

Chapter - One

INTRODUCTION

1.1 Background of the Study

The Democratic Republic of Nepal, is landlocked between two giant countries of China in North and India in South, West and East. It is located in between 26⁰4' to 80⁰12' east longitude. The total land at present is 147181 km² and its average length is 855 km east to west and 193 km average breadth north to south.

Nepal is predominantly an agricultural country where more than 80 percent of its population are engaged in agriculture to run their way of life. Agriculture is the backbone of Nepalese economy contributing about 40 percent of its national GDP. In this system of agriculture, animal husbandry is the supporting wall. Nepal is also well known for its traditional occupation of animal rearing since the generations. Yak/Chauri farming popularly and overwhelmingly, done in mountain regions of Nepal is crucial one to support the national growth. It is the main income source of Himali people basically Sherpa, Tamang, Hyolmo, Rai, Limbu, Ghale, Gurung, Thakali and the so on ethnic groups. It is the altitude based farming and well practices of pastureland management.

Nepal is divided into three ecological regions; the Terai, Hill and Mountain. Terai is known as storehouse of grain products, hilly region is famous for horticulture farming and vegetables farming whereas mountain regions is suitable for animal husbandry. The main occupation of the mountain which is also known as Himali region is animal husbandry by which their daily life is operated. Himali region is not suitable for other agricultural products due to high altitude and its terrain nature. As a result, government of Nepal has also introduced this area as the animal product zone.

Yak/Chauri is one of the most important recognized farming in the high land of Nepal. Chauri farming is especially preferred by the Sherpa/Hyolmo

community traditionally by the ancestors. It is done above 2000 meters high from the sea level and is considered as suitable for the high altitude climate condition due to their origin and nature of survival by genetically. Yak are reared breed which can be formed at high altitude of Asian countries like China, India, Nepal, Bangladesh, Pakistan and Indonesia.

In Nepal, origin of Yak farming are not mentioned clearly by any researcher however it can be assumed that when the Bhotas people followed transhumance flock of Chauri by rotational grazing system by subsequent pastureland. At present, northern Broades Himalayan more than 25 districts of Nepal like Ilam, Bhojpur, Solukhumbhu, Ramechhap, Dolakha, Sindhupalchock, Rasuwa, Nuwakot, Gorkha, Manang, Mustang, Dolpa, Humla etc. have done this farming. Chauri/Yak can rear above 2000 to 45000 meters from sea level altitude in alpine climatic region. Above 1 (One) lakh Chauri/Yak population area existing throughout the country. The system of farming is based on transhumance in which seasonal shifting of animal is done. In winter 2000 to 2500 meter altitude is suitable for yak/Chauri farming whereas in summer season, it is done upto 4500 meter altitude.

Yak/Chauri farming known as indigenous farming system of Sherpa/Lama community is being very popularized for its nutrient products. Among various nutrient products, cheese is the crucial one in the world market. It has high value to those countries where this farming is not done. Yak/Chauri farming has economic as well as social strengths in Himali people of Nepal. It is believed that more the numbers of yak/Chauri, higher will be the income level as well as social status.

Livestock raising is an integral part of the Nepalese farming system according to percent of agricultural output and doing is widely used for compositing. 90 percent of the ploughing work is done by oxen pairs in Nepal. The role of animal husbandry is not only limited to economic importance, it is also an integral part of the Nepalese culture as a cultural symbol (Pandey, 1982).

Livestock raising is an additional source of income generation for the farmers. So, it has been given second importance after farming because it has been fulfilling the households requirements of the rural peasant in various ways. It contributes about 18 percent of total GDP in the form of milk, ghee, meat, manure, wool, hides and skins and 29 percent of agricultural GDP (GON/DFAMS, 1985).

The dominant sector of the Nepalese economy is agriculture which accounts for about 40 percent of gross domestic product. More than 80 percent of the economically active population are engaged in agriculture and allied activities and this sector represents about 75 percent of the total export earnings (CBS 1991). Agriculture is the core part for the development of the nation but inspite of the various effort of the government, the productivity in agriculture is decreasing year by year which has caused to slow down the economic growth of the country. These in order to uplift Nepalese economy and provide employment opportunities for the overwhelmingly large portion of the population dependent on agriculture a rapid and sustained increase in agricultural production is necessary. In this respect livestock and pasture land resources integrated with agricultural production should be equally considered. Undoubtedly the main economic source of Nepal is agriculture and animal husbandry. But agriculture and animal husbandry depend on the optimum utilization of natural resources. Pasture and forests are renewable natural resources which help the animal husbandry sector and agricultural production directly. So, they are basic components of livestock development as well as agricultural productivity.

Pasture land of Nepal has associated with the transhumance culture of ancient animal husbandry system. Transhumance is a traditional farming which is still continued in the high altitude of Nepal. It is the best practices in enhancing the livelihood of the Himali people as well as management of natural resources. To sum extent, the Yak farming is based on transhumance system of farming. It is more natural farming.

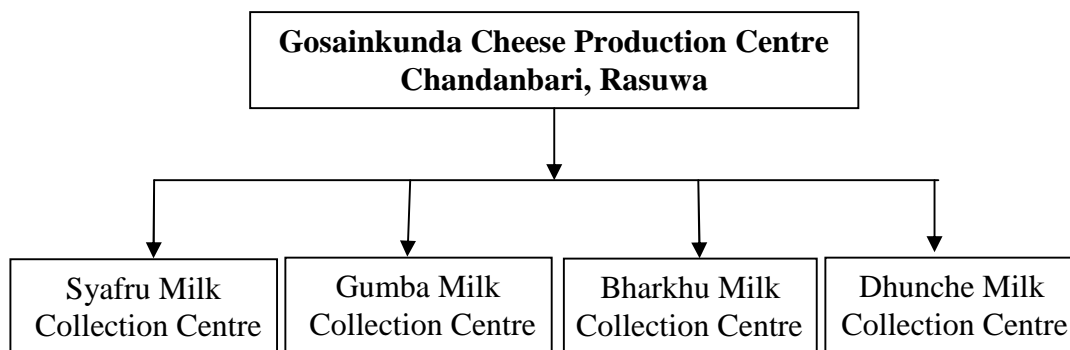
In the high altitude area of northern Nepal, livestock is raising is the primary source of income and livelihood. A report (UNDP/FAO/SATA, 1974)

stated that the existing pasture and fodder sources were sufficient to feed the cattle only during the rainy season. In Nepal, the pastureland resources is 11.9 percent out of which it is occupied more than 50 percent in Himali region. To manage this sources, himali people are running the yak/Chauri farming indigenously. Yak/Chauri farming is the ancient job of Sherpa/Lama communities of the himali region of Nepal.

This type of farming system is the environmentally friendly where yaks/Chauri are reared in various kharkas. Rasuwaa, himali district of Nepal is also well known for Chauri farming where 30 percent people of upper Rasuwa are doing this farming since the history. It is the zone where other agricultural products is hardly produced. Yak/Chauri farming is the main source of income basically the Sherpa communities.

One of the main products of yak/Chauri milk is cheese. Nepal has established 9 cheese factories under the Nepal Dairy Development Corporation and among them, 2 are located in Rasuwa districts. In fact, 14 thousand metric ton milk is produced daily in Nepal which has contributed 9 percent in national GDP. Rasuwa has been contributing around 30 percent of its total. Previously Rasuwa has emerged as the commercial Chauri milk product centre since 2009 B.C. Langtang Yak cheese establishment of third cheese factory and Gosainkunda Cheese factory had been established in 2027 B.S. which was third cheese factory of Nepal.

The Gosainkunda Cheese production centre lies in Chandanbari of Syafru VDC in the 3300 meter high from sea level. It is the centre where all four milk collection centers should have to collect the cheese and cream for cooling installation daily by the cheese boys. This main centre provides the various pro-farmer facilities. One of the major facility is to provide the 40 percent amount out of milk sold in a season without any interest and it will reduce in the up coming season by their own milk selling. This centre has the following branches :



Dhunche Milk Collection Centre is the branch of Gosaikund cheese factory. There are 48 goths (farmers) involved daily to sell their Chauri milk. They are rearing their Chauri/yak tradition by transhumance. They have indigenous method of pastureland resources management. Their economy as well as social affairs is cement built relation with Chauri farming. This centre is located in Langtang National Park since its imitations in 2046. This collection centre has the multiple dimensions. It has facilitated to the people to promote their economic activities even though government of Nepal has not cared of it inspite of its high potentiality. Pastureland is repository land of various natural resources. At the some spirit, people of this countries groundings are managing beautifully to it. Despite its contribution to the people life, the policy maker of Nepal do not eye yet. It needs to enhance the Chauri/yak farming in this area however the significance of it is still negligence by GON. It ahs provided double benefits as conserving national sites and ultising of it with rational manner. That is why this research study as a navin in nature will open up the potentiality of Chauri farming and dig out its essential improvement measures from the policy level which can promote it not banned in the name of environment conservation.

1.2 Statement of the Problem

In Nepal, pastureland resources plays a major role for the development and integration of agricultural productivity and animal husbandry. About 80 percent land of Nepal is covered by highland where other crops production is

less imagined. In the high land zone of Nepal, sufficient pastureland resources is available however its suitable management process is still lacked. In high land basically above 2000 to 4500 meters in Nepal, Chauri/yak farming is main occupation of the people. Yak/Chauri farming structures the economic as well as social status of the people in Himali region.

Yak farming is widely farmed on the high altitude area of Nepal. This is the most favoured occupation by the Sherpa community. There are various reasons for the favourable of this occupation like wise by the high altitude region where low rainfall, small bony plants, conifers trees, high cold weather more than 3 months snow cover of mountains are its silent features. The pastoral life is the main part of its economy. Chauri farming with the traditional method of transhumance is touched mostly. Sherpa/Hyolmo community have sole profession by the generation to generation from the historical background. The study area lies in Rasuwa has the lightest potentiality in yak farming even if it is not uncovered by the bountiful problems. The economic condition of the yak farmers has been increasing trend however social status of women and children has not well developed. It is because of the women engagement in all affairs of yak farming and children are far from the school service.

Yak/Chauri farming is a potential for cheese making which is considered for as the nutrient for human beings. The policy makers of Nepal do not care of its importance in national economy as a result, this study will awaken those who neglect this farming and to shed light its essentiality of promotion.

For this research study, the following research questions were developed :

- Why are you motivating in this occupation?

- What is the condition of Chauri farming in your family?
- Which facilities do you need to promote this occupation in future?

1.3 Objective of the Study

The general objective of this study is to assess the socio-economic impact of yak/Chauri farming. Whereas, the following are its specific objectives :

- 1) To study the potentialities and challenges of Yak/Chauri farming in study area.
- 2) To inquire the role of indigenous pastureland management practices in study area.
- 3) To conserve and promote Chauri/yak farming in study area.

1.4 Significance of the Study

There is an enormous scope of study of yak/Chauri for the production point of view on high Himalayan climatic condition. This zone is lacked of cultivable land in term of crop production. Many pasturelands are available in this study area too. one of the benefit of pastureland in this study area is Chauri farming. It is the main occupation of its inhabitants specially by the various ethnic communities such as Hyolmo, Sherpa, Tamangs etc.

Mostly roughage feed are gathered by animal or Chauri on the pastureland at day time by grazing only. It is a process of saving from the wastage of natural resources. It is not denied that it also deteriorate, the environment by increasing encroachment in marginal land. How ever, it is alternative of the livelihood of the high land people that is why, it should not be taken as the enemy farming of environment but have to be considered as the ultimate solutions of backwardness. Nevertheless, it needs certain incentive measures to obtain both hand sweets.

1.5 Limitation of the Study

The research study is limited on the following points:

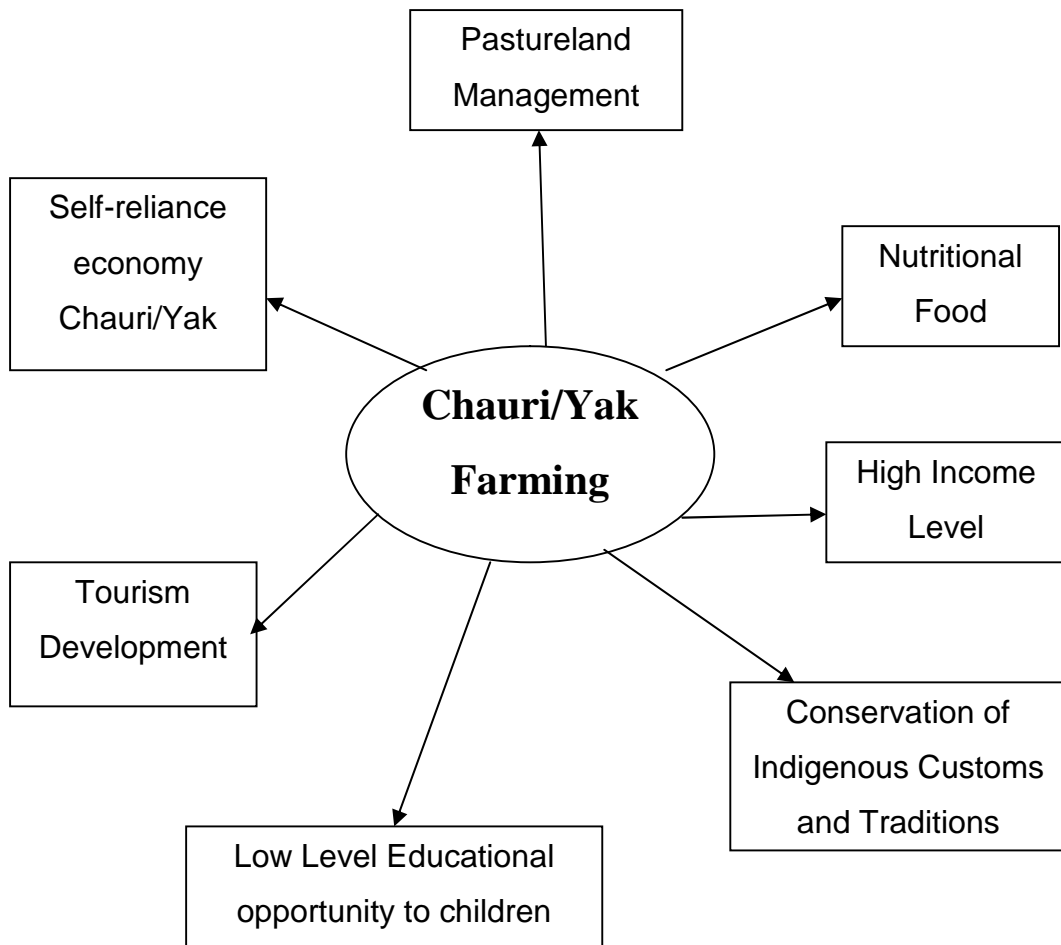
- 1) It was limited to 48 Yak Goths of Dhunche Chauri Milk Collection Centre of Dhunche VDC-9, Rasuwa district. It is due to the time and resource constrained to select this area.
- 2) In this study, only the 16 goths holder were surveyed as case study.
- 3) Since, this study is relied on socio-economic impacts of Yak farming, it had taken required informations from the natural level too.
- 4) This study had not applied any specific statistical measures such as correlation, regression etc.

1.6 Organization of the Study

The study "Socio-economic impact of Chauri/Yak farming" is hierarchically organized in sit different chapters. The first chapter shed light the general introduction of the study. The second chapter mirrors out the conceptual and empirical review of the various related literature. Similarly third chapter has organized with research methodology and study area description is limited in chapter four. The very important aspect of the study is organized in chapter five i.e. data presentation and analysis where as the last chapter presents the summary, findings and recommendations of the study.

1.7 Conceptual Framework

Chauri/Yak farming is the indigenous and the most wanted livestock farming of this study region. It has the socio-cultural plus economic linked with the people of this site. It is basically taken as main occupation in the Hyolmo Community. their total livelihood pattern is based on this very farming. Accepting this very fact, this study has sketched on the following conceptual framework.



Chapter - Two

LITERATURE REVIEW

Literature review is the foundation of the any research report. It paves the way to meet the objectives of the study. This chapter present the general overview about Chauri/Yak farming from published and unpublished documents if different authors or institutions.

Every development plan and programme for Nepal has always been giving priority to the agricultural sector. Moreover, the plans and programmes have been giving importance to suitable occupation in each ecological zone. But unfortunately, most programmes have failed to meet their goals. Agricultural productivity is decreasing because of traditional farming system and marginal and cultivation are still prevalent, in spite of the government giving first priority to the sector. Forest and pasture resource have been decreasing because of heavy population pressure. Excessive over grazing has resulted in tremendous deterioration of the natural pasture fodder and livestock development (Ministry of Forest, 1968).

Livestock raising is an integral part of the Nepalese farming system, accounting for 30 percent of agricultural output and dung is widely used for composting. 90 percent of the ploughing work is done by oxen pairs in Nepal. The role of animal husbandry is not only limited to economic importance, it is integral part of the Nepalese culture as a cultural symbol (Pandey, 1982).

Livestock rising is an additional source of income generation for the farmers. So it has been given second importance after farming because it has been fulfilling the household requirement of the rural peasant in various ways. It contributes about 18 percent of total GDP in the form of milk, ghee, meat, manure, wool, hides and skins and 29 percent of agricultural GDP (HMG/DFAMS, 1985).

According to a report of the Ministry of Food and Agriculture HMG/N (1981), the total livestock population of Nepal in 1979/80 consisted of 5.98

million cattle, 2.60 million buffalo, 3.65 million goat, 0.56 million sheep, 0.36 million pig and 8.21 million poultry. Similarly, according to CBS (1992) the total population of livestock in 1989/90 consisted of 6.28 million cattle, 3.01 million buffalo, 5.23 million goat, 0.29 million sheep, 0.57 million pig and 13.49 million poultry.

In the high altitude area of northern Nepal, livestock raising is the primary source of income and livelihood but many researchers have observed that the livestock raising occupation of the high altitude is gradually facing shortage of feed/fodder for their animals because of increasing animal population and declining natural resources. A report (UNDP/FAO/SATA, 1971) stated that the existing pasture and fodder resources were sufficient to feed the cattle only during the rainy season but in the dry season animals had to live under sub-maintenance level of nutrition because of the heavy pressure on pasture land. The livestock development effort is also in great trouble due to inadequate quantity of animal forage, especially during the winter season in the high altitude area.

2.1 Origin and Distribution of Yak/Chauri

The historical background of origin of Yak are not clearly stated on any literature. But Yak (male) and Nak (Female) comes under the cattle tribes genus *Bos*. The species are varies wild yak species is *poephagus* and domesticated yak species is *grunniens* (Prezewalski, 1883). The domestication of livestock begun since new stone (Neolithic) age. Animal first become domesticated in the sub tropical region of Asia and Africa later of Europe Continent (Dr. D. D. Joshi 1982). Different ununivocal evidences are available with talking to origin of Chauri. The fossil evidences suggested that yak were extensively distributed in north east Eurasia in the late tertiary.

Yak farming is one of the most important recognised farming in the hill terrain of Himalayan region of Nepal. Yak farming care especially preferred by the Sherpa community traditionally by their ancestor. High hills are covered by many pastureland and less suitable for crop cultivation in all season according to the land use classification of Nepal because of low rainfall, low temperature

and humidity with minimum soil depth and rocky land structure. Yak/Chauri is the most suitable profession for economic activities on Sherpa community at Himalayan range of Dolkha District of Nepal. Yak farming is done above 2000 meter above sea level altitude and preferred them for successful survival and production of milk. Yak are reared breed which can farmed at high altitude of Asian countries like China, Pakistan, Nepal, India, Bangladesh and Mongolia. This study will enhance for the promotion and conservation of such reared breed with considers to main economic activities of Sherpa community of Nepal. The other importance of yak study, they provide production with minimum management practice, minimum concentrate feed available and can farmed with nomadic and transhumance pastoral system by availability of grass. Yak can thrive by extreme cold climate with snow fall and frost condition. Agriculture is the main occupation for the livelihood of majority of the population more than 80 percent. The major national contribution by agriculture is about 40 percent gross domestic product for national economy and livestock sector contribute 31 percent on agriculture gross domestic product. Even though, livestock farming is the main profession followed by the high mountain rural people, because of available of big pastureland, the land are not suitable for the crop.

At present, northern boarder Himalayan 22 district have Chauri farming like wise Darchula, Humla, Jumla, Dhading, Manang, Mustang, Gorkha, Rasuwa, Sindhupalchowk, Dolkha, Ramechhap, Solukhumbu, Bhojpur, Sankhuwasabha, Terhathum, Taplejung, Mugu, Bajura, Rukum, Baglung, Dolpa and Bajhang. Chauri can reared above 2000 metre to 4500 meter sea level altitude alpine climate condition. About 90,000 yak population are existing all over the country. They farmed as transhumance system by which winter settlement of flock with range of 3600 to 4000 meter and summer settlement of flock is about till 5000 meter altitude.

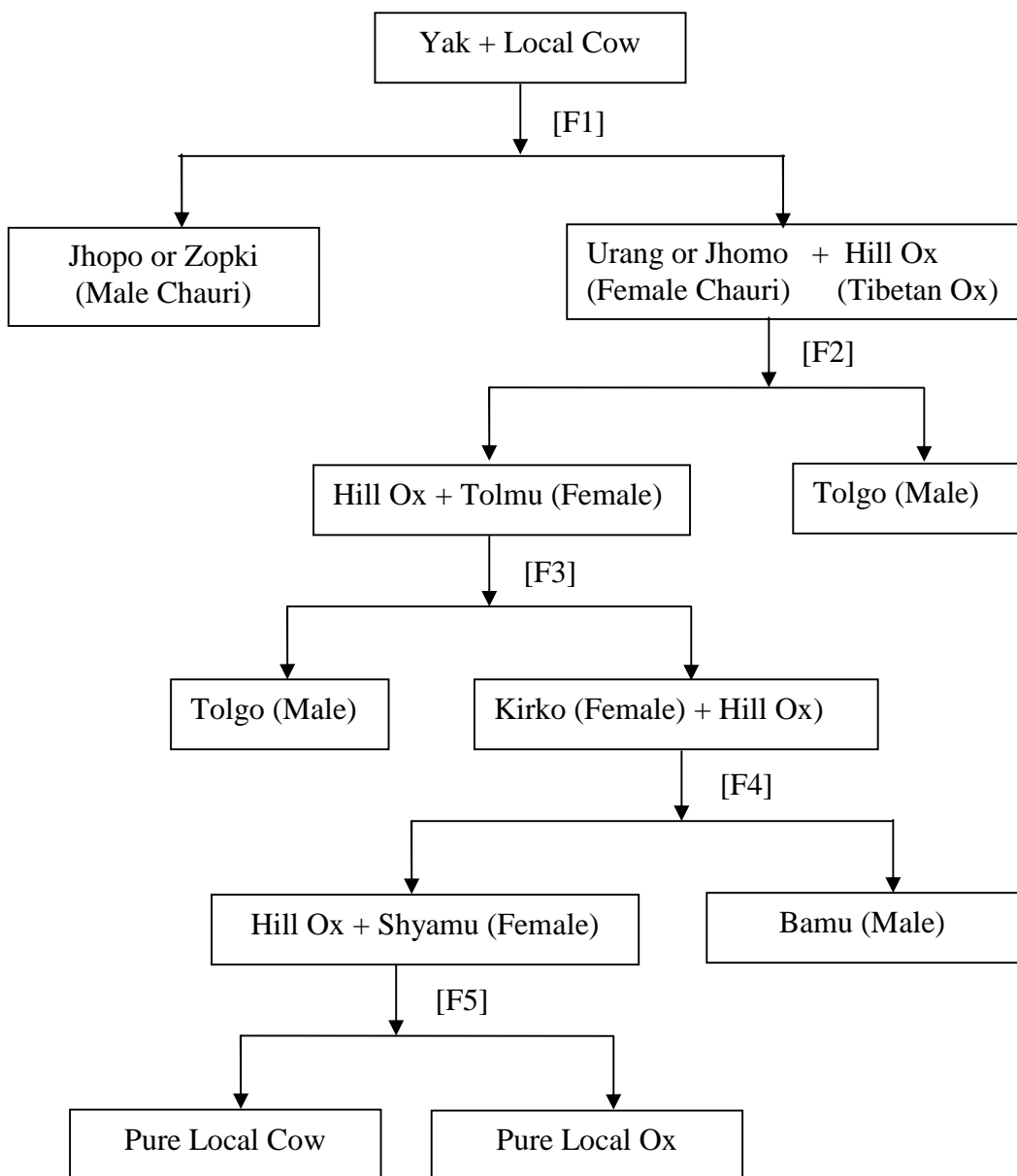
2.2 Breeding System

Chauri is the local term for the hybrid between yak and local cow. Local people use this word for yak and nak (female yak) as well, but really Chauri is

absolutely different to yak and nak. The yaks size is all over the body, a tail which is also very thick. Its overall appearance is different from the Chauri. The Chauri is smaller than the yak and bigger than the local cow. Yak and nak are very high altitude animals. They can not live in lower elevation. They can be found only between minimum elevations of about 3500 meters and maximum elevation of more than 6000 meters. Their heavy wool and other specialized thermo-regulatory mechanisms can keep them warm even in the extreme condition of high altitude, yet is risky for them to venture down below about 3000 meters because of the warmer climate of lower elevations (Brower, 1991:97). In this present study area a few yaks are moved between 3000 to 4000 meters are with the local cows and only in mid-winter do they descend down below about 2500 meters elevation (summer is the breeding season). Yak keeping is risky in this area because there is a high change for them to die specifically in the summer season. During the field visit it could be seen that the yaks were usually lying under the tree shadows with quicker respiration than normal.

The Chauris are the only hybrid animal, using yak to local cow. Though the Chauri Goth holder again use hill ox (called Tibetan ox, which is a bit bigger in size the local ox) to the Chauris not for breeding purposes but to make the Chauris are usually killed because they are not so profitable and valuable. If they are killed at a young stage the farmers get the profit of all the milk and also there is higher chance of the Charui becoming pregnant soon. The informants reported to us that if there is continuous cross-breeding between yak and local cow, eventually pure local ox and local cow will result. Regarding the information, let's see the following chart which gives the local terms for the cross-breed for 5 generations.

The Chart of Chauri and Cattle Breeding



Source : Field Survey, 1992 (Drona Raj K.C.)

Pattern 1

- 1) Belang Bull X Nk (Birmo or Brimjo)
 - ↓
 - F1 Dimjo Chauri (Female) ----- Fertile
 - Dimjo Jhopo (male) ----- always sterile

- 2) Belang Bull X Dimjo Chauri
 ↓
 F2 Pamee Chauri (Female) ----- Fertile
 Pamu Jhopa (male) ----- sterile
- 3) Pamee Chaur X Belong Bull
 ↓
 F3 Pamjo Chauri (Female) ----- Fertile
 Pamjo Jhopo (male) ----- sterile
- 4) Belang Bul X Pamjo Chauri
 ↓
 F4 Pamu Chauri (Female) ----- Fertile
 Payok (male) ----- sterile

Pattern 2

- 1) Yak X Belang Cow (Local Hilly Cow)
 ↓
 F1 Urang Chauri (Female) ----- Fertile
 Urang Jhopo (male) ----- sterile
- 2) Yak X Urang Chauri
 ↓
 F2 Tolmu Chauri (Female) ----- Fertile
 Tolko (male) ----- sterile
- 3) Yak X Tolmu Chauri
 ↓
 F3 Hormu Cow (Female) ----- Fertile
 Harmu Tolko (male) ----- sterile
- 4) Yak X Hormu Cow
 ↓
 F4 Grumu (Female) ----- Fertile
 Garyakpu (male) ----- sterile

Source : Dr. D.D. Joshi, Yak and Chauri Husbandry in Nepal 1982. His Majesty's Government press Singhdarbar, Kathmandu.

It is found that any hybrid male Chauri are sterile which means that male are capable to breeding purpose they are detected genetically. Only they used for pack animal as well as ploughing the agriculture field.

2.3 Reproductive Characteristic of Chauri

Generally re-production of yak depends on climate and feed. Yak comes in heat normally on warm season. Maximum feed available in this season on the pastureland. The first heat shown at the age of 12 month. But average bull accepting age ranges 14 to 19 months, which is earlier to other cattle species.

The yak had shown less libido in comparison to domestic cattle Bull for mating. At the time of breeding season yak walking and followed whole days. After mating Yak shown isolated behaviour.

The sign of heat is similar as domestic cow like bellowing, discharge of muscous membrane, mounting to other cow, restlessness, decrease the milk production. The ovulation takes place after 12 hours of beginning of heat, that is the optimum time for higher conception. The conception rate depends on feed condition. Successfully discovery of heat symptoms and health status of Chauri with normal herd composition or ratio male and female respectively 1:15-25 in general.

Table 2.1
Productive and Reproductive Performance of Different Breed of Chauri and Nepali Hilly Cow

| S. N. | Parameter | Unit | Nak | Dimjo Chauri | Urang Chauri | Kirko Cattle | Nepali Hilly Cattle |
|--------------|--------------------------------|-------------|------------|---------------------|---------------------|---------------------|----------------------------|
| 1 | Age at 1 st heat | Day | 1095 | 812 | 1095 | 1277 | 1277 |
| 2 | Age at 1 st calving | Day | 1355 | 1082 | 1365 | 1570 | 1570 |
| 3 | Calving interval | Day | 665 | 425 | 425 | 660 | 664 |
| 4 | Gestation length | Day | 260 | 270 | 270 | 300 | 300 |
| 5 | Lactation length | Day | 180 | 260 | 260 | 300 | 180 |
| 6 | Milk yield | Kg | 720 | 1690 | 300 | 600 | 180 |
| 7 | Calf mortality | Percent | 40 | 95 | 95% | 40% | 50 |
| 8 | Av. Body weight male | Kg | 300 | 365 | 360 | 310 | 300 |
| 9 | Female | Kg | 225 | 235 | 280 | 220 | 210 |
| | Total Life span | Years | 15 | 20 | 20 | 15 | 15 |

Source : D.D. Joshi et al (1999) An Assessment of the Yak Cheese Factory in Nepal

The above table shown that early maturity found in Dimjo Chauri then higher maturity time to Kirko cattle and Nepal hilly low. Dimjo have early giving birth than other. Nak, Dimjo and Urang Chauri posses short gestation period than other lows but the length of lactation is significantly shorter than other domestic cow, calf mortality is higher in Chauri that purposively for to produce more milk purposively by the farmer male animal have higher body weight than female animal universally.

2.4 Previous Study on Chauri Farming System

There are limited previous study and research about Chauri Husbandry. There is one Chauri Development farm situated a syamboche Solukhumbu district through Government sector. Which studied the best generation and crossing system to produced good offspring for farmers distribution to produced more milk. That office is also responsible for the appropriate pasture improvement at high altitude for rotational grazing practices. Other study is done like Chauri could no farmed or reared stall feeding as like cattle, buffalo, sheep and goat. Because, of the high altitude of mountain, there are extreme cold then temperature goes down less then zero Celsius by the snowfall and first. The pattern of temperature higher when reducing the elevation of mountain on winter. Then Chauri shed (Goth) comes down gradually on lower elevation from September to March for the safety of coldness in winter. Then March Atmospheric temperature gradually increase and Chauri shad go up to balance the thermo-neutral zone march to August similarly, some other studied on Yak/Chauri farming system by the D.D. Joshi, B.D. Awasti and Minu Sharma at 1999, the various study are enclosed on an assessment of the Yak cheese factory in Nepal 1999 published by National Zoonoses and food hygiene Research centre (NZFHRD).

Agricultural production depends upon the availability of fertile land and the fertility of land can be enhanced by animal husbandry. Similarly, the increase in animal population depends on availability of quality of pasture land. Therefore, there is a very close relationship among animal husbandry, pasture resource and agricultural productivity. "Pasture, animal husbandry and agriculture are closely interrelated, and they should always be considered together and not in isolation" (Gurung, 1987 : 18).

The total pasture land in Nepal is 1757.3 hectares which covers 11.9 percent of the total land (i.e. 1,47,181 km²). The ecological distribution of the pasture land in Nepal is 884.4 (50.32%) hectares in the high Himal (i.e. above 4000 m.), 509 (29%) hectare in the high mountains (i.e. 2500 - 4000 m), 292.7 (16.65%) hectare in the middle mountains (i.e. 1500-2500 m.) 20.8 (1.2%)

hectares in the Siwalik (i.e., 300-1500 m.) and 49.7 (2.82%) hectares in the terai (i.e. below 300 m.) (LRMP, 1986).

Garret Hardin made a study and published an article in Science (1968) with the title of "The Tragedy of the Commons". His article symbolises the degradation of the environment to be expected whenever many individuals use a scarce resource in common. The article moved other researchers and theorists to think deeply about the natural resources and common property resource management system.

Supporting Hardin's notion, Smith states that "The only way to be avoid the 'Tragedy of the Commons' in natural resource and wildlife management is to end the common property system by creating a system of private property rights (1981 : 467).

Mckean (1984) argues that local communities can devise effective rules to manage their own common property resource without outside interference. She has illustrated her view with an example of traditional common land management in Japan where local people have established the rules of harvesting timber or thatch, etc. The village headman was responsible for determining the time of harvesting the thatch, winter fodder and other products and for scheduling the event. Mckean concludes that the long-term success of these locally designed rules indicates "that is not necessary for regulation of the commons to be imposed coercively from the outside".

Further Haimendorf (1964) gave one of the earliest accounts on indigenous forest management systems in Nepal. He has given a good description of the "Shingo-naua" (Practising of communal system) of the Sherpas of Solukhumbu. The Shingo-naua were locally appointed officials for a fixed period, after which they passed on to others the responsibility for allocating forest and pasture resources, making sure that individuals support the established rules for forest use. In his later publications (1975, 1984) he reported that the replacement of "Singo-naua" by an ineffective system imposed by the Naitonal Forest Department led to the degradation of the forest resources of Solukhumbu.

Fisher et al. (1989), Gilmour and Fisher (1991 : 40-43) have mentioned their experiences of forest resource management in many places in Sindhupalchok and Kavreplanchok Districts, where local people have, without outside guidance, made arrangement to protect and regulate access to forest resource for which there is no signal ownership. To illustrate the above with an example: three forest patches of Badase VDC of Sindhupalchok district were managed properly by the local people. They had formed a formal committee to establish and uphold the rules and regulations. Forest watchers were appointed who were called "Chitardar" in the local term. The forest users collected a certain amount of money from each household and paid the watchers. For the forest products' collection, certain times and rules were fixed. Children were not allowed to cut green grass at any time because they were less experienced and could cut seedlings. Two other patches of forest were also managed indigenously. But here, local people had not formed any formal committee and were operating on the basis of agreed rules and practices alone. Similarly, Gilmour and Fisher have referred to a number of other researchers (specifically Molnar, 1981; Campbell, 1978; Messerschmidt, 1981, 1984, 1987) who identified many other indigenous natural resource management system operating elsewhere in Nepal.

Similarly, Gurung (1987) showing inter-relationship among pasture animal husbandry and agriculture has given emphasis to effective pasture resource management for livestock development and agricultural productivity in Nepal. He strongly advocates on traditional social rules and measures adopted by the village communities for natural resource management and states that the social measures adopted by the communities should honestly be considered for better resource management, in order to increase livestock population and agricultural productivity.

He gives an example of Tara village people who have managed their local natural resources properly in their own way. He explains that the Tara village people gather together on a particular festival day of the year and make rules for their common resource use. They fix dates for fencing, opening, grazing sites etc. on that day. All the villagers have to pay labour

service for fencing and other common work. If any one doesn't contribute labour service he/she should pay a fine and the money is spent on communal feasts. The villagers graze their animals on a rotational basis. They provide grazing for their neighbouring villagers as well but under their rules, and allowing a limited number of animals. A grazing fee is charged and the fee is used in communal feast and Puja. Finally, Guring argues that Tara village is a useful example of successful common resource management by the local people, serving as a protective and self-regulating system.

Brower (1991) has focused on the livestock management and the cattle economy of Khumbu Sherpa. She has noted the changes of this Sherpas' community due to opening of Nepal's borders in the last three decades and the external pressures have made the Sherpas unable to accommodate their traditional systems. The Sagarmatha National Park has brought new pressure on the Sherpas and their fragile high mountain environment. Although the Sherpas are happy to take advantage of the opportunities that public attention to their home-land brought about through the opening borders and the Park, many Sherpas are reluctant to pay the price of artificial, externally imposed regulation of their way of life.

Some other scholars and research centers have examined the condition and situation of natural resource and livestock. They have pointed out the factors which led to a decline of resources but have not discussed the management system much.

Anthropology Alirol (1979) and Molnar (1981) examine pastoralism as an economic strategy of various mountain and hill-people of Nepal. They have discussed natural resources and their exploitation by the village people but they have not paid due attention to community management systems of the resources. Wyatt-Smith (1982) and Mahat (1987) remark that due to the system of subsistence agriculture operating, the state of the natural resources of Nepal's hills and mountains is critical.

Howard (1979) emphasises the importance of pasture land and suggests that of the development of livestock productivity and agricultural development, there must be complete, adequate and proper utilization of the neglected land (i.e. pasture land) and forage resources. Similarly, Kayasta (1987) argues that agricultural productivity depends on the availability of quality and quantity of pasture lands. She has tried to show an interactive relationship between animal husbandry and pasture resource management.

Yak is a domestic cow animal comes under the bovine family with Genus *Bos* and species *grunniens*. They can be reared on high altitude with cold climatic condition. This climate condition is not suited for other domestic cattle (*Bos indicus*). Such domestic cattle are farmed on low land area where other animals buffalo, sheep, goat and pig and poultry are reared. The origin of world yak was tamed by the ancient Qinghai province of China from the ancient times about (8th century BC the yak, Regional office for Asia and the Pacific of FAO). Gradually yak farming shifted to a Himalayan range of Nepal. Yak or Chauri can survive at high altitude due to special oxygen binding capacity by the haemoglobin in blood. The yak haemoglobin must have capacity of binding more oxygen per unit of blood (D.D. Joshi et al. Yak in central Asia). Than *Bos Taurus* (hump less cattle) and *Bos indicus* (humped cattle). Haemoglobin consists of red blood corpuscle. Which is responsible for special binding capacity of oxygen and their transport of oxygen and carbohydrate. Yak and Chauri have special characteristics with compare to domestic cow (*Bos indicus*) Yak have 270 days gestation period and cow have 300 days gestation period. There is about 30 days lesser the body and cow have shorter hair body cover and fine hair down cover to the body and cow have shorter hair body cover. Cow can be reared on cattle shed for night time and Chauri do not need Yak shed for night time. They live on the pasture field, no need such special shed. Yak tamed on transhumance/nomadic flock on herd. Minimum concentrate feeding to Yak than cattle or other domestic

animal. There are limited literature are available with concerned to Yak/Chauri farming or the world because the Yak species farming limited on China. Afghanistan, Bhutan, India, Mongolia, Nepal, Pakistan and Russia the name of Yak derived from the Tibetan language pronounced as yag other language followed this pronunciation closely Yakpho in Nepalese. This name is usually for among numerous language of the world the ancient Chinese people called ya niu. In Nepal, the nomenclature of Yak is could male animal which is widely used for the breeding purpose and commonly called Chauri for female animal farmed for the reproduction and milk production. The Yak has the same chromosome number diploid 60 same as the Bos Taurus and Bos indicus cattle. Therefore crossing (mating) is possible by the same homologous number of chromosome pattern. The difference between domestic and wild yak are noted strong temperament (mental behaviours). Many attributes in common between wild and domestic Yak. Yak of Tibetan plateau type tend to migrate freely with the alpine type because of the open topography of the land. Bull may moved from one area to another and mate with individual cow or even whole herd in the neighbouring area thus leading to inter breeding the Yak stock in different area. The plateau type Yak tend to be smaller breed, they are, however good milking capacity with high butter fat content and these Yak are clearly multipurpose, being used for milk, meat and draught. Individual herd of the plateau type Yak usually larger than alpine type, the plateau type Yak are black hair, or black with white spot predominate.

The alpine or valley type Yak Chauri farmed on steep gradients. Most mountain are over 4000 meters and valley fall deeply between 1000 to 2500 meters. There are large temperature difference between the top and valley bottom are kept. The mountain meadow pasture land lies above the tree line. It is cold and plant do not formed seed, the alpine yak Chauri mostly covered by black hair with gray hair around the mouth. Alpine Chauri have broader forehead than the plateau type.

Numerous scholars and researchers have studied the various aspects of Chauri/yak farming. These resources will be reviewed in this study too. Besides it, different websites will be shared for analyzing various aspects of this study.

Yak/Chauri is a domestic cow animal comes under the bovine family with *Bos taurus* and species *grunniens*. They can be reared on high altitude with cold climate condition. The origin of the world yak was tamed by the ancient Qinghai province of China, from the ancient times about 8th century B.C. (BAO). Gradually yak farming shifted to the Himalayan range of Nepal. Yak or Chauri can survive at high altitude due to special oxygen binding capacity by the hemoglobin in blood. The yak/Chauri hemoglobin must have capacity of binding more oxygen per unit of blood (D.D. Joshi et al, Yak in Central Asia, 1999).

Realizing the acute shortage of animal fodder in the northern region of Nepal the government introduced a small number of high altitude pasture and fodder development programmes (Thapa, 1990).

In Nepal, pasture resource plays a major role for the development of livestock and agricultural productivity as well as the national economy. But the conditions of the high altitude pasture land area of Nepal are generally becoming poorer, particularly in the more accessible pastures exposed to continuous grazing by a large number of animals (Rai and Thapa, 1993).

Traditional systems are of great antiquity and imply continuity whereas indigenous management may be a new development (Fisher et al, 1989 : 14). This yak/Chauri farming is both traditional as well as indigenous methods of farming and transhumance is the old is gold method of natural resources management. Mahabir Pun, the last year's Megashes. Price winner has used to sell the blood of Chauri twice a year and use this income for Wireless Internet Technology (Gorkhapatra, 064/4/18).

Milk Development Corporation 2064 did a short-glimpse about the condition of milk in Nepal and reported that there are nine cheese production centre out of which six are from the Chauri/Yak milk and other rest are from the local cow milk. These six cheese factories if Chauri/yak are situated in Himalaya region of Nepal

Ministry of education and sport; Curriculum Development Centre had included a topic about “the importance of work” in grade-three social book and wrote a story about the Chauri/yak milk which was located in Chandanbari cheese factory. This story provided a lesson that the economic activities of Himali region can be upgraded by the reusing of yak.

Trisuli Prabaha (weekly) (22 Bhadra, 2057) published a future news written by Gyanendra Neupane about the production of cheese in Chandanbari which found that this Chandanbari cheese factory had produced 4 thousand KG cheese and 1 thousand 3 thousand kg ghee at its establishment period of 2027 B.S. But due to the increasing number of yak and people luring towards this occupation, the level of production of cheese and ghee has increased substantially. It was found that 18 thousand 500 kg cheese and 6500 kg ghee has been producing annually. It is now in increasing ration year by years. In respect to the daily diving standard maintained by the Yak/Chauri farming, Kami Chhiring Sherpa, a local farmer had said that he owned 42 yak/Chauri and provide 70 liters milk daily to the Dhunche Milk Collection Centre from which he has been earning Rs. 1092. From this description, the researcher had found that his daily living standard was weekly maintained by this occupation no doubt.

Nima Chhiring Tamang, A superior social Mobilizer (2065) had written an article in “Langtang Sampada” kharka management program. He analyzed that Rusuwa has various kharkas and its role in livestock raising is very countable which in turn benefited to the local people. However, despite the

various opportunities brought by yak/ Chauri farming in this region, the kharkas are not well managed and most of the pastureland (kharka) have been suffered from the lack of desired level of grass. In spite of the hardship for raising the yak/ Chauri in this region local people are engaging in this occupation due to zero alternative and their religious factor. The Sherpa/Lama people of this region are devoted Buddha and they make different worship by applying the Chauri ghee in Lamp-loghting (chhemi) in various Gumbas. So, this occupation has religious importance too.

Binup Bhattarai in Kantipur National Daily on Poush 14, 2065 wrote on article about “Chauripalannale chamkia Bhotiya” (the wealth by Chauri farming). He analytically had presented an old Chauri farmer of Illam named Dandu Bhotiya whose income level had been soared by this faming. Based on the Dandu’s view about his Chauri/Yak farming, he had written that this occupation had provided bountiful employment opportunities to the local people and Dandu himself had ameliorated his income level. Now, Dandu has been brought-up 250 Chauri/yak which was only 6 Yak/Chauri before 40 years. This article had spoken that by creating such type of occupation on this kind pf remote area, the present unemployment problems can be eradicated.

Dr. Bhuwaneshwar Sharma (2065) (2nd ed.), wrote about yak/Chauri farming. He write that yak/Chauri farming in Nepal was introduced from the bordering of Tibet in the ancient period. Now, it is taken as the prime occupation in the Himali region of Nepal. He added that there are 1.4 billion yaks/Chauris through out the world and out of the total china alone consists more than 90 percent. In respect to Nepal, he made the following table from the different districts to calculate the numbers of Chauri.

Table 2.2
Chauris/Yaks Population in Nepal

| District | Population of Chauris/yaks |
|-----------------|----------------------------|
| Taplejung | 1825 |
| Sankhuwashba | 7982 |
| Solukhumbu | 12054 |
| Dolakha | 3047 |
| Ramechhap | 729 |
| Siddhupalanchok | 1840 |
| Rasuwa/ Nuwakot | 2876 |
| Dhading | 115 |
| Gorkha | 2041 |
| Manag | 4289 |
| Mustang | 4914 |
| Dolpa | 10694 |
| Humla | 3671 |
| Jumla | 295 |
| Mugu | 1750 |
| Bajura | 67 |
| Darchula | 385 |
| Bajang | 46 |
| Total | 58635 |

Source: Sharma, 2065

Ibid (2065), had presented that Chauri/yak can provide 400 to 3200 litre milk in one time and in case of Nepal it is 600 to 1690 litre in each time milking period.

The literatures it had reviewed were very much related to the study theme. However, due to lack of sufficient matters on it, the researcher had himself taken the ideas by experience.

Chapter - Three

RESEARCH METHODOLOGY

3.1 Population

The population of this study consists 5 VDC of Rasuwa district namely Dhunche, Shyafru, Ramche, Bhorle, Yarsa and Urleni from Nuwakot district. These VDCs contain about 21000 population having about 4000 households. Mainly, this study was conducted on the 48 Chauri Goths owner of Dhunche Milk Collection Centre.

3.2 Sampling Design

There are other Chauri milk collection centres and several Chauri Goths among which farmers (Goths) of Dhunche Chauri milk collection centres is taken as sample purposively. The households survey was done based on simple random sampling in 16 goths out of total 48 goths in this collection centre. Since the sampling zone is a highland of the Rasuwa district, it can be generalized ideas in the homogenous characteristics of the geography not overall country. That it why, it could be an indicative study rather than holistic generalization.

3.3 Research Design

For the purpose of finding the socio-economic impact of yak/Chauri farming in study site's community. This study was based on the exploratory and case study types of research designs. The former had applied to agglomerate the accurate information whereas households survey was done on case study types of research. In addition, descriptive research had been used to present the gathered data.

3.4 Rationale of Selection of Study Area

Dhunche V.D.C. lies in Rasuwa district in the headquarter of Rasuwa itself. About 50% area of this V.D.C. is covered by high land. In this V.D.C.

Langtang national park is situated. Despite its various ecological nature, it is also well exemplary place for Chauri milk products. Dhunche milk collection centre under Gosaikund cheese factory is situated in this V.D.C. ward no. 9, Dikharka. This collection is the sub-branch of Gosaikund cheese factory which is recognized as the largest milk collection centre consisting up 800 liters of milk daily. It takes approximately 2 hours from Dhunche in which 5 VDCs of Rasuwa and 1 V.D.C. of nuwakot's farmers are daily selling their milk from Baishak to Asoj. In spite of long distance to the point from 3 hours, the farmers are bringing their Chauri milk. As a result, this collection centre has the all requirements needed by researcher of this study. That is why this location is selected to conserve and promote the yak/Chauri farming in this area.

3.5 Nature and Sources of Data

Mainly primary as well as secondary type of data were included on the study of socio-economic impact of yak/Chauri farming. The secondary data had been gathered from published and unpublished scholarly books, articles, journals, websites etc whereas primary sources of data had acquired from field survey.

3.6 Data Collection Tools and Techniques

This study had applied the following data collection techniques and tools :

3.6.1 Households Survey

To generate accurate data from the study site, structure and unstructured questionnaires were asked to the sampled households. Questionnaires were given to those respondents who can fill-up and those who can't researcher had asked and filled-up by himself. It was don on sixteen households of this area.

3.6.2 Key Informant Interview

To inquire more information on this study, key informant interview was applied to those who are informed and other policy makers of the government of Nepal. Officer of Nepal Milk Corporation Dr. Iswori Prasad Adhikari, Present Chairman Tej Bdr. Khadka of this collection centre, local goth holder Ang Babu Sherpa and Kami Dolma Sherpa form women, local social worker Dawa Lopsang DM.

3.6.3 Focused Group Discussion

It will be applied cumulatively in certain number of farmers, management committees and administrative committee. This technique was also used to the following individuals as : Rudra Bahadur B.K., Chhiring Sherpa, Sete Lama Ghale, Rikki Sherpa, Karsang Dawa Sherpa.

3.7 Data Analysis

The agglomerated data had been analyzed both on statistical as well as descriptive method. The quantitative data will be analyzed through using simple statistical tools such as groups, tables, etc. Descriptive method was applied both on quantitative and qualitative information. Since this report was qualitative in nature, it hard based on women were taken as key informants.

Chapter Four

STUDY AREA DESCRIPTION

Nepal is a geographically diversified country in the map of the world. It has 75 districts and 14 zones having 5 development regions. Among them 75 districts, Rasuwa, a himali district is situated in the north part of Nepal bordering with Tibet. This district has its own importance in its geographical formation, biological diversity local customs, religions, ethnicity and occupations etc.

The word 'Rasuwa' is basically derived from the Tamang language in which 'Ra' means sheep/ goats and 'sowa' means rearing/ farming or breeding. That is why, the literal meaning of Rasuwa in local language is "sheep/goats farming". It is much more convincing that this region has various chances of pastureland for the animals.

Rasuwa lies in 27°5' to 28°25' north latitude and 85° to 85°15' eastern longitude. It situates in 615 into 7226 m from the sea level whereas the district headquarter Dhunche is in 1950 m high.

4.1 Climate

This region is a cold zone of Nepal having alpine types of climatic condition. In this district, half of the regions is ranked as snowfall area in seasons. Due to the chilly climate, no other occupation is done except the yak/ Chauri farming in most of the area.

4.2 Geo-application

According to the CBS report of 2058 B.S., this district has 1544 sq km land out of which the following applications are touched.

Table 4.1 : Geo-Application

| Geo Applications | Area (Sq. km) |
|-------------------------|----------------------|
| 1. Pastureland/ grass | 382.34 |
| 2. Waste land | 635.54 |
| 3. Forest land | 384.88 |
| 4. water-bodies | 42.24 |
| 5. Sand land | 7.75 |
| 6. Snow river | 90.38 |
| 7. Cliff | 0.53 |
| 8. Air way | 0.04 |
| Total | 1544 |

Source : CBS Report, 2058

4.3 Population by VDC

This district has occupied by 43,906 population in which male are 22552 and rest are female (CBS - 2058). The population distribution of each VDC has been presented under the table.

Table 4.2 : Population of VDCs

| S.N. | VDC | HHS | Population | | Total |
|------|-------------|------|------------|-------|-------|
| | | | Female | Male | |
| 1 | Dhunche | 574 | 1015 | 1315 | 2330 |
| 2 | Haku | 449 | 1194 | 1312 | 2506 |
| 3 | Yarsa | 797 | 1873 | 2056 | 3929 |
| 4 | Saramthali | 728 | 2083 | 2025 | 4108 |
| 5 | Dhaibung | 953 | 2469 | 2475 | 4944 |
| 6 | Bhorle | 1078 | 2982 | 2983 | 5965 |
| 7 | Ramche | 397 | 1032 | 1121 | 2153 |
| 8 | Laharepauwa | 940 | 2586 | 2546 | 5132 |
| 9 | Dandagaun | 377 | 1040 | 1101 | 2141 |
| 10 | Thulo Gaun | 293 | 776 | 736 | 1512 |
| 11 | Gatlang | 366 | 839 | 900 | 1739 |
| 12 | Chilime | 325 | 709 | 812 | 1521 |
| 13 | Thuman | 222 | 451 | 536 | 987 |
| 14 | Timure | 102 | 245 | 272 | 517 |
| 15 | Bradhim | 163 | 286 | 291 | 577 |
| 16+ | Langtang | 143 | 269 | 252 | 521 |
| 17 | Syafru | 484 | 994 | 1147 | 2141 |
| 18 | Goljung | 298 | 511 | 672 | 1183 |
| | Total | 8689 | 21354 | 22552 | 43906 |

Source: CBS, 2058

4.4 Education Level

Education is the key to open the development overheads. It is the foundation of any development activities. Since, it is a vital tool, this district has low level of education in comparison to national level of 54% in total. This district is made up 46% of literacy rate out of which 52.47% are from male and 39% from female. Behind the low level of education of high land areas (Himalayan) of the district, the major factor is to take Buddha Education (lama education) from Gumbas informally. There are 149 schools in total which are tabulated below.

Table 4.3 : Education Level

| School | Community/ Govt | Institutional/ Private | Child centre |
|------------------|----------------------------|-----------------------------------|---------------------|
| Pre-primary | 0 | 2 | 38 |
| Primary | 81 | 4 | 0 |
| Lower secondary | 10 | 0 | 0 |
| Secondary | 9 | 1 | 0 |
| Higher secondary | 3 | 0 | 0 |
| College | 1 | 0 | 0 |
| Total | 104 | 7 | 38 |

Source: Rasuwa Bikash Sardesh- 2064.

4.5 Ethnicity and Occupation

This district has consisted by various castes. They are Tamang, Sherpa, Ghale, Brameen, Chhetries, Newar, Gurung and Dalits. Among them 60% is tamang population.

This VDC has all total government offices including central office of Langtang National Park dispersed in Rasuwa Nuwakot and Sindhupalchowk district. In addition to it, Dhunche is the main gate entering Gosaikiunda which accounts its tourism potentiality.

Among 18 VDCs, Dhunche is one of them. It is the district hadquarter to which Sindhupalchowk district in eastern part, Haku VDC in western part, Syanbru and Yarsa VDC in southern part are bounded. This VDC has mainly inhabited by the Sherpa, Tamang and Ghale castes however after initiation of Trisuli-somdhang Road network, the people from the other parts are also residing in this VDC.

Agriculture and animal husbandry as the main occupation of Sherpa, Tamang and Ghale have been involving in tourism, trade and commerce. Moreover, the least number of the population are taking secondary occupations such as teachers and other governmental services. The people

of this VDC have entertained their own religion and cultures who are fully devoted to the Buddhism.

In case of their cultural ceremony, “Hyum Puja” in shrawan of each year has been conducted in the Dhunche Gumba by all Chauri/Yak goths owners of the area. In this ceremony each and every Goths of this areas have to mandatorily come with Chauri/Yak milk and its products. Beside it, the local habitants of it go to worship in Gunlbas each Asusi and purnima. In this respect, the local people have their cultural relation with Chauri/Yak framing.

Since this VDC occupies massive opportunities for yak/ Chauri farming this study’ socio-economic impacts” of Chauri/yak farming” is based on the northern Himalaya regions only.

Chapter Five

DATA PRESENTATION AND ANALYSIS

This chapter presents the data gathered from the field survey and analysis of them with the help of table, charts, percentage. It is the most important part of the research report by which the result can be generated. The 16th Goths of Chauri/Yak farmer's have been taken as sample and this chapter also is based on these goths holders.

5.1 Population Composition/ ethnicity

Population/ethnicity is one of the important aspect of any research study. It structures the socio-cultural and economic aspect of the country Ethnicity composition of these study are not actually heterogeneous interims of their major castes. However, out of the 48 goths, this study has been done on 16 goth's holders from which the following caste- wise table is derived in micro level:

Table 5.1
Caste/ ethnicity Distribution of Respondents

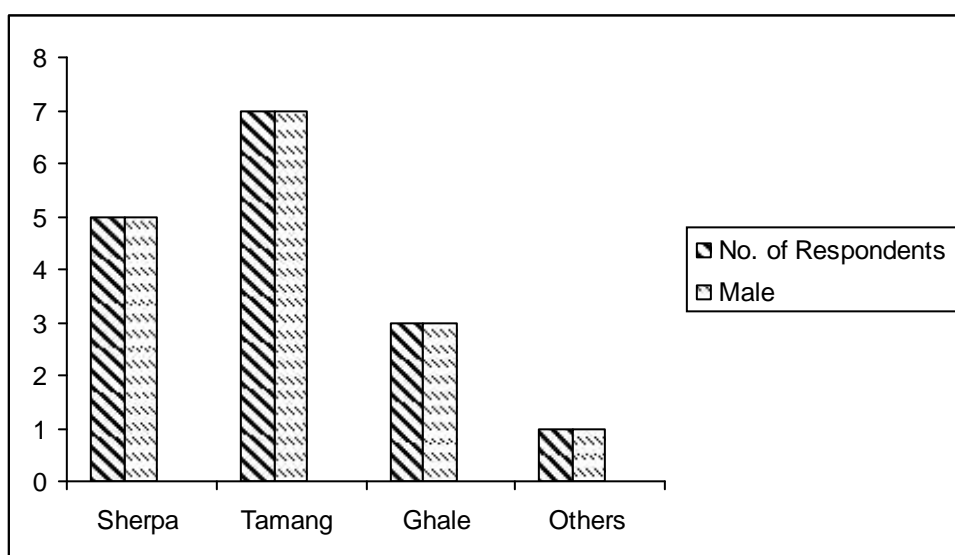
| S.N. | Caste/ethnicity | No. of Respondents | Percentage | Male | Female | % |
|------|-----------------|--------------------|------------|------|--------|-----|
| 1. | Sherpa | 5 | 31 | 5 | 0 | 31 |
| 2. | Tamang | 7 | 44 | 7 | 0 | 44 |
| 3. | Ghale | 3 | 19 | 3 | 0 | 19 |
| 4. | Others | 1 | 6 | 1 | 0 | 6 |
| | Total | 16 | 100 | 16 | 0 | 100 |

Source: Field Survey, 2009.

The above table 5.1 shows that 44 percent of the total respondents were from Tamang community followed by Sherpa with 31 percent. Similarly, Ghale occupied 19 percent and 6 percent from other castes. It showed that though they all are from the Mongolian caste, however they have their different way of lives. In case of inclusion to male and female, there is zero. It

is because of the male domination and researcher visiting to only milk collection centre. It is also fact that researcher met to female too take the name of their husbands name instead of own name. furthermore, caste/ ethnicity composition is shown under the bar diagram:

Figure 5.1 : Caste/ ethnicity Distribution of Respondents



5.2 Educational Status

Education erects the country economy and paves the way from backwardness to prosperity. In respect to the 16 goth holders of this, site the following table presents the level of education.

Table 5.2
Educational status of Respondents

| S.N. | Educational Level | No. of Respondents | % |
|------|-------------------|--------------------|-----|
| 1 | Illiterate | 14 | 88 |
| 2. | Literature | 2 | 12 |
| 3. | Primary | 0 | 0 |
| 4. | Secondary | 0 | 0 |
| 5. | Above SLC | 0 | 0 |
| | Total | 16 | 100 |

Source: Field Survey, 2009.

This above table reveals that 88 percent out of the total 16 respondent were illiterate and 12 percent are literate. And, the researcher did not find the more than above level educational status of respondents. Behind this, there are various cause as over work load, absence of school facilities nearby the goths, etc. In case of their children, it is found that majority are out from the school surroundings the goths coverage. To improve the literacy level of this areas, majority had responded to establish at least non-formal education centre by the goths.

5.3 Occupation

Population engagement requires different sector. Occupation is the comer stone of the country's population to build of economic enhancement. The occupational structure of respondents in this study has been presented in the following table:

Table 5.3
Occupational Structure by Respondents

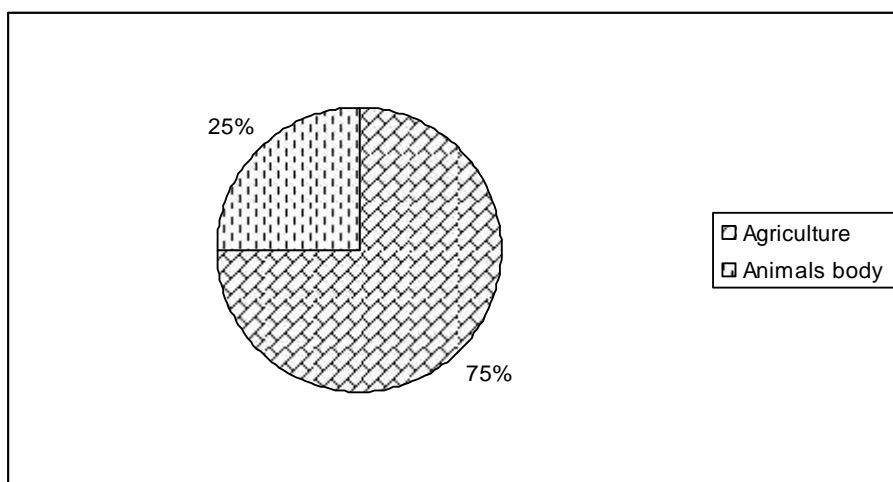
| S.N. | Occupations | | | | | |
|------|-------------------|--------------------|----|------------------|--------------------|-----|
| | Primary | No. of respondents | % | Secondary | No. of respondents | % |
| 1. | Agriculture | 12 | 76 | Animal husbandry | 16 | 100 |
| 2. | Animals husbandry | 4 | 24 | Service | 0 | |
| 3. | Service | 0 | | Trade & Commerce | 0 | |
| 4. | Other | 0 | | Other | 0 | |
| | Total | 16 | | | 16 | 100 |

Source: Field survey,2009

The above table 5.3 mirrors out that the primary occupation among the 16 respondents is agriculture occupied by 76 percent and followed by 24 percent of animal husbandry. In case of secondary occupation, 100 percent are engaging in animal husbandry i.e. Chauri/yak farming. It shows that

animal husbandry i.e. Chauri/Yak farming has been integrated with the agriculture. These two systems are interdependent to each other. The main occupation of the total respondents can be visualized by the following pie-chart as:

Figure 5.2 : Occupational Structure by Respondents (Primary)



5.4 Age Structure of Respondents

The age structure of the respondents clears out the economically active and non-active population. It paves the level of production too. The age structure of the respondents of this study is given below.

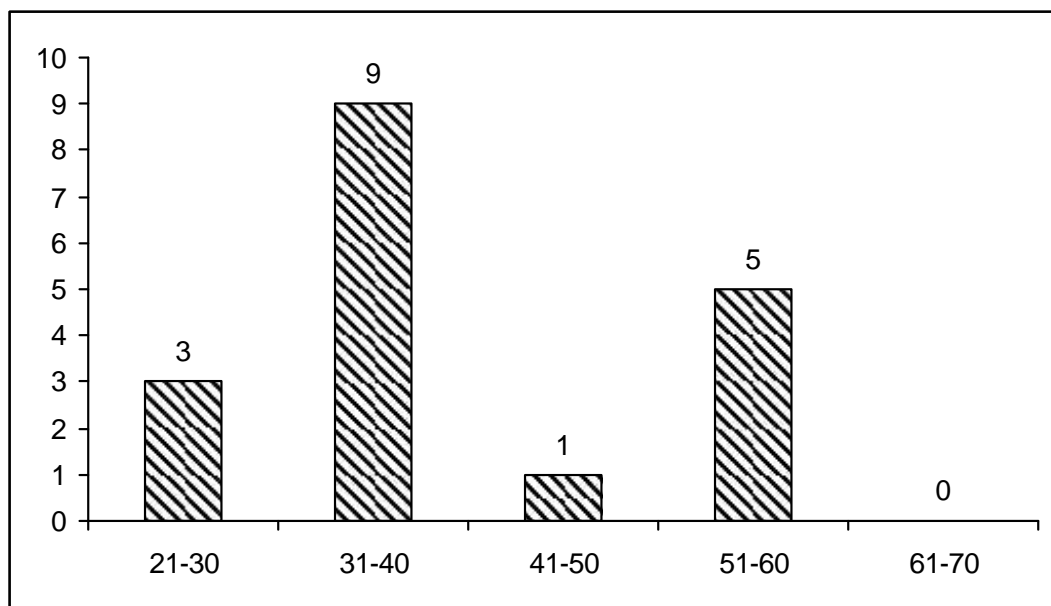
Table 5.4
Age Structure of Respondents

| Age structure | No. of Respondents | Percentage |
|---------------|--------------------|------------|
| 21-30 | 3 | 19 |
| 31-40 | 9 | 56 |
| 41-50 | 1 | 6 |
| 51-60 | 5 | 19 |
| 61-70 | 0 | 0 |
| Total | 16 | 100 |

Source: Field Survey, 2009.

This above table provides the age structure of the 16 respondents. Out of the total 16 respondents, 56 percent are 31-40 age group. Likewise 19 percent occupied by 21-30 and 51-60 age groups. Similarly 41-50 age group consisted with 6 percent. It shows that there is no economically non-active population as Nepal introduced above 59 age group. By this data, the researcher would like to conclude that higher rate of working group people resided in this site. It is because of aged people live in their permanent house not in Goths. The age structure of the respondents is observed from the following graphs as:

Figure 5.3 : Age Structure of Respondents



5.5 Family Size of Respondents

The family size of the area sketches the resource accessibility and work performance. It provides the level of development too. This present study has founded the following structure of family of the respondents.

Table 5.5
Family size of the Respondents

| Family size | No. of respondents | Percentage |
|--------------------|---------------------------|-------------------|
| Nuclear | 11 | 69 |
| Joint | 5 | 31 |
| Extended | 0 | 0 |
| Total | 16 | 100 |

Source: Field survey, 2009

The above table reveals that 69 percent of the total respondents have nuclear family which is followed by 31 percent of joint family having more that 5 family members. In case of extended family there is zero. It is clear that no family burden is touched.

5.6 Choosing of Chauri/Yak farming

Chauri/yak farming of this area is the dominant occupation where most of the family are engaged. The causes behind choosing this farming system based on sampled households or tabulated below.

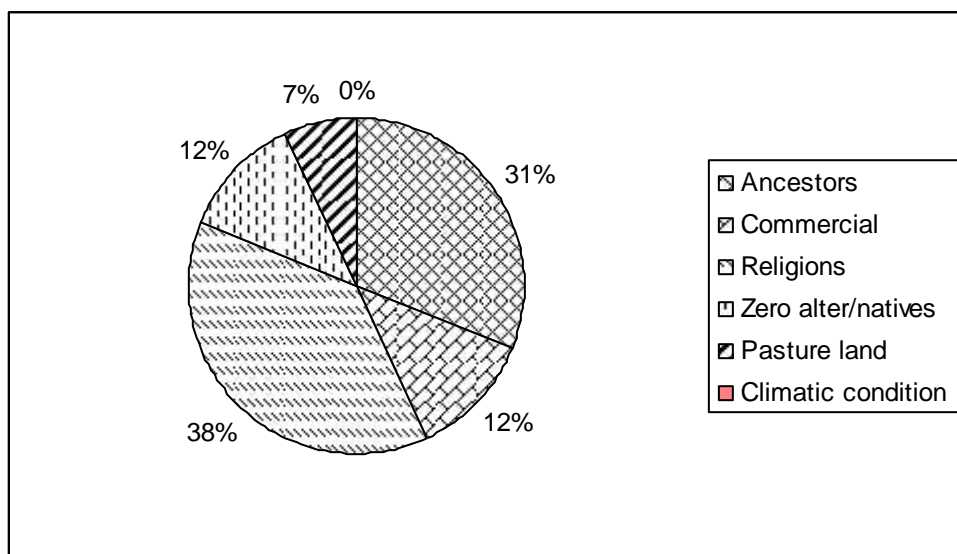
Table 5.6
Causes of Choosing Yak/ Chauri Farming

| S.N. | Causes | No. of respondents | % |
|-------------|--------------------|---------------------------|----------|
| 1 | Ancestors | 5 | 31 |
| 2. | Commercial | 2 | 12 |
| 3. | Religions/customs | 6 | 38 |
| 4. | Zero alternatives | 2 | 12 |
| 5. | Pasture land | 1 | 7 |
| 6 | Climatic condition | 0 | 0 |
| | Total | 16 | 10 |

Source: Field survey, 2009.

The above table shows the cause of selecting the yak/Chauri farming by the 16 goths holders. 38 percent viewed that religion is the major factor to choose this occupation. It is due to the need of Chauri ghee worshipping in various Gumbas and as a customs they used to drink tea and eat floor by mixing the Chauri's ghee. Out of the total respondents 31 percent said that ancestor farming is the cause to take this business. It is some how very fact that Chauri/Yak farming is their traditional farming. It is followed 12 percent who favoured on zero alternatives 7 percent viewed on availability of pastureland resources. In case of researcher point of view, the major factor is the ancestral farming. For more convement, the causes of choosing yak/Chauri farming by respondents have shown under the pie-chart.

Figure 5.4 : Causes of Choosing Yak/ Chauri Farming



5.7 Chauri/Yak Holding

There are many family who rear Chauri/Yak by themselves. The number of Chauri/Yaks holding in sixteen Goths have been presented below.

Table 5.7
No. of Chauri/Yaks of respondents

| No. of Chauri | No. of Respondents | % |
|----------------------|---------------------------|----------|
| 1-9 | 1 | 6 |
| 10-19 | 8 | 50 |
| 20-29 | 4 | 25 |
| More than 30 + | 3 | 19 |
| Total | 16 | 100 |

Source: Field survey, 2009.

The above table shows that 50 percent reared 10-19 number of Chauri/yaks followed by 25 percent with 20-29 no. of yaks. Similarly 19 percent reared more than 30 yaks and the least 1-9 yaks cared by 6 percent of total respondents. It is clear from the data that in terms of holding Chauri/Yak, majority held 10-19 because of their family size as well as availability of pastureland too. For the conservation and promotion of this farming to boost up the Himali economy, there need to be well managed of pastureland resources and National parks. In case of the study site, Langtang National Park is existed.

5.8 Chauri/Yak Milk Selling

The daily milk selling of 16 goths had been brought by the responds and listed below:

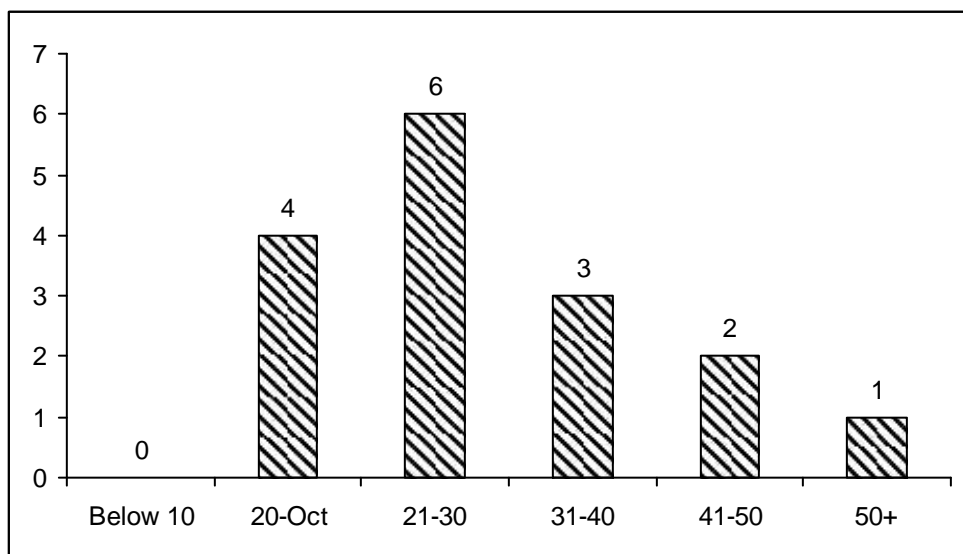
Table 5.8
Daily milk selling by respondents

| Milk/ liter | No. of Respondents | % |
|--------------------|---------------------------|------------|
| Below 10 | 0 | 0 |
| 10-20 | 4 | 25 |
| 21-30 | 6 | 38 |
| 31-40 | 3 | 19 |
| 41-50 | 2 | 12 |
| 50+ | 1 | 7 |
| Total | 16 | 100 |

Source: Field Survey , 2009

The portion of daily milk selling of Chauri/Yak by the sixteen Goths had be shown above the table. In respect to sell the milk, 38 percent soll 21-30 liter milk daily followed by 25 percent of 10-20 liter milk selling. Likewise, 19 percent soll 31-40 liter and 41-50 liter and more than 50 litre occupied by 12 percent and 7 percent respectively. It concludes that all of the respondents are taking it in commercial way. They sell their milk Rs. about 20 per liter an average and they can earn Rs. 300 to Rs. 1200 daily. It is shown under the bar-diagram too.

Figure 5.5 : Daily milk selling by respondents



5.9 Distance between Goths and Milk Collection Centre

Distance plays the important role to get the development facilities. It enhances the income level if there is nearby the developmental overhands. As we know that Dhunche milk collection centre is also developmental overhands, the 16 goths holders reside in different sector to sell their milk. The distance of the 16 goths holders to reach the collection centre has been given under the table.

Table 5.9
Distance between Centres and Goths

| Distance | No. of Res. | % |
|-----------------|--------------------|----------|
| Below 1 hour | 3 | 19 |
| 1 to 2 hours | 5 | 31 |
| 2 to 3 hours | 5 | 31 |
| 3 to 4 hours | 3 | 19 |
| Total | 16 | 100 |

Source: Field survey, 2009

The above table mentions that 19 percent Goths are below 1 hour far from the collection centre by walking. 31 percent said that it takes 1 to 2 hours and 2 to 3 hrs to reach the Dhunche milk collection centre. Similarly 19 percent viewed that, 3 to 4 hrs takes to come in this collection centre. It shows that the distance between Goths and milk collection centre in averagely very high. There seems to be needed of various sub-centres establishment so as to reduce the difficulties of the farmers and increase their portion of milk to be produced.

5.10 Health Status of Respondents

Health is the wealth of an individual. We have already known that Chauri/yak products is the nutrient food to human beings. How ever due to the over worked load and other factors, some Goths holders had faced the health difficulties. In case of women, it is increasing. The respondents view on the health difficulties in yes/no form had given below in the table.

Table 10
Health Status

| | | | | | |
|-----|----|----|----|---------|----|
| Yes | % | No | % | Unknown | |
| 8 | 50 | 4 | 25 | 4 | 25 |

Source: Field survey, 2009

The above table shows that health difficulties faced by the respondents had been shown. The 50% respondents view that they were facing health difficulties such as backache, respiratory, etc and 25% said 'no' and unknown respectively. It clears that there is normal level of health status due to the nutrient food.

5.11 Sufficiency of Livelihood

The livelihood of the people of this region is totally integrated with nature. The nature provides them bountiful chances to year the high value products of Chauri. And it has narrowed down the haves and haves not too. According to the respondent view on the yak/ Chauri sufficiency to pass their livelihood is listed under the table.

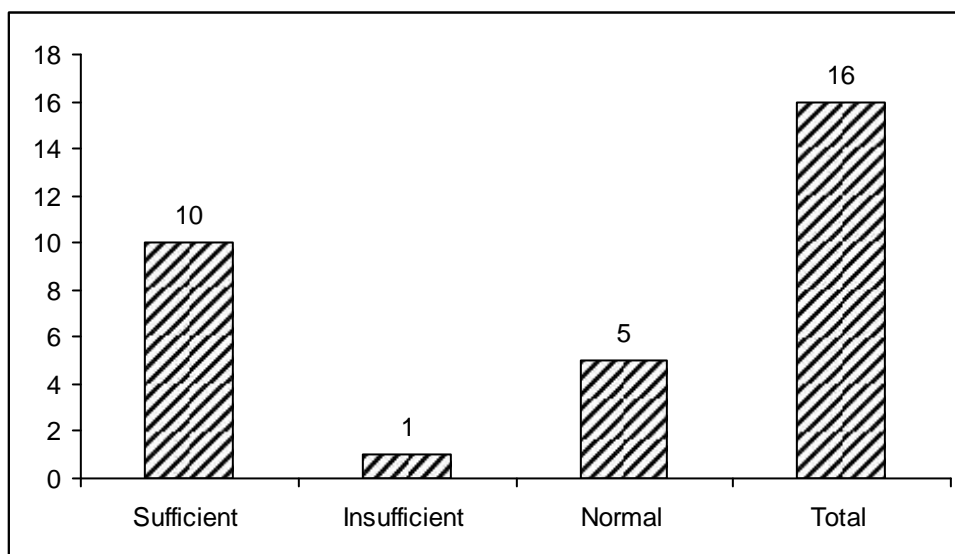
Table 5.10
Respondents View on Yak Farming

| Responses | No. of Res. | % |
|------------------|--------------------|----------|
| Sufficient | 10 | 63 |
| Insufficient | 1 | 6 |
| Normal | 5 | 31 |
| Total | 16 | 100 |

Source: Field Survey, 2009

The above table shows that 63 percent of the total respondents kept their response that the Chauri/yak farming satisfied their livelihood. Similarly, 31 percent viewed on normal in their livelihood. 6 percent out of the total responded the insufficient of Chauri/Yak farming in their livelihood. It shed light that majority are entertained to this business. The following chart can show its figurative analysis as :

Figure 5.5 : Respondents View on Yak Farming



5.12 Milking and Carrying the Chauri/Yak Milk

After rearing the Chauri/yak in goths, the local people used to milk the Chauri/Yak two times in a day and carry this milk to collection centre in the morning time. In the milking and carrying milk to the collection centre, the respondent responded the followings:

**Table 5.11
Milking and Carrying the Milk by Respondents**

| | Milk | | | Carry | | |
|--------------|------|--------|---------|-------|--------|---------|
| | Male | Female | Equally | Male | Female | Equally |
| No. of Resp. | 5 | 8 | 3 | 9 | 1 | 6 |
| % | 31 | 50 | 19 | 56 | 6 | 38 |

Source: Field study Survey, 2009.

The above table 5.11 shows 50 percent milking activities had done by female whereas 31 percent milked by male. The rest 19% milking activities had been doing equally by male and female.

In case of carrying the milk to the collection centre, 56 percent is done by male and only 6 percent by female. Similarly, 38 percent carrying activities have been done both by male and female. From this data, the researcher concludes that milking activity is highly done by female whereas carrying by male. That is why, there is justice in case of carrying and milking activities in the Chauri Goths. It is also fact that majority male carry the milk due to long distance between Goths and collection centre and women chores are the other important factors.

5.13 Ways of Getting Pasturelands

Regarding the acquisition methods of the pastureland resources, the local goth holders have responded the followings:

- 1) Acestorial legacy
- 2) Buying Goths with Kharkas.
- 3) Co-ordination among farmers themselves and community leaders.
- 4) Denoted by the VDC.

Among the responses, more than 40 percent of the goth holders got their pastureland by the heredity based. Similarly, co-ordination among farmers and community leaders is the second important way of acquiring the Kharkas. The VDC also supports these above mentioned ways for getting pasturelands in this area. Furthermore, minimum number of Goths were found by buying Chauris/Yaks with Kharkas too.

5.14 Indigenous Methods for Pastureland/Forest Management of this Area

There are two methods in the world for the management of pasturelands/forest namely community based known by indigenous and agency made. In respect to study area, the former management practices has got top significance. In case of their indigenous practices, they follow the following methods :

- a) The Goths holder farmers transfer their Goths in new pastureland in the same time if the then pastureland resources finished. For this purpose the Chauris tied with bell (Ghanties) in neck of the sign of transformation into next Kharkas.
- b) The goth holders worship the gods for the protection of their families as well as Chauries before the establishment of Goths and during the Goths keeping period.
- c) The local Goths holders cut the grass by using thinning method.
- d) The Goths made materials were kept for coming season. It conserves the wood of the forest also. Similarly the dung of the livestocks manage systematically in a certain.
- e) The local people of this site cut the trees after the permission given by the local army post or National Parks.

5.15 Challenges of Chauri/Yak Farming

Every development activities has both side i.e. prospects and challenges. The Chauri/yak farming of this study area has been facing the following challenges according to the respondents and key informations presented below the table.

Table 5.12.1
Challenges of Chauri/Yak Farming by Respondents (individual)

| Challenges | No. of Res. | % |
|----------------------------------|--------------------|----------|
| Climate | 1 | 625 |
| Lack of Pastureland management | 5 | 31.5 |
| High distance to sell their milk | 5 | 31.5 |
| No Chauri/yak insurance | 4 | 25 |
| Brain drain (manpower) | 1 | 6 |
| Total | 1 | 100 |

Source : Field Survey, 2008

Table 5.12.2
Challenges of Chauri/Yak farming by Key Informants

| Challenges | Informants | % |
|-------------------|-------------------|----------|
| National Park | 1 | 20% |
| Soil erosion | 1 | 20% |
| Biodiversity loss | 1 | 20% |
| Education problem | 1 | 20% |
| Just distribution | 1 | 20% |
| Total | 5 | 100 |

Source : Field Survey, 2008

The above table 5.12.1 and 5.12.2 reveals the challenges of Chauri/yak farming by 16 respondents and 5 key informants. The table 5.12.1 shows 31.5 percent of respondents pastureland management and high distance between goths and milk collection centre are the prime factors of challenges in this business. Whereas 25 percent and 6/6 percent responded “no Chauri/yak insurance”, climate, and brain drain respectively. It clears that distance and pastureland are key of challenges. In case of key informants,

equally 20 percent stowed the National Park, soil erosion, Biodiversity loss, Education Problem justice distribution are the major challenges.

5.16 Supportive Policies

Yak/ Chauri farming has played crucial role to enhance the income level of the surrounding people. They are engaging in this business by hook and crook of no alternatives. The respondents viewed that they have needed the following supportive policies for the conservation of Chauri/Yak farming:

Table 5.13

Need of supportive policies supportive policies

| Supportive policies | No. of Res. | % |
|---------------------------------------|--------------------|----------|
| Collection centre in nearby the goths | 6 | 38 |
| Health Campaign | 2 | 12.5 |
| Informal education | 2 | 12.5 |
| Livestock-insurance fund | 5 | 31 |
| Increased milk price | 1 | 6 |
| Total | 16 | 100% |

Source: Field survey, 2009.

The above table 5.13 mentions that 38 percent out of total respondents enforced to establish the different milk collection centre for supportive promotional activities to enrich the Chauri/yak farming. Likewise, 12.5/12.5 percent said to keep health campaign and informal education nearby the goths. 31 percent out of the total respondents voted to provide livestock insurance by the government and 6 percent viewed to increase the price of their selling milk.

Chapter Six

SUMMARY, FINDINGS AND RECOMMENDATION

6.1 Summary

National economy is based on agriculture profession of the Nepalese people. More than 80 percent population have been engaging on agriculture for their livelihood. Livestock sectors have contributed about 31 percent agricultural gross domestic product. Geographical distribution of Nepal is varies on 3 regions i.e. Terai, Hill and High hills. High hills (himali region) and hills are less suitable for crop production due to temperature and alpine climatic condition. Their hills and high hills topography land are preferable for livestock production. The land classification of countries is like arable land 20 percent, uncultivated land is 6.5 percent, forest land 40 percent pastureland 12 percent and other land 19 percent is found. Such forest land pasture land be utilize for domestic animal and Chauri/Yak rearing for livelihood of the himali and hilly region of Nepal.

The study has focused on the Dhunche VDC of Rasuwa district where Tamang, Sherpa Ghale etc caste are resided. Chauri/Yak farming is the prime livestock rearing on this VDC by the availability of many block o pertinent problem which are facing by the Chauri/Yak herdsman likewise scarcity of breeding bull for crossing their Chauri, high price rate of Chauri i.e. about Rs. 30,000/- per Chauri, marginal farmer could not afford the desired numbers of Chauri/Yaks. Lack of loan flow of the financial institution, and poor management of pastureland contributed to decrease the carrying capacity of the more Chauri.

Animal husbandry is the major and traditional occupation of the high altitude inhabitants of Nepal. The flourishing of this occupation depends on the quality and quantity of natural resources and their proper management. In this VDC too, animal husbandry i.e. Chauri rearing is the dominant occupation. The local people generally rear the at least 10 Chauri/Yaks for running their daily livelihoods.

6.2 Findings of the Study

The present study is an attempt to analyse the socio-economic impact of Yak/ Chauri farming in Dhunche VDC. From the forgoing discussion, it is clear that people of Dhunche VDC have been engaged in the livestock raising occupation traditionally, i.e. Chauri/Yak farming. Although, they also practice agricultural farming, Chauri raising is their major and prominent occupation for their livelihood. In Dhunche VDC, especially the study area, agricultural production is very low because of the harsh climate and low fertility of soil. The farmers own large area of land. However, they cannot meet their food requirements all year round by their own production. Therefore, they have to rely on yak/Chauri to supplement their food maintenance around the year. From this study, the researcher has found the following specific findings:

- i. The Chauri/Yak farming and pasture land management in study area is still of the traditional type. The people care and treat their Chauri/Yak in their own traditional way. It is due to the lack of veterinary facilities nearby the goths.
- ii. The high attitude pastures are used by the Chauri. In summer, Chauri/Yak are moved up to high land and left them free to graze where as in winter season, the Chauri are moved down to the low land (Bensi) and tied in certain places.
- iii. By the study, it was found that the local people reared no less than 10 numbers of Chauri/Yak. It has cleared that the local people's major occupation is fully depended on Chauri/yaks farming.
- iv. Crop production is not favourable due to cold climate condition; crop also requires long duration for harvest. That is why, the farmer should make enthusiastic for Chauri/Yak farming.
- v. In the study, the researcher found that the major cause of selecting the Chauri farming are religious (38%) and ancestral occupational (31%) factors. It shows that they are engaging in this business due to

their religious ceremony to satisfy by the ghee of Chauri/Yak in worshipping in different Gumbas.

- vi. In case of challenges for this business, majority replied on long distance between Goths and collection centre and poor management of pastureland (31.5%). The former contributed to waste of huge time (3 to 4 hrs) each day which disturbed to other walks and the later produced low level of grazing grass. It is due to the policy of National park controlled over the forest also.
- vii. In the respondents view on the need of supportive policies for conservation and promotion of Chauri/Yak farming, 38 percent favoured on to establish extra sub-collection contras. Other replied on health campaign (Animal + Human) (12.5%), Informal education (12.5%), livestock insurance (31%) and increased milk price (7%) respectively.

6.3 Recommendation

In the present study, the following recommendations have been made on the basis of the findings. These recommendation may be useful for the future researcher and policy makers in local level and national level.

- i. Most of the people are illiterate in this area so an informal education programme should be launched there along with the environmental education too.
- ii. The traditional pattern of Chauri/Yak farming should be modernized bit by bit by introducing various measures such as new grass seeds in pasture land. It can reduce the problem of grass scarcity and the number of Chauri/Yak raising will increase so as to uplift the economic condition of the people.
- iii. Pasture development program should be made with improved grass and removal of unwanted and poisonous plant from the pastureland.

- iv. Government policies should be anticipated for the soft loan provision, medical treatment of Chauri and insurance.
- v. No objection should be made by the national park for Chauri farmers. Furthermore, national park officer can aware them about the environmental education and justice. In addition to it, the national park should promote the tourism activities both on domestic and foreign level.
- vi. There is needed a provision of training to Chauri/Yak farmers about new innovation and improved Chauri/Yak management practices. Government should introduce this areas as a "Research Centre for Chauri/Yak population" establish a Chauri/Yak research centre and gene pool immediately.
- vii. There is needed other 2 sub-branch milk collection centre and existing milk collection centre should be developed as central cheese factory. It can reduce the distance between goths and collection centre and also management of grasslands.
- viii. Milk Collection Centre should initiate the saving and credit programs among the farmers and also should provide the 'Share' those who are interested.
- ix. District Drinking water office should manage the drinking water in those Goths which are far from the water by providing plastic pipe or collection tank. It can contribute to reduce the grazing-grass scarcity because if all Goths holders get the water facility, they can't make their Goths near to the other Goths located in nearby the water resources.
- x. The Government of Nepal should declare the "Yaks/Chauri land" above the land of 3000 m. in Himali region. The political boundary such as VDC should be avoided and three movement of Yaks/Charui in this Yak/Chair land area should be strengthened. It means inter VDC transformation of Goths should not be disturbed in terms of next VDC.

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Appendix - I

Questionnaire For the Household Survey

Personal Information

1. Name of the Respondents :

| | | |
|-----------|------------|------------|
| Caste : | Age : | Ward NO. : |
| Address : | Locality : | |
2. Marital Status :

| | | |
|--------------|-----------------|---------------|
| i) Married : | ii) Unmarried : | iii) Divorced |
| iv) Widow | v) Separated | |
3. Education :

| | | |
|---------------|-----------------|--------------|
| i) Illiterate | ii) Literate | iii) Primary |
| iv) Secondary | v) Above S.L.C. | |
4. Main occupation :

| | |
|-----------------------|---------------------------|
| i) Agriculture | ii) Service |
| iii) Animal Husbandry | iv) Retail Trade and Shop |
| v) If other (specify) | |
5. Secondary Occupation

| | |
|----------------------------|------------------------|
| i) Service | ii) Animal Husbandry |
| iii) Retail Trade and Shop | iv) If other (specify) |
6. Household Members

| Members | Age | Gender | Education | Primary Occupation | Secondary Occupation |
|---------|-----|--------|-----------|--------------------|----------------------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

7. Information about family

| | |
|---------------------------------------|---------------------------|
| i) Nuclear Family (up to 5) | ii) Joint Family (6 to 9) |
| iii) Extended family (Large above 10) | |
8. Household/family Composition

- i) Total number of male : ii) Total Number of Female :
9. Who is the Head of the Family?
 i) Male ii) Female
10. Why do you choose Chauri Farming?

11. How many Chauri do you rear?
 i) 1-9 ii) 10-19
 iii) 20-29 iv) More than 30
12. How much milk do you sell each day?

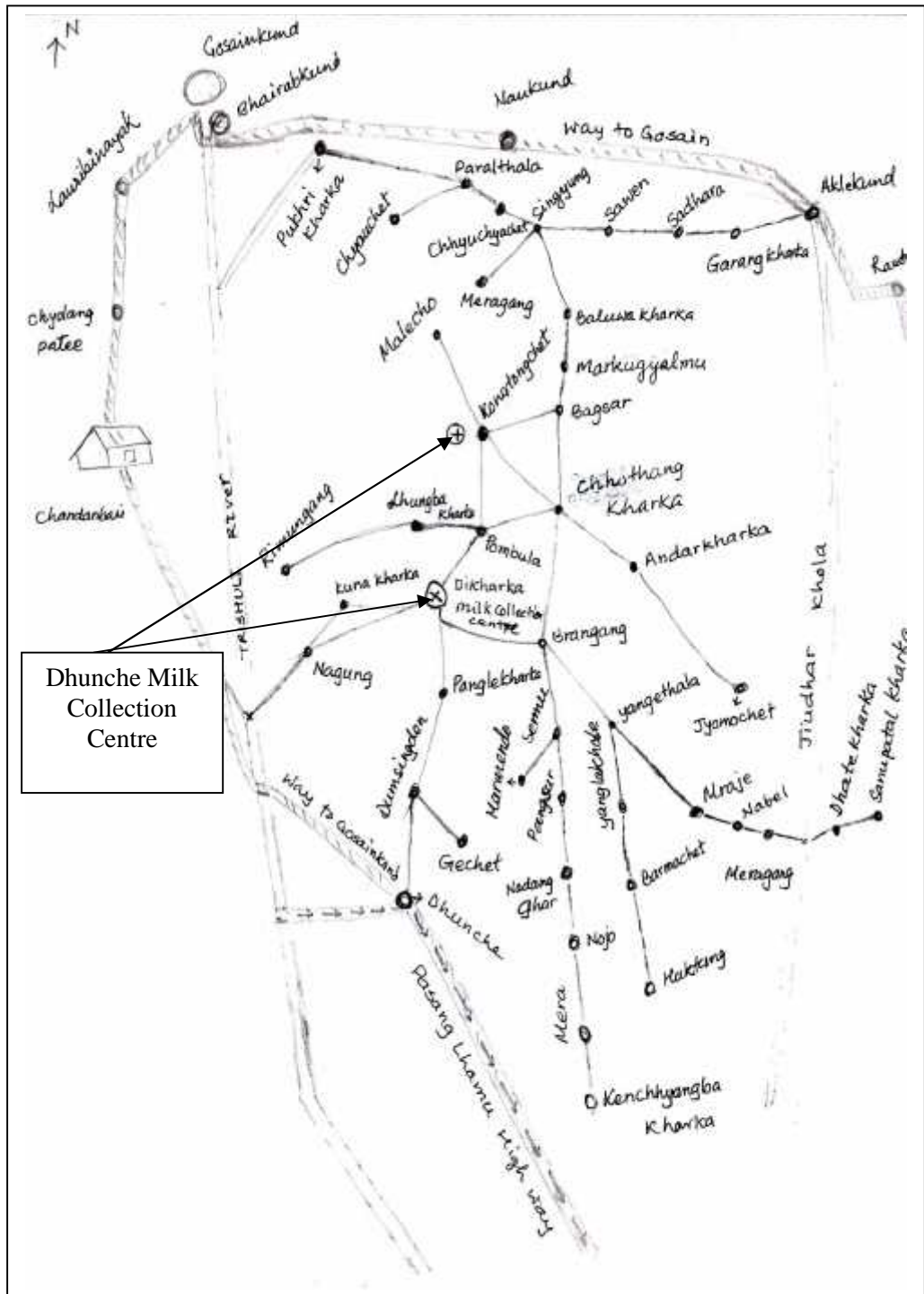
13. What is per litter cost of Chauri Milk?

14. Is this income satisfying your daily needs?
 i) Yes ii) No
15. What is the price of a Chauri?

16. Have you taken loan?
 i) Yes ii) No
 If yes, where did you take?
 i) Landlords ii) Bank
 iii) Cooperative iv) Collection centres itself
 v) If other (specify)
17. Who milks Chauri?
 i) Male ii) Female iii) Equally
18. What is the distance of your Goth and collection centre?

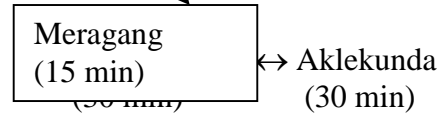
19. Who do use to carry milk per day in this centre?
 i) Male ii) Female iii) Equally
20. What do you do the milk when the cheese factory doesn't take it?

Appendix - I
Map of The Study Area

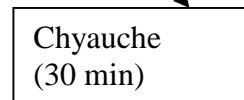


1. Dikharka (Milk Collection Centre) ↔ Kunakharka ↔ Nagun
(45 minute) (15 minute.)
 2. Dikharka (Milk Collection Centre) ↔ Panglekhara ↔ Dhumsingden ↔ Gechet
(20 minutes) (1 hrs) (20 min)
 3. Dikharka (Milk Collection Centre) ↔ Brangang ↔ Sando
(30 min) (30 min) (1 hrs)
↔ Pangsur ↔ Nadanghar ↔ Najo
(15 min) (20 min) (1 hrs)
↔ Mera ↔ Kenchhyanba
(30 min) (30 min)
 4. Dikharka (Milk Collection Centre) ↔ Brangang ↔ Yangethala ↔ Yanglakhde
(30 min) (20 min) (1 hrs)
↔ Barmachet ↔ Huktung
(1 hrs) (1 hrs)
 5. Dikharka (Milk Collection Centre) ↔ Brangang ↔ Yangethala ↔ Mraje
(30 min) (20 min) (1 hrs)
↔ Nabel ↔ Marangang ↔ Datekhaka
(15 min) (15 min) (1½ hrs)
↔ Sanupatal Kharka
(30 min)
 6. Dikharka (Milk Collection Centre) ↔ Pombula ↔ Lhumbakharka ↔ Rimungang
(20 min) (45 min) (1 hrs)
 7. Dikharka (Milk Collection Centre) ↔ Pombula ↔ Chhothang ↔ Andorkharka ↔
(20 min) (20 min) (1 hrs)
Jyomochet
↔ (45 min)
 8. Dikharka (Milk Collection Centre) ↔ Pombula ↔ Kontongchet ↔ Malecho
(20 min) (30 min) (2 hrs)
- Dhunche
(30 min)
- Pangdalung
(1½ hrs)

9. Dikharka (Milk Collection Centre) ↔ Pombula ↔ Chhotang ↔ Bagsar
 (20 min) (20 min) (15 min)
 ↔ Markugyalmo ↔ Baluwakharka
 (10 min) (10 min)
 ↔ Singyug ↔ Sawen ↔ Sadhara
 (1 hrs) (1 hrs) (15 min)



10. Dikharka (Milk Collection Centre) ↔ Pombala ↔ Chhothang ↔ Bagsar
 (20 min) (20 min) (15 min)
 ↔ Markugyalmo ↔ Baluwakharka
 (10 min) (15 min)
 ↔ Singyung ↔ Chhyuchyache
 (1 hrs) (15 min)
 ↔ Paralthala ↔ Pukrikharka
 (15 min) (1 hrs)



Appendix - II Questionnaire for Households Survey

Personal Information

1. Name of the Respondents :
 Caste : _____ Age : _____ Ward NO. : _____
 Address : _____ Locality : _____
2. Marital Status :
 i) Married : _____ ii) Unmarried : _____ iii) Divorced
 iv) Widow _____ v) Separated _____
3. Education :
 i) Illiterate _____ ii) Literate _____ iii) Primary
 iv) Secondary _____ v) Above S.L.C. _____
4. Main occupation :
 i) Agriculture _____ ii) Service _____
 iii) Animal Husbandry _____ iv) Retail Trade and Shop _____
 v) If other (specify) _____
5. Secondary Occupation
 i) Service _____ ii) Animal Husbandry _____
 iii) Retail Trade and Shop _____ iv) If other (specify) _____
6. Household Members

| Members | Age | Gender | Education | Primary Occupation | Secondary Occupation |
|---------|-----|--------|-----------|--------------------|----------------------|
| | | | | | |
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| | | | | | |

7. Information about family
 i) Nuclear Family (up to 5) _____ ii) Joint Family (6 to 9) _____
 iii) Extended family (Large above 10) _____
8. Household/family Composition
 i) Total number of male : ii) Total Number of Female :
9. Who is the Head of the Family?
 i) Male _____ ii) Female _____
10. Why do you choose Chauri Farming?

11. How many Chauri do you rear?
 i) 1-9 _____ ii) 10-19 _____
 iii) 20-29 _____ iv) More than 30 _____

Appendix - III
List of 48 Goth Holder Farmers and Staffs of Dhunche Milk Collection Center

| Farmers No. | Farmers Name | Address |
|--------------------|--|----------------|
| 01 | Chhowang Renjen Tamang (Lhakpa Tenjen) | Yarsa VDC |
| 02 | Lhakpa Tamang | Ramche VDC |
| 03 | Urba Tamang | Bhorle VDC |
| 04 | Pema Bhote | Syaphru |
| 05 | Gose Tamang | Yarsa |
| 06 | Ang Babu Sherpa | Urleni -1 |
| 07 | Dukpa Tamang | Yarsa |
| 08 | Lhakpa Sherpa | Urleni -1 |
| 09 | Karsang Dawa Sherpa | Dhunche-9 |
| 10 | Sherchhowang Sherpa | Dhunche-9 |
| 11 | Pasang Wangli Sherpa/Dindu Sherpa | Urleni |
| 12 | Wandi Gyalba Sherpa | Urleni |
| 13 | Kami Chhirung Sherpa/Phuspa Sherpa | Urleni |
| 14 | Sonam Norbu Ghale | Dhunche |
| 15 | Lama Tenjen Ghale | Dhunche |
| 16 | Lhakpa Gyalbu Ghale | Yarsa |
| 17 | Malange Ghale | Yarsa |
| 18 | Kanchha Lopchan | Bhorle |
| 19 | Lhayul Tamang | Yarsa |
| 20 | Kami Lama | Yarsa |
| 21 | Dukpa Singi Tamang | Yarsa |
| 22 | Lendup Tamang (Jandare) | Yarsa |
| 23 | Thulo Chhowang Tamang | Yarsa |
| 24 | Tulu Kami Tamang | Ramche |
| 25 | Tenjen Sherpa | Urleni |
| 26 | Mendo Kalsang Tamang | Yarsa |
| 27 | Kanchha Tamang | Yarsa |

| | | |
|----|-----------------------|---------|
| 28 | Kargyalbu Sherpa | Urleni |
| 29 | Urba Tamang | Yarsa |
| 30 | Nima Mendo | Yarsa |
| 31 | Aita Ram Syangba | Dhunche |
| 32 | Purba Chhowang Tamang | Ramche |
| 33 | Nima Chhiring Thokra | Yarsa |
| 34 | Tulku Tamang | Yarsa |
| 35 | Dawa Mengmar Sherpa | Urleni |
| 36 | Reijen Norbu Ghale | Dhunche |
| 37 | Kajee Tamang | Yarsa |
| 38 | Surya Tamang | Yarsa |
| 39 | Lhakpa Ghale | Yarsa |
| 40 | Mangal sing Tamang | Urleni |
| 41 | Chhiringma Tamang | Yarsa |
| 42 | Dame Lama Tamang | Yarsa |
| 43 | Dawa Gyalbo Ghale | Dhunche |
| 44 | Gyami Ghale (Garwi) | Dhunche |
| 45 | Wang Singh Tamang | Ramche |
| 46 | Mendo Pasang Tamang | Yarsa |
| 47 | Man Bahadur Tamang | Yarsa |
| 48 | Kami Tamang Meghi | Yarsa |

List of Milk Collection Centre's Staffs

| S.No. | Name | Post | Address |
|--------------|------------------------|--------------------|--------------------|
| 1 | Tej Bahadur Khadka | Asst. Cheese Maker | Mali-1, Dolakha |
| 2 | Narendra Khadka | Asst. Cheese Maker | Those-1, Ramcchap |
| 3 | Bishnu Bahadur Jirel | Asst. Cheese Maker | Jiri-3, Dolakha |
| 4 | Govinda Bahadur Gurung | Cheese Boy | Chankhu-6, Dolakha |
| 5 | Prem Bahadur Jirel | Cheese Boy | Jiri-7, Dolakha |
| 6 | Deepak Tamang | Cheese Boy | Syafu-3, Rasuwa |

Appendix - IV
List of 16 Goth Holders (Respondents)

| S.No. | Goths Holder | Address |
|--------------|---------------------|----------------|
| 01 | Lakpa Tamang | Ramche VDC |
| 02 | Urba Lopchan | Bhorle |
| 03 | Kancha Lopchan | Bhorle |
| 04 | Rangen Nurbu Ghale | Dhunche |
| 05 | Garbi Ghale | Dhunche |
| 06 | Dindu Sherpa | Urleni |
| 07 | Wang Singi | Ramche |
| 08 | Gose Tamang | Yarsa |
| 09 | Kargyalgu Sherpa | Urleni |
| 10 | Kami Lama | Yarsa VDC |
| 11 | Mendo Pasang Thobra | Yarsa VDC |
| 12 | Wandi Gyalbu Sherpa | Urleni |
| 13 | Phurpa Sherpa | Urleni |
| 14 | Ang Babu Sherpa | Urleni |
| 15 | Lama Tenjing Ghale | Dhunche |
| 16 | Pema Bhote | Syafru |

Appendix - V
Daily Milk Recording Card Given the Collection Centre

दुग्ध विकास संस्थान
दुग्ध पदार्थ उत्पादन तथा विभिन्न वितरण आयोजना
लैलघौर, काठमाडौं

।सोम उत्पादन केन्द्र: अम्लघौर

कृषकको नाम श्री पुर्ण सेवा

संख्या १३

संस्था: ५३

५.१३

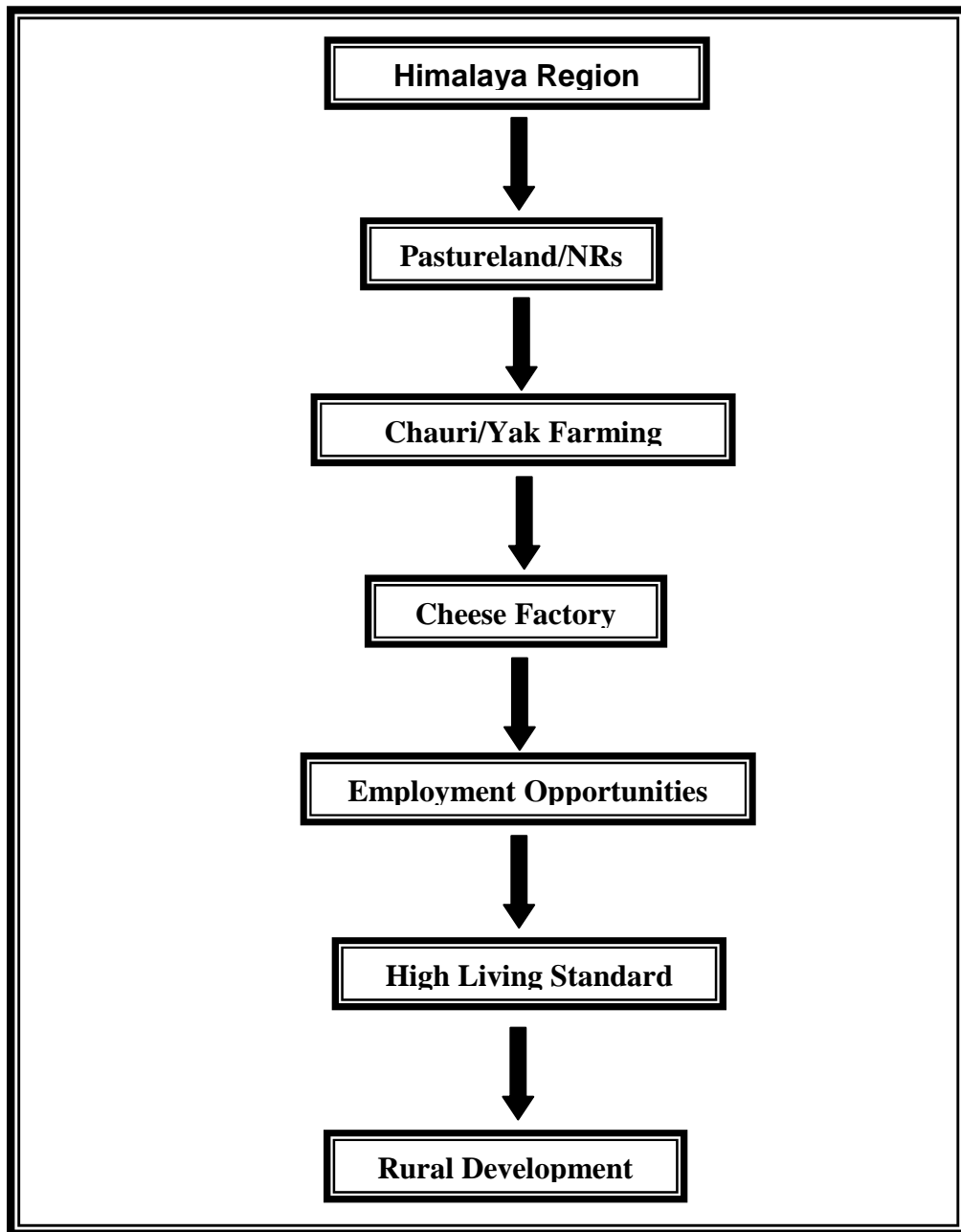
| दिने | दुध के ली | | प्रतिशत | टैकिफल |
|----------|-----------|-------|---------|-----------------------|
| | मिहान | समुका | | |
| ०९.१२.१९ | २०.५ | | | |
| २ | ३४.२ | | | |
| ३ | ३०.२ | | | दुध जम्मा के ली ५९०.६ |
| ४ | ३०.२ | | | सहर प्रतिस ६.०० |
| ५ | ३३.३ | | | फाक्ट बुकिट ३०६३६० |
| ६ | ३५.६ | | | प्रति प्रतिस दर ३१०५ |
| ७ | ३२.६ | | | |
| ८ | ३१.६ | | ६.० | जम्मा बोली ६३४९१६ |
| ९ | ३२.४ | | | |
| १० | ३३.६ | | | |
| ११ | ३२.९ | | | |
| १२ | ३०.६ | | | |
| १३ | ३०.० | | | |
| १४ | ३०.५ | | | |
| १५ | ३१.५ | | | मको बोली ६२०३४/०५ |
| १६ | ३०.६ | | ६.० | |
| | २९०.६ | | ६.०० | |

Appendix - VI

Legend of the Photographs

- Photo 1 : The author/researcher taking with the Chauris/Yaks holder farmers in Dhunche collection centre while going to yield survey.
- Photo 2 : The author is taking photo with the Dhunche milk collection centre's staffs in the period of data collection.
- Photo 3 : A woman milking the Chauri in the pastureland and the background is covered by sheep/goats.
- Photo 4 : The farmer's child is carrying Chauri milk towards collection centre. He is on the way now.
- Photo 5 : The farmers in milk collection centre.
- Photo 6 : The farmers in queue to pour milk in the Dhunche milk collection centre.
- Photo 7 : The farmers are returning towards Goths from the milk collection centre.
- Photo 8 : Chauris are grassing inside the forested land.
- Photo 9 : Chauri in winter season. They are move down on low hills and tied in certain place. In the back, the temporary Goths with goth owner.
- Photo 10 : The temporary Goths (shelter of the farmers in the pasturelands (kharrkas)
- Photo 11 : The "white milk cans" (aluminium drum) in milk collection centre after cleaning. These types of cans plus 2 milking pot are given to each farmers.
- Photo 12 : Chauris/Yaks are sitting on the pasturelands after satisfying by grassing.
- Photo 13 : Yak/Chauri in Nepalese 5 rupee note. It is historically used as the national sign in this note.
- Photo 14 : Tourist on the Yak in Himanchal Province of India
- Photo 15 : Yaks/Chauris are used to carry loads and riding in Tibet. In Nepal also, they are used to carry loads and riding in Himalayan range.
- Photo 16 : Local goth holders are worshiping in Buddha Gumbas. They burn these lamps by the Chauri/Yak ghee only.
- Photo 17 : Stored cheese which should have to clean by salt water daily.
- Photo 18 : Researcher is talking with a local Goths holders in local Sherpa dress.
- Photo 19 : A Yak is grassing in the pastureland researches.
- Photo 20 : A farmer is cutting Durkha (Churpi) in a goth.
- Photo 21 : Cheese factory's staffs are preparing the cheese in milk collection centre.

Appendix - VII
Relation between Natural Resources and Rural Development



Source : Author's Finding