

# CHAPTER I

## INTRODUCTION

### 1.1 Background of the Study

Nepal is a small, independent, least developed and agricultural country. It is one of the nature gifted countries in terms of its natural beauty and biodiversity. It is land locked between its two large neighbouring countries namely India and China. It is a small country with 1, 47,181 square km area and within this boundary 27 million people are living. It is a least developed country with per capita GDP at current price is estimated to be 740 US \$. Approximately more than 80 percent of the population lives in rural areas and agriculture is the main occupation of rural areas. Here, agriculture contributes about 33.1 percent (at constant prices) to GDP. Around 76 percent of the population is engaged in agriculture sector. GDP of the agriculture sector is estimated to grow by 1.3 percent as compared to previous fiscal year (MoF, 2014).

Livestock farming is an important and integral component of Nepalese agriculture. The major contribution of livestock is milk, meat, wool, bone and farming etc. Dairy farming has been an important component of livestock gained. Milk and milk product provide us to required calories proteins in our daily food composition. So, milk and milk products are the best source of protein. Further it is obvious that dairy development plays a vital role in improving socio- economic status of rural people. Hence, it had become the most popular and prosperous business in rural areas. Cows, buffaloes, chaunri are the main milk producing species. Cows and buffaloes are found in Terai and Hilly regions and chaunri in Himalayan region of Nepal. Cows have been domesticated during the early Vedic age (probably 3000 B.C.) and have been highly acclaimed for the value of their milk. Buffaloes were entered into Nepal much later (about 1500 B.C.) and chaunri even later (may be 500 B.C.). Generally, white/grey humped cows are found in Terai and brown, red and

black cows are found in the lower and middle hills. Hump less Lulu cows are found in Mustang, Manang and Achhame cows in Achham. Nowadays, wide spread rising of crossbred Jorsey and Holstein cows are found in several milk pockets area. Buffaloes are generally kept in warm and moist climate, but in the case of Nepal they are found even 3500 meters height. Chaunries (Yak/ Nak) are found in the northern alpine areas (between 2000 to 5000 meters) of Nepal (Upadhaya et al., 2001).

In the past, most of the people used to keep dairy animals for the fulfilment of their domestic self consumption. Later on milk and milk products was started for business purpose. Nowadays, people sell milk at the market. In many rural areas, small dairy plants also have been established. The small scale dairy production and processing industries neither require high technology nor it requires high investment to develop the dairy farming in the rural areas.

## **1.2 History of Livestock Development in Nepal**

Nepali farmers practice livestock farming from ancient periods. Importance of cow on Hindu religion shows its significance since the rise of human civilization. Some of our historical rulers were from classes like Gopal and Mahispal also hints the culture of livestock in past. However, institutionalized effort of agriculture development in Nepal can be traced back since the establishment of the board of agriculture in 1925 AD. The agriculture board was dissolved with the creation of Department of Agriculture in 1953. A Department of Livestock Development and Veterinary Sciences (DLDVS) was established in 1966. It emphasized institutional development of livestock at various levels. However, livestock extension and development activities were implemented through the Department of Agriculture Extension (DAE). The functions of DLDVS were again merged with the Department of Agriculture in 1972. There were two section concerned with livestock issues, livestock improvement section and veterinary service division. The livestock department

was again made independent in 1979, and was called Department of Livestock Development and Animal Health (DLDAH). The DLDAH was responsible for all livestock extension activities until 1987 (NARC, 1993).

The historical review of the livestock development activities in Nepal for past seven decades points out some outstanding features. The livestock development process at the earlier stage was very slow because of shortage of trained manpower, poor organization, mal- distribution and low budgetary constraints. The influence of foreign aid from the very beginning in the development of livestock farms, animal health services and dairy development projects were more pronounced in mobilizing the existing resources with better management practices and incentives to the technicians.

When the foreign aid was reduced to a minimum or completely removed, the standard of livestock farms and project management were greatly handicapped resulting in non- optimal utilization of funds, lack of proper management and differences with donors in shaping the programs were major limitations with government operated farms. Due to management and service problem Department of Livestock Service (DLS) was established in 1995. Presently, Department of Livestock Services (DLS) has taken the responsibility for livestock development and extension activities in Nepal. The National Agriculture Research Centre (NARC) and Institute of Agriculture and Animal Science (IAAS) are other institutional bodies responsible for carrying out animal science development and research activities within the country.

### **1.3 Brief Introduction to DDC**

Establishment of first dairy industry in the form of milk processing centre was in Nalatusal of Kavre district in 1952 AD. The dairy development section was formed under Department of Agriculture. Central dairy centre was established in 1957 AD with the help of New- Zealand government. Then processing and distribution of milk was started in systematic way. Owing to national level

expansion of dairy development, the Dairy Development Corporation (DDC) was established under the Ministry of Agriculture in 1969 AD (2026 B.S.).

*The main objectives of DDC are as follows:*

- ) To provide guaranteed market to supply hygienic pasteurized milk.
- ) To collect the milk at reasonable price and manage pasteurization, production and distribution.
- ) To establish milk collection centres, chilling centres and dairy centres at suitable places.
- ) To provide fair price for rural milk producer for their products.
- ) To give employment and encourage to the rural farmers.

The corporation presently operates seven milk supply schemes in eastern, central, western and mid western development regions of Nepal. It has five milk processing plants under its operation in Kathmandu. These five milk processing plants were established in Kathmandu (1974 A.D.), Biratnagar (1974 A.D.), Hetauda (1974 A.D.), Pokhara (1980 A.D.) and Lumbini (1990 A.D.). The milk processing plants produce pasteurized milk and other dairy products which has been collected from rural farmers and sold to urban consumers. Nowadays, DDC is extending chilling centres and sahakari sang limited to provide the transportation facility to the farmers. Therefore, this corporation is responsible for developing dairy farming providing secure market for farmers and production and distribution of dairy products throughout the country.

#### **1.4 Importance of Livestock Farming in Nepal**

Livestock farming plays an important role in Nepalese economy. It contributes one third to the total agricultural GDP. Moreover, Nepalese agriculture is characterized by subsistence type where crop and livestock based farming system has been adopted. In such a case livestock farming has significant role

in socio- economic lives of Nepal. The economic support to household is the biggest contribution of livestock. Butter, cheese, ghee are economically most important dairy products. These are a good source of export earning too. Dairy products of mountains of Nepal are used to be the main barter items in the Nepalese trade with Tibet. Live animals are export to India, which has been a good source of export earnings.

The major contribution of livestock is to supply milk, meat, wool, skin, bones etc. Milk and meat are the main source of protein in Nepalese diet. Besides, wool, hide, bone are used as raw materials for livestock based industries. Milk is one of the economic transactions of farm households. Buffaloes, Cows, Yaks are mainly kept for milk production. Milk provides many kinds of nutrients and vitamins for human body, which are very much essential for the growth and development. No other food products can be raised with milk, which has valuable components and vital for the human health.

Manure as alternative to chemical fertilizers. Since, chemical fertilizer is harmful to surrounding environment and ultimately to our health. Ox and he- buffaloes are also contributes to agriculture and transportation. Particularly oxen and he- buffaloes are used in Terai for transportation and agriculture. Yak, sheep, horse and donkey are used in hills area for transportation.

In Hindu society of Nepal, different types of livestock have different religious importance as well. For example cows are considered as the God of wealth. Similarly, goat, sheep, pig and young buffalo as well as duck and chicken are sacrificed in festivals and religious occasions. Thus, livestock farming is found to be of considerable importance in the context of Nepal.

### **1.5 Economic Significance of Livestock Farming**

Livestock farming is one of the significant components in the agriculture sector. Livestock and crop agriculture are highly integrated as a profession of

majority of our farmers. Manure from livestock is the main source of maintaining crop productivity. The agriculture sector contributes 33 percent (MoF, 2014) to the GDP and provides employment to more than 70 percent of the total population. Livestock sector contributes about one third to the total agricultural GDP. Livestock and fruit cultivation are more attractive in hill and mountain regions of Nepal because in those regions there were unfavourable land cultivation. So, livestock farming is the best way to livelihood in those regions. Livestock provides farmers with milk, meat, wool organic manure and source of income by selling its product or live animals.

Elements of economic significance associated with livestock will be presented with dairy livestock in particular. Most of the farmers in rural belt are uneducated and unconscious about economic accounting. Farmers practicing livestock normally do not consider many of the indirect costs incurred for production as well as indirect advantages with cash point of view. Labour by their family members, cost of plantation of grass on their land, feed items directly produced by themselves such as dry and green fodder, crop residues, interest on their capital investment, depreciation of animals and other risk factors are not considered in proper way. Normally they notice cash cost like cost of buying the animals, wages paid to hired labour, breeding and medical expenses, construction of sheds and purchasing of balance grains; choker and other feed materials etc. Similarly, while considering the income from livestock, the family consumption of milk and its products and meat are not accounting as income. Products sold in cash and incomes from sales of animals are normally considered as the income. Values of by products such as manure, future income from rising of calves/ nesting are also of economic significance. Therefore, estimating of all the cost components of economic significance and all of the income in the field of livestock is thus not an easy task.

## **1.6 Statement of the Problem**

In the production of milk various factors are employed. The payments to those factors of milk production are known as the cost of milk production. The cost in milk production process for the fixed factor inputs is called fixed cost. For example capital equipment, land cost, shed cost etc. But the expenses on variable factor inputs during the milk production process are called variable cost. For example labour cost, interest cost, feed cost, medicine cost etc. So, the total cost of milk production is the sum total of fixed and variable costs.

Different rural areas have different potentialities for the development of economic activities. Livestock farming could be regarded as highly valuable economic activities for rural areas. In livestock farming, the role of dairy cooperatives is important. Nowadays, the market for the dairy products has been growing considerably in the country. On the one hand, there is not enough supply of milk and milk products in big cities but the demand of dairy products has been growing day by day. On the other hand, the rural farmers are facing different types of problems like marketing loan, feed, animal health service etc. So, the farmers are not satisfied from livestock farming due to various causes like lack of appropriate knowledge about cost of milk production, income from milk is too low, lack of knowledge about artificial breeding system etc. So, this study focuses on that the cost and benefit of milk production process.

Nepalese farmers tame animals for their livelihood. Some farmers are taming animals to take benefit from selling milk. Many farmers know a few general aspect of cost of milk like animal loan, feeding, animal housing but they cannot take account of many minor costs like animal tying rope, grass cutter, feeding pot, milking pot, spades etc. So they satisfied from the income of milk without knowing small or minor things about the cost. In rural area like Kanyam VDC, farmers don't take care of labour cost as they have not done any other job

instead of livestock farming. So, this analysis focuses on the calculation of actual cost of milk production to calculate the net profit.

Farmers get certain level of income by selling milk. However, they do not count the amount of milk which they have consumed. They get other benefits such as biogas, compost manure and income from calves etc. So, in this research major and minor benefits are mentioned which are also sources of income. Farmers are facing different types of problems like marketing, loan, feed, animal health service etc. Therefore, this analysis also focuses on the major problems faced by the farmers and measures to solve the problems. Therefore some related research questions are as follows:

- ) What is the cost of milk production?
- ) What is the benefit of dairy farming?
- ) How much time the farmers are spending on livestock farming instead other works?
- ) What are the problems and prospects of dairy farming in the study area?

### **1.7 Objectives of the Study**

The main objective of this study is to analyze the cost and benefit of dairy farming. The specific objectives of this study are as follows:

- ) To calculate the cost of milk production,
- ) To examine the benefit of dairy farming,
- ) To study the generation of self- employment through milk production,
- ) To identify the problems of milk production process and suggests remedial measures for them,



## **1.8 Significance of the Study**

This study is mainly concern with the cost and benefit of milk production as well as dairy farmers of Kanyam VDC of Ilam district who create the self employment on livestock farming, especially milk production. Therefore, this study tries to fulfil the gap of knowledge about various aspects like production, marketing and economic condition of dairy farmers of Kanyam VDC. In spite of this, only few studies have been carried out in dairy farming. Lack of essential information has made it difficult for policy makers and researcher to set priorities for the development of dairy farming. However, the finding of this study will also be useful for local people, project designers, planners and administrators as well as for policy makers in the views of people's welfare and their betterment.

## **1.9 Limitations of the Study**

No study can be free from its own limitations. Lack of research experience is the major limitations for all the research work. So, the present study has also some limitations, which are listed below:

- ) Lack of appropriate data about cost of milk production.
- ) Farmers do not keep any record about income component so they have not known the actual profit amount from the milk production.
- ) Since the study covers only one VDC so it does not represent the whole country.
- ) The study is fully based on the student's financial resources and it is to be conducted and submitted within a certain time- frame.

## **CHAPTER II**

### **LITERATURE REVIEW**

Nepal is a small agro-based country. Livestock farming is a most important and essential branch of agriculture. Dairy farming plays the vital role on Nepalese economy. Many planners, policy makers, agriculturist and economist have done researches in the field of dairy sector of Nepal. Most of the researches are related to existing situation of dairy cooperatives, cost of milk production, and quality of milk, marketing system of dairy products, problems and prospects of dairy forming and so on. Some researchers and scholars have carried out their studies in this field but a few of them have given attention on the aspect of cost and benefit of milk production. Some of the related literatures are reviewed here;

#### **2.1 Theoretical Review**

##### **2.1.1 At International Level**

Kon (1972) in his book has mentioned milk is a complex mixture consisting of an emulsion of fat and colloidal dispersion of proteins, together with the milk sugar (lactose) in true solution. These major constituents are accompanied by various minerals, vitamins, enzymes and various minor organic compounds such as citric acid, some of them nitrogenous in nature. The characteristic opaque colour of milk is due mainly to the dispersion of the milk proteins and the calcium salts. The composition of milk not only differs from species but varies widely within any one species and even within breeds' races of one species.

The fat of milk is a mixture of the chemical combination of many different fatty acids with glycerol milk proteins consists of casein, a phosphor protein found only in milk and forming the curd when milk is acidified or re-enacted,

together with soluble proteins, mainly L-Lactobunins and B-lacto globulins. Lactose or milk sugar is disaccharide; that is, it consists of two simple sugars in combination, in this instance glucose and galactose. The milk of the buffalo contains much more fat than cow's milk, rather more non fatty solids and probably rather less riboflavin. The buffalo converts carotene into vitamin A more efficiently than cow and its milk contain only traces of carotene otherwise most of what has been said about cow's milk applies equally to buffalo's milk (Kon, 1972).

FAO (1972) in its publication has mentioned milk as the only farm product which can provide a day to day income, but it must be collected every day, except perhaps during the dry season. The farmer should be encouraged to produce milk and to become milk minded by providing a market for his production. A farmer will become accustomed to receiving a certain amount of cash everyday once he possesses money, the milk producer will certainly look for means spending it to improve his standard of living. Thus, encouraging a local trade for various commodities for his family or foods and daily equipment. When a number of farmers in the same village are doing the same thing, this will have considerable impact on the social and economic development of the community as a whole. This has been shown on many occasions where the opening of a milk plant with regular daily collection and payment has improved the standard of living not only of the farmers but also of other people living in the area (FAO, 1972).

FAO (2009) in its website to publication argued that traditional livestock sector to the national milk production of individual countries within the region and products in the region as a whole. While considering the economic contribution of traditional dairy products in the region. Attention will be given only to cow milk which constitutes about to present of milk produced marketed milk and dairy products. Since, traditionally dairy product are associated mostly with the traditional cattle keepers then the amount of milk involved in traditional

processing may be taken to be at least 80 percent of the total milk produced that is total milk less 10 percent that is produced in the commercial sectors and another 10 percent which is marketed from the traditional sector via milk processing plants (FAO, 2009).

NDDDB (2011) in its annual report has reported that India continued to be the largest milk producing nation in 2010-11 with an anticipated milk production of 116.2 million tonnes, an increase of 3.3 percent over the previous year. This was close to 16 percent of world milk production. The dairy co-operatives collected 9.6 million tonnes of milk, an increase of around one percent compared to 2009-10. Milk marketing by the cooperatives stood at 8.2 million tonnes, an increase of around four percent compared to the previous year. The cooperatives increased producer's prices by about Re 2 to 3 per litre, a part of which was passed on to the consumers. To ensure the availability of liquid milk in the lean months, and based on the requirement given by the cooperatives and city dairies, the National Dairy Development Board was asked by the Government of India to import 30,000 tonnes of milk powder and 15,000 tonnes of butter oil under Tariff Rate Quota (TRQ). World milk production increased to 719 million tonnes in 2010, an increase of 1.6 percent over the previous year. Global prices of dairy commodities remained high on account of increased demand (NDDDB, 2011).

Uotila & Dhanapala (2013) in their article states that the common need of milk producer is to obtain a fair price for their milk and this is fulfilled through collective marketing. Milk is considered to be one of the most sensitive agricultural commodities, requiring special and timely care, and this can be provided conveniently as well through the collective operation of cooperative dairy societies. Apart from the collection and marketing of milk, other services such as dairy inputs, extension services, veterinary health care, artificial-insemination services, provision of animal feed, fodder seed, planting material, fertilizers and credit, and training and education, can also be provided through

cooperatives. These would act as business associations owned and operated by members for their entire benefit.

Many countries are attempting to increase livestock and especially milk production by assisting small- scale farmers, since they are the most numerous and poorest of the population, and very often also landless. Such a policy has a social as well as a commercial purpose since while it provides rural employment, more cash income and diversification away from traditional crop production (by- products), it also enhances the utilization of potential family labour. The farmer cooperative system has proved to be an effective vehicle for livestock development in general and for dairy development in particular in rural areas (Uotila & Dhanapala, 2013).

### **2.1.2 At National Level**

Joshi et al., (2001) in their book stated that the problem of milk quality worsens. The quality of milk is sometimes worsening by various factors. Some of them might be done deliberately by farmers for monetary gains but sometimes it happens due to technical mistakes in chilling centres. 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 of milk collection will be solved to a great extent of chilling of milk can be performed as close to the milk production point as possible. they further state that cost of production per KG of milk in Nepal is considerably higher (50%) or more compared to countries like Newzealand and Australia. the relatively high cost of producing milk of a general low quality is a major constraint in achieving of the goals of the Nepalese dairy industry (Joshi et al., 2001).

Pradhan et al., (2008) in their annual report reported that the dairy animal production system in Nepal is greatly influenced by availability of feeding

resources prevailing environment, market and the socio economic condition of the farmers. The production system varies greatly across agro-ecological zones of the country. Milk is produced by adopting different production and management system. Some of the major production systems are;

1. Subsistence and mixed production system is prevalent in the rural area.
2. Semi-commercial and commercial production system is practiced in the semi-urban area where market and transportation is available. Regarding the feeding system, for the milk production;
  - a. Complete stall feeding is adopted in dairy production area.
  - b. Local cattle and buffaloes are raised under complete grazing in nearby forest and fallow land.

A typical milk production system of buffalo is practiced in these days. In the milk shed area, lactating buffaloes are purchased (early lactation) from traders and are kept them throughout lactation period for milk sale and dispose them towards the end of lactation period for slaughter and buying new lactating buffalo for regular supply of milk. This practice has resulted into losses of potential resources which could have been utilized for further lactation. Rehabilitation of dry buffaloes has drawn considerable attention as prices of milking animal has gone up these day from 50% to 100% in different place (Pradhan et al., 2008).

DDC in its annual report reported that the milk prices at the collection centres vary from place to place. The price mostly depends upon location and the distance of the collection centre and transportation cost involved. Price at far distance sites is usually low paid. Dairy Development Corporation (DDC) reported varied price for flush and lean season and also considering the distance sites (DDC, 2008).

Biesh “Biju” (2013) in his article stated that past initiatives for the cooperative movement in Nepal have not shown much impact on the overall food self sufficiency, agricultural commercialization, and socio- economic transformation of the nation. A scientific farmer cooperative movement that empowers farmers, commercializes agriculture, enhances food security, transforms socio- economic conditions, and contributes to rural development in Nepal is necessary. A renewed and revitalized cooperative movement should be all inclusive, fully managed at the grassroots level, and must have strong governmental support in terms of cooperative formation and safeguarding. Appropriate educational, research and extension support programs are essential for a successful cooperative movement. Farmers’ income and quality of life must be the yardstick of success of the cooperative movement in Nepal (Biesh “Biju”, 2013, January 27).

NDDDB (2013) in its annual report stated that a cow in Nepal produces 432 litre milk annually on an average compared to 1,129 litres in India. A cow in Israel produces the highest 9,405 litres milk on an average annually. “Generally, poor breed of the cattle, declining grazing areas and insufficient technical support to improve productivity are the major reasons behind the low productivity.” Said experts at a workshop organized to discuss the proposed 20 year Dairy Development Vision (2013-33). As a result, Nepal is facing milk deficit despite having adequate animals. This has discouraged low income farmers.

There are an estimated 7.2 million cows and 4.6 million buffaloes in the country, according to NDDDB (NDDDB, 2013).

MoF (2014) showed the total number of cattle in Nepal is expected to drop by 1.17 percent reaching nearly 7,188,000 as compared to that of previous year. Of the total number of cattle, the number of milching cows has stood at 1.02 million (14.0 percent). The number of improved cows is on the rise. Likewise, the number of buffaloes is estimated to decrease by 1.89 percent reaching

5,143,000. Of the total number of buffaloes are estimated to remain at 1,304,000 (26.0 percent). The number of lactating buffaloes has decreased by 4.75 percent compared to that of previous year.

The production of cow and buffaloes milk (excluding Yak) is estimated to remain at around 1,698,000 MT in the current fiscal year 2013/14 which is higher by nearly 1 percent compared to previous year. Of the total milk production, the share cows' milk is estimated to remain at 562,000 MT while that of buffalo milk to remain at 1,135,000 MT. Despite the number of buffaloes in recent days has dropped, cow's milk production has increased as a result of flourishing improved cow raising business (MoF, 2014).

## **2.2 Empirical Review**

### **2.2.1 At International Level**

Sollod (1996) in his paper has highlighted the major marketing constraints on dairy products. The main constraints are; delivering milk from farm to plant and plant to market (transport and chilling), lack of strategic marketing plan (future directions and approach, supply demand relation etc.), lack of well defined and optimized marketing channels, lack of public awareness of nutritional benefits and consumer confidence, inability to differentiate between public and private markets, farm inputs not synchronized with farm outputs, etc. He also presents the results the poor marketing. According to him, fewer people, especially children enjoy the nutritional and aesthetic benefits of dairy products, farmers earn less cash income and dairies don't realize their profit potential, dairy animals suffer from malnutrition.

If milkable cows and buffaloes are inadequately fed and malnourished, there exist some effects such as ; they produce less milk and proportionately more feed is used to keep them alive (maintenance requirement), they produce more harmful methane gas that is released into air by eructating (belching). The



methane gas accumulates in the atmosphere and causes global warming, which will cause suffering for our children. Human treatment should prevent animals from suffering from malnutrition (Sollod, 1996).

ANZDEC (2002) in its publication stated the seasonality of milk production is related with 1) Onset of parturition 2) Onset of monsoon and 3) Availability of green grasses. Milk production in Nepal has two seasons; Flush and Lean season. First half of the lactation period is a flush season i.e. high milk production in which milk is produced for 5-6 months while the second half of 5-6 months is a lean season (lower milk production), Flush season usually starts from August/September and lasts until January/February that is milk production is increased from the month August/September and contiguous its peak production up to December/January and starts decreasing in January/February. The lean season or the low production period starts from February/March / April and lasts until August / September where milk yield continuously decreasing and reaches lowest in August/ September./ During the flush season, the Lactating cows / Buffaloes after parturition obtain sufficient green grasses to eat during monsoon and early winter months resulting into more milk production. While in the lean season, the availability of green forage reduced to almost zero during spring and summer dry months causing lowest milk production (ANZDEC, 2002).

Kharel (2005) in his thesis has analyzed the cost aspect of milk production. He describes about the dairy farming of Sikkim, India. The main objectives of his study are; to find socio economic condition of farmers, trend of milk collection and marketing and to find the problems and suggest necessary measures for overcoming them in Sikkim. Researcher uses primary as well as secondary source of data. In primary sources, he uses field survey questionnaire and secondary data are gathered through the government, NGO/INGO, National Dairy Development Board, Sikkim milk union journals and so on.

The researcher finds that after establishment of milk collection centre, farmers were increased cross breed cows instead of local cows. Total milk collection among samples households was estimated 390 liter per day. After establishment of milk collection centre, the amount of milk sales was increased day by day. Income from selling milk and milk product is Rs. 8340 per year. the dairy income is spent in various items. 25 percent households spend the dairy income in overall domestic expenses. The price of standard milk is Rs 10 to Rs12 per litre which has 4 percent fat and 7.5 percent SNF per litre in milk. The researcher finds several problems in the study area on dairy farming such as problem in credit facilities, veterinary, insurance, fodder, price of milk, improved breed, quality diet etc (Kharel, 2005).

Swanepoel, in his thesis states that the objective of the research was to quantify the economic contribution of the Colorado dairy industry. Using an I- O model the industry was analyzed, for each of the four separate sectors within the Colorado dairy industry, dairy producers, fluid milk and butter manufactures, cheese manufactures, ice cream and frozen dessert manufactures. After estimating the economic contribution of each sector alone, the four individual components were aggregated into one industry. The quantification of the industry allows for future policy decisions to be made with the necessary knowledge, it provides an understanding of the social impact of the dairy industry, details the impacts on related industry, and allows for the long term benefits of the industry to be effectively analyzed.

Primary results generated from the IMPLAN estimation were the total output from each of the four industries; \$ 593,525,940, \$ 1,601,698,242, \$ 766,750,610, \$ 61,544,628 respectively. This results in a combined economic contribution of over \$ 3 billion to the Colorado regional economy. Dairy producer industry created a total of 2,270 jobs in the economy, fluid milk and butter manufacturing, 1,140 cheese manufacturing 773, and ice cream and frozen dessert manufacturing created a total of 150 jobs in the regional

economy. The total dairy industry combined to produce 4,333 jobs in the Colorado economy (Swanepoel, 2014).

### **2.2.2 At National Level**

Pradhan (1994) in his dissertation studied cost aspect of milk production of Panauti of Kavre district. According to him higher maintenance cost per day was observed on single buffalo stall is compared with more than one buffalo stalls. It was from 46.28 to 60.00 respectively. Pradhan also showed that feed cost constituted more important items of total cost account about 64 percent to 72.2 percent for one buffalo stall and more than one buffalo stall respectively. Similarly labour cost also computed that about 16 percent of total cost of one and more than one stall buffalo respectively. He also suggests that average per day yield of buffalo milk is depending not upon the size stalls. However, it depends on the superior breed of buffaloes and well management as well as qualitative feed of the buffaloes (Pradhan, 1994).

NDDDB (1997) in its study shows the cost of milk and income. The highest loss in milk per litre has found in Panchkhal and Morang Rs. 10.26 to 11.07 respectively. Similarly, lowest has found in Fickle (Ilam) Rs. 3.55. Above given loss was calculated with labour cost of DDC. The study has conducted milk cost analysis between three different chilling centres. The central milk producer co-operatives union have submitted memorandum to NG/Nepal mentioning a demand that buying price of milk and commission rate provide by the DDC should be increase in proportion to the percent increasing price of the daily consumer goods. In such a situation, the study report recommended that the sub-committee also necessary to review the existing price of milk in order to provide to the farmer (NDDDB, 1997).

Gautam (2000) in her thesis has evaluated the economic impact of the DDP on the economic status of the farmers of Dhikurpokhari VDC. The main objectives of her study are; to compute the cost of production of milk in Dhikurpokhari

VDC and compare it with current market price and to find the main problems faced by the farmers. The study is based upon primary data assembled from the VDC through field survey. Publications of the DDC, Cooperatives office (Milk Collection Centre) etc. are taken as secondary data. Out of 300 farmers registered in Nagdhunga Dugdh Utpadan Sanstha, 20 percent has been taken as sample.

In the study, the researcher finds that the average cost of production of milk including the implicitly cost (service cost) is Rs. 20.11 per litre where the current market price of milk is Rs 15.72. This difference shows the farmers incurring low of RS 4.39 per litre. This implies that the economic status of the farmer is not improved (Satisfactory). Gautam found so many problems like fodder, veterinary; credit facilities, pasture land, low price of milk etc. are in dairy farming. To solve these problems, researcher states that the DDP has to establish its own industry for supplying feed, training to farmers, low interest should charged milk price should increase (Gautam, 2000)

Awasthi (2005) in his thesis has analyzed the cost aspect of milk production. He has selected 60 farmers with method of simple random sampling. The main objective was to analyze the cost of production situation of dairy livestock.

In his study, it was found that per day per milking buffaloes average total cost was Rs. 124.95, feeding cost Rs 43.37, labour cost Rs 43.00 and cost of per litre milk Rs. 17.46. The study revealed that average per day yield of milk 7.18 litre. Average per litre price of milk Rs. 20.90, average per day revenue from milk Rs. 151.67, revenue from sale of calf Rs. 10.22, revenue from compost fertilizer Rs 20.00 and total income Rs. 200.01(Per day per buffalo). The main problems of dairy livestock of the study area were low price of milk, milk holiday and general strike (Awasthi, 2005).

Sharma (2008) in his case study of Baglung milk producer's cooperatives Union, Baglung analyzed the impact of BMPCU on the economic status of the

milk producers who are engaged in MPCs. This study is prepared on the basis of both primary as well as secondary data.

A sampled household, in average spend Rs. 2207.90 per month on his/her milking cattle to produce 209.52 litres of milk. Out of 209.52 litres, farmers sell only 133.79 litres milk and 75.72 litres of milk is consumed by themselves. Thus, the average cost of production of per litre milk is Rs. 10.53 ( $2207.90/209.52$ ). The average transportation cost from collection centre to BMPCU is Rs 4.50; the total average cost of per litre milk is Rs. 14.53 ( $10.53+4$ ). The average selling price per litre milk is Rs 27. Therefore, the farmers earn net Rs. 12.47 per litre of milk. The average monthly income from selling milk products (ghee) is 253.06 per household (Sharma, 2008).

Karki (2010) in his thesis worked on the cost aspect of milk production in Tansen municipality of Palpa district. The main objectives of his study are; to analyze the situation of milk production, to determine the share of various components of cost in the total cost, to compare the cost of milk production with price paid to the farmers and to determine the optimum level (i.e. profit maximizing level) of milk production.

Researcher used primary as well as secondary sources of data and the research design in this study is descriptive as well as analytical. The researcher finds that the DDC provides average per litre cost Rs 26 to the farmers of Tansen. The average per day income per milkable buffalo has been calculated by the multiplication of average dairy milk production per buffalo and average price paid by DDC per litre of milk. The average income per day per milk able buffalo according to the size of stall has ranged from Rs. 154.96, Rs. 161.2 and Rs 161.2 for one, 2 - 3 and 4 - 5 buffaloes stalls respectively. It shows that more than one buffaloes stall income is higher than the income of one buffalo stall due to increase in per day average milk produce (Karki, 2010).

Aryal (2012) in his research paper has analyzed that the cost aspect of milk production in Tasarpu VDC of Dhading district. He selected 30 farmers as sample

to achieve the objectives. In his study, researcher finds that per day per milking buffalo average total cost is Rs. 171.54. Out of total cost, feed cost constituted to be the most significant component. It is found that average feed cost per day per buffalo is Rs. 91.52. Similarly, labour cost, interest cost, cost of utensils, maintenance cost and medicine cost per day per buffalo is Rs. 60.50., Rs. 12.28, Rs. 3.26, Rs. 2.06, and Rs. 1.92 respectively.

Similarly, it is found that the total income per day per buffalo is Rs. 192.85, profit is Rs. 21.32, total milk production is 6.73 litres and per litre cost of milk production is Rs. 25.77 (Aryal, 2012).

Acharya (2012) in his thesis has analyzed the livestock farming and cost of buffalo milk production in Ugratara VDC of Kavrepalanchowk district. The general objectives of his research are to study the livestock farming trends in Nepal, to identify per unit (Per litre) cost of milk production of buffaloes according to size of stall, to compare the cost of milk production and price of milk paid by DDC.

From the study it is found that per day per milking buffalo average total cost were Rs. 32.80 , Rs. 31.20 and Rs. 29.40 for one, two and three buffalo stalls respectively in the single buffalo stall has higher total than other so that farmer should keep more than one buffalo for milk production to get more profit. Among the cost component feed cost constituted to be the most significant component cost. It varied from Rs. 120.33 for one buffalo stall, 103.18 for two buffalo stall and 92.65 for three buffalo stall respectively. Labour cost varied from Rs 60.50, Rs. 44.25 and Rs. 46.83 for one buffalo stall, two buffalo stall and three buffalo stalls respectively. The labour cost also decreasing when buffalo stalls and increased (Acharya, 2012)

Timilsina (2014) in his thesis has concluded that the livestock farming is one of the important sources of earning cash income. Livestock farming and agriculture are closely related. Livestock keeping, specially milking livestock keeping provides manure for agriculture on the one hand and milk and milk products are beneficial for our health on the other. In Syangja, people have been keeping

livestock from the ancient period but history of commercialization of livestock is very short. Very few farmers who are near to the city have sold milk to the open market. The price of per litre milk was very low at that time. For making commercialization and respective occupation, AMPCS is established and it started to milk collection.

In the initial stage of establishment of AMPCS, the amount of collection of milk is small but in the recent year the amount of milk collection is increased. More and more farmers are engaged on dairy farming in the study area. Dairy farmers have been taken various facilities from the AMPCS. Subsidization of loan, daily milk selling, training and field visit etc. are the major facilities of AMPCS. The activities of AMPCS have affected the economic life of the farmers of Syangja. After establishment of AMPCS, the production of milk, farmers' income level, employment level etc are increased and the livestock keeping is going towards its commercialization. It also helps to reduce the cost to production and transportation, minimization of risks and uncertainties of livestock farming (Timilsina, 2014).

### **2.3 Research Gap**

After analyzing the above literature, most of the researches are related to the existing situation of dairy cooperatives cost of milk production, quality of milk, problems and prospects of dairy farming, marketing system of dairy product and so on. However, among these researches most of the researchers are concern about the cost of milk production. Most of the people in Nepal are fulfilled their daily demand and need by selling milk. Therefore, comparatively my study is also not differing than other but this study is trying to find the present situation of cost and benefit of milk production. It focuses on the situation of cost and benefit of milk production in Kanyam VDC of Ilam district.

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

A systematic research study needs to follow a proper methodology to achieve the predetermined objectives. Research methodology is a sequential procedure and methods to be adopted in a systematic study. This section deals with the methodology used in this research and is divided into introduction of the study area, research design, sources of data, population and sample, sampling procedure, method of data collection, questionnaire and interviews, methods of data analysis and so on.

#### **3.1 Introduction to the Study Area**

Kanyam VDC is one of the 48 VDCs of Ilam districts which is located about 50 km south- east from the Ilam municipality. Kanyam VDC is linked with Mechi highway. Shree Antu VDC is the east corner of Kanyam VDC (study area), whereas Panchakanya VDC is the west corner. Similarly, Jirmale VDC is south corner and Fikkal VDC is north corner. The residents of this VDC are of different castes like Brahman, Chhetri, Tamang, Gurung, Rai, Lapcha etc. Most of the people of this VDC are engaged in dairy farming as well as tea production. Kanyam VDC has high potentiality of dairy farming.

This VDC is famous for milk production in Ilam district. There are sixteen milk collection cooperatives. These milk collection cooperatives are organized by the local farmers with the help of District Livestock Service Office (DLSO) and DDC. Among these cooperatives, nine cooperatives are supplying milk to DDC and rest of others are supplying milk to Kamdhenu Dugdha Sansthan. Approximately 2800-3000 litres per day of milk are collected by these cooperatives from Kanyam VDC. In this area the main purpose of keeping livestock specially cow is to produce of milk. Here, Kanyam Dugdha Chisyan Kendra and Kolbung Chisyan Kendra are the nearest chilling centres which are



providing service for milk collection under Kamdhenu Dugdha Sansthan and DDC respectively.

### **3.2 Research Design**

This study focuses on the cost and benefit aspect of milk production. This research is mainly based on primary source of data. Primary data were collected through field survey by using structured questionnaire. This study is descriptive as well as analytical in nature. Quantitative as well as qualitative data were collected for the study.

### **3.3 Nature and Sources of Data**

The thesis report is both in descriptive as well as analytical in nature. Generally, two types of data were found to be used in research purpose. They are primary and secondary data. It is fact that the primary data has the close proximity with realism. Thus, to fulfil the predetermined objectives of the present analysis, greater emphasis has been laid to primary data. Primary data has been collected by personal interview and the field survey at Kanyam VDC with structured questionnaire. However, some of the secondary data (available from governmental, non- governmental organizations) are also used to supplement the analysis, wherever necessary. To sketch the background of the study, a heavy reliance is put on secondary data. The sources of secondary data have been listed in the reference.

### **3.4 Population and Sample**

Kanyam VDC is the targeted area of the study. Altogether there were 635 household involved in dairy farming. Out of the population 65 farmers were selected as a sample for present study with the method of judgement sampling. Thus, the selected 65 household (10.24 percent of the population) represents the sample of the study.

### **3.5 Sampling Procedures**

It is not possible to interview all the farmers of the study area. Therefore sampling method has been used for the study. First of all, name and address of the total dairy farmers was collected from the dairies in Kanyam VDC and by the help of judgement sampling 65 dairy farmers were selected for the present study. Judgement sampling is a type of non- probability sampling. In this design the selection of sample units depends upon the judgement of the researchers. For data collection process researcher himself travelled door to door and met the farmers of the selected sample and with the help of interview schedules, necessary data and information were obtained from the selected sample.

### **3.6 Methods of Data Collection**

There are different types of data collection methods. Out of them direct personal interview and questionnaires (interview schedule) are more effective. So the interview method has been used in the present study. For the collection of first hand primary data researcher himself met the dairy farmers travelling door to door. It is because; most of the farmers in rural area like Kanyam are illiterate so they are unconscious about their responsibility and contribution for the national development. They may not give or response fully to other types of data collection method. So, one way to minimize the non- response error, direct personal interview with structured questionnaire can be the best way in data collection. Therefore in this study, researcher has used this method of data collection.

In addition, the secondary data available from governmental, non-governmental and semi- governmental organizations was collected to supplement the background of the study. Such data was obtained from books, journals, annual reports of DDC, newspapers and other governmental offices and from their websites.

### **3.7 Questionnaire and Interviews**

Questionnaire and interviews are the methods of primary data collection. This method has adopted with the help of questions schedule. Since questions schedule was formed according to the targeted problem. So in this research, structured questionnaire was designed to fulfil the predetermined objectives of the study. With the help of structured type of question, the direct interview was conducted on the spot with sampled respondents.

### **3.8 Presentation, Analysis and Interpretation of Data**

First of all, primary data obtained from the field survey were tabulated. Primary data on different components of cost, was collected in traditional units have been converted into standard units. For example; mana, pathi are converted into 'kg' and then their monetary value was calculated. The values of feeds (hay, maize, rice bran, wheat bran, medicine etc.) were computed by multiplying of their respective prices. Therefore, total cost was computed by adding the cost associated with all inputs. Similarly, total income was computed by adding all income headings. For the analytical purpose the quantitative data have been presented in tabular form. And then simple statistical tools like percentage, average have been used to present and analyse the findings.

## **CHAPTER IV**

### **DATA ANALYSIS AND PRESENTATION**

Livestock farming plays an important role in Nepalese economy. It contributes one third to the total agricultural GDP. Moreover, Nepalese agriculture is characterized by subsistence type where crop and livestock based farming system has been adopted. In such a case livestock farming has significant role. Livestock also plays vital role in socio-economic lives of Nepal. The economic support to household is the biggest contribution of livestock. The major contribution of livestock is to supply milk, meat, wool, skin, bones etc. Milk and meat are the main source of protein in Nepalese diet. Besides, wool, hide, bone are used as raw materials for livestock based industries. Milk is one of the economic transactions of farm households. Buffaloes, cows, Yaks are mainly domesticated for milk. Milk provides many kinds of nutrients and vitamins for human body, which are very much essential for the growth and development.

#### **4.1 Population and Production of Livestock in Nepal**

Livestock sector plays an important role for the less developed country like Nepal, whose economy is largely based on subsistence agriculture. In Nepal cattle and buffalo are the main dairy livestock. They are kept for milk production whereas goat, sheep, pigs are kept for meat and chicken and duck for eggs.

### 4.1.1 Livestock Population of Nepal

**Table: 4.1**

#### **Livestock Population of Nepal**

<b>Category</b>	<b>2008/09</b>	<b>2009/10</b>	<b>2010/11</b>	<b>2011/12</b>
Cattle	7175198	7199260	7226050	7244944
Buffaloes	4680486	4836984	4993650	5133139
Sheep	802993	801371	805070	807267
Goat	8473082	8844172	9186440	9512958
Pigs	1044498	1064858	1108465	1137489
Fowl	24481286	25760373	39530620	45171185
Duck	383123	379753	378050	376916
Milking Cow	932876	954680	974122	998963
Milking Buffaloes	1211495	1252770	1291644	1331037
Laying Hen	7124054	7290875	7478645	7907468
Laying Duck	179187	175300	175150	174978

Source: *Agri-Business Promotion and Statistics Division,  
Ministry of Agriculture & Co-operatives (2012)*

In Fiscal year 2013/14, the total number of cattle in Nepal is expected to drop by 1.17 percent reaching nearly, 7,188,000 as compared to that of previous

year. Of the total number of cattle, the number of milching cows has stood at 1.02 million (14.0 percent). The number of improved cows is on the rise. Likewise, the number of buffaloes is estimated to decrease by 1.89 percent reaching 5,143,000. Of the total number of buffaloes, the Lactating buffaloes are estimated to remain at 1,304,000 (26.0 percent). The number of lactating buffaloes has decreased by 4.75 percent compared to that of previous year. In FY 2013/14, the number of sheep is estimated to remain around 789,000 and the number of goats at 10,179,000. The number of sheep is estimated to decrease by 2.51 percent while that of goats to increase by 4.2 percent as compared to that of previous fiscal year. Similarly, the number of pigs is expected to rise by 5.6 percent as compared to that of previous fiscal year reaching 1,225,000

As compared to previous year, the number of fowl is estimated to decrease by 4.67 percent from 48,000,000 reaching 45,700,000 in fiscal year 2013/14. Though business of broiler chicken has been flourishing in Nepal, its production is expected to fall this year due to low import of layer parent stock caused by bird flu outbreak in the districts including Bhaktapur. The number of ducks is estimated to increase by 3.79 percent reaching 390,000. Of the total number of fowl, the number of egg laying chicken is estimated to remain at 8,031,000 while the number of egg laying duck out of total number ducks to remain at 180,000. The number of yaks and rabbits in current fiscal year is expected to reach of 61,045 and 25,437 respectively. Similarly, the numbers of horse / donkey are estimated to stand at 49,426.

**Table: 4.2****Description of Animal and Fowls**

Types	Fiscal Year		
	2013/14	2012/13	2011/12
Cow	7188940 (-1.17)	7274022 (0.41)	7244944 (0.26)
Buffalo	5142910 (-1.89)	5241873 (2.13)	5133139 (2.79)
Sheep	789180 (-2.51)	809536 (0.28)	807267 (0.27)
Goat	10179321 (4.02)	9786354 (2.87)	9512958 (3.55)
Pig	1225035 (5.6)	1160035 (2.00)	1137489 (2.62)
Chicken	45719377 (-4.67)	47959239 (6.17)	45171185 (14.27)
Duck	390209 (3.79)	375975 (-0.25)	376916 (-0.30)
Mulching Cow	1020175 (-0.53)	1025591 (2.67)	998962 (2.55)
Mulching Buffalo	1304686 (-4.75)	1369796 (2.94)	1331039 (3.05)
Egg Laying Chicken	8031616 (2.45)	8233616 (4.12)	7907469 (5.73)
Egg Laying Duck	179447 (2.71)	174714 (-0.15)	174981 (-0.10)

Note: Numbers in brackets denotes growth in percent as compared to that of previous fiscal year.

Source: Annual Report (2014), Ministry of Agriculture Development

#### **4.1.2 Status of Domestic Animals /Fowls Production**

The production of cow and buffaloes milk (excluding Yak) is estimated to remain at around 1,697,000 MT in the current fiscal year 2013/14 which is higher by nearly 1 percent compared to previous year. Of the total milk production, the share of cow's milk is estimated to remain at 562,000 MT while that of buffalo milk to remain at 1,135,000 MT. Despite the number of buffaloes in recent days has dropped, cow's milk production has increased as a result of flourishing improved cow rising business. As compared to previous year, the total meat production of Nepal is estimated to increase by 0.15 percent reaching 295,000 MT. Of the total meat production, production of buffalo's meat is estimated at around 173,000 MT (58.0%), sheep at 2652 MT (1.0%), goat (castrated / non – castrated) at 59050 MT (20%), pig at 19.860 MT (7.0%), Fowls at 40,690 MT (13.0%) while that of ducks meat is estimated to remain at 227 MT (1.0%).

As compared to the previous fiscal year, total eggs production is estimated to drop by 5.0 percent in the current fiscal year reaching 799 million eggs. Of this total, the chicken shares 785.6 million while duck shares 13.4 million units. Similarly, wool production from sheep is estimated to reach 586 MT. Fish production in the current fiscal year is estimated to reach at 65,757 MT with about 14.0 percent growth. Fish campaign programs organized in various districts of the country has attributed to increase in its production.



**Table: 4.3**  
**Production of Animal and Fowls**

Production types	Fiscal Year		
	2013/14	2012/13	2011/12
<b>Milk Production (MT)</b>	1697760 (1.01)	1680812 (3.60)	1622751 (4.2)
Cow	562684 (14.28)	492379 (5.00)	468913 (4.85)
Buffalo	1135076 (-4.49)	1188433 (3.02)	1153838 (4.0)
<b>Total Meat Production (MT)</b>	295603 (0.15)	295167 (2.51)	172414 (2.70)
Buffalo (Male)	173124 (-1.15)	175132 (1.58)	172414 (2.70)
Sheep	2652 (-2.54)	2721 (0.04)	2720 (-0.07)
Goat	59050 (6.25)	55578 (3.02)	53956 (2.97)
Pig	19860 (6.15)	18709 (2.36)	18277 (1.97)
Chicken	40690 (-4.95)	42810 (6.86)	40346 (11.80)
Duck	227 (4.61)	217 (-0.46)	217 (-3.57)
<b>Egg Production (In 1000 unit)</b>	799054 (-4.75)	838940 (4.69)	801370 (13.80)
Chicken	785651 (-4.87)	825890 (4.77)	788310 (14.0)
Duck	13403 (2.70)	13050 (-0.07)	13060 (-0.03)
<b>Wool Production (kg)</b>	586830 (-0.17)	587834 (0.14)	587017 (0.13)
<b>Fish (MT)</b>	65770 (14.35)	57515 (2.71)	56000 (6.76)

Notes: Numbers in brackets denotes growth in percent as compared to that of previous fiscal year.

Source: Annual Report (2014), Ministry of Agriculture and Co-operative Development

### 4.1.3 Milk Production of Nepal

**Table: 4.4**

**Number of Milking Cows, Buffaloes and Average Milk Production.**

Years	Cow		Buffalo		Total Milk Production (MT)
	Numbers of Milking Cows	Milk Production (MT)	Number of Milking Buffaloes	Milk Production (MT)	
2011/12	998962 (2.55)	468913 (4.85)	1331039 (3.05)	1153838 (4.0)	1622751 (4.2)
2012/13	1025591 (2.67)	492379 (5.00)	1369796 (2.94)	1188433 (3.02)	1680812 (3.60)
2013/14	1020175 (-0.53)	562684 (14.28)	1304686 (-4.75)	1135076 (-4.49)	1697760 (1.01)

Notes: Numbers in brackets denotes growth in percent as compared to that of previous fiscal year.

Source: Annual Report (2014), Ministry of Agriculture Development

We find the cows and buffaloes to be the main source of milk production in our national context. In 2013/14, out of the total population of buffaloes and cows, only 130486 buffaloes and 1020175 cows are said to be milking and a total of 1697760 MT milk was produced in the country. Of which, the share of buffalo milk was 1,135,076 MT (66.86 percent) and cow milk was 562,684 MT (33.14 percent). Total milk output has been increased by 1.01 percent as compared to the 2012/13.

As compared to 2012/13 the numbers of milking cows and buffaloes have decreased by 0.53 percent and 4.75 percent respectively in 2013/14. On the other hand, as compared to 2012/13 cow milk production has increased by 14.28 percent and buffalo milk production has decreased by 4.49 percent in 2013/14.

#### 4.1.4 Total Production of Milk and Milk Products by DDC

Buffaloes and cows are found to be the main source of milk production. Due to unavailability of statistics the contribution of Yaks and chauris were not included in the total milk production and this is the only production of processed milk by DDC. Private dairies and home consumed is not included. Amount of milk and milk production are given below in Table 4.5

**Table: 4.5**

##### **The Total Production of Milk and Milk Product**

<b>Particulars</b>	<b>2010/11</b>	<b>2011/12</b>	<b>2012/13</b>
Milk Collection (Litre)	55509853	62138181	65786256
Milk Production (Litre)	72886437	85592467	62034792
Butter Production (Kg)	800650	769526	963224
Ghee (Litre)	542988	642906	577926
Yoghurt (Litre)	2996241	3082194	3096685
Cheese (Kg)	230559	232528	237285
Ice cream (Litre)	82881	107346	78928
Paneer (Kg)	145344	162212	171034
Skimmed Milk Powder (Kg)	453775	879075	747731
DDC Fresh (Litre)	100046	74985	83257
Lalmohan (Pack)	95621	95698	89414
Peda (Pack)	41405	31223	35063
Rasbari (Pack)	70794	53378	73512

Source: [http://www.dairydev.com.np//Annual Report \(2013\), Dairy Development Corporation, Nepal](http://www.dairydev.com.np//Annual Report (2013), Dairy Development Corporation, Nepal).

## 4.2 Socio-Economic Characteristics of Milk Producers

Socio-economic characteristics include ethnicity, age of respondents, size of land holding and family size. The analysis is based on the sampled households in the study area.

### 4.2.1 Ethnic Composition

There are multi ethnic people resided in Kanyam VDC of Ilam district. To estimate the ethnic composition, the sample was categorized in different caste and the result obtained is presented into following Table:

**Table: 4.6**

**Ethnic Composition of Sample Household**

S.N.	Caste	Number of HH	Percent
1	Brahman	22	33.85
2	Chhetri	14	21.54
3	Lapcha	6	9.23
4	Rai	9	13.85
5	Shrestha	4	6.15
6	Tamang	10	15.38
	Total	65	100.00

Source: *Field survey, 2014*

Table 4.6 shows that out of 65 sampled households, 22 households were Brahmin, 14 households were chhetri, 10 households were Tamang, 9 households were Rai, 6 households were Lapcha and 4 households were Shrestha. This table has indicated that Brahmins are in major number of households of sampled respondents in the study area.

#### 4.2.2 Age of Respondents

The age of respondents of sampled households ranged from 23 to 68 years. Age of respondent is related to the duration of livestock farming. It is expected that older person is capable to handle the service than younger person due to their experience. To compare the condition, the respondents were asked to provide their age. The data obtained for this aspect are summarized in following Table:

**Table: 4.7**

#### **Age Group of Respondents in the Study Area**

<b>S.N.</b>	<b>Age Group</b>	<b>No. of Respondent</b>	<b>Percent</b>
1	15 – 30	10	15.38
2	31 – 45	28	43.08
3	46 - 60	21	32.31
4	61 and above	6	9.23
	Total	65	100.00

Source: *Field survey, 2014*

Table 4.7 shows that out of 65 sample households, 10 respondents were with 15-30 age groups. Similarly, 28, 21 and 6 were with 31-45, 46-60 and 61 above age groups respectively. This table shows that with age 31-45 are involved more than others age group in keeping livestock. The average age of respondents of dairy farmers was 42.80 years.

### 4.2.3. Family size of the Sample Households.

Family size and number of livestock might be related. Family size is the factor affecting to look after livestock rising. Larger the size of family, greater the number of labour to look after livestock. On the other hand, larger the size of family greater demand for milk inside the family. The family size of sampled household is shown in Table 4.8.

**Table: 4.8**

#### **Family size of the sample Household**

<b>S.N.</b>	<b>Family size</b>	<b>No. of respondents</b>	<b>Percent</b>
1	0 – 5	13	20.00
2	6 – 10	41	63.08
3	11 and above	11	16.92
4	Total	65	100.00

Source: *Field survey, 2014*

Table 4.8 shows family size group of respondents. The numbers of respondents 13, 41 and 11 were with the family size group of 0-5, 6-10 and above 10 respectively. The size of family of respondents with 6-10 is larger than other groups.

### 4.2.4 Size of Land Holding

Size of land holding is an important indicator of economic status in the society. It is expected that farmers having larger size of land, then they are capable to keep livestock more and vice-versa. To find out the relationship, the respondents were asked to know about their land holding. The data obtained in local unit (Ropani) of land were converted into standard metric system units and their average size of holding is presented in Table 4.9

**Table: 4.9**

**Size of Land Holding Households in Study Area  
(1 Hectare = 19.65 Ropani)**

<b>S.N.</b>	<b>Land size (in Hectare)</b>	<b>No. of HH</b>	<b>percent</b>
1	0 – 2	22	33.85
2	2 – 4	32	49.23
3	4 – 6	8	12.31
4	6 and above	3	4.62
	Total	65	100.00

Source: *Field survey, 2014*

Table 4.9 shows that out of 65 dairy farmers, 22 households belonging to the size of land holding group of 0-2 hectare. Similarly, 32, 8 and 3 households were with the 2-4, 4-6 and 6 above size of land holding group respectively.

#### **4.2.5 Size of Milkable Cattle Stalls of the Sampled HH**

Most of the farmers in Kanyam VDC are rearing cow for the purpose of milk production. There are different sizes of cow stalls in Kanyam VDC. According to field survey, we can summarize the obtained data in tabular form.

**Table: 4.10**

**Size of Cow Stalls in the Study Area**

<b>Size of Cow Stalls</b>	<b>No. of Households</b>	<b>Percent</b>
One Cow Stalls	13	20.00
Two Cow Stalls	25	38.46
Three Cow Stalls	15	23.08
Four Cow Stalls	8	12.31
Five Cow Stalls	4	6.15
Total	65	100.00

Source: *Field survey, 2014.*

Table 4.10 Shows that out of 65 dairy farmers 13 households are keeping one cow stalls. Similarly 25, 15, 8 and 4 households are keeping two, three, four and five cow stalls respectively. It is found that most of the farmers are rearing milkable livestock according to their land holding. Most of the farmers in Kanyam VDC belonging to the size of land holding group of 2-4 hectare. So, this size of land is appropriate to keep two cow stalls.

### 4.3 Milk Collection Centres

This VDC is famous for milk production in Ilam district. There are sixteen milk collection cooperatives. These milk collection cooperatives are organized by the local farmers of Kanyam VDC. It is also another important factor in development of dairy farming. Among sixteen milk collection centres, nine cooperatives are supplying milk to DDC and rest of others are supplying milk to Kathmandu dugdha Sansthan. Here Kanyam Dugdha Chisyan Kendra and Kolbung Chisyan Kendra are the nearest chilling centres which are providing service for milk collection under Kamdhenu Dugdha Sansthan and DDC respectively. Ward wise milk collection centres of Kanyam VDC are presented in following Table.

**Table: 4.11**

#### Ward Wise Milk Collection Centre of Kanyam VDC

Ward No.	1	2	3	4	5	6	7	8	9
Milk collection Centre	2	2	3	2	1	1	1	2	2

Source: *Field survey, 2014.*

### 4.4 Milk Production

Among 16 milk collection centre 65 dairy farmers have selected as a sample for present analysis. Out of them 13 farmers were taken one cow stalls, 25 farmers



were taken two cow stalls, 15 farmers were taken three cow stalls, 8 farmers were taken four cow stalls and 4 farmers were taken five cow stalls. Average milk production of all cow stalls has mentioned in Table below:

**Table: 4.12**

**Average Milk Yield According to the Size of Stalls**

<b>S.N.</b>	<b>Size of Stalls</b>	<b>Per Day Average milk in Litre</b>
1	One Cow Stall	11.50
2	Two Cow Stall	16.18
3	Three Cow Stall	19.67
4	Four Cow Stall	26.81
5	Five Cow Stall	37.87

Source: *Field survey, 2014.*

The table 4.12 shows the average milk yield from different cow stalls. There are five cow stall sizes in Kanyam VDC. It has found that one cow stall average daily milk production is 11.50 litres. Similarly, 16.18, 19.18, 26.81 and 37.87 litres of milk production in two, three, four and five cow stalls respectively. It is found that there were improved breeds of cows in single and five cow stalls. On the other hand, mixed breeds of cows (local, cross and improved) in two, three and four cow stalls. That is why; the increasing trend of milk production in these sizes of stalls is low. So, the ratio of milk production of single cow stalls and five cow stalls are greater than the others. Because improved breeds of cows have more productivity than local and cross breeds.

Farmers cannot buy improved and crossed breeds of cows due to different factors like high dependency ratio in family, least amount of land holding, income level is very low, cost of improved and crossed breeds of cow is very high and farmers are not get training about livestock raising from relative institutions.

Due to lack of awareness, modern technology and nutritional aspects are ignored. So, the domestic animal's health care also ignored due to the unconsciousness of farmers. However, very limited farmers has found conscious about nutritional aspect and livestock rising. This is because the training given by District Livestock Service Office (DLSO) does not cover all the farmers.

#### 4.5 Cost of Milk production

There are five categories of cow stalls in the study area. They are one cow stalls, two cow stalls three cow stalls, four cow stalls and five cow stalls. There are four categories of cost components are Feed Cost (FC), Labour Cost (LC), Medicine Cost (MC) and Miscellaneous and Maintenance Cost (MMC). These cost components are taken as variable cost. The cost components are summarized according to the size of cow stalls as Table below:

**Table: 4.13**

#### **Cost of Milk Production According to Size of Stalls**

<b>Size of Cow Stalls</b>	<b>Average Feed Cost (Rs.)</b>	<b>Average Labour Cost (Rs.)</b>	<b>Average Medicine Cost (Rs.)</b>	<b>Average Misc. and Maintenance Cost (Rs.)</b>	<b>Average Total Cost (Rs.)</b>
One cow stall	176.00	156.92	5.66	5.44	344.02
Two cow stall	236.12	164.00	8.17	7.61	415.90
Three cow stall	335.00	231.67	12.65	9.44	588.76
Four cow stall	471.25	331.25	18.39	11.78	832.67
Five cow stall	770.75	412.50	20.26	12.82	1216.33

Source: *Field survey, 2014.*

Table 4.13 shows that, among the cost component, feed cost constitute the most important item of cost accounting. It takes place Rs. 176, Rs 236.12, Rs. 335, Rs. 471.25 and Rs. 770.75 for one, two, three, four and five cow stalls respectively. The share of feed costs are 51.15 percent, 56.77 percent, 57.67 percent, 56.59 percent and 63.37 percent in one, two , three, four and five cows stalls respectively.

Labour cost is another important component of total cost. Farmers work as a labour in the study area. They work for 3-4 hours per day for keeping their milkable livestock. In this area, the cost of labour is calculated in per hour basis. We find that, the average cost of labour for an hour is Rs 33.33. But additionally, they work for cultivation and other work also. Hence true amount of labour cost was not possible to calculate directly. Estimate had been made by the local paying rates for per month or per day hired workers. The work done by family members for their milkable livestock cannot be neglected because of their time do have monetary significance. The family members spent their time to care the cattle were converted based on hired labour cost. In the study area, we find average labour costs of different stalls are differently varied. The average labour cost of single stall is Rs. 156.92. Similarly, the average labour costs are Rs. 164, Rs. 231.67, Rs 331.25 and Rs. 412.50 for two, three, four and five cow stalls respectively. Hence, this result clearly shows that the average labour cost is increasing with the size of stalls but the average labour cost is increasing at a decreasing rate.

Medicine and vitamins are very important to milkable livestock in their lactation period to increase productivity. In the study area, farmers use vitamins hormones and other nutritional products in some special occasions to increase and maintain the milk yield from their animals. Improved and crossed breeds of cows are sensitive than local breeds in order to maintain their health. So, farmers are spending more for improved and crossed breeds of cows. The average medicine costs are different according to the size of stalls. In one cow

stall, Rs. 5.66 is the per day average medicine cost. Similarly, Rs. 8.17, Rs. 12.65, Rs. 18.39 and Rs 20.26 are the per day medicine costs of two cow stalls, three cow stalls, four cow stalls and five cow stalls respectively. Decreasing and increasing of medical cost mainly depends on the lactation period of the milkable livestock in the study area.

Farmers need different types of pots and instruments for dairy farming like feeding pot, doko, ropes, hay cutting machine, sickle, soap/slippers etc. The prices of these instruments are differing and they have different life span. So each of the items expected life is calculated on the basis of information. In present study, average prices of pots or items used in dairy farming are divided by their expected life and daily cost is calculated. The costs of maintenance for different sizes of stalls are calculated on the basis of price of normal expenditure to maintain it yearly. The average per day miscellaneous and maintenance costs are Rs 5.44 , Rs. 7.61, Rs. 9.44, Rs. 11.78 and Rs. 12.82 for one cow stalls, two cow stalls, three cow stalls, four cow stalls and five cow stalls respectively. Therefore, it also shows that the miscellaneous and maintenance costs are increasing with the increase in sizes of stalls.

#### **4.6 Income from Milkable Livestock**

There are one, two, three, four and five cow stalls in the study area. The income from milkable livestock is different according to the sizes of stalls. There are three categories of income components are; income from milk sell, income from calves and manure and other income. Other income includes income from ghee, churpee, lolypop etc. The average per day income from different categories of income from various cow stalls can be presented by following Table:

**Table: 4.14****Per Day Average Income from Milkable Cattle**

<b>Sizes of Stalls</b>	<b>Income from Milk (Rs.)</b>	<b>Income from Calves and Manure (Rs.)</b>	<b>Other Income (Rs.)</b>	<b>Total Income (Rs.)</b>
One Cow Stalls	357.42	56.99	7.32	421.73
Two Cow Stalls	507.00	110.59	29.88	647.48
Three Cow Stall	629.33	173.56	58.14	861.03
Four Cow Stall	854.81	190.35	70.40	1115.64
Five Cow Stalls	1212.00	382.93	131.15	1726.08

Source: *Field survey, 2014.*

The price of milk is paid according to the fat content and SNF. If there is increase in level of fat and SNF then price of milk also increases. From the field survey it has been found that fat contains higher in the winter season than summer season. Despite this, there is no any effect in revenue of farmers in both seasons because in summer season high quantity of milk has been produced than winter. So, it is assumed that winter season is lean season and summer season is flush season in terms of milk production. Basically, lactose, fat and SNF are representing the quality of milk. So, farmers get the price of milk according to these measurements. As a result, farmers get higher price in the lean season from the same amount of milk. Based on the prevailing prices of fat and SNF the price of milk was Rs 29 to Rs 38 per litre in the winter season while it was Rs 27 to Rs 35 per litre in the summer season.

Incomes from milk sale are different according to the sizes of cow stalls. In one cow stalls, average per day income from milk sale is Rs. 357.42. Accordingly, Rs. 507.00 Rs. 629.33, Rs. 854.81 and Rs. 1212.00 are the per day average income of two, three, four, and five cow stalls respectively. We found that the sales amount of milk is increasing with the increase in sizes of stalls. However, income from milk sale is decreasing trend due to mixed of local and cross breeds of cows in more than one cow stalls.

Furthermore, income from calves and manure also plays an important role to total income accounting from milkable livestock. But it is difficult to calculate in per day basis because farmers ignored the income from manure in their income accounting. Farmers have used manure for cultivation and bio-gas plant so it is not monetized directly. But in income accounting process, it gives economic significance. Therefore income from calves and manure is an important component of total income. From the field survey, we calculated Rs. 56.99, Rs. 110.59, Rs 173.56, Rs. 190.35 and Rs. 382.92 are the per day average income from calves and manure for one , two, three, four and five cow stalls respectively.

Other income includes income from ghee, income from churpee, income from paneer, income from lollypop etc. These milk products can be sold easily in the local market. It was found that Rs.7.32, Rs 29.88, Rs. 58.14 Rs. 70.40 and Rs. 131.15 are the per day incomes of one, two, three, four and five cow stalls respectively. It is also increasing with the increase in sizes of stalls.

#### **4.7 Net Profit**

Per day average net profit has been calculated by deducting per day average total cost from per day average total income. Per day average net profit can be shown by the following Table:

**Table: 4.15****Calculating of Per Day Average Net Profit**

<b>Sizes of Stalls</b>	<b>Average Per Day Total Income (Rs.)</b>	<b>Average Per Day Total Cost (Rs.)</b>	<b>Per Day Average Net Profit (Rs.)</b>
One Cow Stall	421.73	344.02	77.71
Two Cow Stall	647.48	415.90	231.58
Three Cow Stall	861.03	588.76	272.14
Four Cow Stall	1115.64	832.67	282.97
Five Cow Stall	1726.08	1216.33	509.75

Source: *Field survey, 2014.*

If the farmers are able to get higher price for their milk production and able to receive loan at lower rate of interest, they could earn more profit. From the field survey, we found that the feed cost only covers 50 to 60 percent of total cost in all cow stalls. To increase profit margin, there is very essential to decrease cost of feed. This can be done by choosing a proper combination of feed. Farmers need to choose nutritional grass instead of expensive grains. Farmers should be trained to gain knowledge about nutritional aspects for their milking animals especially to use alternative low cost feed materials with nutritional richness, use of artificial breeding for improving their animals genetically and health hazards and proper care of their milkable livestock. Animal insurance and regular market are other essential services to make them secure and enthusiastic about dairy productivity.

#### **4.8 Problems of Dairy Farming**

In the study area there are various problems faced by the dairy farmers. Sampled farmers have given multiple responses about the problems of dairy farming. The main problems of dairy farming of the study area are as follows:

1. The price of milk paid by relative institution is very low
2. High price of feeding materials.
3. Lack of improved breeds of milking animal.
4. The price of improved breeds is too high.
5. Lack of proper livestock health service.
6. Lack of improved seeds of grass.
7. Lack of infertile alleviation programs.
8. Lack of appropriate training on livestock rising.
9. Lack of proper management of shed.
10. Lack of nutritional grains to improve the quality of milk.

#### **4.9 Measures to Solve the Problems of Dairy Farming**

Farmers are facing a lot of problems. Their problems are not solved by themselves. The problems are solved participating with government, NDDB, DDC, milk producer cooperatives and NGOs/INGOs. To solve the existing problems of dairy farming, following methods should be adopted.

1. The price of milk should be increased at least covering cost of per litre milk with appropriate profit.
2. Farmers should be trained to make feed for animals from local materials.
3. Improved breed artificial insemination service should be facilitated.
4. Farmers should be provided with advance loan at low rate of interest.
5. Improved breed of calves should be distributed at low price to the farmers.



6. Livestock health service centres should be improved and expanded in village locations.
7. Improved variety of grass seed should be distributed to the farmers.
8. Infertile alleviation program should be lunched.
9. Farmers should be trained to make shed for cattle at low price.
10. Relative institutions, which are performing to dairy sector, should be arranged their market structure by which farmers would get transportation facility.
11. Nowadays milk supply is increasing annually. Therefore, related institution should manage to keep balance with supply and demand of milk by discouraging in import of milk powder from abroad.

## CHAPTER - V

### SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Summary of Findings

The main objective of this study was to identify the cost of milk production and to calculate the benefit of dairy farming. This study also presents some problems faced by the farmers during milk production process and measures to solve these problems on the basis of research findings. The summary of findings is as follows:

- ) The population of cattle is lower than buffalo in Nepal. But in the research area, most of the farmers are keeping cow to produce milk.
- ) Livestock sector can play an important role in different geographical region of Nepal for animal power, cultivation, milk product and manure. Natural manure is the substitution of harmful chemical fertilizer.
- ) Highest percentage of livestock has found in the hills due to lack of alternative occupation for people, availability of forages, proper pastureland and suitable climate condition, etc.
- ) Yak and chauries are the major milk producing species in mountain region. It has found that very little researches have done in the field of Yak and Chauries.
- ) In Nepal cows and buffaloes to be the main source of milk production. There is a small proportion of milk production contributed by Yak and Chauries.
- ) The production of cow and buffaloes milk (excluding Yak) is estimated to remain at around 1,698,000 MT in the current fiscal year 2013/14 which is higher by nearly 1 percent compared to previous year. Of the total milk production, the share of cow's milk is estimated to remain at 562,000 MT while that of buffalo milk to remain at 1,135,000 MT. Despite the number of

buffaloes in recent days has dropped, cow's milk production has increased as a result of flourishing improved cow raising business (Ministry of Agriculture, 2014).

In this present study primary and secondary data were used. For primary data sixty five farmers were selected for interview with judgement sampling. Out of 65 sampled households 13 households were with one cow stalls, 25 were with two cow stalls, 15 were with three cow stalls, 8 were with four cow stalls and 4 were with five cow stalls respectively. From this study, we find the cost of milk production and to calculate the net profit of different stalls and also to suggest the dairy for better profitability on the basis of research findings. For the analysis of data, the sample was divided into five categories according to the size of cow stalls,

1. One Cow Stall
2. Two Cow Stall
3. Three Cow Stall
4. Four Cow Stall
5. Five Cow Stall

) In this study, it is found that local feeding practice varied with availability of type of grass from season to season. During the rainy season, green grasses were the main feed source while during the winter season main feed source was crop residue. However, fodder scarcity has found in dry, winter and cold seasons.

) Out of 65 dairy farmers, 22 households belonging to the size of land holding group of 0-2 hectare, 32 households have 2-4 hectare, 8 households have 4-6 hectare and 3 households have 6 and above hectare of land . Most of the farmers are in Kanyam VDC belonging to the size of land holding group of 2-4 hectare. So, this size of land is appropriate to keep two cow stalls. This

result clearly shows that the average land holding increases along with the rise of cow stalls.

- ) The study found that milk output has ranged from 9 litre to 14 litre per day in one cow stalls. Similarly, 12.50 to 19.00 litres, 17.50 to 22.00 litres, 24.00 to 29.00 litres and 36.00 to 40.00 litres of milk production in two, three, four and five cow stalls respectively.
- ) The study found that per day average total cost were Rs. 344.02, Rs. 415.90, Rs. 588.76, Rs. 832.67 and Rs. 1216.33 in one cow stalls, two cow stalls, three cow stalls, four cow stalls and five cow stalls respectively. On the other hand, the per day average total incomes were Rs. 421.73, Rs. 647.48, Rs. 861.03, Rs. 1115.64 and 1726.08 in one, two, three, four, and five cow stalls respectively. Therefore, the average income increases with increase in the sizes of stalls.

## **5.2 Conclusion**

From the study it is found that average total costs were; Rs. 344.02, Rs. 415.90, Rs. 588.76, Rs.832.67 and Rs. 1216.33 for one, two, three, four and five cow stalls respectively. It has been seen that cost components varied according to the sizes of stalls and breed of cows. If farmers are rearing improved breed of cow, they are spending more for feed, medical charge, comfortable shed and so on.

Among the cost components feed cost constituted to be the most significant component of cost. It varied differently along with the sizes of stalls. Here, average feed cost were Rs. 176.00, Rs. 236.12, Rs.335.00, Rs. 471.25 and Rs. 770.75 for one, two, three, four and five cow stalls respectively. The ratio of average feed cost of one cow stalls and five cow stalls are higher than others because farmers mostly keeping improved breed of cows in single and five cow stalls.

Labour cost varied from Rs. 136.92, Rs. 164.00, Rs. 231.67, Rs. 331.25 and Rs. 412.50 for one, two, three, four and five cow stalls respectively. It is found that labour cost increase with increase in sizes of stalls but decreasing rate.

Improved and crossed breeds of cows are sensitive than local breeds in order to maintain their health. So farmers are spending more medical charge for improved and crossed breeds of cow. In one cow stall Rs. 5.66 is the per day average medical cost. Similarly Rs.8.17, Rs. 12.65, Rs. 18.39 and Rs. 20.26 are the per day medicine costs of two, three, four and five cow stalls respectively. Decreasing and increasing of medical expenses mainly depends on the lactation period of the milkable livestock in the study area.

The average per day miscellaneous and maintenance costs were, Rs. 5.44, Rs.7.61, Rs. 9.44, Rs. 11.78 and Rs. 12.82 for one two, three, four and five cow stalls respectively. Therefore, it also shows that the miscellaneous and maintenance costs are increasing with the increase in sizes of stalls.

The price of milk is paid according to the fat content and SNF. If there is increase in level of fat and SNF then price of milk also increases. From the field survey it has been found that fat content is higher in the winter season than in summer season. Despite of this, there is no any effect in the income of farmers in both seasons because in summer high quantity of milk has been produced than in winter. So, it is assumed that winter season is lean season and summer season is flush season in terms of milk production.

Incomes from milk sale are different according to the sizes of cow stalls. In one cow stalls, average per day income from milk sale is Rs. 357.42. Similarly, Rs. 507.00, Rs 629.33, Rs.854.81 and 1212.00 are the per day average income of two, three, four and five cow stalls respectively. We found that the sales amount of milk is increasing with increase in sizes of stalls. However, income from milk sale is decreasing trend due to mix breed of cow (local, crossed & improved) in more than one cow stalls.

### 5.3 Recommendations

Based on the major findings of the study, some recommendations have been outlined below:

Most of the farmers in study area are found to be engaged in dairy farming as their traditional occupation. There is a need to aware the farmers about the modern farm management practices to get high benefit. It is suggested that district Livestock Service Office (DLSO) should organize the training program.

- ) The current price to the dairy farmers is low in comparison to the production cost, thus it is suggested that relative institutions should review the price paid to the dairy farmers.
- ) An economic problem is the main disturbance factor for the livestock rising. So, it is better if the loan procedure of the bank, cooperatives were made simple, convenient and with minimum interest rate as far as practicable. It is suggested that Agriculture Development Bank should issue the loan with low interest rate.
- ) Farmers should be encouraged to keep improved breeds of cows. Artificial insemination, information about improved breed and cross breeding shall be made available to farmers in their village situation. It is suggested that DLSO should manage appropriate program for this aspect.
- ) Animal medicines should be provided in subsidized rate by government. Moreover, animal health services centres should be expanded in village locations.
- ) Farmers should be taught to have proper knowledge about cultivation of nutritional grass on their own land to increase productivity with low cost. It is suggested that DLSO should organize the training to cultivation of nutritional grass and to product of nutritional animal feed.

- ) Farmers should be encouraged for participating into cooperative membership. Government should assist that cooperative technically and financially.
- ) Short term training of milk products making should be provided to the dairy farmers in milk shed area. It is suggested that DLSO should provide the training.
- ) It is suggested that DDC should established more milk collection centre in the milk corridor area and measures should be taken to reduce the cost of marketing.
- ) DDC is the only government organization for buying milk in standard price. Milk chilling capacity and fluid milk buying should be improved.

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## APPENDIX – A

Table A- 1

### Primary Data of Total Milk Production

#### One Cow Stalls

##### Cost Components

S.N.	Feed Cost (Rs.)	Labour Cost (Rs.)	Medicine Cost (Rs.)	Misc. & Maintenance Cost (Rs.)	Total Cost (Rs.)
1	188	150	6.94	5.12	350.06
2	160	150	5.34	6.21	321.55
3	177	160	4.23	7.34	348.57
4	180	180	5.32	6.00	371.32
5	150	150	7.00	4.00	311.00
6	165	170	5.38	6.35	346.73
7	185	150	4.25	5.15	344.40
8	187	150	5.05	6.28	348.45
9	168	160	6.07	5.38	339.45
10	170	140	5.88	4.34	320.22
11	188	150	6.38	4.23	348.61
12	190	180	7.15	4.59	381.74
13	180	150	4.65	5.79	340.44
Total	2288.00	2040.00	73.58	70.72	4472.30
Average	176	156.92	5.66	5.44	344.02

Source: Field survey, 2014

**Table A-2****Primary Data of Total Milk Production****One Cow Stalls****Output and Income Components**

<b>S.N.</b>	<b>Output in Litre</b>	<b>Income From Milk (Rs.)</b>	<b>Income from Calves and Manure(Rs.)</b>	<b>Other Income (Rs.)</b>	<b>Total Income (Rs.)</b>	<b>Total Profit (Rs.)</b>
1	11.00	330.00	50.00	6.94	386.94	36.88
2	11.00	341.00	52.00	7.28	400.28	78.73
3	13.00	416.00	63.00	5.52	484.52	135.95
4	12.00	360.00	56.36	9.00	425.36	54.04
5	9.00	297.00	48.00	12.32	357.32	15.32
6	10.00	300.00	53.65	11.54	365.18	18.46
7	11.50	356.50	57.84	6.50	420.84	76.44
8	13.50	418.50	58.43	3.31	480.24	131.91
9	12.00	360.00	54.00	4.80	418.80	79.35
10	10.50	346.50	58.00	7.89	412.39	92.17
11	9.50	315.00	63.28	10.50	388.78	40.17
12	14.00	406.00	65.32	4.23	475.55	93.81
13	12.50	400.00	61.11	5.38	466.49	126.05
Total	149.50	4646.46	740.87	95.16	5482.49	1010.23
Average	11.50	357.42	56.99	7.32	421.73	77.71

*Source: Field Survey, 2014.*

**Table A-3****Primary Data of Total Milk Production  
Two Cow Stalls****Cost Components**

<b>S.N.</b>	<b>Feed Cost (Rs.)</b>	<b>Labour Cost (Rs.)</b>	<b>Medicine Cost (Rs.)</b>	<b>Misc. and Maintenance Cost (Rs.)</b>	<b>Total Cost (Rs.)</b>
1	282	150	4.78	3.78	440.56
2	274	150	5.56	6.39	435.95
3	198	150	8.33	5.48	361.81
4	277	200	5.36	8.34	490.70
5	274	150	11.12	15.00	450.12
6	252	150	10.32	12.35	424.67
7	196	150	11.00	8.84	365.84
8	198	150	11.82	7.24	367.06
9	198	150	12.39	6.84	367.23
10	250	150	6.84	7.32	414.16
11	255	150	6.89	7.69	419.58
12	196	225	7.23	5.34	433.57
13	225	150	7.84	5.85	388.69
14	200	150	7.32	6.29	363.61
15	271	150	7.58	5.34	433.92
16	282	150	8.39	4.84	445.23
17	220	225	10.32	3.28	458.60
18	235	150	11.54	5.84	402.38
19	192	200	8.32	3.78	404.10
20	199	250	7.51	6.89	463.40
21	234	150	6.32	12.85	403.17
22	280	150	8.65	14.66	453.31
23	275	150	7.00	15.50	447.50
24	245	150	6.23	3.80	405.03
25	195	150	5.56	6.78	357.34
<b>Total</b>	<b>5903.00</b>	<b>4100.00</b>	<b>204.25</b>	<b>190.25</b>	<b>10397.50</b>
<b>Average</b>	<b>236.12</b>	<b>164.00</b>	<b>8.17</b>	<b>7.61</b>	<b>415.90</b>

*Source: Field Survey, 2014.*

**Table A- 4**

**Primary Data of Total Milk Production  
Two Cow Stalls**

**Output and Income Components**

<b>S. N.</b>	<b>Output in Litre</b>	<b>Income from Milk (Rs.)</b>	<b>Incomes from Calves and Manure(Rs.)</b>	<b>Other Income (Rs.)</b>	<b>Total Income (Rs.)</b>	<b>Total Profit (Rs.)</b>
1	16.50	495.00	111.11	34.72	640.83	200.27
2	12.50	400.00	102.77	13.89	516.66	80.71
3	12.50	400.00	125.00	10.11	535.11	173.30
4	14.00	448.00	125.00	33.33	606.33	115.63
5	15.00	450.00	102.78	33.33	586.11	135.99
6	15.50	480.50	104.75	33.33	618.58	193.91
7	16.00	496.00	115.00	50.50	661.50	295.66
8	17.00	510.00	125.00	55.56	690.56	323.50
9	13.00	416.00	98.00	25.56	539.56	172.33
10	17.50	560.00	112.12	15.00	687.12	272.96
11	18.50	592.00	120.00	16.68	728.68	309.10
12	17.50	525.00	128.23	16.00	669.23	235.66
13	13.00	416.00	102.77	20.00	538.77	150.08
14	12.00	384.00	130.33	35.12	549.45	185.84
15	18.50	573.50	104.56	36.00	714.06	280.14
16	19.00	589.00	105.00	38.12	732.12	286.89
17	18.00	576.00	110.00	30.00	716.00	257.40
18	19.00	608.00	97.54	35.00	740.54	338.16
19	17.00	544.00	101.18	40.84	686.02	281.92
20	16.00	496.00	98.59	33.38	627.97	164.57
21	16.50	495.00	105.23	12.84	613.07	209.90
22	17.50	525.00	111.15	35.73	671.88	218.57
23	18.00	576.00	115.64	28.83	720.47	272.97
24	19.00	608.00	98.19	30.00	736.19	331.16
25	16.00	512.00	115.00	33.33	660.33	302.99
Total	404.50	12675.00	2764.75	747.00	16187.00	5789.50
Average	16.18	507.00	110.59	29.88	647.48	231.58

*Source: Field Survey, 2014.*

**Table A – 5****Primary Data of Total Milk Production****Three Cow Stalls****Cost Components**

<b>S.N.</b>	<b>Feed Cost (Rs.)</b>	<b>Labour Cost (Rs.)</b>	<b>Medicine Cost (Rs.)</b>	<b>Misc. and Maintenance Cost(Rs.)</b>	<b>Total Cost (Rs.)</b>
1	277.00	225.00	10.28	8.78	521.06
2	364.00	250.00	17.56	6.39	637.95
3	387.00	225.00	8.33	14.48/	634.81
4	390.00	225.00	10.34	8.39	633.73
5	350.00	225.00	12.36	10.00	597.36
6	298.00	225.00	14.80	10.35	548.15
7	310.00	225.00	17.86	11.84	564.70
8	405.00	250.00	13.29	10.34	678.63
9	280.00	250.00	15.00	5.98	550.98
10	325.00	225.00	9.08	9.39	568.47
11	375.00	225.00	10.67	7.27	617.94
12	320.00	225.00	10.11	7.87	562.98
13	316.00	250.00	14.39	12.00	592.39
14	310.00	225.00	12.70	10.00	557.70
15	318.00	225.00	13.00	8.54	564.54
Total	5025.00	3475.00	189.77	141.62	8831.39
Average	335.00	231.67	12.65	9.44	588.76

*Source: Field Survey, 2014.*

**Table A – 6**  
**Primary Data of Total Milk Production**  
**Three Cow Stalls**

**Output and Income Components**

S.N.	Output in Litre	Income from Milk (Rs.)	Income from Calves and Manure(Rs.)	Other Income (Rs.)	Total Income (Rs.)	Total Profit (Rs.)
1	18.50	592	150.77	75.23	818.00	294.94
2	17.50	560	152.78	50.50	763.28	125.33
3	22.50	720	175.68	95.67	991.35	356.54
4	19.50	624	180.23	92.00	896.23	262.50
5	18.50	592	197.00	45.34	834.34	236.98
6	19.50	624	150.22	34.85	809.07	260.92
7	19.00	608	168.35	60.00	836.35	271.65
8	19.00	608	208.58	64.65	881.23	202.60
9	22.00	704	152.00	85.80	941.80	390.82
10	20.50	656	190.00	45.50	891.50	323.03
11	20.00	640	201.32	60.75	902.07	284.13
12	19.50	624	180.37	35.67	840.04	277.06
13	18.50	592	150.00	39.30	781.30	188.91
14	20.50	656	168.39	42.54	866.93	309.23
15	20.00	640	177.78	44.28	862.06	297.52
Total	295.00	9440.00	2603.47	872.08	12915.55	4082.16
Average	19.67	629.33	173.56	58.14	861.03	272.14

*Source: Field Survey, 2014.*



**Table A – 7**

**Primary Data of Total Milk Production  
Four Cow Stalls**

**Cost Components**

S.N.	Feed Cost (Rs.)	Labour Cost (Rs.)	Medicine Cost (Rs.)	Misc. and Maintenance Cost(Rs.)	Total Cost (Rs.)
1	477.00	300.00	12.50	8.50	798.00
2	451.00	350.00	18.20	11.01	830.21
3	465.00	350.00	15.00	12.98	842.98
4	503.00	300.00	18.00	10.50	831.50
5	471.00	300.00	19.00	9.20	799.20
6	495.00	350.00	22.25	13.60	880.85
7	450.00	350.00	20.34	14.75	835.09
8	458.00	350.00	21.85	13.68	843.53
Total	3770.00	2650.00	147.12	94.24	6661.36
Average	471.25	331.25	18.39	11.78	832.67

*Source: Field Survey, 2014.***Table A – 8**

**Primary Data of Total Milk Production  
Four Cow Stalls**

**Output and Income Components**

S.N.	Output in Litre	Income from Milk (Rs.)	Income from Calves and Manure(Rs.)	Other Income (Rs.)	Total Income (Rs.)	Total Profit (Rs.)
1	25.50	790.50	164.38	41.09	995.97	297.97
2	26.50	848.00	191.78	65.75	1105.53	275.32
3	24.00	768.00	208.69	75.12	1051.81	208.83
4	28.50	912.00	198.00	84.32	1194.32	362.82
5	29.00	928.00	182.82	58.71	1169.53	370.33
6	27.00	864.00	225.00	95.18	1184.41	303.33
7	25.00	800.00	201.71	55.30	1057.01	221.92
8	29.00	928.00	150.38	88.39	1166.77	323.24
Total	214.48	6838.48	1522.80	563.84	8925.12	2263.76
Average	26.81	854.81	190.35	70.48	1115.64	282.97

*Source: Field Survey, 2014.*

**Table A – 9**

**Primary Data of Total Milk Production  
Five Cow Stalls**

**Cost Components**

<b>S.N.</b>	<b>Feed Cost (Rs.)</b>	<b>Labour Cost (Rs.)</b>	<b>Medicine Cost (Rs.)</b>	<b>Misc. and Maintenance Cost(Rs.)</b>	<b>Total Cost (Rs.)</b>
1	778.00	400.00	20.54	12.37	1210.91
2	750.00	400.00	18.78	15.32	1184.10
3	765.00	450.00	22.25	11.58	1248.83
4	790.00	400.00	19.50	12.00	1221.50
Total	3083.00	1650.00	81.04	51.28	4865.32
Average	770.75	412.50	20.26	12.82	1216.33

*Source: Field Survey, 2014.*

**Table A – 10**

**Primary Data of Total Milk Production  
Five Cow Stalls**

**Output and Income Components**

<b>S.N.</b>	<b>Output in Litre</b>	<b>Income from Milk (Rs.)</b>	<b>Income from Calves and Manure(Rs.)</b>	<b>Other Income (Rs.)</b>	<b>Total Income (Rs.)</b>	<b>Total Profit (Rs.)</b>
1	36.00	1152.00	301.37	98.01	1551.38	340.47
2	38.50	1232.00	450.15	150.00	1832.15	648.05
3	40.00	1280.00	367.62	165.92	1813.54	564.71
4	37.00	1184.00	412.58	110.68	1707.26	485.76
Total	151.48	4848.00	1531.72	524.60	6904.32	2039.00
Average	37.87	1212.00	382.93	131.15	1726.08	509.75

*Source: Field Survey, 2014*

# APPENDIX- B

## QUESTIONNAIRE

**Namaste**

I am going to prepare a thesis entitled **Cost – Benefit Analysis of Milk Production in Kanyam VDC of Ilam District**. I would like to request you to fill out this questionnaire and support to me to complete my thesis work. I hope that your help will be a great success for me.

### 1. General information of respondent:

Name.....

Age:..... Sex:.....

Village: ..... Ward no:.....

Main occupation:.....

Education level:

a) Illiterate  b) Literate  c) ve

### 2. Details of Your household members:

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

### 3. How much land do you have: (In Ropani)

a) Land non-irrigated (Bari) .....

b) Land of irrigated (Khet) .....

c) Land non-cultivable (Pakho) .....

d) Land covered by Dale Ghas .....

e) Land covered by Ground Grass .....

**4. What types of Livestock do you have?**

	Livestock	Improved	Cross	Local	Total
1	Cows				
2	Buffaloes				
3	Goats				
4	Ox/Bull/Male Buffalo				

**5. How many milking livestock do you have?**

a) Cattle:

i) Improved

ii) Crossed

iii) Local

b) Buffalo

i) Improved

ii) Crossed

iii) Local

**6. Do you receive any training on livestock rising?**

S.N.	Types of Training	Training Provider	Duration	Year (when)
1				
2				

**7. How long have you been keeping livestock?**

Recent ( )

Long time ago ( )

**8. Please give following information of your milkable livestock:**

a) Milkable cattle	Number	<input type="text"/>
	Lactation Period	<input type="text"/>
	Milk in Liter	<input type="text"/>
b) Milkable buffalo	Number	<input type="text"/>
	Lactation Period	<input type="text"/>
	Milk in Liter	<input type="text"/>

**9. What is the current price of milkable livestock?**

a) Cattle:

i) Improved one: Rs. ....

ii) Cross one: Rs. ....

iii) Local one: Rs. ....

b) Buffalo:

i) Improved one: R. ....

ii) Cross one: Rs. ....

iii) Local one: Rs. ....

**10. What are the financial sources of keeping livestock?**

S.N.	Sources	Amount	Rate of Interest
1	Self		
2	Lending from villagers		
3	Co-operative Institution		
4	Participatory District Development Program (PDDP)		
5	Rural Bank (Agriculture Bank)		
6	Livestock insurance		
7	Borrowing without interest from relatives		
8	Other		

**11. Please give me information about mating charge for your cattle?**

Rs. .... (Annually per cattle)

**12. Do you use artificial insemination about to improve the breed of your milk animals?**

Yes ( )

No ( )

**13. How is the shed for keeping animal?**

a) Simple Katero

b) Cemented

c) Muddy

d) Others.....

**14. Please provide information about quantity and price of feed material you use for your lactating livestock (for a day)**

Items	Quantity	Unit Price (Rs.)	Total Price (Rs.)
Green grass (Bhari)			
Straw/lay (Bhari)			
Maize flour (kg)			
Rice bran (Kg)			
Oil Cake (Kg)			
Salt (Kg)			
Other			
Total			

**15. Please provide information about pots and others materials you use livestock farming:**

Items	Price	Expected life day/month/year
Hay cutting machine		
Rope		
Doko (basket)		
Pot (Khudocooking/milking/milk Porting )		
Soap/ Slippers		
Other		
Total		

**16. How many members of your family are being engaged to serve livestock?**

a) person

i) Male: .....

ii) Female: .....

b) Working hours per day.....

Do you use hired labor(s) for this purpose

Yes

No

If yes, how much amount do you spent on them?

i) Monthly Rs. ....

ii) Yearly total Rs. ....

**17. How much amount do you spend on medicine for milking livestock in a year?**

a) Per cattle: Rs. ....

b) Per buffalo: Rs. ....

**18. How much amount do you spend for repair and maintenance of shed (Yearly)?**

Rs. ....

**19. How many months in a year you are able to produce milk?**

.....Months

**Average daily milk production:**

Seasons	Total Production	Sales amount	Home consumption
At seasons of maximum production (Flush Seasons)			
At seasons of least production (Lean Seasons)			
Average daily production			

**20. Where do you sell the milk?**

- a) To direct consumers
- b) To dairy collection centers
- c) Milk Processors
- d) Others.....

**21. What is the basis of payment for milk sale?**

- a) SNF
- b) Fat
- c) SNF and Fat
- d) Lactose
- e) Others.....

**22. What is the mode of payment for milk sale?**

- a) Day to day payment
- b) weekly payment
- c) Forthrightly payment
- d) Monthly payment
- e) Others.....

**23. How much money do you get from selling milk?**

Rs. .... (Annually)



**24. Please, tell me how much money you earn from following:**

Items	Income (annually)
Manure	
Calves	
Biogas	
Infertile buffalo	
Others (Ghee/.....)	
Total	

**25. What are the main problems of dairy farming?**

1. ....
2. ....
3. ....
4. ....

**26. What should be done to solve these problems?**

1. ....
2. ....
3. ....
4. ....