \times 360^\circ = 9.47^\circ$
0.51 – 1.00	2	2	$\frac{2}{38} \times 360^\circ = 18.94^\circ$

1.01 – 1.50	2.5	3	$\frac{3}{38} \times 360^\circ = 28.43^\circ$
1.51 – 2.00	3.5	4	$\frac{4}{38} \times 360^\circ = 37.90^\circ$
2.01 – 2.50	4	4	$\frac{4}{38} \times 360^\circ = 37.90^\circ$
2.51 – 3.00	4.5	5	$\frac{5}{38} \times 360^\circ = 47.36^\circ$
3.01 – 3.50	2	2	$\frac{2}{38} \times 360^\circ = 18.94^\circ$
3.51 – 4.00	6	6	$\frac{6}{38} \times 360^\circ = 56.84^\circ$
4.01 – 4.50	5	5	$\frac{5}{38} \times 360^\circ = 47.36^\circ$
4.51 – 5.01	5.5	6	$\frac{6}{38} \times 360^\circ = 56.84^\circ$
Total		38	360°

Let us now draw a circle of suitable size and divide it into 10 sectors.

Fig. no. 6

Land holding size in (hec.)



5.8 Main crops of the study area

There are various types of crops cultivated in the area. The main crops are paddy, wheat, millet, maize, potato, oil seed etc. Most of the land is covered by rice field maize and wheat occupies 2nd and 3rd position respectively. millet, potato and oil seeds are also cultivated overall total land is cultivated by main crops and also covered more than half percent of the agriculture land, because farmers inter, double & triple cropping in the field.

In terms of production, paddy occupies the highest position than other crops wheat, maize, potato, millet are also suitable production. Therefore a large of number people depends on rice, wheat, maize, potatoes, for domestic consumption.

5.9 Cardamom land holding

Consumption cardamom landholding size is gradually increasing year by year because of its bright prospect in terms of generating foreign currency. Most of the farmers are inspired from cardamom and they are clearing, their land for cardamom can be cultivated unequally distributed.

Table no. 5.8

Cardamom land holding size of the study area

Land category in (hec.)	No. of respondents	Percentage
0.00 – 0.50	13	36.11
0.51 – 1.00	12	33.33
1.10 – 1.50	7	19.44
1.51 – 2.00	4	11.12
Total	36	100

Source:- field survey, (2011)

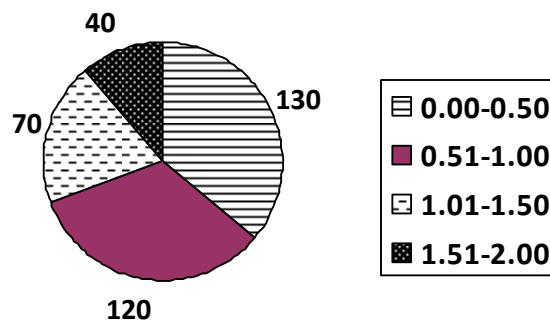
It seems most cardamom farmers 0.00 – 0.50 hec. category occupied high percentage (36.11%) but it represents they are small farmer of the total card-amom farmers and by cardamom farmers are small number (11.12%).

Land category in (hec.)	No. of respondents	degree
0.00 – 0.50	13	$\frac{13}{36} \times 360^\circ = 130^\circ$
0.51 – 1.00	12	$\frac{12}{36} \times 360^\circ = 120^\circ$
1.10 – 1.50	7	$\frac{7}{36} \times 360^\circ = 70^\circ$
1.51 – 2.00	4	$\frac{4}{36} \times 360^\circ = 40^\circ$
Total	36	360°

Let us now draw a circle of suitable size and divide it into 4 sectors.

Fig.no 7

Land Category in (hec.)



5.10 Cardamom production on the study are

Phaktep VDC is the pioneer village of cardamom farming in Panchthar district. Cardamom cultivation was initiated 37 years ago (VDC report 2011). The total cardamom production is about 220 Mond (8.800 kg), likewise, total income from cardamom amounted to about 70,000. Average

cardamom production per household in about 135 kg per year and average hectare cardamom production is observed to about 6.4 mond per year. Average income from cardamom is about Rs. 1,20,00/- per households and per year.

Table no. 5.9

Labour investment in cardamom cultivation (per. hec.)

Particulars	Average labour	wage per. day	Production (40 kg)
to dry land	10	100	5
harvest	12	100	6
fire-wood	-	-	600kg

Source:- field survey, (2011)

5.11 Change in cropping pattern since cardamom cultivation.

Cropping pattern in the study area is done in a traditional style. They don't use modern technology in order to grow more food. Farmers cultivate in their field crops such as paddy, wheat, maize, millet, potatoes etc. After the introduction of cardamom cultivation farmers are turning to cardamom because of its economic benefits. As a result, most of the farmers are clearing their rice or rain fed dry land marginal land for cardamom cultivation where main crops can't be grown sufficiently.

CHAPTER-6

ESSENTIAL PHYSICAL & CULTURAL DETERMINANTS FOR CARDAMOM.

In this chapter, Physical determinations, Altitude slope, land feature, cultural determinations, Preparation of the land, Plantation, Distance of Plantation Pits, weeding, irrigation, Disease and pests, Harvesting, Grading and packaging, storage, marketing are described.

6.1.1 Physical determinants

Warm temperate climate as well as shady moist and wettest is suitable for cardamom cultivation. Cardamom cannot bear extreme heat and dry land, Therefore, Shadow and humid land is necessary for cardamom growing. Temperature plays a vital role for cardamom compared to other crops. A temperature of 8 to 20°C, is ideal for cardamom cultivation. On the other hand, a rainfall of 1600 to 5000mm. is favourable for cardamom. Cardamom doesn't fare well in the estuarine cold or during frequent climatic changes.

6.1.2. Altitude

Crop production is largely dictated by certain altitude. Cardamom is no exception cardamom can be grown about 1000m. to 1500m from the sea level. But there were various types of cardamom needing various altitudes accordingly; Ramshahi for instance can be grown from 1500 to 2000m. Ranges from the sea level. It planted in lower altitude; it does not give production satisfactory. But csolshahi cardamom can be grown in lower range (1200-1600m) the Ramshahi because it can be bear warm climate. Rangbange and saune can be grown up in the middle hills of Nepal.

6.1.3. Slope

Generally, cardamom is cultivated in different slopes according to the features. There must not be specific slope aspect for cardamom. Slopes as well as terrace plain land with enough shadow is suitable for cardamom. Very steep & slanting land is unfavourable because there would be problem in weeding, picking, irrigation etc. The land having 15 to 35 slopes is considered as favourable for cardamom farming. Especially north – east facing slope aspect is suitable to grow cardamom natural shadow is obtained in this slope aspect for cardamom.

6.1.4 Land Feature

Land feature is an essential physical determinant. For cardamom cultivation, generally, north – east slope aspect land feature should be selected for cardamom cultivation (Kholisa – Kholisi). It should be contain PH 4.5 to

6.5 on the soil to avoid landslides and erosions.

Cardamom can be grown on all types of soil. The soil must be soft and light with adequate natural minerals and compost.

6.2. CULTURAL DETERMINANTS

6.2.1. PREPARATION OF THE LAND

Land preparation is the preliminary requirement for cardamom cultivation. About 5-6 month before plantation land should be cleared off the unnecessary shady plants and arrange in breadth equally. The necessary land is prepared by digging pits to plant cardamom sloping.

6.2.2. Plantation

Two kinds of cardamom can be planted i.e. the first one is clump separating method & the second one is by necessary or seeding method. The

first method is popular and most of cardamom cultivators have been using this method in different parts of the eastern Nepal. This method is very easy to follow but is prone to attack to try diseases and pests.

Plantation by necessary method is useful but it takes a long time to grow and production is painstaking. Therefore necessary method is not popular than clump separating method. Diseases and pest cannot attack easily because better seeds are selected. Similarly, cardamom plantation is done from the month of May to August (Jestha to Bhadra) because it is the time of monsoon. At that time, seed would not be dry and clump and is not disturbed by water.

6.2.3. Distance of plantation pits

Distance of plantation pits for cardamom should be on the basis of varieties of cardamom and nature of slope, soil. There must be minimum 1/2m. distance between one plant seeds to another 9m. breadth and 9m. length and 1/2m. deep pits should be prepared 1.2 month before cardamom plantation. Each and every pits should be better to planted 2-3 clump having with roots. Because of this method varieties of cardamom can be grown and it the distance of pits in considered as very important for production. Because if distance of pits becomes long, it will disturb production (low production). While distance of pits should not be short because cardamom plant may intertwine making it difficult and picking it later.

6.2.4 Weeding

After the plantation of cardamom should be done time to time leading to the harvesting. After, the cardamom starts to produce there is not frequent weeding because cardamom covered the area and small bushes do not grow up easily and removed for the field. The first weeding is done in Baishakh

(April/May) and it is the time the cardamom bloom. Second weeding Bhadra (August/September) in this time those clump doesn't have fruits should be removed out it helps to reap cardamom easily.

6.2.5 Irrigation

Irrigation is necessary for every crop during the dry season. Therefore, cardamom needs irrigation if there is no enough water. After the humid containing on the soil is found logging it should be managed by drainage system. Generally, December is the best month for better irrigation Poush (Dec. / Jan.).

6.2.6. Diseases and pests

Cardamom is one of the important cash crop of Nepal which should be protected from various kinds of diseases, pests and wild animal. Some diseases are very dangerous and harmful to cardamom. Generally disease & pests are given as following which are found in the cardamom garden.

(i) Foorke

Foorke is a very harmful disease by virus diseases by virus. It is suspected to have entered Nepal from the neighbouring Darjeeling and Kalimpong and India. It is now common in Ilam district of Nepal. Foorke disease it not transforable by soil, seeds as well as from material tools used in cultivation. Generally, this disease of cardamom transferred from a plant to another. The pests are known as micromyzus, Kalipongenis, Hedychium, Caromarium & Pestalonia niroversa. These diseases pests get into the plan by sucking juices from the plant (Breeding & hatching) increases because and hatching along the cardamom plants.

The most common and conspicuous symptoms of foorke are evident in changing size of the leaves. Clumps become small and short. Clumps become small and short. Clumps roots become dry and ultimately the total cardamom plants die out. The plant does how more than 30cm after foorke grips the plant.

(ii) Streak Mosaic

This disease is also very harmful to cardamom with a knack for attaching to the leaves. It is small streak, long and yellowish in colour. When the disease becomes matured, this yellowish streak may combine each other (joint) and spread over the entire leaves making them yellow. The virus of this disease is known as borge cardamom streak mosaic.

(iii) Clump root

In Ilam this disease is locally known as "sangle- chhirke" clump root is rampant in most of the districts of cardamom cultivated area. Generally, this disease grows by fungi; cephalosporium, fusarium, pythium etc. are the common disease in cardamom garden. In the initial stage the virus attacks the pick of the leaves turning them yellow. Finally leaves become wither. The collar region becomes useless and can be easily plucked from the collar region becomes useless. Besides these existing diseases there are various pests and insect impeding the cardamom development. These disease pests are jhusilekira (cele pimhiold), Dant Khane, Gobar, Adipts, leaf hand Thrips etc. are the common diseases of cardamom. On the other hand wild animals such as palm civets, rats etc. are also considerable cardamom destroyers.

6.2.7. Harvesting

Harvesting is the last stage (action) of farming and is done in the cardamom field. When fruit becomes red a sweet smell permeates the

cardamom field, preparation are made to harvest the fruit. Before the picking up, necessary arrangements such as bamboo baskets, sacks and labour done as per necessary. Perfect ripped cardamom fruit seeds are should black, strong and non-fit .The ripe cardamom seeds are strong and black in colour or crude ones are either white or yellow in colour. Extreme are to be taken while pick up the fruits from the plants otherwise the harvest may not be bountiful. The fruits are picked up with the help of knives made of iron. The one side of the knife is blunt and sharp while, opposite side is serrated like the tooth of a saw. Now a days both side of knife is sharpened in order to increase the inefficiency.

Harvesting producer is various according to the altitude time get underway from the months of Bhadra (August/ September) to Kartik (October/ November). In lower altitude harvesting is done from the last week of Falgun to Jesth first week. The harvesting should be done within the time honoured time tables; otherwise, laxity could affect the cardamom quality. Moreover, vermin and mammals like Kala (Palm civets) are likely to spoil the harvest.

There are two types of Bhattie i.e. (traditional) modern bhattie (New one)Local or traditional Bhattie is popular everywhere in Nepal where are cardamom is cultivated. It is made of local material, such as: sore, mud, wodden pillar & roof. Local bhattie can be made easily by the local farmers. Bamboo mat as well as iron net is usually sued for contracting the bhattie. Roofs are plied to protect the bhatties from rain and sun.

(i) Cardamom bhatties

Traditional private bhatteis have been used for drying the cardamom. Such bhatties are in each cardamom farmers house. Over 3000 such bhatties are expected to have been in Panchthar district. For constructing the

traditional bhatties digging the ditch, making a wall and roofing are done. such bhatties are also made with care and expenditure. The improved models have been also practised to maintain quality because traditional bhatties are giving smoky cardamom. Good cardamom is produced through such improved bhatties so Panchthar Udhog Baninjaya Sangh (PUBS), Rural Business Help Programmme (RBHP), SNB Nepal, Community Help Programme (CHP), Mercy Crops Nepal and Agriculture Development Office (ADO). There are about 30 such bhatties. Improved cardamom bhattie is such a bhattie on which the cardamom is dried only in the heat of the fire produce by the iron plates. The cardamom dried in such bhatties are smokeless, weighty, economy in time and fire – wood.

Advantages of such improved bhatties.

- ⇒ Well managed net woven on the bhattie with the use of iron rods is made for drying the cardamom.
- ⇒ About 60% dried fire – wood is used for heating the bhattie.
- ⇒ The pipe and rod get heated with the temperature of 55 to 60 degree Celsius and same temperature is tried to be maintained for drying the cardamom.
- ⇒ About Rs. 70000 should be spent to make such improved bhatties.

Table No.6.1

Differences between traditional and modern bhatties

Traditional Bhatties		Improved bhatties
Smoky and smelly of getting burnt cardamoms are produced.	1	Smokeless and healthy cardamoms are produced.
Less in weight	2	More in weight.
Less in quality	3	Better in quality, colour & taste
Quality may go down. While storing	4	Durability

it for 2 to 3 years.		
Less oily.	5	About 2.5% oily.
Time consuming.	6	Economy in time.
Use of more fire – wood.	7	Economy in fire – wood.
Bad impact in farmer’s health.	8	Good impact in farmer’s health.
Less pricing.	9	More pricing.
About Rs. 5 to 6000 should be spent for making such bhatties.	10	About Rs. 70000 should be spent for making such bhatties.

Source: PUBS Panchthar

The cardamom fruit is continuously heated until it is dried. It should be continuous heating about 520kg of wet cardamom, which normally takes about 24 hours. Cardamom is taken to be dry when it turns into black colour.

(ii) Modern bhattie

Modern Bhattie is particularly used in the Ilam district in order to save fuel-wood. By this Bhattie cardamom can be dried using heat rather than smoke. Modern Bhatties are not popular still at other districts except in Ilam.

6.2.9. Grading & Packaging

After the cardamom is dried out, grading is done in necessary marketing. We should separate with tail, without tail, more black and less black, we dry large capsule and small capsule etc. after the grading cardamom is packed in the sacks for marketing purposes jute sacks etc. After the grading cardamom is packed in the sacks for marketing purposes jute sacks and plastic sacks are used to package cardamom. Plastic sacks are much preferred than jute sacks because they protect the final product from wet, water, moisture and other harmful pests.

6.2.10. Storage

Every crops as grains should be properly stored to provide long-term security. Similarly, cardamom should be well separated after the grading & Packaging. Storage is necessary when cardamom price is not (high) in the market. It there is not proper storage it may be destroyed by insects and vermin etc. There should be separate room for storage.

6.3.11. Marketing

There are various types of cardamom buyers or channel in our country. During the high price of situation stored cardamom can be sold in the market. Farmers do not usually sell their product where the market is not favourable to them. Farmers of this area almost all sold their cardamom in the village to whole sellers. Only 1-3 percent of farmers sold their cardamom literally to explore the markets in India.

CHAPTER- SEVEN

MARKETING CONDITION

In this chapter cardamom production in Nepal Internal market of cardamom, Channel of Cardamom collection in Nepal, Buying and selling Producer, Transportation cost, total export or income from cardamom, prospect of cardamom in present situation, land use pattern for cardamom cultivation in panchthar district, Cardamom collection centres of Mechi Zon, Village wise Cardamom production of Panchthar district are described.

7.1. CARDAMOM PRODUCTION IN NEPAL:

Eastern hills of Nepal are not able for cardamom production. At present, Ilam, Panchthar, Taplejung, Terahthum, Sankhuwasabha, Dhankuta, Bhojpur districts are the main cardamom protection centres of eastern Nepal. According to the fiscal year 2050/051 cardamom farm area as well as production has been presented by cardamom Development centre, Fikkal, Ilam. It is given below.

Table No 7.1
Production of cardamom by districts

districts	Area in (H.)	Production in metric tones
Ilam	2250	950
Panchthar	1245	685
Taplejung,	2239	685
Dhankuta	204	128
Bhojpur	225	62
Sankhuwasabha	837.7	130
Terahthum	435	98
Okhaldhum	14	3
Udayapur	9	3

Khotang	31	8
Solukhube	8	7
Others district	35	7
Total	7542.7	2766.00

Source: Cardamom Development center fikkal Ilam ,050/051

In the table above cardamom farms area & production is extensive in Ilam district. Taplejung occupied a second position in terms of area. But the production there is equal to Panchthar. Likewise other district area also catches up very fast.

In this way cardamom cultivation and its production is increasing year after year because of its production to generate foreign currency. Recently cardamom Development center, Fikkal Ilam has published the report regarding cardamom cultivating area and production. The report clearly indicates that total area of cardamom cultivation and the production this year increased are then the previous fiscal years. In other district Dolakha, Sindhupalchok, Gorkha, Rukkum, Baglung, Dadeldhura, Ramechhap, Kaski, Jajarkot etc. also cardamom cultivated area.

Table No. 7.2

Estimated cardamom farm area & production for the year 2059/060

Districts	Area in (H)	Production in metric ton
Ilam	2582	756
Panchtar	1435	692
Taplejung	2350	964
Dhankuta	317	174
Bhojpur	355	55
Sankhuwsabha	1030	143
Therathum	450	197

Okhaldhunga	46	9
Udaypur	27	2
Khotang	20.5	3.5
Solukhumbu	20	8
Other districts	150	8
Total	8782.5	3011.5

Source: C.D.P. Fikkal Ilam, 2067

Comparatively, cardamom farm area increased in the fiscal year 051/052 than before (fiscal year 050/051). The cardamom farm of land the Taplejung district has taken high position. In terms of the total cultivated areas, the district of Taplejung share the top position with Ilam. But when it comes to production, Ilam heads the list. The table also shows that cardamom farms area is increasing year by year, not only in eastern Nepal but also in the western parts of Nepal.

The total cardamom farm land other in the year 059/060 increased by 1239.8 hec. Likewise, production also increased in comparison to 1 year 059/060 by 244.2 metric tonnes.

7.2. INTERNAL MARKET OF CARDAMOM

Marketing has a different connotation for lay man and economists. The layman marketing is generally selling and purchasing of a commodity, which in its economic terms in only the part of marketing. On the other hand, economists define marketing as the performance of all business actives involving the transfer of goods as services from the point of the initial production to the ultimate consumer. Agriculture is the largest and oldest occupation o the world. In fact the marketing economy of today is still a part of this transition stages. The marketing of agricultural products plays a vital part in our life and engages a wide variety of skills.

Generally, cardamom doesn't have internal market in Nepal. Cardamom is only used for spices in curry and occasionally with herbs. Nevertheless it has religious importance. Nepalese cardamom products reach foreign countries (market) via India where most cardamom is consumed. Therefore, it has directly affected our internal market. Local Nepalese cardamom buyers determine the price of cardamom on the basis of Indian market price. Moreover, we can say the internal market of cardamom in Nepal has limited as compared with other crops.

7.3. CHANNEL OF CARDAMOM COLLECTION IN NEPAL

Cardamom is grown in Nepal, for export purposes, but owing to very small scale of cardamom production on individual farms (10-100kg) and transportation, storage difficulties, cardamom passes through several hands before it is exported. District headquarter of Taplejung, Terathum, Bhojpur, Dhankuta, Sankhuwasabha, Panchthar, and Ilam are primary collection centre of cardamom. In this collection centre merchants deal with the produce brought by the farmers. They also send their agents to different production centre. The function of these merchants is limited to assembly and storage. Carrying of dry cardamom on human backs is the only way of transporting the products, Bamboo baskets (Dhakar) and jute & plastic sacks (Bora) are also extensively used.

Cardamom is collected in primary collection centre of Koshi and Mechi zones. The secondary markets are in Dharan, Biratnagar and Birtamode and respectively. Merchants in primary collection centre hire labour to transport the product. Birtamode in Jhapa, Biratnagar in Morang, Dharan in Sunsari are the major export outlet of large cardamom. Farmers after harvesting and drying the product either sell it to wholesaler or stored for delayed transportation. Various channel of cardamom.

(i) Producers (Farmers)

Producers are known as farmers, who produce cardamom in their field. Generally, sell their products (cardamom) in their house in the near market.

(ii) Middlemen

Middlemen are called local businessmen. They have temporary or permanent shops in the village. During the harvesting season, they go from one village to another village to collect cardamom. After collection cardamom, they sell it to whole sellers & district sellers.

(iii) Whole sellers & District sellers (Merchants)

Whole sellers & district sellers collect cardamom in large quantity from different collection (Local collection) sometimes they collect the cardamom themselves at the village level, if the field is near to the market.

(iv) Exporters

Exporters are known as large scale merchants. Who collect the cardamom from whole sellers & district level merchants. Ultimately, they export cardamom to foreign countries.

(v) Foreign Exporters.

Foreign exporters are large scale cardamom collections as well as exporters, Generally, cardamom is transferred from one hand to another. There is direct connection between cardamom producer and cardamom consumer is impossible, so cardamom is sold at home in the local rate, and small number of farmers have to sell cardamom near market by carrying on the back to Ghurbise Panchami bazaar (Panchthar).

7.4. BUYING & SELLING PROCEDURE:

There is adverse relationship between buyers & sellers in terms of price of cardamom in Nepal. Indian market is always in fluent in determining the price of Nepalese cardamom Therefore; the real cardamom producers do not get maximum benefit out their actual labour input. Cardamom price is always in favours of buyers because they have well organized and good channels in every sector of market. On the other hand, cardamom producers do not have concert associations as well as preventive ways to over themselves. In this critical situation the government do not provide financial cushion when the price fluctuates at market. As a result, farmer has to sell their product according to demand of buyers. In the context of study area, most of the farmers solid their cardamoms at home alone while the few sell in the near market by carrying the produce on their backs. Understandably, the price of cardamom in the market is higher than in the village.

Table No: 7.3

Average selling price of cardamom in local market Ghurbise Panchami Bazar
(per mound 40kg in Rs.)

Year	minimum price per mound	maximum price per mound
2060	8,000	8,600
2061	7,000	7,600
2062	7,500	8,000
2063	8,500	9,000
2064	8,200	8,700
2065	10,000	13,000
2066	13,000	62,000
2067	35,000	76,000

Source: field survey,2011

7.5. TRANSPORTATION COST

Transportation is not only essential for the operation of marketing process but it also accounts for a substantial part of the total marketing cost. Well developed transportation network is equally essential where ever cardamom is cultivated without proper transportation, we cannot expect the market to expand by leaps and bounds. Therefore, transportation plays a very important role to determine the cost of every cardamom like other commodities.

7.6. TOTAL EXPORT & INCOME FROM CARDAMOM

Almost all the total cardamom production is exported from Nepal towards India as well as overseas countries. As a result, Nepal has been earning million of foreign currency which is helping to develop our nation.

International trade centre has conducted a survey in 1990, which shows that the world wide spices trade about 400 tonnes was value of US \$ 15,00,00,00,000. India is known as "home of spices" and supplies 10-12 percent of the total demand of the world. Likewise contribution of Nepal doesn't have any remarkable value in the trade of spices in the world. Total export of spices from Nepal accounts to US \$ 42, 00,00,000 which occupies 0.28 percent of the world trade share.

In respect to the cardamom Development centre has published the report 049150, export cardamom from Nepal.

Status of export of cardamom from Nepal

Table No. 7.4

Fiscal year	Export towards India		Quantity in tones	Value in Rs
	Quantity in tones	Value in Rs		
040/041	545	7950	260	6491
041/042	387	10458	250	15580
042/043	540	13491	349	25667
043/044	558	14222	534	43271
044/045	788	24052	285	19981
045/046	1296	34869	229	16127
046/047	934	29548	70	4933
047/048	760	2761	10	756
048/049	2773	117565	No record	-

Source: Cardamom development centre Fikkal Programme 2049/050

In this table has presented cardamoms export from Nepal towards India as well as overseas countries, which is not kind of obstacle. Such as, price fluctuation, less demand of cardamom foreign countries etc. overseas market has also showed that fiscal year 2046/2047 Indian as well as overseas countries market absolutely decreased because of India/ Nepal trade transition. Thereafter, Nepalese cardamom export continuously decreased from that time

Table No: 7.5
Status of export of spices from Nepal (Rs in 000)

Spices	Fiscal year (049/ 050)	050/ 051	055/ 060
Cardamom	127214	135983	124676
Ginger	71662	66686	101653
Sutho	30712	23600	76247
Chillies	236	25	54
Garlic	-	945	101453
Cinnamon	-	-	3404
Coriander	-	-	8
Turmeric	-	-	16
Total	229824	227239	407511

Source: Department of custom, 2052

Above this table refers export of cash crops from Nepal cardamom occupied highest position then other cash crops ginger, chillies, sutho etc. except jute, tea, potatoes. In compared fiscal 2049/050 to 050/051 cardamom export is increased but fiscal 2051/052 is decreased. In the other hand ginger is increased year by year.

7.7. PROSPECT OF CARDAMOM IN PRESENT SITUATION

Cardamom has already been established as a cash crop in places like Sikkim, Darjeeling, Bhutan, Guatemala, Sri Lanka and Thailand. Nepal, however, doesn't have long history of cardamom farming which only spans back to seventy years and at present, It has a bright potential as a sources of foreign currency. similarly nowadays cardamom farming is rapidly flourishing in our country especially in the eastern part of Nepal like Ilam, Panchthar, Taplejung, Dhankuta, Sankhuwashabha, Terathum & Bhojpur.

Table No. 7.6

Prospect of cardamom production and area by district 2059/060 (area in hec.)

districts	Prospect area (in hec)	estimated production (in metric tonnes)
Panchthar	15000	350000
Terathum	12000	300000
Sankhuwasabha	13000	325000
Okhaldunga	14000	35000
Udaypur	200	5000
Sinduli	250	6250
Ramechhap	200	5000
Surkhet	390	9750
Lamjung	1268	31700
Khotang	519	12975
Kaski	265	6625
Makwanpur	562	14225
Total	42,654	1101525

Source: (DDC Report, 2060)

The above table shows that there are sufficient potential to cultivate cardamom in area in our country. There is reasonable climate as well as geographical condition but also it is becoming alternative sources income of the rural people.

7.8. Land use pattern cardamom cultivation is Panchther district

Land use pattern (ha)

Total area of the district: 124,590(ha) Cultivated land 41,222 (ha)

Forest land: 57,707(ha) grazing land: 5,292 (ha)

Percentage of irrigated (of Cultivated) land: 7.84(ha) Others:

Table No. 7.7
Pocket areas for high values crops

S.N.	Name of crops	Name of Pocket areas	Number of Pocket	Area covered (ha)	Remarks
1	Cardamom	Ravi, Yangnam Oyam, Phaktep Sarandanda, Falaicha, Memeng, Ranitar, Chilindin, Changthapu	4	1595	
2	Ginger	Nagi, Ranitar, Tharpu, Phidim Amarpur		105	
3	Tea leaf	Ranitar, Oyam, Ekteen, Phidim Aansarang, Memeng			
4	Orange (citrus)	Amarpur, Chokmagu	8	526	
5	Green vegetable	Nagi, Varapa, Chokmagu, Phidim	5	1505	
6	NTFP (chiraito, bikhma, lauthasalla)	Oyam, Ranitar, Pranbung, Changthapu			

Source: CAA panchthar

Table No. 7.8

S.N.	Crops	Area covered (ha)	Production (metric tonnes)	Prductivity (mt/ ha)	Remarks
1	Maize	14160	21139.4	1.49	
2	Paddy	12813	23662.66	1.84	
3	Wheat	4115	8230	2	
4	Barely	519	647.7	1.3	
5	Cardamom	1595	669.9	0.42	
6	Ginger	105	1155	11	
7	Potato	1792	23296	13	
8	Garlic	12	60	5	
9	Vegetable	1205	14460	12	
10	Fruit (citrus)	526	5786	11	
11	Akabare chilly	23	172.5	7.5	
13	Turmeric	21	168	8	
14	Millet	5989	10780.2	1.8	

Source:- CAA Report, (2067)

7.9. Cardamom collection centre of Mechi Zone

Table No. 7.9

S. N.	Rural Collection centre	sub centre	Main centre
1	Ranitar, Lungrumpa, Phidim	Ranitar/Phidim	Phidim
2	Yangnam, Nangeen, siden, Prambung, Memeng	Phidim/ Yangnam	Phidim
3	Chokmagu, Siwa	Phidim	Phidim
4	sikaicha, Chaksibote, Dumrise, Ose, Phawakhola, Thechambu Tiringe, Kunjari, Bakhim	Tharpu	Tharpu
5	Chyangthapu, Falaicha, Tharpu, Oyam, Nagi	Chyangthapu/ Tharpu	Tharpu
6	Fulbari, Athrai, Niguradin, Hangpang, Amarpur	Amarpur	Amarpur
7	Amchok, Fuyetappa, Lumde, Jaubari, Banjho, Sakhphara, Ivang	Ravi	Ravi
8	Limba, Kurumba, Ravi, Arubote, Olane, Sarangdanda	Ravi	Ravi
9	Phaktep, Pouwasartap, Imbung, Angsarang, Phakphok	Ghurbise/ Ranke	Ghurbise/ Ranke
10	Chamaita	Ranke	Ranke
11	Ekteen, Panchami, Suvang	Gopetar/ Jorpokhari	Gopetar/Jorpokhari

Source: PUBS Panchthar

7.10. Village wise cardamom production of Panchthar district

Table No. 7.10

S.N.	Villages	No. of bhatties	Productio in Monds
1	Limba	over 100	700
2	Kurumba	“ 100	600
3	Ravi	“ 100	800
4	Arubote	“ 20	150
5	Olane	“ 50	400
6	Sarangdanda	“ 150	900
7	Chilingdin	“ 100	500
8	Angsarang	“ 50	400
9	Phaktep	“ 100	600
10	Pouwasartap	“ 50	400
11	Yashok	“ 30	100
12	Imbung	“ 80	400
13	Chyangthapu	“ 200	2000
14	Falaicha	“ 200	2500
15	Tharpu	“ 150	1500
16	Oyam	“ 200	3000
17	Nagi	“ 100	1000
18	Amarpur	“ 20	100
19	Panchami	“ 80	300
20	Ekteen	“ 300	2000
21	Suvang	“ 50	600
22	Phidim	“ 50	300
23	Ranitar	“ 300	2500
24	Lungrupa	“ 300	2500
25	Yangnam	“ 300	2000
26	Nangeen	“ 50	400
27	Sidin	“ 300	2000
28	Memeng	“ 100	1000
29	Prangbung	“ 100	1000
30	Siwa	“ 50	400
31	Nawamidanda	“ 50	100
32	Chokmagu	“ 50	300
Total			31450

Source:- PUBS Report ,2065

CHAPTER-EIGHT

Summary of Findings, Conclusion and Recommendation

In This chapter, summary, Finding, conclusion, Recommendation are described and last Reference, Appendix and Photographs, are given.

8.1 Summary

Production and marketing condition of cardamom is not absolute form with compared to other cardamom producing countries. We can also say that Nepalese cardamom production is concentrated only eastern part on Nepal and marketing also deal with eastern region. Marketing condition is not in favour of the cardamom. Producers because cardamom transfers several hands towards consumers, that is why actual price cannot be obtain by hills of Nepal. It has been occupied a high position in terms of income as compared to other agricultural crops of Nepal.

Phaktep is one of the pioneers VDC of cardamom farming in Panchthar district where cardamom is cultivated in about 1200 hec. of land and average production amounted to Rs. 2 million per year (ACC Report). Cardamom cultivation started in this area in 2031/ 032 BS because of its cultivated in waste & marginal land at the beginning but now farmers cultivate cardamom in rice field & dry field at present.

Cardamom is a shade loving crop which is generally grown at an altitude of 1000m – 2000m and with an annual rainfall of 60 to 70 inches. The temperature on the other hand should not rise above 25° C theoretically north facing aspect slope & humid places is important for cardamom cultivation.

There is adverse relationship between cardamom price & productions. Cardamom producers are always exploited by cardamom buyers. The fluctuation in the market price directly affects the production of cardamom

other hand there are various channels of cardamom collection in our country such as, the producer's local businessmen, dealers, wholesaler & exporters etc.

The benefits brought by cardamom cultivation dominate economic environment and social fronts. With regard to income, its position is placed in first. The economic return is always vacillating. Fluctuation is a result of production and price of cardamom. Cardamom brings forth not only income but also supplies other necessary materials such as fire wood, fodder, timber; pillar etc. more than 60% of fire wood is fulfilled from cardamom cultivation.

The cardamom of Nepal is still considered of interior quality, than of other countries because of unscientific method of drying system. Systematic and modernized drying system is concentrated in Ilam as well as other district. The Nepalese cardamom is considered superior in volatile oil content.

Nepal has to increase agricultural cash crops like cardamom to meet the rapid rate of growth of population, growing features industrialization, unfavourable balance of trade. The cardamom of Nepal is still considered of interior quality, than of other countries, because of unscientific method of drying system. Systematic and modernized drying system is concentrated in Ilam as well as other district. The Nepalese cardamom is considered superior in volatile oil content.

Nepal has to increase agricultural cash crops like cardamom to meet the rapid rate of growth of population, growing features of industrialization, unfavourable balance of trade which demand for the rapid growth rate of capital formation increasing awareness in economic growth. Therefore, the agriculture economy as such Nepal should a vital part in initial phase of economy development.

8.2 Findings

At present, cardamom cultivation is flourishing specially in eastern parts of Nepal. The significant districts are, Ilam, Panchthar, Sankhuwsabha, Taplejung, Dhankuta, Terathum & Bhojpur etc. other districts like Okhaldhunga, Udaypur, Solukhumbu, Khotang, Ramechhap are considered minimum production area.

According to the CAA report Panchthar occupied 5th position in 2065 among the eleven cardamom producing districts. The main cardamom producing VDCs are Oyam, Ravi, Sarangdanda, Phaktep, Chyangthapu. Phaktep VDC (study area) is the pioneer VDC of Panchthar district where cardamom cultivation has been practising 20 years back.

The living standard of cardamom farmers have been gradually raising since cardamom production began in the study area. According to farmers due to the increased of income they have maintaining their health by medicine and able to buy water pipe, electricity, changed tin-roof instead of straw- strutted their roofs.

In the beginning, farmers used to clear out bushes, grazing land, meadows, gullies, marginal land for cardamom cultivation but nowadays, they have changed rice field & dry field into cardamom cultivation land. Cardamom producers are getting more profit out of cardamom when compared to their crops.

Cardamom farming brings economic benefit but also helps to promote green and healthy environment. The necessary physical elements for cardamom farming are north falling land, sandy loam soil, moisty wettished land etc.

Utis (Alnus Nepalanses) tree is considered as the best for shading management. Therefore, farmers have planted it around the borders of the cardamom land.

The clump separating method is popular for propagation in this area (plant seeds). Nursery method is practised at present.

Farmers are still adopting old and traditional method for cardamom production instead of new technology; such as traditional drying system, picking and packaging, the concerned authority (Panchthar UBS) has failed to expand proper skills and techniques.

There is no sufficient water facility so farmers have to manage themselves for irrigation in the dry season. Large canal scale of irrigation (Kulo) is not suitable because of sloppy land feature on the hill.

According to the local farmers there is no need to use manure for cardamom. Therefore, farmers don't use any types of manure.

Chhirke Furke and clump damage are the main diseases of cardamom, Gobaro and Jhusilekira (Nepali name) are also harmful pests. Rato Kala is also harmful for cardamom during the harvesting time.

The production ratio of cardamom in the study areas as well as other areas is not proportionate because of uncertain weather (monsoon). Therefore, sometimes production ratio fluctuates.

Phaktep VDC is one of the pioneers VDC of cardamom cultivation in Panchthar district where cardamom is cultivated in about 1600 hec. of land and average production amounted to Rs. 2 million per year (Panchthar UBS). Cardamom cultivation started in this area 2031/032 BS because of its cultivated in waste and marginal land in the beginning but now its cultivated in rice field and dry field.

Cardamom is a shade loving crop which is generally grown at an altitude of 1000m to 2000m and with an annual rainfall 60 to 70 inches the temperature on the other hand should not rise above 25 degree Celsius. Theoretically north facing sloppy places are important for cardamom cultivation.

There is adverse relationship between cardamom price and production. Cardamom producers are always exploited by the cardamom buyers. The fluctuation of the cardamom price in the market always affects the production of cardamom. On the other hand there are various channels of cardamom collection in our country such as the producers, local businessmen, dealers, wholesalers and exporters etc.

The benefits brought by cardamom cultivation dominate economic environments and social fronts. With regard to income its position is placed in first. The economic return is always vacillating. Fluctuation is a result of production and price of cardamom. Cardamom brings forth not only income but also supplies other necessary materials such as firewood, fodder, timber, pillar etc. More than 60% of firewood is fulfilled from cardamom cultivation.

The cardamom of Nepal is still considered of interior quality than of other countries, because of unscientific method of drying system. Systematic and modernized drying system is concentrated in Ilam as well as Taplejung district. The Nepalese cardamom is considered superior in volatile oil content.

Nepal has to increase agriculture cash crops like cardamom to meet the rapid rate of growth of population growing features of industrialization, unfavourable balance of trade which demand for the rapid growth rate of capital formation increasing awareness in economic growth. Therefore, agricultural economy such as Nepal should play a vital part in initial phase of economic development.

8.3 Conclusion

The study shows that the area under cardamom cultivation is increasing continuously the cardamom occupies higher position in terms of income than other agricultural crops.

The cardamom markets of Nepal are still traditional. There are several internal markets which are organized and systematized too. There are certain internal markets for cardamom which are interlinked but on the other hand they are facing the problems of transportation. There is only one route to Ghurbise Panchami to Brtamode and up to India. To study are still deprived from transportation to reach Panchami from study area it takes with minimum load 1 and half days.

Cardamom growers of the study area are still suffering from many problems such as many problems such as shortage of irrigation, lack of modern techniques and technicians, lack of sufficient loan facilities to the farmers, lack of improved seeds and chemical fertilizers and price fluctuation and unequal exchange to cardamom producers and cardamom buyers.

8.4 Recommendation

The following recommendations are presented to improve and expand cardamom cultivation in the study area.

1. Different kinds of research and study should be undertaken on cardamom cultivation. With the help of research it would be easy to find our problems and ways of solution for them.
2. There are still traditional methods of cultivation, so it should be gradually improve for modern techniques. The farmers should be provide training time to time and should be provide, monitor or visit the cultivation area every now and then.
3. Transportation is played an important role in production and export trade. Transportation facilities are lacking in this area therefore, transportation should linked to the market, as a result, farmers can get assistance to develop cardamom production.
4. Cardamom processing system still markets use of traditional style of cardamom drying. Therefore, modern types of cardamom drying (Bhattie) should be run.

5. Advertisement plays a very important role at any time to develop and expand business. Therefore, for the development of cardamom cultivation, information should be disseminated through radio, TV and other means of communications bulletin newspaper, booklet can also be published for this purpose.
6. Cardamom cultivation is also considered as an agro forestry system, intercropping such as alder cardamom is popular since the very beginning. The agro forestry system is useful for the sustainable development. Agriculture people are very much attracted to this system. So the government should play necessary attraction towards it.
7. Environment degradation is Rampath in this hill of Nepal. The cardamom cultivation has be directly or indirectly helping to compensate this degraded environment. Therefore, cardamom cultivation is necessary to preserve the environment.
8. Clump separating plant is popular to seeds productions in this area. But it can be harmful seeds production by nursery is viable because of this chance of transfer disease are minimal. This store of method should be expounded to every farmer who is interested to cultivate cardamom.
9. Cardamom marketing system of Nepal should be made systematic. Nepalese cardamom market limited so it is necessary to search new market overseas. There is always fluctuation in the cardamom price. So government should be well prepared to interfere and fix price conducive to farmers.
10. Due to the lack of industry, total cardamom production is export to foreign country and actual price cannot obtained by the farmers because of the several hands involved in this business. Therefore, it is necessary to established industry using cardamom as raw material. Consequently farmers can get actual price and there will be possible to encourage employment services.

11. If cardamom production is to be improved different types of taxes should be removed, such as; land tax, non district tax, bridge tax & export tax etc.
12. Government should provide loan at a minimum rate of interest to improve cardamom plantation for farmers. Loan borrowing and paying system should be made easy.
13. The concerned authority should pay attention and distribute insecticides, pesticides, materials and improved seeds for the cardamom farming.
14. The cardamom development programme is situated only at Fikkal, Ilam district. It cannot look after all districts in Eastern Nepal. Therefore, another branch office (CDP) should be established in a district like Panchthar.
15. Due to Chhirke Furke disease the leaves of the plant get spotted and dried and it has no treatment. So the government should manage the new plants for the farmers.
16. Cardamom development office should be managed in district agriculture office and experts are to be provided for the farmers.
17. The farmers are to be trained about farming technology, prevention of disease and worms etc.
18. The programmes in the district are to be made effective through donor agencies and private sectors participation.
19. Imitation should be made for exporting the cardamom to the countries except India.
20. Technical service should be expanded through cardamom board and loan should be managed for the cardamom farmers.
21. The radio and television have to broadcast news related to price of cardamom.
22. The improved Bhatties are to be set up for maintaining quality in cardamom.
23. Tax system should be systematized.