

Chapter- One

Introduction

1.1 Background.

Milk is only the food having some of all nutrients necessary to maintain life and promote body growth. Milk contain the fat soluble vitamin D and the water soluble B Complex, C is also present for all age groups and almost complete single food for the young. Half a liter of milk per day will supply about a quarter of daily recommended intake of protein and all the calcium required by an active man to vitamins to help the health. (Encyclopedia Britannica, Vol.5, p.451)

Livestock farming is an important economic activity since the commencement of human civilization. In the early stages of civilization when agriculture was not properly known, cattle formed the principle property of the people. In course of time, together with the gradual development of agriculture, livestock farming was also pursued and properly developed. Men first came to practice agriculture, which included the raising of domestic animals in the New Stone Age, i.e. the Neolithic Age. Thus, the history of dairy farming is related with the history of civilization.

Dairy farming is the major component of livestock farming. It has a long tradition in our country. Cow, buffalo, yak and are the main domesticated dairy animals. Cows and buffaloes are found in Tarai and hilly areas. In high hills yak and cow are the major dairy animals. Agriculturists see the promotion of milk production system as one of the most broadly favorable path of rural and overall economic development in many countries. For producer it provides a daily source of income with a relatively low risk. The care and management of milking animals provide socially desirable work opportunities. And wastages from animals (dung) can use in bio-gas plant which will provide energy for daily consumption, it will make life easier. Animal's dung can also be used as fertilizer which is highly productive and harmless for agricultural land. Nowadays people sell milk where market is available. Many small dairy plants also have been established in rural areas. Dairy farming is developing as dairy enterprises in many parts of our country.

Agriculture is the largest sector contributing about 40 percent of GDP and active labor force engaging almost 65 percent of the total population in Nepal. Livestock sector contributes about one third of AGDP and 4 percent of national export. Dairy sector has high weight in livestock sector GDP and contributes about two third. Dairy farming is a major source of cash income of the major of Nepalese rural farmers. There were 6982660 cattle and 3624020 buffaloes in Nepal in 2001. Among them, milking cows were 852583 and milking buffaloes were 936811 (CBS 2002). Animals' products have occupied 27.7 percent weight on agricultural production index where 15.8 percent is only from milk. In the fiscal year 2001/02, 1158.8 thousand metric tons milk and milk products have been produced in Nepal and by 2002/03 it increased to 1195.9 thousand metric tons (CBS 2004.p.61-62)

The dairy development activities in Nepal started from Tusal village of Kavre district in 1952 (2009 BS) on the experimental basis with a small scale milk processing plant under the Department of Agriculture. The Central Dairy Plant was established in 1956 and in started to milk collection, processing and marketing activities. For the institutional development of dairy farming, Dairy Development Corporation (DDC) was established in 1969 (2026) under the public sector. DDC is totally owned by government. It is also financing supported by the foreign grants and loans. World Food Program (WFP) has been supporting DDC since 1974. The New Zealand and Danish Government had contributed towards the establishment of milk processing plants. At present, USAID and Danish Government are the major donors.

The main objectives of DDC are:

1. To provide a guaranteed market for milk to the rural farmers with fair price.
2. To supply hygienic pasteurized milk and milk products to the urban consumers.
3. To develop organized milk collection system to meet increasing demand of pasteurized milk and products.
4. Develop an organized marketing system for milk products in urban area.

For fulfillment of these objectives, DDC has implemented various programs to develop numerous milk collection center, milk producer organization and Chilling Center in the various rural areas.

1.2 Statement of the Problem.

In Nepal, especially in the hills and the high hills where suitable climate, pastureland, fodder as well as unemployed wage labor force are available, dairy farming could be well developed as an industry. But farmers are not encouraged in this direction. In recent decades, with population explosion, we have been facing the problems of unemployment and insufficiency of land for agriculture. Farmers are generally engaged in crop farming beyond the carrying capacity of land. Marginal land has been occupied. Farmers are practicing traditional methods of agriculture, so the production and productivity has not been changed significantly.

In such situation, if we develop dairy farming, it will be an alternative to crop farming. It would be beneficial to both the individual farmers and the nation as a whole. Dairy farming not only supplements the rural farmers' income but also help to increase agricultural productivity.

Demand of milk and milk products is increasing day by day due to rapid population growth and urbanization. But, because of inadequate milk supply and ill management of its marketing system, still dairy farmers are suffering from "Milk Holiday". Milk holiday become more sever, farmers of this study area are facing this problem due to various reasons: Banda, Strike and other technical problems of adequate alternative milk market. There is lack of reasonable prices of milk products in local market. So, the farmers increase their own consumption.

A large number of Nepalese farmers are below the line of poverty. They are engaged in subsistence farming. Nepalese agriculture is dependent on monsoon and it is wage labor intensive. Such poor agricultural condition has been one of the major factors, which has hindered the development of the country. Illiteracy, poverty, unemployment and malnutrition have been the basic characteristics of Nepalese farmers. In this situation, dairy farming being a home industry, can employ farmers and increase their income as well as develop countries, dairy farming plays a vital role in the life of human being as an extra income generating activities. DDC is supporting to the dairy farmers by various ways from last four decades.

1.3 Objectives of the Study.

Agriculture is the backbone of rural Nepalese society. Without agricultural development we can not develop our rural sector and without rural development Nepal can not be develop. So, to achieve the goal of national level development we have to develop our rural agro-sector. Therefore, the study aims to find out the socio economic condition of dairy farmers.

The specific objectives of the study were:

1. To analyze the overall scenario of milk production and marketing system of the dairy products.
2. To examine the role of DDC for institutional development of dairy farmers.
3. To examine the role of dairy farming in rural poverty reduction.

1.4 Significance of the Study.

Dairy farming is developing as a second occupation of rural Nepalese people. It has been playing a vital role to uplift rural socio economic condition. Only few studies have been conducted in the field of dairy farming. Many studies have been made of biological aspects of livestock. But socio economic aspects have been overlooked. Thus the study aims to present information about the socio economic condition to the dairy farmers and the contribution of DDC to develop dairy farming. The study tries to find out the impact of dairy farming of the general life of the farmers. Likewise, it will present the problems of dairy farming and recommends for its sound development. This study will provide guidelines to construct dairy development policies and plan for the policy makers.

1.5 Scope and Limitation of the Study.

Dairy farming has been developing as a major occupation in this area. No study has been done about the dairy farming activities and contribution of DDC to the dairy farmer for their socio economic enhancement of this study area. This study area was highly potential for dairy farming. So this study is supposed to be helpful for researcher, planner and development workers.

The study has some limitations. They were as follows:

- A.** Only those dairy farmers were selected for the study whose milk was receiving by Teenghare Chilling Center. Therefore, the findings of the study may or may not be generalized to other area of the country.
- B.** This study is an academic study, so a large area could not be incorporated in the study because of certain limitation viz. time, money etc.

1.6 Organization of the study

The thesis is divided into five chapters and each chapter includes many sections and subsections. Chapter-I deals with the background of the study, statement of the problem, objectives of the study and significance of the study. Chapter-II deals with the review of literature covering the concept of dairy farming, existing literature on role of dairy farming, existing situation of dairy farming, problem and prospect of dairy farming. Chapter-III describes the methods, tools and techniques used for the collection of data and their analysis. In this chapter research design, selection of study area, sampling procedure and sample size, nature and source of data, time frame, scope and limitation of the study. Chapter-IV is the most crucial part of the study, which includes in-depth discussion on the households according to the objectives. Finally, conclusions and recommendations for the future consideration are provided in Chapter-V.

Chapter - TWO

Review of Literature

Many researchers have done a number of studies in the field of dairy farming. Most of them are related to the existing situation of dairy farming, cost of production of milk, quality of milk, problems of dairy farming and so on. Among them some related literature are reviewed in this chapter.

Dairy Development Corporation(DDC), "Annual Report of Fiscal Year 2060/061 deals about the income and expenditure of DDC, its product, collection capacity, total milk collection, collection area etc. It has pointed out that DDC alone collected 57,129 metric tons of milk through the network of 1,014 dairy producer's associations (Dairy Cooperatives). DDC has provided income generating opportunity for more than 1, 50,000 family farmers.

2.1 Literature on Role of Dairy Farming

The study carried out by Department of Agriculture, HMG of Nepal (1991) shows that milk production is an important source of cash income for those households who can sell their milk. Sale of milk accounted for 15 percent to 36 percent of the total household income of the dairy surveyed farmers. Net cash returns were found to be the highest in households with both cattle and buffalo, with improved animals and with good market access. Net cash return per wage labor day is lower or comparable to the net cash returns obtained in production of various crops. However, milk production and sales is one of the few possibilities, which many farmers have to obtain the cash required to pay for certain necessities. Compared to crops, milk production provides more constant cash inflow, which is appreciated because the family's expenditure is relatively constant, e.g. monthly school fees and so on.

Shrestha (1995) observes that farmers keep the dairy animal with the integration of vegetable and crop production for the agriculture in the country. Therefore, boosting of milk production helps to improve the rural economy. As the improved dairy farming provides more manure for the field, it will also help to improve the agriculture up to a certain extent. Therefore, dairying is a very effective medium to uplift the rural economy, a

medium to increase the nutritional level of the urban population and ultimately to help the national economy.

Poudyal (1997) finds livestock contributed 27 percent and 21 percent to the total household income inside and outside DDC areas respectively and major share of the contribution was from milk. Farmers' reason for integration of dairy and high value crops show the supplementary relationship between them. He finds that the net return per cow per year is significantly higher in inside DDC area but return to wage labor from high value crops was found much higher compared to milk in both inside and outside DDC areas. He further finds that concentrates feed, fodder and wage labor contributed positively and significantly to the milk yield. Significantly, lower milk was found for the areas where farmers grew broom as cash than where used broom grass for fodder. Farmers inside DDC area got significantly higher milk yield from concentrate feeding.

Gautam (1999) describes that more than 9000 small dairy holder in Biratnagar milk region are directly benefited from dairy enterprise, through this sector they are earning more than 9 million Rupees in cash per month. Therefore, the economic status of the small dairy holder is good; their daily cash need is met through this sector. This sector is found as one of the major source of backward linkage with rural area to urban area supplying money. This sector can be used as a good model for the Rural Urban Partnership in development and benefit sharing. He observes that among the small dairy farmers, the biogas had increased the importance of livestock at the farm level. The use of biogas is mainly for cooking food for the family and lighting the house. Use of biogas has saved about 20-25 percent of wage labor and time.

Pradhan (2000) has pointed out that DDC alone collected 54 million liters of milk from 40 districts through the network of 772 dairy producers associations. This has provided self-employment opportunity for more than 90,000 farmers and to enhance their capabilities.

Singh (2000) in his seminar states that among the livestock components, dairying contributes almost three-fourth of the total livestock contribution in the agricultural gross domestic product (AGDP). However, the importance of the dairy sector has always been undermined and thus no plan has yet given a serious thought in formulating strategies that will help sustain the growth of dairy sector in the country. He further says that it is interesting to note that the period 1991/1992 to 1995/1996, the annual

import value of the dairy products is Rs. 214 million that is as high as 6 times the average annual export value of Rs. 37 Million. This clearly shows a net negative trade balance of Rs.177 million per year. It indicates that Nepalese dairy industries have ample room for production and marketing of products for import substitution that/ or export, the Nepalese dairy farmers will have to face more "Milk Holiday" which will drastically curb farm production and thereby limiting the access of the rural poor to family income.

2.2 Literature on Existing Situation of Dairy Farming.

The study conducted by Department of Agriculture, HMG of Nepal (1991) revealed that Nepalese farmers typically keep 5 to 8 cattle/buffaloes. Bigger holding have more animals but not proportionately and thus, their livestock cropland ratio is lower. About 87 percent of the total milk production is used for home consumption. Average annual milk consumption is about 45 liters per capita, which by Asian Standard, is a high level. Farmers in remote rural areas mainly use informal marketing channels. They sell their raw milk to the local shops in the village or process it into various products such as ghee, *KHUWA* (a kind of sweets made from milk, by cooking and shaking) which can be preserved and later consumed by the household or sold to private vendors. Simple traditional technologies are used in the processing and fuel wood is the main source of energy. A considerable amount of ghee is produced in the informal sector and perhaps as much as 8500 tons of ghee is export to India.

Lindegaard (1993) in his research shows that when a household has a lactating cow, they meet their own demand for milk products and afterward they sell milk if they have any surplus. Thus, even though milk sales provide a reasonable possibility for cash income, the household requirement for milk products is given highest priority. He states that most of the weeds fed during the rainy season have a positive impact on milk quantity but none of a negative impact on milk quality (fat %). Livestock, throughout the year, are fed in such a way that they are just kept on maintenance level.

Dhakal (1997) has found the quality of raw milk collected from farmers is very poor in terms of bacterial quality, which has to be improved in a greater way. The direct field visit shows that the livestock keeping system was very poor. Farmers did not wash the udder properly and again the milking pail was not sanitized properly. Another factor might be that, the farmers bring the milk far from the Chilling Centers a day before. The

Chilling Center did not always test acidity; hence, there is always the possibility to come the poor milk to the processing plant.

Joshi and K.C. (2001) state that the problem of milk quality worsens when there are deliberate attempts in quality deterioration made with the intention of monetary gains. At different units, the raw milk is exposed to adulterations of various kinds added to change the chemical composition of the milk for getting higher payments. At each point in the chain, quality control and monitoring activities are not performed effectively. The problem of quality in milk collection will be solved largely if chilling of milk can be performed as close to the milk production point as possible. They further state that cost of producing 1 kg of milk in Nepal is 13.5 to 15.5 depending on type of farm and location. In an international prospect, the cost of milk production in Nepal is considerably higher (50% or more) compared to countries like New Zealand and Australia. The relatively high cost of producing milk of a general low quality is a major constrain in achieving the goals of the Nepalese dairy industry.

Stem and other (2001) describe that dairy production in Nepal can be characterized as almost exclusively small scale, pre-industries and low input. Such subsistence-level production is the result of poor nutrition, management and health care. However, this kind of minimal production serves the farm family well; low inputs - low cost - low production - low risk. There is very large milk deficit in Nepal. Milk marketing prices and infrastructure are discouraging production.

2.3 Literature on Problem and Prospect of Dairy Farming

Agriculture Development Bank carried out a research study in 1973. The basic objectives of this study were to find out the nature of dairy enterprise, to study the economics of dairy farming, to study the marketing outlets and to suggest appropriate measures for an effective operation of credit for dairy farming. The study found that buffaloes are better dairy animals than cows. The borrowers can repay the loans obtained for dairy farming from the bank within two-lactation period without any inconvenience. The bank loan has, therefore, generated good impact on the income and repayment capacity of the dairy farmers. But the repayment of loan is not very effective and generally the borrowers become delinquent by one reason or the other. Therefore, the study suggests concentrating dairy loan only in the areas where effective veterinary services and milk collection

centers existed. Similarly, scientific dairy program, breeding, feeding, timely replacement and cutting of herds have been suggested.

A study conducted by Dairy Association of Nepal (DAN, 1994) reveals that the relatively high price of concentrate, its uncertain quality and lack of awareness together with untimely supplies of seeds and plantation materials have restricted improvement for the provision of low cost nutritious feed and fodders for the high milking animals. The study further shows that milk handling, storage and hygienic aspects of milk are in the domain of female member of the household. Hence, gender consideration in the empowerment process will require specific and sustained attention. The study concludes that shortage of feed and fodder, unavailability and insufficient veterinary services, unavailability of credit facility, higher interest rate in livestock credit, and lack of milk marketing facility are the major problems of dairying.

The study carried out by Department of Agriculture and National Dairy Development Board (2001) shows that almost all the milk product in Nepal comes from large number of small farmers raising one to few milking cows or buffaloes. But still, cost of production of milk in major milk - shed areas are high. This is one of the reasons that the farmers are always complaining about the price that the DDC is providing to them. Main reason of high cost of production of milk at the movement is mainly due to excess dependency of farmers on the grain based expensive concentrate feed for maintaining dairy animals. Animal health services are also becoming more expensive as almost all the veterinary drugs and vaccines are to be imported.

Shrestha (1995) writes that government does not seem to have encouraged the private sector to come into dairy industry. It has been very urgent to bring more milk processing plants and other dairy factories to match up with the ever-increasing milk production in the country. It is recommended that both the private and co-operative sectors should be encouraged to participate for the development of dairy industry. The dairy industry is to be diverted for the production of other dairy products too. It is high time that private investors are to be attracted for the establishments of new dairy plants in the country. As the markets for the dairy products are local and national; import substitution and exportable to the neighboring countries. Foreign collaboration in this field would be much helpful for the accelerated growth of the dairy industry in the country.

Dhakal (1999) draws his conclusion that the general economic condition of the people can be raised by making them engaged in dairy farming in modern line. Farmers give equal importance to crops production and dairy farming but the study shows that dairy farming is more attractive to bring positive changes in their general economy. Although commercialization of dairy farming doesn't go back more than two decades, but the study shows that dairy farming is more profitable than the agricultural activities.

Kshetri (2000) says that cattle play a vital role in poverty reduction. However, they are severely malnourished due to acute shortage of food and fodder. Literature available shows that 50 percent to 67 percent ruminants are acting as sole extra burden to the available feed resources. He also mentions that livestock are backbone of Nepalese agricultural economy. At present, there is no way for average farmers to raise household food production without keeping livestock.

These studies reviewed provide information on various topic i.e. milk production and its quality, feeding materials, relationship of dairy farming with agriculture, role of dairy farming, and problem and future prospects of dairy farming. No specific study been done on contribution of DDC in enhancing the socio economic condition of dairy farmers. Nobody has studied the impact of dairy farming to rural farmers in comparison to their previous (before dairy farming/ income) and present condition. Similarly, any study on dairy farming in the surrounding areas of Teenghare Chilling Center has not been done yet. Thus, this study is carried out to find out the realities of above unstudied topics of the study areas.

Chapter - Three

Research Methodology

3.1 Research Design.

A descriptive as well as analytical research design was adopted in order to analyze and interpret the quantitative and qualitative data collected from the concerned field. Such research designs help to fulfill the above mentioned target.

3.2 Selection of Study Area.

Ilam district is one of the hilly district lies eastern part of Nepal. There are 5 Chilling centre of DDC in the district. Biratnagar Milk Supply Scheme, which was established in 2030 BS, regulates all these Chilling Centers. These Chilling Centers dispatch the collected milk from local dairy cooperative to the Biratnagar Milk Supply Scheme.

Table No. 3:1
Chilling Centers of Ilam District.

Name of Chilling Center	No. of Dairy Cooperatives	Average milk collection Per day (in liter)
Phikkal Chilling Center	16	4000
Teenghare Chilling Center	17	6000
Biblante Chilling Center	15	4000
Kutidanda Chilling Center	10	2000
Puwakhola Chilling Center	10	4000

(Source: DDC Annual Report 2061/062)

The coverage area of Teenghare Chilling Center was selected for the study, which was established in 2051 BS. It covered 17 dairy cooperatives from the different VDCs of the district. The dairy farmers who sell their milk to these dairy cooperatives were studied. The total number of milk seller households of the area was about 1250.

3.3 Sampling Procedure and Sample Size.

It was not possible to interview all the dairy farmers in the study area. Therefore, sampling method has been adopted for the study. The total number of milk seller households in the study area was about 1250 out of which only 130 households were selected for the detailed study. Sample size was taken from every dairy cooperative on the basis of equity by using the method of Simple Random Sampling.

**Table No. 3:2
Sample Frame**

S.N.	Cooperatives	Total Milk Seller Household	Sample	
			Sa. No.	%
1	Kerabari Dugdha Utpadak Sahakari Sanstha Ltd.	105	11	10.47
2	Malim Shree Krishna D. U. S. S. Ltd.	140	14	10.00
3	Mechi Namuna D. U. S. S. Ltd.	79	8	10.12
4	Kolbote D. U. S. S. Ltd.	49	5	10.20
5	Laxmi Narayan D. U. S. S. Ltd.	99	10	10.10
6	Nava Joti D. U. S. S. Ltd.	25	3	12.00
7	Jaubari D. U. S. S. Ltd.	140	14	10.00
8	Laxmi D. U. S. S. Ltd.	42	5	10.90
9	Chainpure D. U. S. S. Ltd.	40	4	10.00

10	Laxmipur D. U. S. S. Ltd.	77	8	10.38
11	Bhawani D. U. S. S. Ltd.	128	13	10.15
12	Santipur D. U. S. S. Ltd.	50	5	10.00
13	Jankalyan D. U. S. S. Ltd.	56	6	10.71
14	Bardu D. U. S. S. Ltd.	62	7	11.29
15	Teenghare D. U. S. S. Ltd.	53	6	11.32
16	Panchakanya D. U. S. S. Ltd.	60	6	10.00
17	Shree Krishna D. U. S. S. Ltd.	48	5	10.41
	Total	1253	130	10.37

Source: Field Survey, 2006.

3.4 Nature and Source of Data.

The present study was mainly depended upon the primary data. Different types of quantitative and qualitative data and information were collected in the study. Primary data were collected by interviewing dairy farmers. However, secondary data were obtained from Teenghare Chilling Center, Dairy Cooperatives, different journals, books, reports, newspapers and Biratnagar Milk Supply Scheme.

3.5 Method of data collection.

The following three methods were used to collect primary data.

A. Questionnaire.

Structure questionnaire was used to get detail information about the socio economic condition of the dairy farmers and contribution of DDC to them. It was used to collect data on population, institutional development, education, number of dairy animals, milk production, income of dairy farmers, utilization of the income, consumption pattern, role of DDC and cooperatives and expected role of DDC.

B. Informal Interviews.

Information was collected from informal interviews with the number of dairy cooperatives, staff of Chilling Center and local leaders. Information related to sustainable development of dairy farming and market centers in the study area was collected by this method.

C. Observation.

Observation approach was used to observe the housing and cowshed types, care of livestock and collection of milk. This approach helped to understand the real socio economic condition of dairy farmers.

3.6 Time Frame.

The proposed study was taken around 90 days to be finally accomplished. Every minute was taken carefully.

3.7 Data Analysis and Presentation.

The systematic analyses have been done by using qualitative as well as quantitative tools and techniques. The quantitative data obtain from structured questionnaire are first processed through validation, editing and coding. Second, this processed data have been presented in tabular form. Finally, the data are interpreted with additional information. Simple statistical tools such as percentage and ratios have been used to present the findings. Besides this, cartographic techniques such as graphs, diagrams and maps are used to supplement the presentation of the findings of the study.

The fieldwork provides an effective interaction between the respondents and the researchers in their various nature and activities. The problems and experience depend upon the attitude, habit and politeness of the researchers. It is impossible to obtain detail information unless the researcher established good relationship with respondents.

Chapter- Four

Analysis and Interpretation of Data

4.1 Milk Sellers

The number of professional milk producers is different in different cooperatives. It is because of the problem of transportation, cattle feed, loan, pastureland, grains, veterinary facilities, etc. Following table shows cooperatives-wise figures of sampled milk sellers:

Table No. 4:1
Average Milk Collection and
Total Sampled Milk Seller

S. N.	Name of milk cooperative	Staff.	Average milk collection/daily	milk sellers	Sampled	percentage
1	Kerabari Dugdha Utpadak Sahakari Sanstha Ltd.	3	274	105	11	10.47
2	Malim Shree Krishna D. U. S. S. Ltd.	4	442	140	14	10.00
3	Mechi Namuna D. U. S. S. Ltd.	3	168	79	8	10.12
4	Kolbote D. U. S. S. Ltd.	1	123	49	5	10.20
5	Laxmi Narayan D. U. S. S. Ltd.	2	224	99	10	10.10
6	Nava Joti D. U. S. S. Ltd.	1	87	25	3	12.00
7	Jaubari D. U. S. S. Ltd.	2	425	140	14	10.00

8	Laxmi D. U. S. S. Ltd.	1	70	42	5	10.90
9	Chainpure D. U. S. S. Ltd.	1	65	40	4	10.00
10	Laxmipur D. U. S. S. Ltd.	3	186	77	8	10.38
11	Bhawani D. U. S. S. Ltd.	2	192	128	13	10.15
12	Santipur D. U. S. S. Ltd.	2	85	50	5	10.00
13	Jankalyan D. U. S. S. Ltd.	3	260	56	6	10.71
14	Bardu D. U. S. S. Ltd.	3	355	62	7	11.29
15	Teenghare D. U. S. S. Ltd.	7	1400	53	6	11.32
16	Panchakanya D. U. S. S. Ltd.	4	220	60	6	10.00
17	Shree Krishna D. U. S. S. Ltd.	2	156	48	5	10.41
	Total	44	4732	1253	130	10.37

Source: Field Survey, 2006.

Table 4:1 shows the cooperative-wise No. of sampled milk sellers. There are 1253 dairy farmers who sale milk to the different cooperatives. The total sampled dairy farmers were 130 (10.37%). The average milk collection at the chilling center was 4732 liters. The distance of these cooperatives from the chilling center was so long. Therefore, the professional milk producers of these cooperatives were not found. On the other hand, the number of Brahmin and kshetri were high in these cooperatives. Besides this Kami, Damai and Sarki lived in these area and

they were not the professional milk producers. Among the total sampled (130) milk producers, 41% milk producers are the Brahmin and Kshetri. Gurung were generally looked for high income yielding jobs other than the milk production which they did not find high income generating activity.

4.2 Family Structure by Age and Sex

Family, structure, its composition and member participating in the various occupations can highly influence the socio-economic status of any family. Similarly, where there is higher economically active population, the pace of development ratio of that place will also be higher. Family structure by age, sex and also the economically active population of the sampled households are shown in the table.

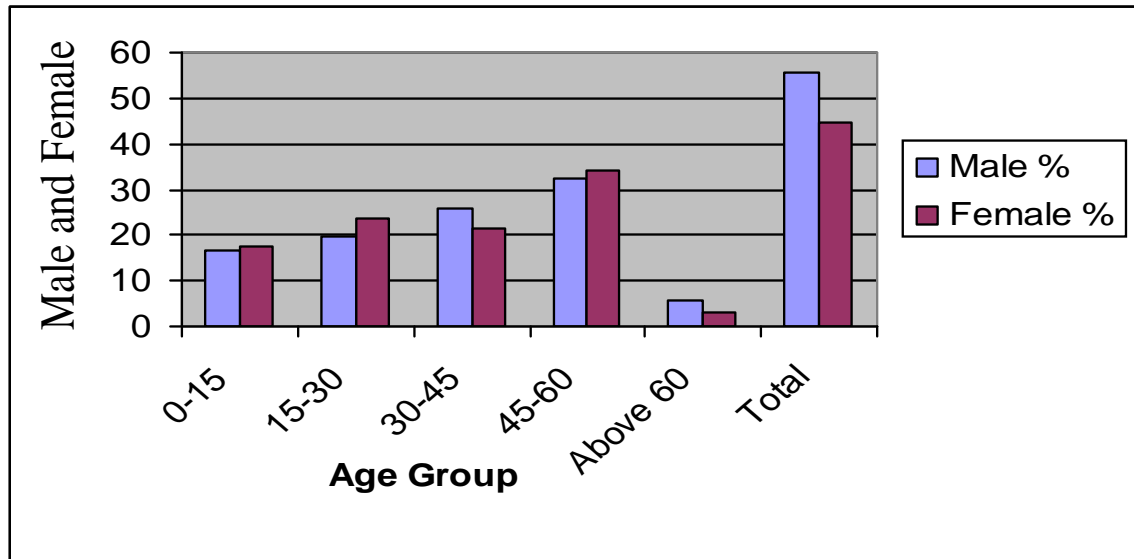
**Table No. 4:2
Family Structure by Age and Sex**

Age Group	Male %	Female %	Total %
0-15	16.54	17.65	17.03
15-30	19.69	23.53	21.39
30-45	25.98	21.57	24.02
45-60	32.28	34.31	33.19
Above 60	5.51	2.94	4.37
Total	55.46	44.54	100.00

Source: Field Survey, 2006.

Above table clearly states that the total male populations in milk production activities are 55.46 percent and female 44.54 percent which indicates that male population involving in these activities is greater by 10.92 percent than female population. Similarly, economically active population (15-60 years) is 78.60 percent and dependent population is 21.40 percent among the respondents. Thus, the highest percentage of economically active population is found in the study area which is shown in bar-diagram.

Figure: 1
Family Structure by Age and Sex



4.3 Population Distribution by Ethnicity

Caste and ethnicity plays an important role in peoples' occupation in our traditional society. We can find peoples' occupation in highly influenced by castes and ethnic groups which they belongs. Population distribution by ethnicity is given in the following table.

Table No. 4:3
Population Distribution by Ethnicity

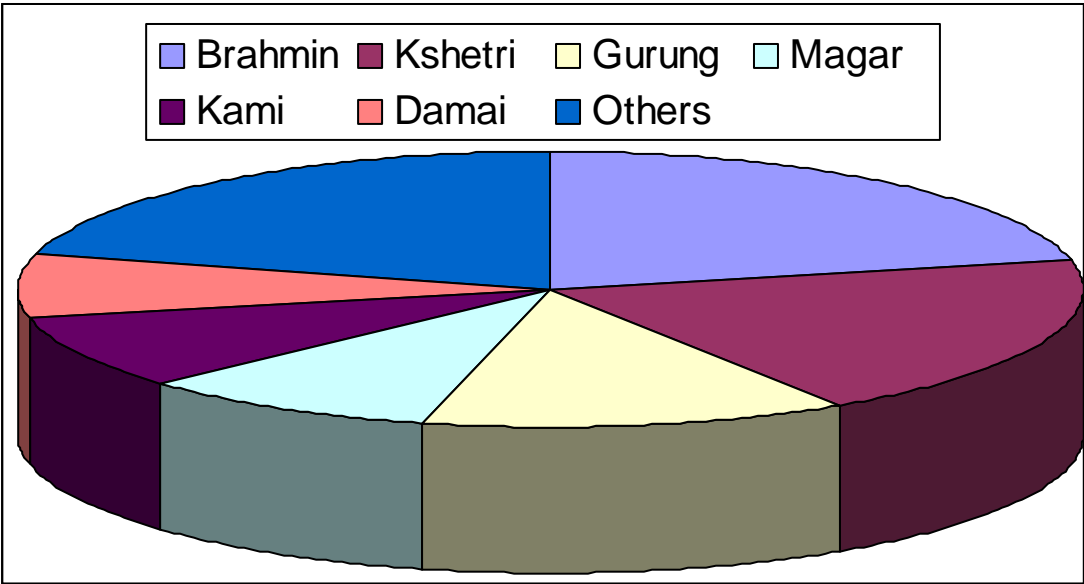
Caste/Ethnicity	No. of Households	Percent
Brahmin	28	21.53
Kshetri	25	19.23
Gurung	17	13.07
Magar	12	9.23
Kami	11	8.46
Damai	10	7.69
Others	27	20.79
Total	130	100.0

Source: Field Survey, 2006

As out country comprises various caste and ethnic groups, the study area also comprises different caste and ethnic group.

The above table also shows that the study area Brahmins population seems to be higher than other caste and ethnic groups. Most of the populations involved in milk production activities are Brahmins and Kshetri, which shows that generally so called higher caste or ethnic groups of society are involving in this profession. This can be shown in pie-chart as shown below.

Figure: 2
Population Distribution by Ethnicity



4.4 Educational Status of Sample Population

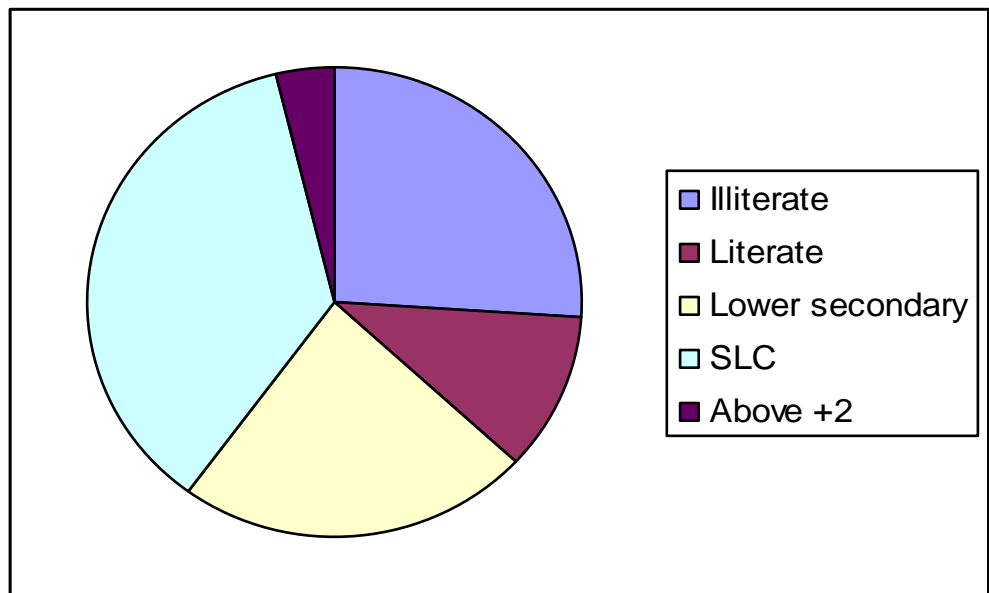
Educational status of parents plays a vital role in the occupation that s/he follows. Generally, higher educated persons are found holding their occupation more efficiently and conveniently than uneducated. Below table shows the educational status of the sample household.

Table No. 4:4
Educational Status of Sample Households

Educational level	Percent
Illiterate	26
Literate	11
Lower secondary	23
SLC	36
Above +2	4
Total	100

Source: Field Survey, 2006

Figure: 3
Educational Status of Sample HHs



4.5 Occupational Status of the Sample Population

Sometime our social hierarchy and deep-rooted social value set the occupation of people living in society. Similarly, in Nepalese society's practice, particular job are set for women and men.

Occupation of the respondents denotes the employment in various sectors for earning purpose. Different respondents are involved in different sector for earning purpose like agriculture, services (government, non-government), business and others.

Table No. 4:5
Occupational Status of the Sample Population

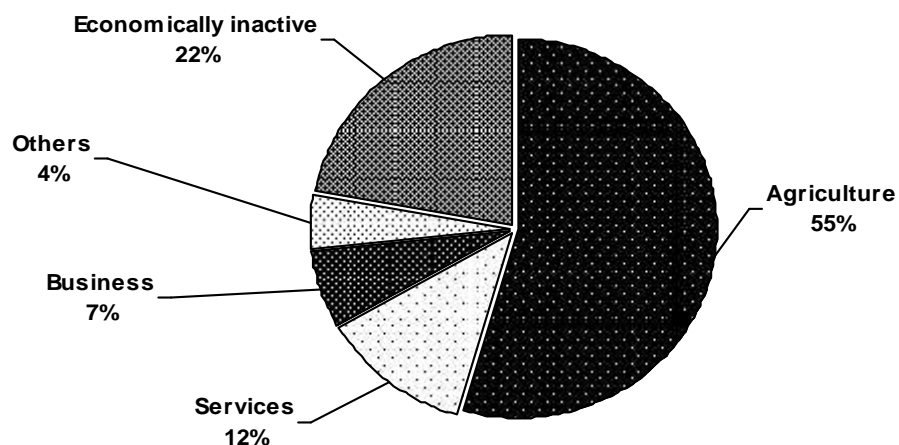
Occupation	Percentage
Agriculture	54.54
Services	12.12
Business	6.67
Others	4.45
Economically inactive	22.22

Source: Field Survey, 2006

Above table shows that 54.54 percent of the respondents are engaged in agriculture sector which is the main source of the income. Similarly, 12.12 percent are involving in services, 6.67 percent are in business and only 4.45 percent are in other activities like wage earner and the remaining 22.22 percent are found to be economically inactive.

This shows fairly the higher number of people is involved in agriculture in comparison to other job.

Figure: 4
Occupational status of the sample population



4.6 Landholding Size of the Sample Households

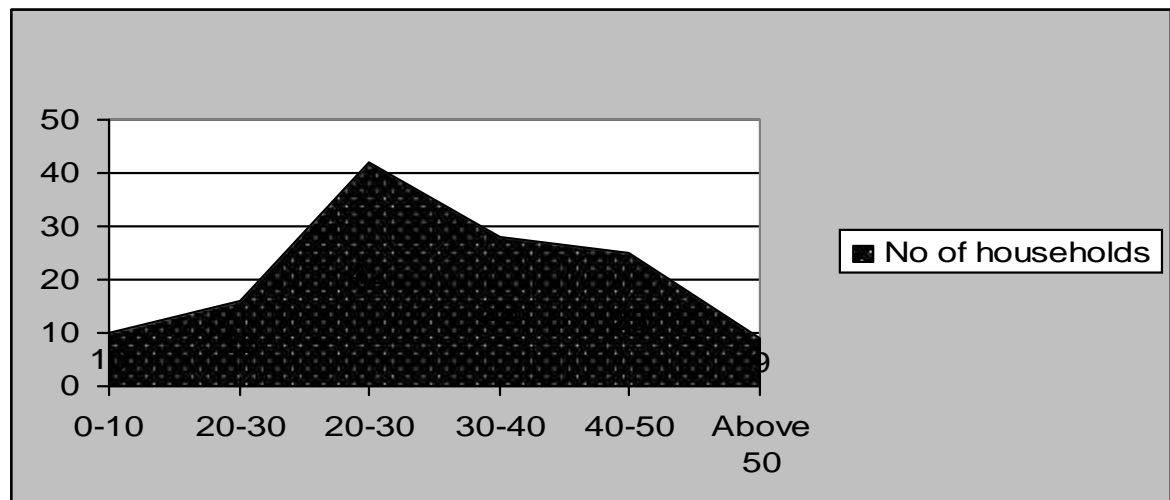
Majority of people living the study area depend highly upon agriculture and it is the main source of their income. Land possession hence, is an important factor of economic status. The overall landholding of respondents is low. The distribution of landholding among the respondents is not even. The landholding situation of the sample households is presented below in table:-

Table No. 4:6
Landholding pattern of the Households

Land size (In Ropani)	No of households	Percent
0-10	10	7.69
10-20	16	12.31
20-30	42	32.30
30-40	28	21.54
40-50	25	19.23
Above 50	9	6.93
Total	130	100.00

Source: Field Survey, 2006

Figure: 5
Landholding size of households



4.7 Type of Buffalo and Cow Kept by Sample HHs

In the study area, there are both types of animal local and improved. Improved are better than local which gives more milk. Different types of cattle are domesticated by the respondents in the course of milk production.

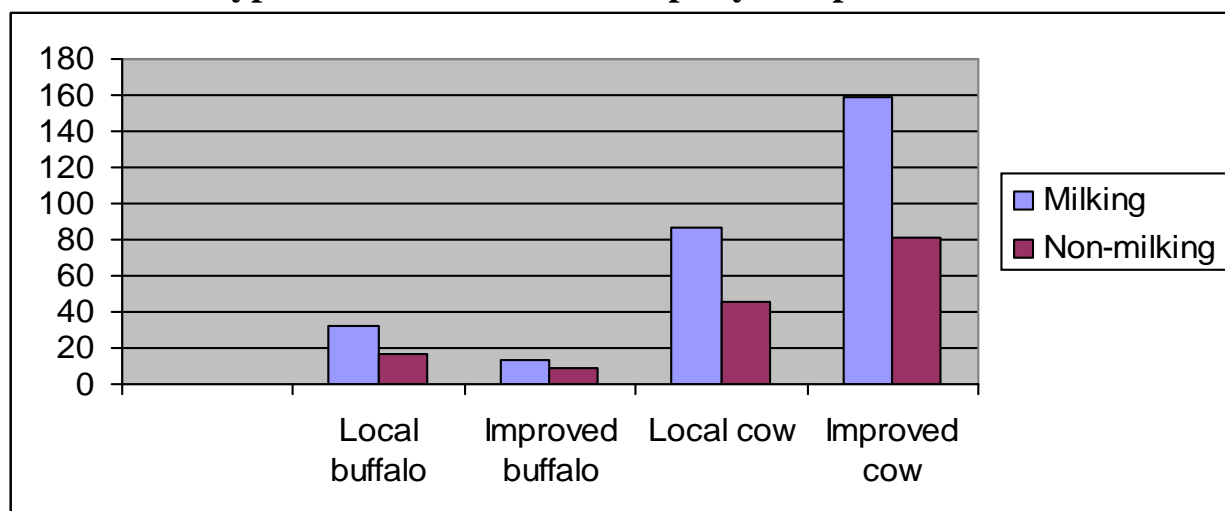
Table No. 4:7
Type of Buffalo and Cow Kept by Sample HHs

S.N	Type of animals	Milking	Non-milking	Total	
				No.	Percent
1	Local buffalo	32	17	49	11.04
2	Improved buffalo	13	09	22	4.95
3	Local cow	87	46	133	29.96
4	Improved cow	159	81	240	54.05
	Total	291	153	444	100.00

Source: Field Survey, 2006

The table shows that the number of milking animals are larger than of non-milking. And the number of improved buffaloes and improved cows are larger than the number of local ones. It also indicates that the respondents have been attracted by improved cows because they are higher milk yielding animals than that of locals. This is the better sign in milk production in near future.

Figure: 6
Type of Buffalo and Cow Kept by Sample HHs



4.8 Total Milk Production

Milk production activity is one of the major economic activities of the farmer in the study area. Generally, farmer keeps cows and buffaloes for milk production. Comparatively the amount of milk production of improved cows is more than that of others. The following table shows the total milk production of the sample households.

Table No. 4:8
Total Milk Production

Amount (in liter)	No. of HHs	Percent	Total production (in liter)	Percent
0-5	15	11.54	45	3.96
5-10	67	51.54	421	37.09
10-15	31	23.85	356	31.37
15-20	12	9.23	198	17.44
Above 20	5	3.84	115	10.14
Total	130	100.00	1135	100.00

Source: Field Survey, 2006

The table shows that there are 51.54 percent households who produce 5-10 liter milk per day and their total milk production is 421 liter which is 37.09 percent of the total production. Similarly in the production category of above 20 liter there are only 3.84 percent households, whose total production is 115 liter per day which is 10.14 percent of the total production. According to the above table it is clearly seems that highest number of households are producing 5-15 liter of milk. On the other hand, it should be noted that there are some farmer having higher number of cattle but with less milk production and this is due to milking status of the cattle they own.

4.9 Milk Utilization

Economic earning from the milk depends on the milk sold by farmers. However, some portion of the total milk production is consumed by the farmers. It is noted during the field visit that some families own milking animals only for domestic (consumption) purpose and not the commercial purpose. The average trend of milk sold and consumption is shown in table below:-

Table No. 4:9
The Average Trend of Milk Utilization
And Total Milk Production

Amount (In liter)	No. of HHs	Total production (In liter)	Utilization			
			Consumed (in liter)	%	Sold (In liter)	%
0-5	15	45	15	6.44	30	3.33
5-10	67	421	104	44.64	317	35.14
10-15	31	356	65	27.89	291	32.26
15-20	12	198	32	13.73	166	18.40
Above 20	5	115	17	7.30	98	10.87
Total	130	1135	233	20.53	902	79.47

Source: Field Survey, 2006

The above table shows that 20.53 percent milk was used for domestic consumption and 79.47 percent milk was sold in milk collection centers through their milk cooperative. Most of the farmers (67HHs) are producing 5 to 10 liter milk per day. In the production category of 15-20 liter/day there are 12 families whose total production is 198 liter/day out of which 32 liter is consumed and 166 liter is sold. It seems the milk consumption per households is 2.66 liter, but the overall average milk consumption of the households is 1.79 liter. It was observed that sometime when DDC can not buy the milk due to closed and technical problem, farmer have to consume all the milk they produced, which also affects their income on that "milk holiday".

4.10 Milk Marketing

For any products, there must be very attractive markets prospects. Production cost and process may impose severely if the producer does not see any profitable market opportunity.

Table No. 4:10
Milk Marketing

Milk sold to	No of HHs	Percent
DDC	130	100.00
Private market	-	0.00
Local market	-	0.00
Others	-	0.00

Source: Field Survey, 2006

The table shows the target market of the farmers for milk production. Sample study of 130 household shows that all of the farmers (100%) sell the milk to DDC. During the field study, it was found that farmers are selling milk only to the milk co-operative with low price and lack of desirable facilities.

4.11 Milk Collection System

The milk collection system plays a vital role in the development of milk production activities. If the milk collection center is not far and price of milk is good enough, farmers will be inspired to sell milk. Milk is collected and marketed by milk cooperatives. There are seventeen milk collection cooperatives in the study area. These collection centers collect milk and send it to the chilling center. Many of these collection centers are far from the chilling center. They are using various kinds of transportation (i.e. horses, van and man themselves) to carry the collected milk to the chilling center.

4.12 Income from Milk Selling

In the sample study, it shows that significance portion of the income is covered by milk sales. Table (below) shows the average income of different households.

Table No. 4:11
Income from milk selling

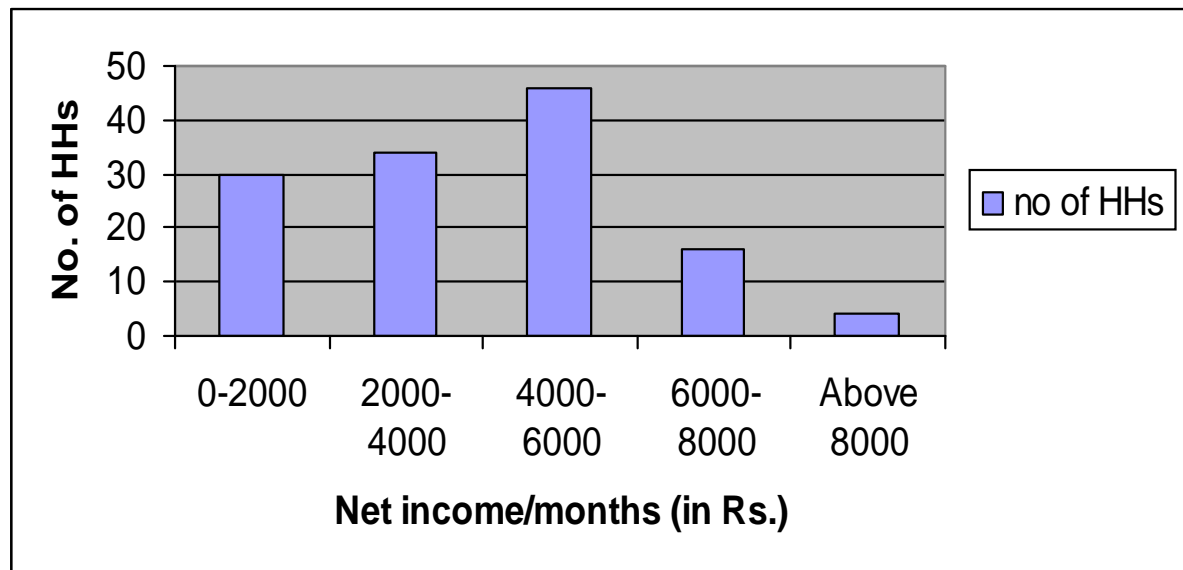
Net income/month (in Rs.)	No. of HHs	Percent
0-2000	30	23.08
2000-4000	34	26.15
4000-6000	46	35.38
6000-8000	16	12.31
Above 8000	4	3.08
Total	130	100.00

Source: Field Survey, 2006.

The table states that 35.38 percent earn Rs.4000 to 6000 individually. It is clearly seems that the number of household is decreasing in the income level of more than Rs. 6000 per month.

Although this income shows a satisfactory level, not a single farmer is satisfied with his/her current income status. They often complain that the price the price of fodder is relatively higher than milk price. The little margin on the milk is almost utilized on the household expenses and there remains no chance of further enhancing the economic status of the people, as it seems. Most of them repeated that they need to keep larger number of animals to earn significantly higher although; nobody fixed that 'large number' in a clear explicit term. Moreover price set by DDC vary with the quantity of lacto and fat contained by milk. Buffalo milk contains more lacto and fat and has high price in comparison to the price of cow milk which contains less fat and lacto.

Figure: 7
Income from Milk Selling



4.13 Utilization of Dairy Income

Dairy income is spent in various items. Many farmers spend dairy income for their basic needs. Some people have pre-plans to use dairy income. Following table shows the utilization of dairy income by farmers.

Table No. 4:12
Utilization of Dairy Income

S. N.	Items	No of HHs	Percent
1	Cattle feeding	51	39.23
2	Home expenses	32	24.62
3	Education	17	13.07
4	Health	7	5.38
5	Fixed assets	6	4.62
6	Above all	17	13.08
	Total	130	100.00

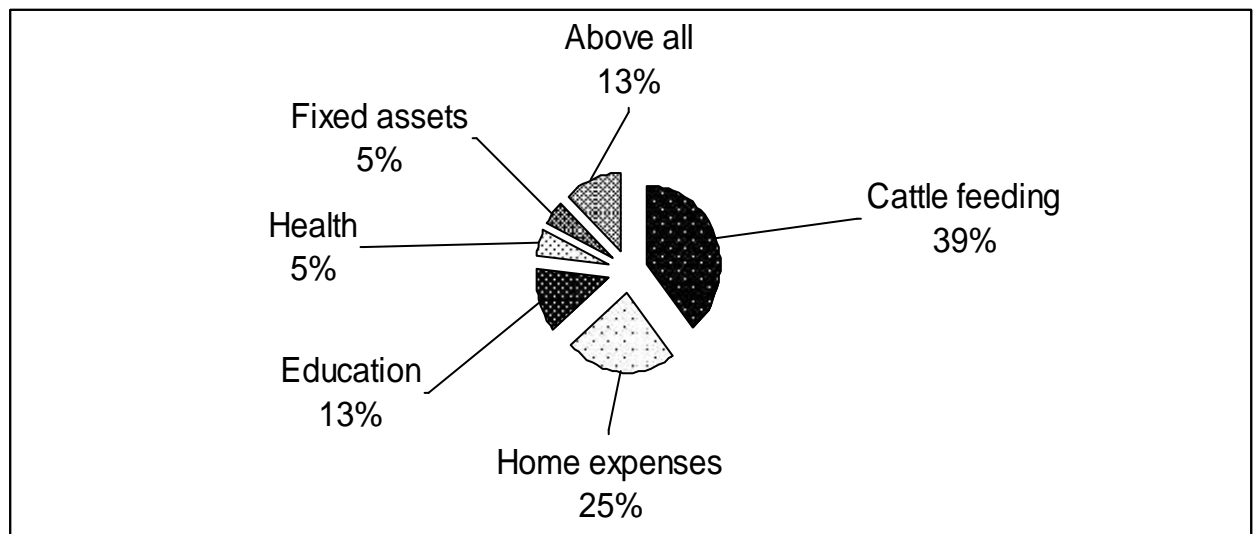
Source: Field Study, 2006.

The above table shows those 39.23 percent households spend dairy income in fodder for cattle feeding. Similarly, 24.62 percent household use dairy income in home expenses such as food, clothes and fuel, 13.07 percent households spend their income in education. Farmers receive regular cash

income on half-monthly (15 days) basis. So, it is convenient to pay school fees for the lower income group farmers. About 5 percent households use their income in health. It is important that about 5 percent households spend in fixed assets such as land and house. It is clearly seems that milk production activities is helping the farmers to enhancing their socio-economic status. Rest of the households (13.08%) said that, they do not spend dairy income separately. They spend their income in above all items.

It shows that dairy income has helped the farmers to fulfill their basic social and economic needs. The lower income group farmers spend their dairy income in basic goods because it is their only one source of income. Many middle-income group farmers spend their income in education, health, fixed assts and durable things. But, about 40 percent of households spend the income of dairy product on cattle feeding. So, the income is not very satisfactory for the dairy farmers.

Figure: 8
Utilization of Dairy income



4.14 Problem and Constraints of Milk Marketing

Dairy farmers are facing many milk marketing problems and constraints in the study area. The collection center buys the milk in the morning only. There is no market to sell the milk in the evening. The price of milk is determined by the DDC and it is very low. There is vast different between the buying price and selling price of milk by DDC. So that the low price of milk is another problem. To some places, collection centers are far

from their houses. It takes long time to take the milk to the collection center. And acidity of milk is also a problem of dairy farmers. If milk acidifies in the collection centers, farmers should bear its loss.

There are other problems such as lack of artificial insemination, lack of scientific testing equipments in the collection center and lack of vehicles and comfortable road to transport milk. The technical knowledge of the staff of collection center is very low.

In the study area, there is no alternative market to sell the milk. If farmer want to sell the milk in market center, they would reach *Kakarvitta* Bazaar. It is far from the study area. Another severe milk marketing problem is 'milk holiday'. Banda, Strike and technical problem create such situation. In this situation, farmers get heavy lose as there is not any alternative milk market. Farmers are obligate to consume their surplus milk production undesirable, though they want to sell it. The following table shows the problem and constraints of milk marketing of the sample households.

Table No. 4:13
Problem and constraints of Milk Marketing

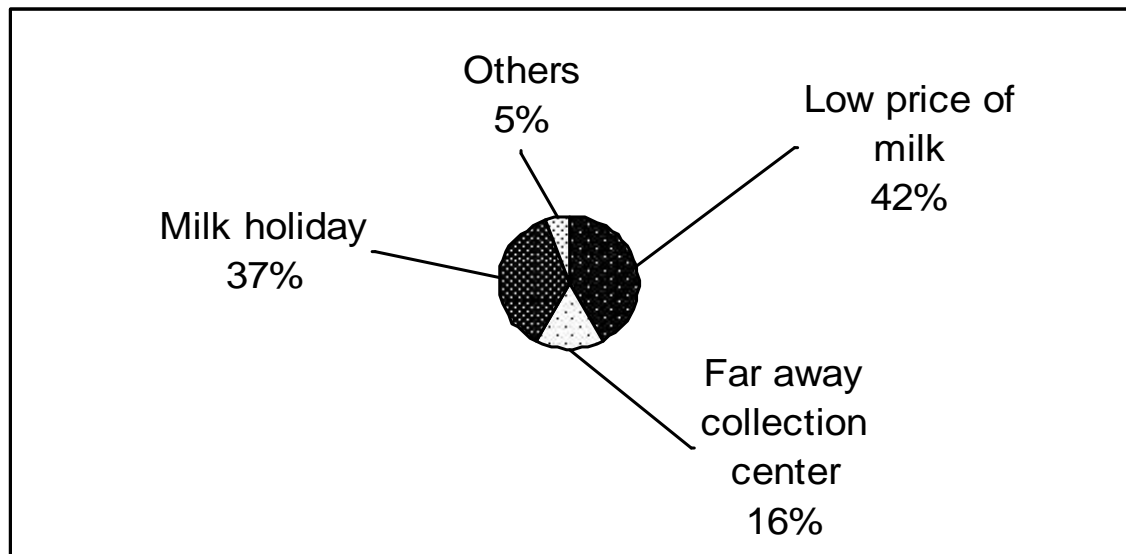
S. N.	Problem and constraints of Milk Marketing	No. of HHs	Percent
1	Low price of milk	54	41.54
2	Far away collection center	21	16.15
3	Milk holiday	48	36.92
4	Others	7	5.39
		130	100.00

Source: Field Survey, 2006

The above table shows that more than 41 percent household said that low price of milk is the first problem of the milk marketing. On the other hand, 16.15 percent household opined that far away a collection center from the houses is the main problem for them. Likewise, about 37 percent households said that milk holiday is the main problem of milk marketing. And more than 5% households said other problems of milk marketing such

as lack of market to sell the milk in the evening, lack of milk product industry, lack of better management, lack of good transportation, lack of technical knowledge, acidification of milk etc.

Figure: 9
Problem and Constraints of Milk Marketing



In general, it is found that low price of milk is the first problem, milk holiday is second one and distance to milk collection center is the third problem of milk marketing that the dairy farmers are facing..

4.15 Support of Institutional Facilities

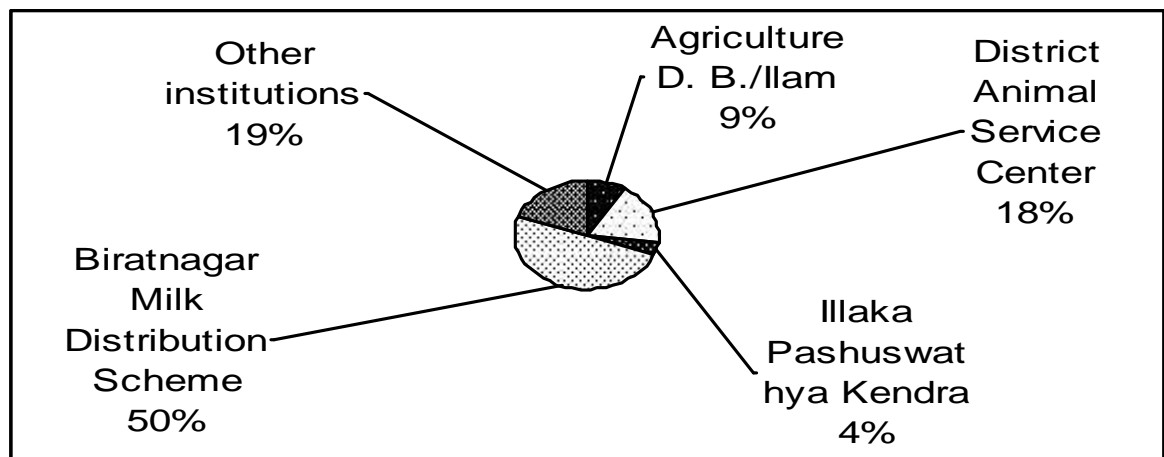
Different organizations provide different form of institutional facilities to the milk producers of this study area. These facilities are encouraged to the rural farmers. The table below shows the institutional support of different institutions.

Table No. 4:14
Support of Institutional Facilities

S.N.	Name of Institutions	Mode of Facilities	No. of HHs	Percent
1	Agriculture D. B./Ilam	Easy loan facility	12	9.23
2	District Animal Service Center	Improved breed	23	17.69
3	Illaka Pashuswathya Kendra	Veterinary service	5	3.85
4	Biratnagar Milk Distribution Scheme	Technical knowledge about milking cattle	65	50.00
5	Other institutions	Others	25	19.23
	Total		130	100.00

Source: Field Survey, 2006.

Figure: 10
Support of Institutional Facilities



However, the above mentioned facilities are provided by different institutions to some extent, these facilities are not sufficient and easily accessible to the entire milk producer. They are frustrated from the plans and policies of these institutions.

4.16 Role of Milk Cooperative

A cooperative is generally viewed as socio-economic organization that can fulfill both social and economic objectives of its members, and that has its members' interests truly at heart (Sing, 1986).

Similarly, milk production cooperatives in the study area are running by its farmer members. These cooperatives are providing various services to its members. The main role of these organization found in the study area are collection of milk, providing loan, providing facilities to its member.

Table No. 4:15
Expected Role of Milk Cooperative

S. N.	Expected Role	No. of HHs	Percent
1	Easy loan facilities	21	16.15
2	Technical knowledge about milking cattle	32	24.62
3	Payment in time	47	36.15
4	Improved fodders seed	19	14.62
5	Others	11	8.46
	Total	130	100.00

Source: Field Survey, 2006.

Above table shows that about 17 percent of the total sample households are expecting easy loan facilities. Likewise nearly 25 percent expect their cooperative as technical knowledge provider. So that they can improve their cattle's milking status. Similarly, almost 36 percent household replied that the milk cooperative should payment them in time. Among the sample households about 15 percent want improved fodders seeds; feed for cattle through their milk cooperatives and another 8.46 percent household replied the cooperative should help them in various methods like inspection of their cattle on time vaccination in the time of fatal diseases.

4.17 Veterinary Services

There is a veterinary clinic in the study area. To take veterinary facility, they should go Aaitabara Bazaar at Panchakanya VDC. The clinic is closed from the chilling centre but far from some milk co-operatives that means maximum number of farmers could not facilitate by the clinic. So it is necessary to establish some veterinary clinic in the study area.

4.18 Annual Medical Expenses

Medical expenses for the animals is also an important factor which determines the annual saving of the farmers and some times farmers have to bear high cost to treat their animals due to intensity and case of the disease. Table below shows the average annual expenses of the sample households.

Table No. 4:16
Annual Medical Expenses

No. of Animals	No. of HHs	Total No. of Animal	Percent	Total Medical Expenditure (in Rs.)
1-2	52	59	13.29	11800
2-4	37	120	27.03	9500
4-6	21	105	23.65	11000
6 and above	20	160	36.03	15200
Total	130	444	100.00	47500

Source: Field Study, 2006

The above table shows that for total animal of 59 (13.29 percent of the total number of animals), generally, it takes Rs 11800 as medical expense which decreases to Rs. 9500 for 120 (27.03%) animals. This decrease is due to the severity, intensity and the type of the disease they suffered. Likewise, for 105 (23.65%) animals of the next group in sample, medical cost is Rs.11000 and still another sample of 160 (36.03%) animals take medical expense of Rs. 15200. According to the respondent the inconsistency in the number of animals and respective medical cost is due to the variety of diseases.

Chapter - Five

Summary, conclusion and recommendations

5.1 Summary of the Study.

The present study attempts to explain the study of socio-economic condition of dairy farmers in some VDC of Ilam district. The surrounding area of 17 milk cooperatives which are collected milk from the dairy farmers and bring to the Teenghare Chilling Center is chosen for the study purpose. In the study, 130 sample households are taken from 17 different cooperatives of the study area. To analysis this study, the primary source of data information is taken into account, which is collected by researcher himself with the help of structured questionnaire. The output of the study has shown that there is a need of better facilities for the farmers to promote milk product and trade in the study area.

The main findings, summaries of this study are as follows:

- In the field survey, total sample population of female is 302, which is greater than male i.e. 289.
- According to the field survey, 17.03 percent remains in the age 0 to 15 years. 78.6 percent population remains in the age group 15 to 60 and only 4.37 percent is in the age group of 60 above.
- The average household size of the study area is 4.54 whereas the national average household size is 5.44.
- The field survey clearly shows that only 26 percent sample population are illiterate and 74 percent population are literate which suggests a positive attitude towards education in the study area.
- In the study area, 54.54 percent of the total population is engaged in agriculture followed by services (12.12%), business (6.67%) and others (4.45%).
- Ethnically, Brahmins and Kshetri are major residents of the study area covering 40.76 percent of the total population.

- The disparity of landholding pattern in the study area is found to be high.
- In the study area, the total number of livestock kept by sample farmers for milk production is 444. Among them 84.01 percent are cows, both local and improved, and remaining 15.99 percent are buffaloes. The number of improved livestock are greater in number which produces more milk than local livestock.
- Total milk production of the sample households is 1135 liter per day out of which 233 liter is consumed for domestic purposes and remaining 902 liter is sold for income generation.
- Almost all milk product of the study area is purchased by Dairy Development Corporation of Biratnagar branch office.
- Among the total households, 23.08 percent households earn up to two thousand, 26.15 percent households earn up to four thousand, 35.31 percent households earn up to six thousand, 12.31 percent households earn up to eight thousand and another 3.08 percent households earn above Rs 8000 per month. It indicates that it is the main source of income of the sample population in the study area. But the farmers are not satisfied by the income of the milk because of the low price of milk.
- The earning from milk production is spent in diversified areas such as cattle feeding, home expenses, education, health caring, fixed assets etc. 'Cattle Feeding' is the main expenditure items sharing 39.23 percent households spend their income in it.
- Among the total households, 41.54 percent households said that low price of milk is the first problem and constraints of the milk marketing, 36.92 percent households said that milk holiday is their first problem and constraints, likewise 16.15 percent said that far away collection center is their first problem and constraints of the milk marketing and other remaining 5.39 percent households said other problem and constraints of milk marketing.
- 'Medical Expenses' for the animals is also an important factor. In which the medical expenses of livestock amount is Rs.47, 500 per annum.

5.2 Conclusion

Looking the result of this study, it can be concluded that the living standard of the people of the study area is uplift to some extent by milk selling. The income from the milk production and its selling occupies about one third income of the farmers. Such income has helped the rural farmers to fulfill their different needs. Most of the farmers use the dairy income in cattle feeding. But the income from the milk is also supporting the domestic expenses of the farmers. Some farmers use their income to pay school fees for their children study. Others have invested such income in fixed assets such as land and house, health, cattle feeding etc. It is a secondary occupation of the farmers living here.

From the very establishment of milk collection center, the numbers of milk selling farmers have been increasing every year. The duration of selling of milk largely depends on the number of milking cows. The collection centers buy milk only in the morning. Thus, the milk of evening is used for domestic consumption and process for ghee, homemade cheese (Chhurpee) and other products.

There are some problems in dairy farming such as lack of institutional credit services, low price of milk, high price of fodder, insufficient veterinary services and high price of improved breed of dairy animals. But these problems have not hindered dairy farming negatively though it needs some improvements. Dairy farming and agriculture are interrelated to each other. The production of crops, improved grass and other feeding materials are high in this area. There is further possibility of market expansion. Likewise, suitable climate and road access are other push factors which help to further expansion of dairy farming in this area. Thus, the overall scenario of socio-economic condition of dairy farmers is not so good, but it is going very positively nowadays.

Dairy farming has various kinds of indirect cost and benefit. Indirect cost means the time devoted by milk producers in the course of milk production and indirect benefit means the fertilizer, bio-gas, dung cake, etc produced by the animals. Here, in this study, it is assumed that the indirect/opportunity cost is equal to indirect benefit because of the unavailability of the accurate data and measuring unit of fertilizer, bio-gas, fuel etc. This requires a further intensive study.

After the establishment of Teenghare Chilling Center (TCC) in the study area; employments, incomes of the farmers, production of milk have increased. This is certainly a positive impact of DDC on the economic status of the dairy farmers. Thus, the DDC is moving forward to reach its goal. As a result, activities have affected the economic status of the dairy farmers of the study area positively. After the establishment of TCC; the monthly incomes of a farmer have increased compared to the incomes before the establishment of TCC in the study area.

5.3 Recommendations

Milk production has played crucial role to uplift the socio-economic condition of the rural farmers. However, some improvements are still needed in this area. Sustainability and commercialization of dairy farming is necessary to reinforce its role in the local economy, for this purpose, the following recommendations can be implemented.

- ✓ Dairy Development Corporation (DDC) should timely improve the price of milk. The cost of production of milk is increasing day by day because of the cost of improved breeding, high purchase rate of milking animals and the price of cattle feeding.
- ✓ Milk holiday by the DDC should be avoided, since milk is the perishable goods. This is a key reason of the milk producers' dissatisfaction in producing milk. Because every farmer wants to get guarantee of the sale of their product.
- ✓ To reduce the problem of cattle feed, the DDC should establish its own industries for supplying the cattle feed. The supply of cattle feed should be cheap and adequate.
- ✓ Credit services for dairy farmers should be made available at minimum interest rate through Agriculture Development Bank, other Finance Companies or Cooperatives.
- ✓ Veterinary services can be provided in the village through District Animal Service Office where regular and timely vaccination given against animal diseases. Milk producer cooperatives, local government of local community should encourage veterinary doctors or paramedical staff to operate clinics of drug shops in the villages.

- ✓ Farmers should be encouraged to rear improved breed of dairy animals whose productivity is higher than that of the local ones. District Animal Service Office should provide improved breed of animals on subsidy price under its regular or specific program.
- ✓ To make the livestock scientific, farmers should be trained about modern technology of animal husbandry.
- ✓ Farmers should be encouraged to produce improved grass; fodder trees and other feed particulars of cheap cost. In addition to that training on basic hygiene of milk, animal health and better management of animals should be provided to the farmers by the District Animal Service Office.
- ✓ Banks or Finance Companies should encourage the farmers by providing them loans and insuring their animals.
- ✓ The collection center, the chilling center and other milk marketing system should be made easily accessible to the people in the study area.
- ✓ To raise the economic status of dairy farmers, to encourage them for producing more milk and to reduce the import of milk powder from abroad, the price of milk should be increased. If the farmers get attractive price of their milk, more farmers can enter in this field and the supply of milk can be increased to meet the increasing demand for milk and quantity of imported milk can be reduced. In order to discourage the import of milk powder, high tariff duty can be levied on it.

So to develop the dairy farming, the problems mentioned above should be solved. Since, Nepal is an agrarian country; most of the people of Nepal depend on agriculture and make their livelihood. The government should distribute the national income by keeping to such problems in view. Farmers should be given different training facilities to develop such type of sector; the area should be announced as "White Zone" by the government.

Reference:

Acharya, Sailedra Prasad, (2005). *Local Milk Production and Marketing System: A case study of Sonpur VDC of Dang District: An unpublished Project Report submitted to Central Department of Rural Development, T.U., Kirtipur, Kathmandu.*

Arthur, L Anderson, (1995). *Introductory Animal Husbandry*, New York: The Macmillan Company.

Dairy Development Corporation, (2062). *Annual Report of Fiscal Year 2060/61*, DDC Central Office, Lainchour, Kathmandu.

DAN, (1994). *Empowering MPAs/MBCs Pilot Project for Sustainable Dairy Development*, Unpublished report of Bhartpur, Butwal and Sipaghat Chilling Center.

DOA and NDDDB, (2001). *Annual Report,2001*, Lalitpur: DOA & NDDDB.

DOA, (1991). *Ten Year Dairy Development Plan (1990-2000), Vol-1*, Kathmandu: DOA.

Dhakal, Krishna Hari, (1999). *Development of Dairy Farming: a Case Study of Gitanagar VDC*, an unpublished dissertation, central department of Geography, TU Kathmandu.

Dhakal, Subash C., (1997). *Study on the Quality of Raw and Pasteurized milk in Biratnagar City, in Promotion of Animal Production Through Research and Development, Kathmandu.*

Gautam, Kamal Raj, (1999). *A Study on Small Holder Dairy Sector in Ilam Milk Shed*, unpublished report, National Dairy Development Board, Kathmandu: NDDDB.

HMG of Nepal, *Ministry of Population and Environment, Nepal Population Report 2003*, Kathmandu.

HMG of Nepal, *Ministry of Finance, (2002). Economic Survey*. Kathmandu.

HMG of Nepal, Central Bureau of Statistics, (2002). *Statistical Pocket Book of Nepal*, Kathmandu.

HMG of Nepal, Central Bureau of Statistics,(2004). *Agriculture Census*, Kathmandu.

Joshi, Durga Dutta and K.C., Tarak Bahadur, (2001). *An Overview on Small Holder Dairy Production and Marketing in Nepal. Make Milk not Methane Gas in Nepal*, Kathmandu.

Kshetri, Bhoj Bahadur, (2000). *Socio-economic and Welfare in Relation to Environment: A case study of the farming system of Hindu country Nepal*, Environmentally sustainable livestock production for poverty alleviation, proceeding of the Third National Animal Science Convention.

Lindegaard, Karen (1993), *Fodder Resources amongst the Milk Producers in Ilam, East Nepal*. Unpublished progress report, Royal Veterinary and Agricultural University, Denmark, Copenhagen.

Pradhan, S.L., (2000). *Livestock Development in Nepal*, Figure Challenges, Development Concept and Approaches, Environmentally sustainable livestock production for poverty alleviation, proceedings of the Third National Animal Science Convention, Kathmandu: NARC.

Sharma, Prem, (2002). *A Handbook of Social Science Research Methodology*, Kathmandu: Kshitiz Prakashan

Sing, Katar, (1999). *Rural Development Principles, Policies and Manegement*: New Delhi.

Stem, Chip, Joshi, Durga Datta and Orlic, Mark, (2001). *Reducing Methane Emissions from Ruminant Livestock: Nepal Pre-feasibility Study Report*, Make Milk, not Methane Gas in Nepal.

Teenghare Chilling Center, (2005). Teenghare Ilam.

Upadhaya, Ram Milan; Joshi, Durga Dutta and Thapa Tek Bahadur,(2001). *History of Dairy Development in Nepal*, Lalitpur: National Dairy Development Board, Danida Support Project.

www.amul.com

www.dairydev.com.np

Annex-1

Questionnaire for Household Survey

Name of respondent:

Related cooperative:

Caste:

VDC:

Ward no:

Age:

1. Detail of household members

	Below 15 years	15-59 years	60 and above
Male			
Female			
Total			

2. Occupational status of household member.

Occupation	No. of persons
Agriculture	
Services	
Business	
Others	
Total	

3. Educational Status

Educational Level	No. of person
Illiterate	
Literate	
S L C	
Intermediate	
Graduate	

4. Land holding size of respondent (IN ROPANI)

- A Less than 5 B 5-10
 C 10-15 D More than 15

5. Please give following information on your livestock.

Animal categories	Number	No. of milking animals
Local buffalo		
Improved buffalo		
Local cow		
Improved cow		
Sheep/ goat		
Others		

6. How much time you spend for your cattle per day? Specify please.

- A 3 hours B 5 hours C 7 hours D Others

7. How many milk you produce per day?

.....

8. **How much milk you consume out of your production?**

9. **Where do you sale your milk?**
 A local market B DDC'S milk collection centre
 C private dairy D others
10. **How much milk you sale?**

11. **How much price you get from per liter**

12. **Do you get reliable price for your product?**
 A yes B no
13. **Do you feel any trouble for marketing of milk?**
 A yes B no
14. **If yes, what type of problems?**
 A related to milk quality B low price of milk
 C milk holiday (i) Political (ii) DDC D others
15. **What is the major problem of dairy farming?**
 A improved grass B lack of straw C loan facilities
 D veterinary facilities E market of milkF pasture land
16. **How much you earn per months?**

17. **Where do you spend your income from milk?**
 A cattle feeding B home expenses C education
 D health E fixed assets F cattle purchasing
18. **How much you save? (Approx)**

19. **Did you feel it supports for your economic activities?**
 A yes B no
20. **Do get any financial support from your milk cooperatives?**
 A yes B no
21. **If yes, for what purpose?**
 A purchasing cattle B individual loan
 C for agriculture D others
22. **Do you get any technical support from DDC?**
 A yes B no
23. **If yes, mention.**

24. **Do you feel that there is any role of DDC to enhance your socio-economic status?**
 A yes B no
25. **Do you get any support from DDC for your institutional development at local level?**
 A yes B no
26. **Please suggest the role and function of DDC for uplift socio- economic condition of dairy farmers.**

Annex-2
Checklist to Collect Information from Chilling Center

S.N.	Questions	Answers
1	Date of establishment of Chilling Center (C.C.)	
2	Daily collection capacity of the C.C.	
3	Type and name of equipments used in the C.C.	
4	Number of staff in the C.C.	
5	Types of test of milk that C.C. does	
6	Hinterland of the C.C.	
7	Name of milk collection cooperatives	
8	Location of milk collection cooperatives	
9	Distance of collection center from the C.C.	
10	Average daily milk collection from each cooperatives	
11	Average price of per liter milk	
12	Selling price of milk	
13	Rate of commission to milk cooperative	
14	Paying duration of collection cooperative	
15	Problems that the C.C. faces during collection	

Annex-3
Checklist to Collect Information from Collection Center
(Cooperatives)

S.N.	Questions	Answers
1	Name of milk producer cooperative/non cooperative	
2	Date of establishment of milk collection center	
3	Date of registered	
4	Number of members of milk producer cooperative	
5	Average number of milk seller farmers	
6	Average daily collection of milk	
7	Number of staff in collection center	
8	Equipments use in collection center	
9	Types of tests of milk in collection center	
10	Means of transportation of milk to the C.C.	
11	Transportation cost (per liter)	
12	Average price of per liter milk	
13	Paying duration to farmers	
14	Problems that collection center facing during collection and marketing	