

**1.1 Background**

Forest is a natural resource which contributes about 15 per cent to the gross domestic product (GDP) of Nepal. But it is being depleted day by day mainly for timber, fuel, wood and fodder supplies. It is not easy to mention that the total energy supply system in Nepal. Only fuel wood covers 68 per cent for energy supply. Similarly, forest is being destroyed for several other purposes. It is said to occur at an annual rate of 4.8 per cent, the highest among all countries' survey (World Resource Institute, 2001).

Forests are important renewable resources. They contributed sustainability to economic development of a country providing a variety of foods and services to the people and industry (Lekhak and Lekhak, 2003). Due to the increasing the population and increasing development activities, encroachment of forest are resulted into rapid deforestation in the country but at present nationwide forestation communities have been involved in the conservation of the forest

The non-timber forest products (NTFPs) are also called minor forest products or alternative forest resources (AFPs). AFPs are critical importance to virtually all Nepalese's farmers and others, including village harvesters, middlemen and small scale entrepreneurs who are engaged in their collection transportation, value added processing, home use and market scale. These are the major resources which have direct importance to human beings mainly into two aspects. First, from the renewable harvesting of NTFPs, income and employment will be

generated at the grassroots level. It has been reported that rural people are increasingly engaged in off-farm cash earning activities. Second, taking in view the economic importance of NTFPs which can be harvested periodically, the rural people themselves save the environment and the ecology of the area.

Despite relatively small in size, Nepal processes a vast range of flora paralleled with topographic and climate diversities that have created a wide variety of NTFPs, ranging from sub-tropical to alpine regions. Thirty per cent of the country is occupied by the middle hills of network of ridges and valleys, which include extensive agriculture and forest lands and supports the population. These middle hills are the principal source of the majority of NTFPs.

Butter Fruit is the English name and *Bassia butyracea* is the scientific name of the *Chiuri*. *Chiuri* is one of the economically viable NTFPs in Nepal. It is a medium sized tree, native of Nepal with multipurpose value. It mainly grows in the region from mid sub-tropical zone to the mid level of lower temperate zone at an altitude of 400 m-1600 m from mean sea level. This tree yield an edible fruit, which contains an oil bearing seed. The seed contains 41 per cent to 48 per cent of oil which is called '*Chiuri* ghee' in local name. *Chiuri* fruit has got several socio-economic values such as fruit pulp for jam industries, nectar for honey, oil cake as fertilizers, feed, fish poison, wine, local sewerage and *Chiuri* ghee itself is used as substitute for coca butter chocolate industries and confectioneries, candle skin cosmetics, soap making, plant parts and fodders, leaf plates, protection of soil erosion. *Chiuri* is being used from the natural and cultivated forests substantially by the people in the mid-hill region of Nepal. Moreover, ethnic people have been predominantly using it as the means of subsistence since time immemorial. They have

their own practices to manage their forest resources including timber and NTFPs like *Chiuri* which might be as response to subsistent and commercial values and the security of the forests products. The long history of consumption of forest products like *Chiuri* has resulted in a rich but dispersed, knowledge of forest management by the indigenous people. The real economic importance of sustainable utilization of *Chiuri* is enhanced at the farm and village levels not only by technological consequences but social factors are also equally essential because the socio-economic value may vary from one ethnic group to another So, this research attempts to study the *Chiuri* management practices and its commercial utilization and its socio-economic aspect on livelihood status of Chepang community in the village.

## **1.2 Statement of the Problem**

It is a proven fact that trade of NTFPs in Nepal is a tangible source of rural income at various levels and particularly for those who have limited access to land, laborer credit. Nevertheless, due to several constraints NTFPs like *Chiuri* have not been commercially utilized so far irrespective of availability of *Chiuri* forests in public and private lands in Okhaldhunga district. The extraction and use of *Chiuri* is an age-old tradition among some of the indigenous and marginal people of Nepal like Rai, in Nepal. However, that knowledge and technology of collecting, processing, production of various items have not been adequately documented, evaluated and promoted yet. So, more empirical studies necessary to investigate the real problems of different aspect of *Chiuri*. More comprehensive and scientific studies of the *Chiuri* are required to have the optional use in sustainable basis. The statement of problem is reflected due to different constraints. These are geographical constraints, technological constraints, indigenous constraints, socio-economic constraints, constraints of

forest management practices including planting, protecting, harvesting, distribution, organizational arrangement, subsistent use, trading and socio-economic factors including age, education, household size, household income, land holding size, land tenure and livestock holding size, the marketing condition of *Chiuri* at local level, national levels and international levels. The statement of the problem is reflected due to following constraints.

1. Geographical constraints : The affecting factors including marginal lands, inaccessibility, declining soil fertility, fragility.
2. Technological constraints: Lack of plant nutrients, irrigation, fruiting problems.
3. Social constraints: Forest management practices including planting, protection, harvesting distribution, organizational arrangement, subsistent use, trading and socio-economic factors including age, education, household size, household income, land holding size, land tenure and livestock holding size.

Socio-economic impacts of *Chiuri* on livelihood status depend on several factors as stated above. But, as a student of Rural development the indigenous resources are the matters of concern. So, this research attempted to study and analyze the statement of problem reflected due to social constraints.

### **1.3 Objectives of the Study**

The general objective of this study is to observe the forest management practices and commercialization of *Chiuri* in Rai community of Balakhu VDC in Okhaldhunga District.

The specific objectives are:

- a. To examine commercialization and management practice of *Chiuri*
- b. To explore the socio-economic impact of *Chiuri* on livelihood status of Rai community

#### **1.4 Rationale of the Study**

Although utilization of oil bearing NTFPs like *Chiuri* have substantial effect on the socio-economic life of rural people as well as the financial position of the country. The commercial utilization of oil bearing NTFPs is still regarded as being less important than exploiting the forest products mainly for wooden logs and fodders.

This study visualizes the existing social potentials and implications towards forest conservation, management and commercial utilization. There are very few studies on commercial utilization aspects of NTFPs, but none examines in detail of the indigenous practices and socio-economic determinants in commercial utilization of NTFPs. Various scholars, researchers have conducted research on the ethnic, socio-cultural aspects of rural ethnic people and on the botanical studies of *Chiuri*. So, the rationale of this research is to examine how people use and manage forest resources not only as a means of subsistence, but also towards commercialization and tries to incorporate the importance of *Chiuri* in the ethnic, socio-economic aspects of rural people as well. The study of this kind is very much useful for the planner, policy makers, industrialists, and others taking interest in sustainable use of NTFPs in promoting own resources based small, medium and large industries in Nepal.

## 1.4 Limitation of the Study

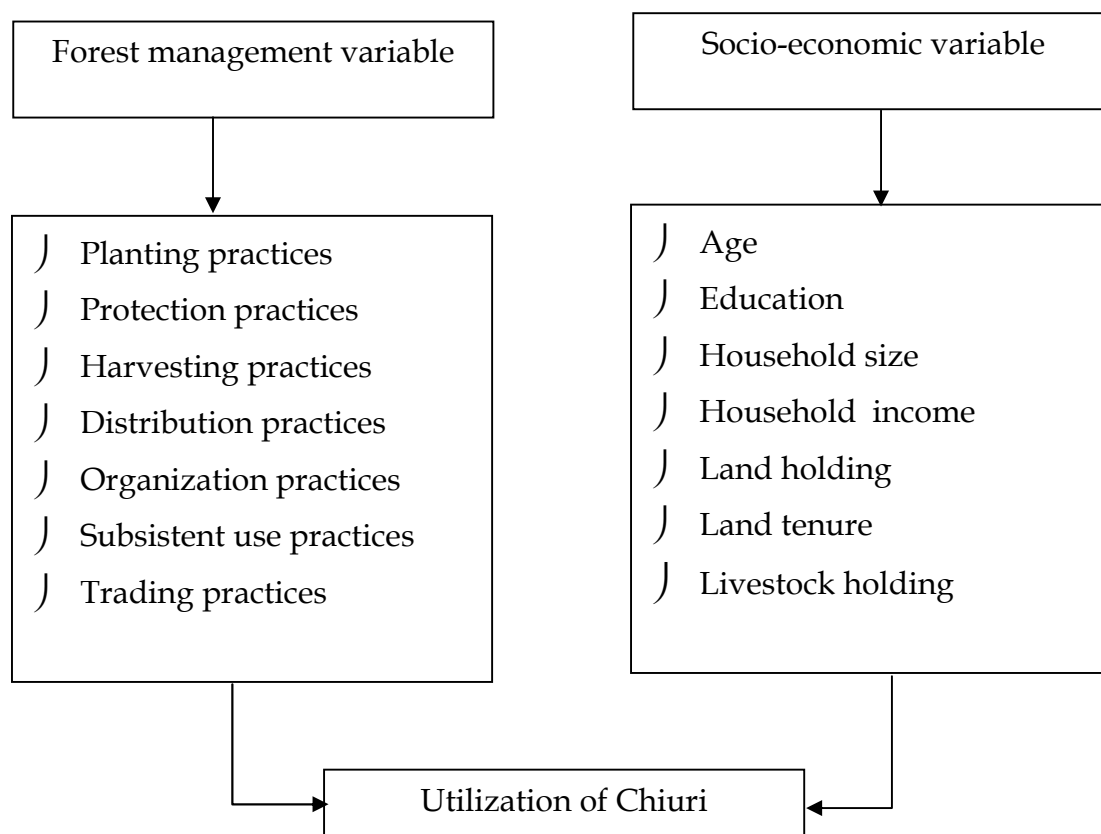
This study covered the socio-economic and environmental activities based on 'Chiuri' in Balakhu VDC ward no. 9 of Okhaldhunga District. The main purpose of this study is to find out the present availability, potentiality and commercial use of *Chiuri* and Its socio-economic impacts on local people. Financial and time boundary are also not sufficient to go in-depth.

## 1.6 Conceptual Framework

The conceptual framework of this study is developed as to incorporate following factors viz. (i) what are the forest management practices in commercial utilization of *Chiuri*? (ii) How does the socio-economic condition effects the commercial utilization of *Chiuri*? (iii) whether '*Chiuri*' can be commercially utilized or not considering the present practices and compositional variables.

The conceptual framework of the study is given below:

**Fig. 1 Conceptual framework of the study**



## Chapter Two

## Literature Review

### 2.1 Conceptual Review

Forest management is the protection, utilization and distribution of products and the institutional arrangement by which they are carried out (Tamang,1990:56). It consists of two aspects, viz, biophysical and organizational.

While the rural population often has a good appreciation of how to manage individual trees or trees species there is little evidence of skill in the manipulation of forest structure to maximize yields or to ensure the connectivity of a forest. ( Mc cracken, 1993:2).

Forest is important renewable resource. They contribute sustainability to the economic development of a country of providing a variety of goods and services to the people and Industries. (Lekhak and Lekhak, 2003:42)

Man's dependence on plants for the essentials of his existence has been of paramount importance in his life since the human race began (Hill, 1996:1)

Tamang (1990: 87) is of the view that protection is the collective realization, decision, support and commitment of two village community to protect forest which leads to the existence of protection practices. He says that there are few studies on the subject of distribution what little there is seems to touch on two aspects: (a) physical- the quantity of forest products and benefits distributed and (b) ethnic the question of equity (is the distribution fair and just ?) should the poor get more and the rich less ?) Some authors are of the view that equity should be at the heart of distribution practices. The issue of equity in distribution seems to be tied up with unequal distribution of land; vast differences in private land holdings by small and large farmers: and uncertain tenure of public lands. They emphasis that land poor farmers have little land to spare to grow trees and are therefore more dependent on public forests for essential products that land rich farmers. However, it is implied that equity

involves fair shares and not necessary equal shares according to social context and economic need.

New ERA (1992) shows harvesting, collection and sale of NTFPs are carried out by the local population during the OFF farm season. The whole family, including women and children, are involved in the gathering. The post-harvest operations, such as cleaning, sorting and grading drying and packing are usually carried out mostly or entirely by the women. Male members usually do the selling and negotiations in transactions, which is considered to be the male domain. where the trees are on private land, the owners harvest them only after they are mature and due consideration is given to protecting the plants. In the public forest, villagers enter the forest before the fruits are matured with motive of getting the highest possible load.

According to Pandey (1993:96) regarding the confidence mechanism and social change of 1990s in Nepal, that "as low level of income leading to inadequate access to food, cloth and shelter for a majority of farming households is the fact in Nepal. This state of poverty is generally in terms of people's ignorance to adopt new agrarian technology such as farm mechanism, chemical fertilizers, improved seeds and the like for an increase in agricultural production to enhance their economic well being reveals the scene of low income, high poverty and low adoption of improved packages and practices. In this sense, the low level of household income is related with lower level of agricultural productivity. In other word household income and agricultural productivity are positively related.



## 2.2 Review of Related Studies

The socio-economic variable, viz, age, education, household size, landholding, etc. showed insignificant positive relationship with commercial utilization of *Chiuri*, which meant they are not the determinants in commercial utilization of *Chiuri* (Shrestha, 1997:70).

New ERA (1992: 71) shows the *Chiuri* is used for subsistence. *Chiuri* ghee production is considered to be an economically important activity in Salyan, Pyuthan and Dang district. Although the Pulp of *Chiuri* is also consumed, it is the seeds which are more highly valued for their fatty oil. It is possibly the paucity of Mustard oil and animal ghee that results in *Chiuri* ghee being used for deep frying and cooking, as well as for adulterating buffalo and cow ghee. In spite of their reported toxic effect of *Chiuri* ghee, attributed to the sponging content of the fat, this does not appear to be determining *Chiuri* consumption among the local populations.

Age is a period of individual existence in his family, society and surroundings. It is an individual's characteristics which affects participation and performances in any job or occupation. It has been found positive and significant variable in working performances of subsistence production in Nepal. Bhandari (1995) shows J.J. Rousseau's popular statement that, "man is born free but everywhere he is in chain." It can be chained to our research that as long as the man grows old, he will have more experience and social responsibilities which may result in more commercial utilization of *Chiuri*.

According to B.D. Bhatiya (1979:1) education is the development of all the capabilities in the individual which will enable him to control his environment to fulfil the necessities. It can be connected to our research

that as long as the man is educated he will be able to conserve forest in a better way and grow *Chiuri* trees and will be able to make a better income through commercial utilization of *Chiuri*. According to Bhandari (1995) education, the door of knowledge, attitude, practices and mysteries, is social, economical,

technical and political sectors of any society, either in developed or developing at their own state. Almost all the productive activities are directly related with people's education. This fact can be connected to commercial utilization of *Chiuri*.

According to Manandhar (1994:67) agriculture in developing countries like Nepal is purely labour intensive occupation, mainly because of traditional tools and technologies. So, human resource is the main force for improving production or whatsoever. This case also applies to the case of commercial utilization of *Chiuri*. According to Sen (1964:27) there is a positive relation between household size and productivity. His explanation is that "peasant family" is generally larger and farm size is predominantly smaller. On the other hand, larger farms are generally "capitalist". The reason that the family labor is "costless" labour and they own a small parcels of land. In this context, larger the household size, higher is the agricultural productivity. Though, the food grain insufficiency is prevalent in peasant families because of less land ownership.

A brief discussion is made on the theoretical frame work on the study of cultural environment nexus. Above section is stated by two parts and has been discussed about relevant literature for this study from books and articles. Theoretical or conceptual review part mainly focuses on the various theoretical framework developed and used to study in ecological perspective of the people and other section studies on especially '*Chiuri*' related literature conducted by many scholars.

## Chapter Three                      **Research Methodology**

### **3.1 Research Design**

The main purpose of this present study was to know the present utilization and socio-economic benefits from *Chiuri* and explore methodology of harvesting, processing or management practices of *Chiuri*. So an descriptive and exploratory research design prefers for its flexibility to provide an opportunity for considering different aspects such as *Chiuri* exploitation, socio-economic significance, culture-environment, relationship and others. Likewise descriptive research design prefers to explain the social organization their local technologies in *Chiuri* use and other productive system.

### **3.2 Nature and Source of Data**

The data and information of the problem have been collected using field survey, observation, interview, household survey and questionnaire with informants. These were primary data and information.

On the other hand, other type of data is secondary data and information that have been collected from various sources like local '*Chiuri*' related institution, VDC office, Forest office, DDC office and forestry related office, various related literature of previous works such as books, journals, dissertation, reports and other reliable information sources.

### **3.3 Universes and Sampling**

Balakhu VDC consists of 803 households (HH) and 5138 population. All the HH and population could not be included for the study. So It specially focused two ward because there are more Rai involved in utilization *Chiuri*. For the study 35 respondents out of total of 50 Rai household have been included because of time and budgetary constraints.

### **3.4 Data Collection techniques**

Using following tools and techniques, the required data have been collected.

#### 3.4.1 Interview schedule

Interview schedule have been used to collect basic data and information from sample households on population size, occupation, subsistence pattern, income generation and management practice.

#### 3.4.2 Observation

Observation is the most important techniques of data collection. This technique have been used to observe the *Chiuri* forest management system, economic, social and environment utilization of *Chiuri*. This technique also helped to explore its harvesting processing etc. It was observed by participating with *Chiuri* users.

#### 3.4.3 Interview

It has been chosen for its flexibility to provide opportunity to know the respondents opinions. It was asked about historical use, indigenous use, and problems or constraints of '*Chiuri*' utilization.

### **3.4.4 Checklist**

Observation checklist has been applied to collect information on the relationship between community and forest resources, commercial utilization of *Chiuri*, forest management practices in respect of planting, protecting, harvesting, distribution, organizational, arrangement, subsistent use, and trading practices. The villagers were assembled and held discussion on different aspects of *Chiuri*. A check list was developed as one of the basic approaches of observation.

### **3.4.5 Focus Group Discussion**

In the context of the data collection, different groups were discussed under the direction of researcher. They were given a story about utilization of *Chiuri* of a particular village and asked to discuss on that story. They made a conclusion utilization and management practice of *Chiuri* in their village in accordance with the discussion of the story. It was a discussed with focus people.

### **3.4.6 Data Processing and Analysis**

Data processing is necessary. The data have been collected from the field and other secondary source have been analyzed in descriptive way by giving great effort. Then the data was coded and classified into descriptive and numerical character. The quantitative data as well as qualitative data was tabulated using computer. Different figures, tables, diagrams, maps were used to make the interpretation more reliable. Opinions of the respondents gave emphasis that helped to explain social events. However, interpretation of data were made objectively to make study more scientific.

## **Chapter Four      Background of the Study Area**

### **4.1 Geographical Setting**

Administratively, Nepal is divided into 75 districts. The districts have been regrouped into five development regions to promote development of the country. Okhaldhunga is one of the district of Sagarmatha zone located in the eastern development region. The total area of this district is 1074 square kilometres. The district is bounded by Khotang in the east, Ramechhap district in the west, and Sinduli and Udaypur in the southern boarder and solukhumbu in the north respectively. The average altitude of this district ranges between 500m to 4500m from the sea-level. Okhaldhunga is the headquarters of the district which is connected to Shiddhicharan path. Geographically, Okhaldhunga district can be divided into two sub divisions viz, high mountain region and mid mountain region.

### **4.2 Cropping Pattern**

The major cropping pattern includes paddy, maize and millet. Paddy is winter and summer seasonal crops. The summer paddy is planted in July and harvested in November. Maize is planted in May and harvested in August which is followed by paddy. The other cropping pattern includes planting winter paddy in March and harvesting in August and again paddy is cultivated. In sloppy and barren land maize is cultivated in April and harvested in August followed by millet in August and harvested in November. In some places upland paddy (Ghaiya dhan) is cultivated along with maize. This paddy is cultivated in April and

harvested in August. Wheat is cultivated in flat lands in Janaury and harvested in May. Different kinds of Daals are also harvested and cultivated. The shaded portion of the given table shows crops production pattern of the study area.

**Table No. 4.1**  
**Cropping Pattern in Balakhu- 9**

Month	Maize	Paddy	Millet	Wheat	<i>Chiuri</i> Ghee
Jan.					
Feb.					
Mar.					
Apr.					
May					
June					
July					
Aug.					
Sep.					
Oct.					
Nov.					
Dec.					

*Source: Field Survey, 2008*

### 4.3 Vegetation Type

There are different types of vegetation according to topographical, climatic and altitudinal variation. The general forest types include hardwood, mixed and coniferous forests. The major vegetation found along the warm temperature regions include sal (*Shorea robusta*), pine (*Pinus Roxburgil*), Chilaune (*Schima Wallichii*), Katus (*Dastanopsis indica*), Banjh (*Qurcus lanata*), Phalant (*Q. Lamellosa*), Gurans (*Rhododendron Campanulatum*).

## **4.4 Socio-Economic Setting**

The socio-economic setting of the study area is reflected under following subjects taken into consideration as:

### **4.4.1 Demographic Distribution**

The total population of okhaldhunga district according to population census, 2001 is 156702. The total number of households is 30121 and household size equal to 5.2

The total population of Balakhu VDC according to the population census, 2001 is 5138. The total number of households is 803 with an average household size equal to 5.6 Ward No. 9 of the VDC, Balakhu is predominated by Rai community. The number of Rai is about 300 and number of households is 50 out of 55 households of Balakhu VDC-9. They are depended by the seasonal cropping system '*Chiuri*' and other.

### **4.4.2 Socio-cultural Setting of Rai**

Rai have a unique socio-cultural setting. They speak own language. They are settled in a quite sparsely area. They reside in very remote areas. They live in very small houses. Houses are small and narrow with hardly one or more small ventilation. The huts are wooden framed and roofs are thatched and supported by bamboo or wooden framed. The inner roof is fully filled with smoky dusts due to lack of windows or ventilation. The upper floor is used for storing food grains. They have a grinding stone and a wooden bed on the floor attached to the hut.

The eldest controls over the family member. Sons after getting married get separated however poor the family may be. The ownership of the property is transferred by birth.



From the migration point of view, Rai hardly shift their place of residence

Males wear a shirt, a wrist coat, Langauti and White cap whereas women use general cholo and sari with patuka.

The foods in case of Rais are of low quality. The food products are hardly enough for 3-4 months a year. Millet, Maize, Phapar, Gahat and Kaguni are major food grain *Chiuri* is their food and the seed is used to expel ghee. It is the best economic source and products of *Chiuri* is easily sold in local marke.

The Rai celebrate, Bhumipuja, preparing delicious types of food like on the day when they first attempt to cook their nwagi. They also celebrate their Kul Debata Puja and a new product crops. Fruits are offered to their ancestors on that very day. They also celebrate Hindu festivals like Dashain and Tihar. Rai believe in super natural system spirits, and ghosts. They prepare Jand and Raksi to offer their ancestors on theirs festivals. Jand is their favorite breakfast and raksi is their favorite drink as tea. They also prefer to take raksi on bed time.

#### **4.4.3 Economy**

Agriculture is the main occupation among them Even, the agricultural production is hardly enough to maintain the level of subsistence for 3-4 months of a year. So, the economy of the Rai in Balakhu VDC-9 is characterized by subsistent economy. Their agrarian economy is very poor because of several constraints, lack of low lands, irrigation facilities, technical knowledge of fertilizers, agricultural implements and extension activities. The majority of Rai households have small patches of uplands where only millet, corn etc. can be grown. Slash and burn cultivation (Khoriya Khande) is still practiced to some extend. This is

due to insufficiency of agricultural productions and subsidiary economy. Rai have recently started to settle permanently in selected areas. Khoriya has become an important part of their farming systems as they have shifted from dependency on forest products to the cultivation of land. For the Rais who don't hold agricultural land for crop production, Khoriya is the only reliable means of food production.

Among Rai there is considerable relationship between the people and the forest. Forest resources are one of the alternatives to meet the food shortage. The food stuffs like maize and Kaguni account for 3-4 months of a year, afterwards they have to depend on hunting gathering and collecting forest production, which have retained as subsidiary economic activity. The main forest products (Flora) including roots and tubers collected by Rai like githa, bhyakur, karkalo, sisnoo, niuro, tama, bharlang, mushroom, chiuri, mango, phandir etc. and fauna including wild pigs, fish, ghoral, rabbit, insects like wasps, hornets, birds like Dhukur, Halesa, Titra, Kalis, etc. But these practices are disappearing due to response of deforestation. *Chiuri* has a significant role among Rai and they have intimacy with *Chiuri* since their forefather. Because, there is a saying that Rai used to stay in places where there as availability of *Chiuri* trees. But, it amounts to small portion to their income. The other subsidiary sources of income practised by Rai are livestock raising, horticulture, handicrafts, bee keeping, honey, gathering from the forest bamboo works, domestic fermentation etc. The man cattle being reared by them are goats, oxen, cows buffalos etc. But the livestock raising is not well developed because of lack of veterinary services, improved breeding stock, growing citrus fruits like mango is being carried out by some of Rai but it is handicapped by factors like lack of manure, insecticides, pesticide, irrigation facilities, skilled manpower etc. Bee keeping has gradually declined due to deforestation and due to

decreasing of *Chiuri* trees. In the agricultural black season, they make their livelihood by wage labouring within the periphery or outside the area mainly in construction fields and providing their labours to the higher ranking people in slack seasons and consequently ,they indulge in debt from generation over generation to meet the basic level of subsistence. They face food deficit from February to June when they have to go to money lenders. They also take loan for festivals, paying land tax, buying goats and domestic supplies, previously, there was the system of adding zero to the loan amount. By this way, they were severely exploited by the money lenders and consequently the fertile lands were snatched by the lenders and barren lands on mountains were left for them. As a result, they are pushed or forced to live in the rocky slope area which might be the cause of calling them as Chepangs. They have got no idea of taking institutional loan due to lack of idea, fear of outsiders, insufficient collateral etc.

#### **4.4.4 Education**

The educational status among Rai is very low in the study area. The quality of education and increase in enrolment of students in school are relatively low as compared to investment made in education among them. These discrepancies are seen mainly due to economic disparity, more number of children in households, so that they have to took after the younger ones, lack of food stuffs, low enrolment of children in scrolls because of lack of higher caste, less attendance in the class, dropping out from the school, problems in languages schools far from their household settings because there are low number of schools in rural areas and they are established in the vicinity of household settings of higher caste people.

#### **4.4.5 Health Status and Service**

The overall health status of Rai is very low due to lack of nutrition, awareness and lack of extension of primary health care services and prevalence of traditional conventional attitudes and thinking.

The primary health service centres have not been able to provide health services effectively consequently, the traditional modes of treatment are still widely accepted. The faith healing is being carried out through either Rai or non-Rai with the faith healers, payment is not immediate, as the whole process is based on faith on God. Therefore, loans and promises to pay back later is widely accepted. High role of children bearing is still seen among Rai due to lack of awareness and unavailability of family planning which is followed by high mother mortality rate during birth. The child mortality is very common.

## Chapter Five      **Data Analysis and Discussion**

Socio-economic determinants of the respondents in respect of age, education, household size, household income, land tenure, and livestock holding, commercial utilization that relationship between forest management practices, socio-economic determinants and commercial utilization of *chiuri*. *Chiuri* tree, being one of the components of forests is the subject to be discussed in relation to integrated forest management. So, this chapter discusses *chiuri* management along with forest management practices.

### **5.1. Forest Management in Historical Perspective**

The forest management before the emergence of panchayat system was controlled and guided by the Talukdari system. The Talukdari system was associated with the lineage group. All the economic and social aspects of the village were under the control to Talukdar (called Mukhiya, Jimmawal) who used to make happy the officials from district office. The forest users had to pay tax for using the forest products from the forest. The Talukdar used to call all the villagers to bring one mana of rice along with. One stick full of fish. They used to give some of the food stuffs to the officials and the rest would be enjoyed by Talukdar himself. They used to make extra income from the villagers and on the other hand they used to established a good relationship with officials.

The forest of this village have been managed, protected and utilized by Rais. Their private forest though there use to occur hindrances from the other ethnic groups residing in nearby villagers. But, a properly managed forest management practices e.g. organizational setup-indigenous village assembly, institutional arrangements. Written rules and regulations,

customs, etc. were not developed in the forest management practice due to ignorance of the people.

The villagers of this village are practising to develop forest user group from their own initiative taking into consideration the importance of forest resources and the future problems that would be brought about by deforestation. But, there occurred feuds among different ethnic groups. However, then were some households including Rai involved in developing a forest user committee, which was not legalized at the time of study. But, the committee did not seem to be keenly interested in forest management in village. So, the villagers were trying to develop the committee of the Rai of Balakhu village alone taking into view the destruction of forest patches by the people from nearby villages.

After the democracy, most of Rais changed the public forest into the private forest. They registered their *Chiuri* forest into private owner. Now a days, *Chiuri* forests are changed into the personal name.

## **5.2. Forest Management Practices**

The forest management practices among the Rais in Balakhu seemed to have been developed by direct interaction with the forest resources at the subsistent level. Their dependence on hunting, gathering, slash and burn cultivation are the factors for emergence of knowledge and perception about forest resources, though these are not remarkable because of low economic profile, lack of knowledge and awareness, and dominance by other ethnic groups. At the same time Rai of Balakhu had never experienced severe shortage of forest resources. That's why innovative management practices have not held so far. Because of ignorance, the forest management practices though expressed somewhere as indigenous, seemed to be somewhat traditional because of new concept and development were not seen. The forest management practices in

terms of planting, protection, harvesting, distribution, organization, arrangement, subsistent use, oil extraction and trading undergone by Rai are dealt in detail below:

### **5.2.1 Planting Practices**

Balakhu ward No.9 is one of Rai settlements of Okhaldhunga district where people are using *Chiuri* since long time back. Every household possessed some *chiuri* trees on the basis of availability of land. Though *chiuri* is playing a vital role as the means of subsistence. They do not have the intensity to undertaken plantation of the new sampling in suitable places in private land. In majority of cases, new saplings catered around the mother trees. That is attributed to the fact that people were facing fruiting problem at the stage of maturity. By nature, *chiuri* tree grows on marginal lands and cater around a small area around the mother tree because of germination from seeds of the same tree. It is but true that a number of trees could not grow healthy in a small area. They need to be transplanted. But, in most of the cases Rai do not transport the *chiuri* samplings to other places where they could grow healthy, which in turn do not affect the cultivable land. In some cases, plantation practice is recent innovation among them because they did not need plantation to spread the trees for fruit and to fulfill fodder needs. Relative shortage of resources scarcity through the plantation of the plantation practices, planting *chiuri* trees on private lands was commonly seen which supported the fact quoted by Fisher. They had planted *chiuri* trees on the edges of their field and around their homestead. Rai of that village had collectively planted *chiuri* trees in the steep slopes and in waste lands. As such, the adhoc forest user committee do not have specific programs for carrying out *chiuri* tree

plantation practice in this community. It seems private incentive and motive rather than the community and collective motive.

### **5.2.2 Protection Practices**

Balakhu is rich in forest resources especially *chiuri* forest. The people of the village protect the *chiuri* as their private ownership. But there are the forests of *chiuri* are protected by the government for common use and some are protected by person for private use.

*Chiuri* was abundantly available in forest and private lands. The forest user group do not permit for its cutting in public land, they further suggest to cut down even in private lands. The people of the village are trying to achieve consensus and mental integrity for protecting the forests. They are no specific and strict rules as to allow the users to collect forest resources from the same village and vicinity. There is no restriction of membership to the forest user groups within the ward no. 9. But there is not formation of *chiuri* forest user groups. They protect their private forest themselves and they protect public forest as a common sense. They are interested to take the charge of watching forest area of the village with the help of villagers. If they found any body destroying the forest areas, used to try to convenience and it not possible, claimed to the forest user committee and help meetings to take action against that person. Rai in Balakhu village do not have their own protection practices. They are fully dependent on the rules and regulations which is made themselves.

In case if the villagers need to forest products like timber for construction or whatever, they use to take permission from the user committee through Rai leaders. Moreover, they use to supervise the surroundings to the view point of biodiversity conservation from where



the timbers are cut. If the committee find some problems with biodiversity conservation, use to suggest to select another place.

### **5.2.3 Harvesting Practices**

Almost every household possess *chiuri* trees. But some are potential and others are not in the sense of yielding and bearing fruits at the stage of maturity. One which yielded and borne fruits are treated well and considered as a milk producing buffalo. The others are used as the source of fodder and timbers in some cases. But, in majority of cases they do not cut down the *chiuri* trees even though they do not bear fruits. In the public lands, there are *chiuri* forests. But due to its nature, *chiuri* grows mainly in marginal lands. So, to harvest *chiuri* in forests is a difficult task. At the same time, *chiuri* is harvested during the period of July/August and its harvest coincided with that of maize harvesting period. So, at that time most of the villagers are busy with agricultural works. Mainly landless people or those who have limited access to economic sources go to forest areas and collect *chiuri* fruits. But sometimes, when the maize production or the agricultural production is low, people from almost every household use to go to collect *chiuri* fruits in forest land. However, that is very infrequent. So there occurs no such rules as to benefit sharing of *chiuri* from forest areas.

Where the trees are on private lands the owners harvest them only after the *chiuri* gets fully ripen, as due consideration is given to healthy fruit and the seeds. In the public forests, villagers enter the forest before the fruits ripe because of their motive of getting highest possible harvest.

As regards to other forest productions like timber for agricultural implements there is no need to ask the forest user committee. (The committee is not registered in the government but formatted by

themselves). Dry firewood and fodder were almost free to collect from nearby forests at any time. Due to low economic condition, they have not heavy use of fire woods hold livestock because of lack of water resources. So, everywhere green fodder are seen to be lying waste. There is no rule limiting collection of leaf litter and fodder.

There is no clear demarcation of the forest area as protected area and area to be harvested. People harvest the forest products from their own individual share of the forest patch, since the forest have been divided into several individual share of the forest patch, since the forest have been divided into several individual shares.

There is a seasonal calendar for harvesting of forest products in accordance with the seasons of different products, which were usually followed by the villagers which were quite controversial. Fuel wood is usually harvested during the agricultural slack season; January and February. Small dried twigs, leaf litter collection is allowed throughout the whole year. People are allowed to harvest. Shyawla (fodder) during September/October, because these materials are more needed in this season for making animal shed (Goth in Nepali) to tie animal and making store for the hay. So there is no restriction regarding the period of harvest. The forest area lacked rich bimodality because of destructions. So, it lacked resources like mountain bamboo, allo, medicinal herbs, etc. However, there is no such restriction regarding the products to be harvested except the timbers. Timbers are prohibited to be harvested without the preapproval of the user.

#### **5.2.4 Distribution Practices**

There is no such rule on the production sharing as far as *Chiuri* is concerned. There was free collection of *chiuri* from the forests. Mainly, Chepangs having limited access to economic sources go to forest areas and collect *chiuri* fruits as much as they could so . As to the forest products like timber, the committee used to give permission on the basis. If purposes for which timbers are collected. For example, for constructing houses, one has to deposit some money. On the other hand, they restrict the forest in the off season and open it in the harvesting season for the common user to all. There is rules and restriction regarding the amount of products to be harvested for per household.

#### **5.2.5 Organizational Aspect**

The organizational arrangement of forest management among Rai are informal, because there is no formal user committee. They have not registered their committee in the government. But format their own committee. In fact, it is guided by themselves. The organizational aspect of forest management in the village is supplemented by following factors.

from the forest area, the village is richer than other villages of the same VDC. But sometimes villagers from nearby villages come to get the forest products. At the same time, the people of this village and of nearby villages though that the protection of the *chiuri* forest is not possible only through the people of Balakhu village. Therefore, the knowledgeable people of all the villages of ward number 9 viz. Balakhu, Bishaundanda, Saite, Kaule, etc. held a meeting on 15 Bhadra, 2065 B.S. under the leadership of Ratna Bahadur Rai of Balakhu village. They discussed about the formation of forest user group (FUG) to make the

users to protect and manage the forest area. But they did not registered their FUG in the government administration. So their FUG is not formal but informal. The group is formed only as the protection group under the most membership of Rai. In that way, the local people became enthusiastic and decided to form a forest user committee still now they can not form the constitution of the user committee and legalize in district forest office. However, the so called committee members are not aware that the forests are destroyed and still intended towards forming and restricting the user committee if they get any sort of help from the forest office.

#### **5.2.5.2 Perception of Need and Ownership**

The forest management practices is the perception of need of the forest resources and of each and every national for future generations. These all are based on the ownership of such lands by the community formed under the consensus of the villages.

#### **5.2.5.3 Decision Making**

The adhoc forest user group can not be formed. So, there is no exact calendar or routine for the meeting. The meeting should be held monthly and annually. They make the decision that the forest of *chiuri* using schedule and groups.

#### **5.2.6 Livelihood Use Practices**

*Chiuri* is an economic wild fruit containing peel, pulp, juice and seed which is very common among Rai as they have been using it as the means of survival since their fore-fathers. *Chiuri* had significantly contributing in on the socio-economic condition of the rural people, particularly of lower economic status. Ghee production has become a major source of income among Rai So, *chiuri* is supposed to be a social

property among Rai A family having the largest number of *chiuri* trees are considered to be of high social and economic status.

*Chiuri* is utilized in Balakhu village only as pulp for food and ghee instead of oil, as fuel for lightening, hair oil, medicine for softening, burning and chapped skin, toxicant for catching fishes. They do not have the idea of using the residues after oil extraction as manure in paddy or maize crops. *Chiuri* has not been utilized efficiently and effectively due to several problems.

#### **5.2.6.1 Presence of Toxic Siphoning**

The presence of toxic substance called siphoning is carried along with the glycosides during extraction of the fat, which make it unsuitable for any worthwhile purpose. However, they are using it as substitute to oil.

#### **5.2.6.2 Lack of Appropriate Oil Expeller**

Rain the village are still using traditional technology of extracting *chiuri* ghee by putting the bamboo basketful of steamed powder of *chiuri* seeds between two wooden planks called as chepuwa which in fact, reduces the amount of ghee expelled between the planks, because that is entirely based on human power rather than any simple machine or device.

#### **5.2.6.3 Chiuri Ghee Extracting Practices**

The *chiuri* ghee extracting practices so far being carried out by the Rai include following processes.

**Collection of *Chiuri* Fruit :** First of all, *chiuri* fruits are collected from the private and public lands.

**Ripening :** *Chiuri* fruits are left until they are ripen.

**Eating Pulp and leaving seeds:** The fruit are eaten and the seeds are left.

**Seed Washing and Drying :** They are washed and dried in the sun shine.

**Grinding :** The seeds are grinded by using local rice huller (Dhikee)

**Steaming :** The grinded powder of *chiuri* seeds are kept in the bamboo basket.

**Pressing :** The bamboo basket is pressed between two wooden logs known as chepuwa.

### **5.2.7 Trading Practices**

*Chiuri* harvesting coincide with the maize harvesting. The whole family, including women and children, are involved in the gathering. So, some of the people used to go to roadside shops to sell *chiuri* and maize and others possessing small patch of land or landless may barter *chiuri* with other food. *Chiuri* is considered to be a means of subsistence during the period when maize production is relatively low. Sales are conducted to local petty shopkeepers for cash or in exchange for such necessities as salt, cooking oil, cloth etc. throughout the year.

### **5.3. Socio-economic Characteristics of Respondents**

The socio-economic characteristics of the respondents have been characterized into age, education, household size, household income, land holding, land tenure and livestock holding. Altogether thirty five respondents are interviewed. All the respondents are male because of male dominance and shy nature of the female. All the respondents are from Chepang community and they have engaged in commercial utilization of *chiuri* in one or other ways.

### 5.3.1 Age Status of the Respondents

Of the total 35 respondents are interviewed age structure varied from 25 to 73 years. Of the total respondents 28.57 per cent lie in young group. 57.14 per cent lie in middle aged group and 14.29 per cent in old aged group respectively. The age status of the respondents are listed below in the table:

**Table No. 5.1**

**Distribution of Respondents According to Age Categories**

Age categories (years)	No. of Respondents	Per cent
Young group (20 to 34)	10	28.57
Middle Aged group (35 to 59)	20	57.14
Old aged group (60 and above )	5	14.29
Total	35	100

*Source: Field Survey, 2008*

The above facts clearly shows that the majority of the respondents dealing in *chiuri* products are from the middle aged group.

### 5.3.2 Educational Status of the Respondents

Majority of the people are illiterate. Hardly very few persons are educated upto class 5. The factors behind such discrepancies are lack of secondary and high schools in Kosrang of Jogimara, economic and serial constraints restricting them from going to school . There is one primary school only for 3 class. It is also running by the private sources of local people. Now "Education for All" programme have supported it. The respondents are identified as literate and illiterate on the basis of their ability to read and write at the time of households survey.

The table below shows the educational status of the respondents. Of the total respondents only 10 persons i.e. 28.58 per cent are literate whereas rest of the respondents 25 persons i.e. 71.42 per cent are illiterate. Thus, it was clear from the figures that the most of the respondents pursuing commercial utilization of *chiuri* are from the illiterate group.

**Table No. 5.2**

**Distribution of the Respondents According to Educational Status**

Education	No. of Respondents	Percent
Literate	10	28.58
Illiterate	25	71.42
Total	35	100

Source: Field Survey,2008

**5.3.3 Household Size of the Respondents**

The average household size of the study village according to the VDC is sixperson when the national figure is 5.4 person. It clearly shows that irrespective of very low economic status of the Chepang, the household size was large.

The table below gives that the distribution of respondents according to household size of the total respondents the household size ranged from 2 to 10 per cent. The majority of the respondents i.e. 51.49 per cent have middle sized household, 25.71 per cent has small sized, household and 22.86 per cent have large household sizes respectively. Thus, from the table below it is clear that majority of the respondents doing commercial of *chiuri* are from the middle sized household group.



**Table No. 5.3**

**Distribution of Respondents according to HH Size**

HH size (No. of persons/HH)	No. of Respondents	Per cent
Small sized HH (2-4)	9	25.71
Middle sized HH (5-8)	18	51.49
Large sized HH (9 and above)	8	22.86
Total	35	100.00

*Source: Field Survey, 2008*

**5.3.4 Household Income Level of the Respondents**

Majority of the people have agriculture as the primary occupation followed by wage, labour and others (selling *chiuri* and *chiuri* products, fishing, setting liquor etc). More number of households are below poverty line or below subsistent level. Relatively, crop income is more than animal income.

The table gives the household income of the respondents. The income level of the respondents varied from Rs.3000 to Rs.30000. The majority of the respondents i.e. 57.14 have low level of income followed by medium level of income i.e. 28.57 per cent and high level of income, i.e. 14.29 per cent. From the figure, it is clear that majority of the respondents doing commercial utilization of *Chiuri* are from the low income level.

**Table 5.4**

**Distribution of Respondents according to HH Income level**

HH income Rs/Year	No. of Respondents	Per cent
low income (3000-8000)	20	57.14
Medium income (8000-13000)	10	28.57
High income (>13000)	5	14.29
Total	35	100

*Source: Field Survey, 2008*

**5.3.5 Land Holding Size of the Respondents**

The topographical feature of Balakhu VDC is sloppy in nature and mostly covered by mountainous forest lands so that very few patches of land are available for cultivation. Cultivation is done by making sloppy terraces. Few Rai households till the land owned by other ethnic groups apart from their own lands. The share croppers farmers have to pay fifty percent of the main crop to the land owners subject to total management of input by the tillers themselves.

**Table No. 5.5**

**Distribution of Respondents According to Land Holding Size**

Land holding (Ropanis/household)	No. of Respondents	per cent
Small land holding (less than 4)	28	80
Middle land holding (5-8)	2	5.71
Large land holding (9 and above)	5	14.29
Total	35	100

*Source: Field Survey, 2008*

The table above gives the land held by respondents. The total land owned by Chepang people are classified into three types namely khet, bari and ferest. The study showed that the promotion of upland (Pakho) is higher than low land (khet) in the village. The uplands are often drought prone. Of the total respondents only five respondents own Bari and Khet ,only 2 respondents owned bari and ban. The rest of the respondents own only bari. The bari land varied from 2 to 27 ropanis. The majority of households i.e. 80 per cent possessed small land, 5.71 per cent owned medium sized land and 14.29 per cent own large sized land. The khet land of 5 respondents have two ropanies each and every of the respondents owning forest land held 15 ropanies and the other held two ropanis. From the figures it is clear that majority of the respondents doing commercial utilization of *chiuri* were from the small land holding group.

### **5.3.6 Land Tenure of the Respondents**

The land tenure in Balakhu village is clear and though the personal land is under Raikar system, most of the villagers did not hold land ownership certificate. The forest lands were completely owned by the government. However, the people were seen to be directed towards increasing their land holding by using *khoriya khanne* system. Some were tilling lands of people from other ethnic groups and held tiller ownership of land. All the respondents owned their own lands.

### **5.3.7 Livestock Holding Size of the Respondents**

The most common livestock were oxen, cow, buffalo, goat, swine, fowls etc. Raiused to get oxen, buffalos, cows from other/higher ethnic groups just for farm yard manure on sharing basis. The cows and buffalo were usually taken by the owners as soon as they give birth to new ones.

The people were not seen to be able to increase the livestock size due to lack of water resources, low access to fodder and because of the fact that they were not able to afford livestock from their income. In general, people were taking interest in buffalo keeping and goat keeping due to its direct benefit by selling milk to the collection center nearby. Oxen were used for land ploughing and for threshing. Crop residue straws were the main sources of fodder for livestock, though some farmers group grabs at the edges and boundaries of their lands.

**Table 5.6**  
**Distribution of Respondents According to Livestock**  
**Holding Size**

Livestock Holding (Nos/HH0	No. of Respondents	per cent
Small number of livestock holding (0-5)	10	28.57
Middle number of livestock (6-19)	20	57.14
Large number of livestock holding (20 and above)	5	14.29
Total	35	100

*Source: Field Survey, 2008*

The table above gives the livestock size held by respondents. The number of livestock holding varied from 1 to 20. Majority of households i.e. 57.14 per cent. Owned small size and 14.29 per cent Owned large number of livestock respectively. From the figures it is clearly seen that majority of the respondents doing commercial utilization of *chiuri* were from the small number of livestock holding group.

### **5.3.8 Socio-economic impact and Utilization of *Chiuri***

Chiuri production is one of the major sources of income among the Rai. A family holding a large number of *chiuri* trees are considered to be of high socio-economic status. A *chiuri* tree yields about one Pathi of seeds and one Mana of *Chiuri* ghee which is sold at Rs. 80 at the local market. They also provided the wine (Raksi) from the *chiuri* pulp and sold at Rs.40 per bottle at the local market. They sold 'Residue' of the *chiuri* seeds from the ghee processing for the poison of fishing and earned Rs.25 per pathi. The detail socio-economic utilization of *chiuri* have been discussed in subsistent use and trading practices.

The income from the selling of *chiuri* ghee and production ranged from Rs 200 to 2000. After it is seen to fulfill the livestock status of the Chepangs in the village. *Chiuri* has multiple uses and its production is highly reliable in the local market. So it has been strongly contributing to the local people on the various means. People make different types of food and materials with the help of such *chiuri* and able to uplift the living standard. Some of them has been totally dependent or fulfilling their hand to month problem by utilizing *chiuri* in various forms. So, socio-economic impact of Rai easily and clearly seen in different terms which has been already discussed above. Education and utilization of *chiuri*, household size and utilization of *chiuri*. Age status and utilization of *chiuri*, land holding size and utilization of *chiuri*, livestock holding and utilization of *chiuri* are major components which bring clear picture of importance of *chiuri* in the economic and social welfare of Chepangs community. So sustainable development and commercial utilization of *chiuri* with appropriate technology can prove the best economic source Rai community to enhance their living standard and bring

desirable change in the field of education, health service infrastructure development and social welfare.

In this part we deal with the underlying relationship between the independent variable viz. age, education, household size, household income, land holding, livestock holding and dependent variable namely commercial utilization of *chiuri* with their livelihood status and socio-economic impact on Chepang community.

**Table 5.7**  
**Number and Percentage of Respondent Earning Different Amount of Income from *Chiuri***

HH income Rs/Year	No. of Respondents	per cent
low income (2000-5000)	20	57.14
Medium income (5000-8000)	10	28.57
High income (above 8000)	5	14.29
Total	35	100

*Source: Field Survey, 2008*

The table above gives the majority of the respondents i.e. 57.14 per cent has low level of income through the selling of *chiuri* ghee i.e. low commercial utilization of *chiuri* followed by middle level of commercial utilization of *chiuri* i.e. 28.57 and high level of commercial utilization of *chiuri* 14.29 per cent respectively of the total respondents the income level from the selling of *chiuri* ghee and products ranged from 200 to 1000.

#### **5.3.8.1 AGE STATUS AND UTILIZATION OF *CHIURI***

From the table below it is found that 70 per cent of the medium aged group had low level of commercial utilization. Relatively, among all the age groups, the old aged group, 40 per cent had high level of commercial utilization of *chiuri*.

**Table No. 5.8****Age Status and Commercial Utilization of *Chiuri***

Age Group	Level							
	High		Medium		Low		Total	
	No	per cent	No	per cent	No	per cent	No	per cent
Young group (25-34)	2	20	3	30	5	50	10	100
Medium aged (35-59)	3	15	3	15	14	70	20	100
Old aged group (60 and above)	2	40	2	40	1	20	5	100
Total	7	20	8	22.86	20	57.14	35	100

Source: Field Survey, 2008

The reason behind the low level of income through the selling of *chiuri* and *chiuri* products by the respondents of medium aged group might be attributed to leaving *chiuri* as the source of income and drifting to other source of income by majority of young generations and the high level of commercial utilization *chiuri* by the old aged group might be due to attachment to the traditional business because of physical weaknesses to seek to do labour works.

### 5.3.8.2 Educational Status and Utilization of *Chiuri*

From the table it found that 60% of the respondents from the illiterate group had low level of commercial utilization of *chiuri* and relatively the literate group had high level of commercial utilization of *chiuri*

**Table 5.9**  
**Educational status and Utilization Of *Chiuri***

Indicator s	Level of educational utilization							
	High		Medium		Low		total	
	No	per cent	No	per cent	No	per cent	No	per cent
Literate	2	20	3	30	5	50	10	100
Illiterate	5	20.	5	20	15	60	25	100
Total	7	20	8	22.8 6	20	57.14	35	100

*Source:-Field survey2008*

The reasons behind the low income through commercial utilization of *chiuri* by the respondents of illiterate group might be due to lack of knowledge and confidence in trading practices and due to involvement in labour in most of the times, whereas in the case of literates they might possess enough confidence and know how as out the commercial utilization of *chiuri*.

### **5.3.8.3 Household Size of Utilization of *Chiuri***

From the table below it is found that 66.67 per cent of the respondents from the small household group had low level of income through commercial utilization of *chiuri* and relatively, large sized household, 50 per cent had high level of commercial utilization of *chiuri*.



**Table 5.10**  
**Household Size and Utilization of *Chiuri***

Indicators	Level of commercial utilization							
	High		Medium		Low		Total	
	No	per cent	No	per cent	No	per cent	No	per cent
Small HH(2-4)	2	22.22	1	11.11	6	66.67	9	100
Medium HH(5-8)	3	16.67	5	17.78	10	55.55	18	100
Large HH(9and above)	2	25	2	25	4	50	8	100
Total	7	20	8	22.86	20	57.14	35	100

*Source:-Field survey,2008*

The research behind the low income through commercial utilization of *chiuri* by the small sized households. It might be due to less involvement of manpower in collection of *chiuri*, processing and trading of *chiuri* and *chiuri* products, whereas the high commercial utilization of *chiuri* by the respondents of large sized households might be due to availability of human resource for the above mentioned activities pertaining to *chiuri*.

#### **5.3.8.4 Household Income Level and Utilization of *Chiuri***

From the calculation it is seen that low level of commercial utilization of *chiuri* whereas relectively, the respondents from high income group 75 per cent had virtually high level of utilization of *chiuri*.

**Table No. 5.11**  
**HH Income Level and Utilization of *Chiuri***

Indicators	Level of commercial utilization of <i>chiuri</i>							
	High		Medium		Low		Total	
	No	per cent	No	per cent	No	per cent	No	per cent
Low level (3000-8000)	3	15	2	10	15	75	20	100
Medium level (8000-13000)	2	20	4	40	4	40	10	100
High level (> 13000)	2	40	1	20	2	40	5	100
Total	7	20	7	20	21	60	35	100

*Source-: Field survey, 2008*

The main reason behind the low level of commercial utilization of *chiuri* by the respondents of low income level might be direct effect of land income through the commercial utilization of *chiuri* on the total household income on the contrary, which comes out to be true in the case of high income level group. And the other factors might be the state of poverty leading people's ignorance to adopt technologies etc.

### 5.3.8.5 Land holding Size and Utilization of *Chiuri*

**Table No. 5.12**

#### **Land Holding Size and Utilization of *Chiuri***

Indicators (In Ropani)	Level of commercial utilization							
	High		Medium		Low		Total	
	No	Per cent	No	Per cent	No	Per cent	No	Per cent
Small land holding (2-14)	5	17.86	5	17.86	18	64.28	28	100
Medium land holding (15-19)	0	0	2	100	0	0	2	100
Large land holding (20 and above)	2	40	2	40	1	20	5	100
Total	7	20	9	25.71	19	54.29	35	100

*Source-: Field survey, 2008*

From the above table it is seen that the respondents of the middle land holding 0 per cent and small land holding, 64.28 per cent had low level of commercial utilization of *chiuri* and relatively, large land holders, 40 per cent had high level of commercial utilization of *chiuri*.

The factors behind the low income through commercial utilization of *chiuri* by the respondents of small and medium sized land holding group might be due to the unavailability of adequate land for growing *chiuri* trees and harvest *chiuri* fruits, whereas the commercial utilization of *chiuri* by the

respondents of the large sized land holding group might be the availability of adequate land for growing *chiuri* trees.

### 5.3.8.6 Livestock Holding and Utilization of *Chiuri*

From the table it is seen that 50 per cent of the respondents of the small number of livestock holding group had land level of commercial utilization of *chiuri* and relatively large number of livestock holding group, 40 per cent had high level of commercial utilization of *chiuri*.

**Table No. 5.13**  
**Livestock Holding and Utilization of *Chiuri***

Indicators in number	Level of commercial utilization							
	High		Medium		Low		Total	
	No	per cent	No	per cent	No	per cent	No	per cent
Small livestock holding (0-5)	3	30	2	20	5	50	10	100
Midium Livestock Holding(6-9)	5	25	5	25	10	50	20	100
Large livestock holding (20 and above)	2	40	1	20	2	40	5	100
Total	10	28.57	8	22.86	17	48.57	35	100

Source:-Field survey,2008

The factors behind the low level of commercial utilization of *chiuri* by the respondents of small livestock holding group might be due to less availability of animals wastes as manures for the *chiuri* trees to grow and bear more fruits which are in fact, free from fruiting problems. Similarly, the high level of commercial utilization of *chiuri* by the respondents of the large number of livestock holding group might be due to availability of adequate animal wastes to be used as fertilizer in the *chiuri* trees.

## Chapter- Six

### Summary, Conclusion and Recommendation

#### 6.1 Summary

The forest management practices in relation to commercial utilization *chiuri* being carried out by Rai of Balakhu village are not seen to be highly developed due to shifting from *chiuri* production and trading to other sources of income. It is guided by subsistent level and dependence on hunting, gathering, slash burn cultivation.

The people in Balakhu VDC did not have the intensity to undertake plantation of the new saplings in suitable place. In majority of cases, new saplings cater around the mother trees. As such, the forest user committee did not have specific programs for carrying out *chiuri* tree plantation. Of the plantation practices, planting *chiuri* trees on private lands is community seen as compared to the common lands.

An adhoc committee of forest user did not permit the villagers to destroy *chiuri* even in public land. The people of this area and vicinity were trying to achieve consensus and mental integrity for protecting the forests and the *chiuri* trees.

Rai members of there user committee were entrusted to take the charge of watching forest areas of Balakhu with the help of village. Villagers used to take permission from the user committee in case of need of forest products like timber for construction or whatever. A punishment in cash is imposed in case of destruction of forest resources including *chiuri* without the approval of the forest users committee.

There is no such rule on the product sharing as far as *chiuri* is concerned. There is free collection of *chiuri* from the forests and those having limited access to economic sources used to collect *chiuri* from the forests are allowed to be collected on the basis of the purpose.

committee of forest users of all the villages of ward number 9 viz. Balakhu Bisaundanda, Saite, Kaule, Dhakregau, Depal, Pipal Danda, have been formed for forest management, which have been legalized due to no incentive for the committee members, mis-conception of the villagers, etc. The forest management practices if any, are due to the perception of the need of the forest resources and of each and every individual for the future generations. Those all are based on the ownership of such lands by the community formed under the consensus of the villagers. Actually, the forests are managed as a response to growing scarcity of forest products as Rai have been relying on the forest products as the means of the subsistence.

*Chiuri* utilization in Balakhu as pulp for food and ghee as substitute to oil. They did not have the idea of using the residues after oil extraction as manure in paddy or maize crops etc. The Rai *chiuri* ghee extracting practices so far being carried out by in the study site included following processes as: collection of *chiuri* fruit, ripening, eating pulp and leaving seeds, seed shelling and drying, grinding by using local rice huller (Dhikee), steaming the powder, putting the steamed powder in bamboo basket, pressing the bamboo basket (chhapani) between two wooden logs known as chepuwa.

*Chiuri* and *chiuri* products i.e. mainly *chiuri* ghee is generally sold to local petty shopkeepers for cash or in exchange for such necessities as salt, cooking oil, rice, cloth etc.

The socio-economic characteristics of 35 sample respondents viz. age, education, household size, household income, land holding, land ownership pattern, livestock holding are studied separately and in relation to commercial utilization of *chiuri* which showed the following results.

The medium aged group of respondents had low level of commercial utilization of *chiuri* and relatively, the literate group had high level of commercial utilization of *chiuri*. The first case might be due to lack of knowledge and commercial utilization of *chiuri*. The first case might be due to lack of knowledge and confidence in trading practices and due to involvement in labour work in most of the times, whereas in the case of literates they might possess enough confidence and know how about the commercial utilization of *chiuri*. The education level of the respondents had insignificant positive relationship with the commercial utilization of *chiuri*.

The small household group of respondents had low level of commercial utilization *chiuri* and relatively, large sized households had high level. The first case might be due to less involvement of manpower in collection of *chiuri*, processing of *chiuri* by the respondents of large sized households might be due to availability of human resource for the above mentioned activities pertaining to *chiuri*. There occurred an insignificant positive relationship between household size of respondents and the commercial utilization of *chiuri*.

The low income group of respondents had low level of commercial utilization of *chiuri*, whereas relatively, the respondents from high income group had virtually high level of commercial utilization of *chiuri*. The main reasons behind the first case might be the direct effect of low income through the commercial utilization of *chiuri* on the total

household income on the contrary, which came out to be true in the case of high income level group. There occurred an insignificant positive relationship between household income level of respondents and the commercial utilization of *chiuri*.

The middle land holding and small land holding groups of respondents had low level of commercial utilization of *chiuri* and relatively, large land holders have high level of commercial utilization of *chiuri*. The factors behind the first case might be the unavailability of adequate land for growing *chiuri* trees and harvest *chiuri* fruits, whereas the high commercial utilization of *chiuri* by the respondents of the large sized land holding group might be the availability of adequate land for growing *chiuri* trees. There have been occurred an insignificant positive relationship between land holding size of respondents and the commercial utilization of *chiuri*.

The small number of livestock holding group of respondents have low level of commercial utilization of *chiuri* and relatively, large number of livestock holding group have high level of commercial utilization of *chiuri* the factor the first case might be due to less availability of animal wastes as manures for the *chiuri* trees to grow and bear more fruits which are in fact, free from fruiting problem. Similarly, the high level of commercial utilization of *chiuri* by the respondents of the large number livestock holding group might be due to availability of adequate animal wastes to be used as fertilizer in the *chiuri* trees. There occurred an insignificant positive relationship between livestock holding size of respondents and the commercial utilization of *chiuri*.



## 6.2 Conclusion

*Chiuri* is an important natural resources as the means of subsistence to Rai of Balakhu VDC., *Chiuri* trees are found abundantly in the private and public lands. However, Rai in the village are not seen to be commercially utilizing the *chiuri* and *chiuri* products. That might be due to lack of knowledge in potential possibilities for *chiuri* utilization, appropriate oil espalier suitable market, fruiting problem etc.

All the socio-economic variable: age, education, household size, household income, land holding size, livestock holding shows insignificant positive relationship with commercial utilization of *chiuri*, which mean they are not the determinants in commercial utilization of *chiuri*. Logically, the socio economic variables are not found to be directed towards better commercial utilization of *chiuri*. Majority of the respondents are from the middle aged group and middle aged groups had low level of commercial utilization of *chiuri*. From this, it is concluded that the young force is not directed towards commercial utilization of *chiuri*. Most of the respondents are of the middle sized and middle households had almost low level of commercial utilization of *chiuri* which is also not directed towards commercial utilization of *chiuri*. Most of the respondents are illiterate and literates has low level of commercial utilization of *chiuri*. Majority of the respondents hold small patches of land and small and medium sizes land holders had relatively low level of commercial utilization. This fact also do not support high commercial utilization of *chiuri* and small number of livestock and small number of livestock holders had low level of commercial utilization of *chiuri*, from this point also high level of commercial utilization of *chiuri* can not be provided the presence situation.

### **6.3 Recommendations**

Through the study made on forest management practices and sociological determinants in commercial utilization of *chiuri* in the Rai community of balakhu VDC of Okhaldhunga district following recommendation are made:

#### **a. Involvement of Indigenous people in *chiuri* development activities**

Local community of Rai have real knowledge who work and have been using *chiuri* since time immemorial. So, far commercial utilization of *chiuri* the indigenous people like Rai should be involved in any form whatsoever. Rai of the study village should have their own user committee that legalized in the district forest office.

#### **b. Need of Government Support**

Lack of physical facilities such as cultivable land, irrigation facilities, the cereal productions are almost negligible which of course is not even sufficient for three months a year for making their livelihood. Government should make the policy on the focus of *chiuri* management practices. On the other hand, government should manage the *chiuri* trade and trading market in the country or out of the country government make a policy to develop the *chiuri* industries , it is success more than other small cottage industries.

### **6.3.3 Need of Education to the Local People**

For the awareness of local people. It should be conducted *chiuri* development campaign in the local area. It is provided training and involved in the seminar to develop future skill for *chiuri* industries.

The villagers should be motivate towards utilizing sustainability of the non-timber forest products which are so far lying waste in the villagers. So that they will come to know the economic importance of the forest resource that they possess in their lands.

### **6.3.4 Recommendation for Further Study**

This study is project report in partial fulfillment of the requirements of the master's Degree in rural development. So, the researcher is confined to study the limited aspects and select few respondents (35 respondents). At the same time the researcher selected few aspects of forest management practices, viz. planting, protecting, harvesting, distribution, organizational arrangement, subsistent use and trading practices and few aspects of socio-economic characteristics viz. age, education, household size , house hold income, land holding to study their effect on commercial utilization of *chiuri*. Therefore, other aspects of forest management practices and socio -economic determinants in the same place and in the area under study and in the country as a whole. And the methodologies are used by researcher can be adapted in eliciting the study. It is wished that study will help the other researchers who want to study related to the *chiuri* anywhere.

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Annex-1

Questionnaire Set –1

**Household Survey Schedule**

The respondents are requested to give authentic information, as the answers will be kept confidential and used only for academic purposes.

Survey Schedule Number:

District:

Village Development Committee:

Ward Number

1. Full name of the respondent:
2. Age:
3. Sex: Male ( ) Female ( )
4. Literacy: Literate ( ) Illiterate ( )
5. Education Level : Below SLC ( ) SLC ( ) Above SLC ( )
6. Household Size: persons ( ) Male ( ) Female ( )
7. Ethnicity/Caste: Higher caste ( ) Mongols ( ) Untouchables ( )
8. Main occupation :
9. Total Income: Rs. ( )
10. Subsidiary occupation :
11. Total Income: Rs. ( )
12. Number of economically active : ( )
13. How many cattle and buffaloes do you have ?
14. Agricultural Land
15. Forest Land
16. Do you have oil bearing plants around you field ? Yes/No
17. Do you know Chiuri ? Yes/No
18. How many chiuri trees do you have ?
19. What are the major sources of oil ?
20. Do you harvest the chiuri seeds ? Yes/No
21. If you do you harvest give the reasons
  - a) No use at home an no market available
  - b)
  - c)

22. If you harvest what you do with this (main uses) ?
  - a) Use as lighting material
  - b) Sell to the market
  - c) Barter it with other things
  - d) Others (specify)
23. Does Chiuri coincide with any farm operation ? Yes/No
24. If yes, which crop and operation coincide ?
25. Give the time duration of such coincidence from                      to
26. If yes harvest and sell those seeds how much income you received this part year ?  
Rs. (            )
27. How much do you earn from Chiuri alone ? Rs. (            )
28. If such seeds can be sold in the market what changes this will bring to your farming operation, please list them.
  - a.
  - b.
  - c.
29. Please indicate the income composition of your household
  - a. Agriculture
  - b.
  - c.

**Questionnaire set -2**  
**Check List**  
**For**  
**Forest Management Practices**

1. Planting practices

Planting on private land

Planting on public land

Others if any,

Organizational aspect

Who manages forest - Committee members?

- User groups

- Others if any,

How forests are managed - Perception of need and ownership

- Decision

- Consensus

- Others if any,

Why forests are managed- Response to scarcity of forest products

- Gaining of religious merit

- Others if any,

2. Protection practices

Control of access

Hiring watchers

Imposing sanctions and punishments

Agreement of exchange

Transfer of pressure

Dispersing the maintenance of livestock

Utilizing other forest to fulfill daily demands

Increasing number of trees on private land

Others if any,



3. Harvesting Practices

Area of harvest- blocks

- Others if any,

Products to be harvested - Type of product

- Others if any,

Period of harvest - Agricultural slack season

- Others if any,

- Exact number of days by indicating the beginning and end of the harvest period

Amount of harvest - Determined by village community

- Others if any,

Distribution Practices

Physical feature - The quantity of forest products

- Others if any,

Ethical feature - Equity

- Others if any,

4. Subsistence use practices

5. Trading Practices