A STUDY OF LIVESTOCK IN MAREK-KATAHARE VDC OF DHANKUTA DISTRICT

A Thesis

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LETTER OF RECOMMENDATION

This thesis entitled **A Study of Livestock in Marek-Katahare VDC of Dhankuta District** has been prepared by Mr. Sunil Thapa under my supervision and guidance in partial fulfillment of the requirements for the Degree of Master of Arts in Economics. I forward it with recommendation for approval.

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LETTER OF APPROVAL

We certify that this thesis entitled **A Study of Livestock in Marek-Katahare VDC of Dhankuta District S**ubmitted by Mr. Sunil Thapa to the Central Department of Economics, faculty of humanities and Social sciences. Tribhuvan University, Kirtipur has been accepted as a partial fulfillment of the requirements for the Degree of Master of Arts in Economics.

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ACRONYMS

ADB	:	Agriculture Development Bank
CBS	:	Central Bureau of Statistics
FAO	:	Food and Agriculture Organization
FY	:	Fiscal Year
GDP	:	Gross Domestic Product
HH	:	Household
HMG/N	:	His Majesty's Government of Nepal
ICIMOD	:	International Center for Integrated Mountain Development
KG	:	Kilogram
MOA	:	Ministry of Agriculture
MOF	:	Ministry of Finance
M-K	:	Marek Katahare
MT	:	Metric Ton
Rs	:	Rupees
TU	:	Tribhuvan University
VDC	:	Village Development Committee

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 it's natural beauty and biodiversity. It is land locked between it's two large neighbouring countries namely India and China. It is a small country with 1,47,181 square k.m. area and within this boundry 27 million people are living. It is a least developed country with per capital 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 of the agriculture sector is estimated to grow by 1.3 percent as compared to previous fiscal year (MoF, 2014).

A traditional and integral part of rural farmers in Nepal is livestock farming. Although livestock is not usually kept for commercial purpose, buffalo and cattle are reared in almost every farm household for socio-economic and religious propose. These animals are used as a means of drawing power, fuel manure and as a source of nutritional substance. They are not used primarily for commercial diary propose expect in hilly areas. In spite of the important role of the dairy product in economy, the production of milk and milk products are inadequate to meet the increasing demand arising from population growth and increase in per capital income of the people in urban areas. The livestock farming which have been regarded traditionally as integral part of rural farmers, has not been effective and efficient in Nepal in promoting the living standard of poor farmers due to various obstacle occurred in these sectors and appeared as a regional unbalanced for a balanced development of the country. HMG has laid proper policies and emphasized on the cereal grain production in Terai belt and development of livestock farming in mountainous region.

Livestock farming plays an important role in Nepalese economy. It contributes on third to the total agricultural GDP. Moreover, Nepalese agriculture is characterized by subsistence types 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, meat, wool, bone are economically most important products. These are good sources of export earning too. Dairy

products of mountains of Nepal are used to be the main 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 household. 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.

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 member, 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 notices 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 feeds materials etc.

Similarly, while considering the income from livestock, the family consumption of milk and it's 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/hasting 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.

In Hind 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 is found to be of considerable importance in the context of Nepal.

1.2 Statement of the Problem

Nepal is one of the least developed countries in the world. It is the reson that Nepalese economy is based on agriculture though agriculture is considered to be backbone of Nepalese economy. Agriculture contributes around 37 percent of the GDP in Nepal (MOAC, 2011)

Livestock hold a prominence place in the economic life of the Marek-Katahare VDC the population lives in rural areas who are directly engage in agriculture and livestock farming. As most of them are illiterate, there is tremendous death of knowledge especially regarding fragile environment and importance of livestock farming in Nepalese Economy.

Marek-Katahare is a small hilly village where slowly growing population pressure is slowly growing with growing unlimited demand which is creating a major issue. It is right to say that, "increase of population and labour force has proved a burder rather than blessing". Even with declining productivity of day by day due to unscientific land use practices and fragmentation of land, agriculture sector alone could not satisfy the growing demand. Therefore, livestock in such situation does not only fulfill the traditional role (draught power, manure and nutritious food) but also generate cash income.

However, with the growing number of human population, land for pasture is getting limited. As a result livestock are unable to get sufficient pasture or fodder. Hence with the existing problem farmer are now forced to keep livestock according to their ability and farm size. Livestock farming is also a high income generating parts of agriculture. It can provide great profit for farmers. So livestock development is necessary to improve economic condition. So livestock plays a vital role in socio-economic lives in Nepal. The economic support to the household is the biggest contribution of livestock. In Hindu society of Nepal, different types of livestock have different religious importance as well, for instance cows are considered as the Goddness of the wealth. Similarly, goat, pig, and young buffalo are sacrificed in festivals and religious occasions. Thus livestock is found to be important in the context of Nepal. Thus taking these entire factor in to consideration this study attempts to answer the following general research question:

a) What is the present situation of livestock in study area?
b) How are livestock contributing in the economic condition of the farmers?
c) What are problem and prospects of livestock in the study area?

1.3 Objective of the Study

The main objective of this study is to identify the livestock farming and it's importance in Nepalese economy. However the specific objectives of this study are:

i) To examine the present status of livestock in Marek-Katahare VDC.
ii) To analyze the contribution of livestock in study area.
iii) To identify the problem of livestock process.

1.4 Significance of the Study

This study attempts to present the condition of livestock in Marek-Katahare VDC. As the study area is a hilly region, whose economy is basically of agro-economy. Hence livestock is almost integral part of agriculture in the study area as they are main source for manure and draught power. Moreover livestock is complex, multi-component, interactive process, which is practiced in many different ways with differing degree of intensity of the environment. But due to the livestock, even knowing the high importance of the livestock for their livelihood.

However livestock is directly interlinked with the people of the study area but the fact is that very little study has been made in this perspective so far in the village. Thus this study tried to identify the situation of livestock farming including fodder situation, role of livestock in agriculture and again how they are playing vital role in economic condition of the people of Marek-Katahare VDC.

Therefore, keeping in view the core fact the present study is significant to those who are interested in livestock farming and even to those who are concerned with the development of the livestock. So that they can able to understand the present situation of livestock and further can fill the gap which exists in the present day. Lastly of the present study will be helpful to those researchers who are interested in the similar field for further study or research.

1.5 Limitations of the Study

This study is based on a very small sample size from Marek-Katahare VDC of Dhankuta district. Therefore, the finding and conclusion may not be generalized and implemented at national level. Since the resources and the man powers are limited for the study so only 10% household be chosen for the study. Although the study tries to relate livestock development and pasture but only livestock development in livestock farming. However the selection of the village committee has been arbitrary.

1.6 Organization of the Study

The study has organized in to five chapter. The chapter I deals with introduction, problem objective, significance and limitation of the study. Chapter II represents the literature review of previous studies. Chapter III deals research methodology. The chapter IV includes presentation and analysis of the data and chapter V concluded the study with summary of the finding, conclusion and recommendation.

CHAPTER II

REVIEW OF LITERATURE

This section of study makes a review of literature available on livestock and pasture development. For the country like Nepal, especially in the Hills and Mountains livestock farming is important. This is because the land and soil the best alternative would be to increase livestock farming.

2.1 International Context

Dalibard (1995) has mentioned, that over the last few decades, there has been much emphasis placed on the detrimental effects of livestock on the environment. These detrimental effects however are essential generated by the way livestock have been managed recently that livestock were not concern for sustainability rather they were mostly used for short term profit basis. Although livestock have been blamed for the various environmental degradation in various countries like water pollution in Europe, deforestation in south America, desertification in Africa but at the same time the study also argues that the most positive contribution of livestock to the environment are related to their role in integrated sustainable farming system. However, the study indicates the different component of the role of livestock in a farming system like draught animal power, fertilizer production, for weed control and source of fuel. He further says that it is not livestock per se but the way in which livestock are used by the growing human population that governs their impact on the environment (Dalibard, 1995).

Schiere & Kater (2001) have reported that, livestock plays an important role in human society. In mixed farming system in particular/r, they are able to utilize those products which are not exploited by human like kitchen waste, grass from road side and wastelands and crops residue from the cereal harvest. In return, animal give multiple product such as meat, eggs, milk, fibers, dung and draught power and cash. They mentioned that new technologies and management practices might be useful for farmers. For that exchange of experience between the farmers of grassroots and national and international level is necessary, so that it keep farmers in business and to produce enough food for growing population. However, they states that, the mixed crop-livestock system occur in different modes, depending on the access of farmers to land, labor and capital. Moreover, they also found that unreliable rainfall, low soil fertility or presence of particular pests and disease may reduce the interested farmers from

mixed crops-livestock farming. Therefore, in order increases the number of interested farmers in mixed farming they concluded with some recommendation which further helps the farmers to overcome from some local problems like soil fertility, resource depletion or waste disposal. (Schier and Kater, 2007)

Uotila & Dhanapala (2013) has 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 diary inputs, extension services, veterinary health care, artificial insemination service, provision of animal fed 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. (Uotila and Dhanapala, 2013)

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 production (by-products), it also enhances the utilization of potential family labor. 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 and Dhanapala, 2013).

FAO (2009) 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 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).

Haan (2001) has mentioned that finding a balance between livestock and the environment is clearly one of urgency and at the same time of complexity. Urgency in such that, there is dramatically increasing demand for livestock products and complexity is livestock's use by society for multiple needs, producing in the process multiple environmental benefits and

costs. According to them, livestock do not set out to destroyed the environment. It is the socio-economic political context defined by humans, which determine livestock effect upon their surrounding. Even then their study also highlighted that there are important situations where livestock are out of balance. In such situation imperative action is required. Furthermore, they say that production system and ecosystems need to be documented with emphasis on current hot spots, future environmental hazards and potential positive contributions. So the future generations can feed with the type and quality of food they desire without depleting natural resources. Which is one the greatest challenges that the world and especially all those involved in the livestock secto is facing (Haan, 2001).

Sollod (1996) in his paper has highlighted the major maketing 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 awerness of nutritional benefits and consumer confidence, inability to differentiate between public and private markets, farm inputs not synchronize with farm outputs, etc. he also presents the result the poor marketing. According to himj, fewer people, especially children enjoy the nutritional and aesthetic benefits of dairy products, farmers earn less cash income and dairies do not legalize their profit potential, dairy animals suffer from malnutrition.

If milk able cows and buffaloes are inadequately fed and malnourished, there exist some effect such as, they produce less milk and proportionately mon feed is used to weep them alive (maintenance requirement), they produce more harmful methane gas that is realized 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).

2.2 Nepalese Context

Koirala (1985) has been presented various aspects of the role of livestock in our economy. He has tried to prove that livestock has played multiple role in Nepalese Socio-economic say-up. He has concluded that Nepalese economy should consider the overall picture of the combination of both agriculture and livestock farming. So he has emphasized the development of livestock condition in order to improve agriculture productivity with

establishing livestock training center, veterinary, health post, sufficient loan with lower rate of interest for animal husbandry (Koirala, 1985).

Pakharibas Agriculture Center, Dhankuta (2010) considerd the importance of livestock in pasture in the higher altitudes of the country. This report specially focuses on the problems are law productivity of animal, poor animal health, lack of fodder resources, weak management of nutrition etc. the Center tries to suggest that these problems can be solved by increasing cross breeding, veterinary services, plantation of improved grasses, preservation and proper management of pasture. (Pakharibas Agriculture Center, Dhankuta, 2010)

Luitel (1997) found that livestock rising plays a significant role not only in households but national Economy as a whole. Hence it is a core part of Nepalese Economy. In his study area, he has found that, buffaloes were more important animal for milk and meat production then other animals. He also states that due to the small and fragmentation of land causing low production, people of mountainous area mainly has to suffer from the economy problems hence in such situation livestock farming could be an alternative source of income for those people. (Luitel, 1997).

Singh (2002) states that's, livestock acquire special importance in mountain farming system on both ecological and socio-economic grounds. But however this sector i.e. livestock sector is often neglected in institutional policies and planning. Furthermore he says that an improvement in the livestock sector through effective local planning would lead to an improvement in the socio-economic condition of the local people. Hence, for such convictional planning for livestock, investment and capital is heavily dependent. The study further argued that during planning, planner never feel to consult the community, social workers or institutional, farmers. Thus, such planning leads not only to waste of money and resources, but also ignores local realities. However his study also identified some major problems like low productivity of herd and livestock production system in the livestock sector in Uttaranchal. Thus while concluding he added that natural resources management is the major key to decisive panning for livestock development in mountain areas. It can not only evolve green and sustainable livestock production system but also infuse vitality in the whole farming system (Singh, 2002).

Mathema and Joshi (2000) has written book entitled "livestock and livestock insurance in Nepal" where they tried to present the historical background, the present situation and some suggestions for the future policy and programmed for the development of different sectors of

livestock insurance to support the economic development of the country up to grassroots level. They further states that, livestock insurance programmed was felt necessary in Nepal by the policy makers, planners and concerned agencies to safe guard the livestock farmers from the loss of their livestock and for the development of agriculture sector as a whole. However they had suggested some commendation to short out the existing problem regarding livestock insurance programme at the country such as lack of basic data, poor animal husbandry, lack of market and transport facilities, limited and poor feedstuff. (Mathema and Joshi, 2000)

Timalsina (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 products are beneficial for our health on the other. in Synagja, 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 liter 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 it's commercialization. It also helps to reduce the cost to production and transportation, minimization of risks and uncertainties of livestock farming (Timilsina, 2014).

Singh and Shrestha (1990) conducted a research which was focused on the development of livestock in Nepal and emphasize the modification made for t he development of livestock in the mountain areas. They clearly states that livestock occupies a significant place in Nepalese farming system where agriculture, livestock and forest resources and rangeland are interlinked. However, they also analyses the growth, structure and quality of the livestock population, it's lineages with other sector and the supply and demand situation of animal feed and fodder. Hence on identifying different constraints such as lack of information, shortage

of feed, further they recommended some strategies and policies for the same which in future can lead to an increase in productivity and more number of livestock.

Regional seminar on problems affecting range and pasture land development in Himalayan Region was held at Peshawar (1989), where the seminar has brought into focus on certain crucial aspects of range and pasture land problems and other practices in relation to livestock productivity in the area. At the same time, it also throw lights on someo the problems which were existing in the area such as limitation of natural resources, complex physical terrain, modern technology, lack of marketing facilities. Further it also mentioned regarding the shortage of fodder it was mainly due to the increasing number of livestock, area under natural resources were coming under great pressure, as a result about 20% to 30% annual deficit in feed supply especially during winter. It includes by stating that in order to meet the demand, an immediate steps has to be taken without degrading the ecosystem for which some strategies were recommended for range and pasture land improvement in three different level viz, national level, regional and international level (Sing and Shrestha 1990)

Tulachan and Neupane (1999) have studied livestock composition in the Himalaya mountain where they found that majority of farmers operate mixed crop-livestock farming system especially in such subtropical Himalaya systems mountain region of Nepal and India. They also analyzed the changes taken place in livestock production management in mixed crop-livestock farming systems. They focused on that are under pressure. According to them linkages between crops, livestock and the forests have weakened. Farmers now rely more and more on private land to meet fodder needs and there is a decline in the relative importance of farmyard manure per compost in the nutrient management system. To some extent, this decline has been compensated by ruing chemical fertilizer. However, the study has also examined the increasing trends of smallholder dairy farming in mountain areas and discourses various issues related to it.

Hence on the changing patterns of livestock production system, they suggested some strategies for sustainable management of livestock production in mixed crop-livestock farming system of the Hindukush Himalaya region (Tulachan and Neupane, 1999).

Mahat (1997) states that fodder from forest for stall feeding, grazing and browsing are the essential basic needs of the rural people in the Hindukush Himalaya region. According to him, farmers of the maintain area maintain largely number of livestock for economic compulsion rather than herely religious beliefs. He further added that forest supply the major

share of fodder and was particularly important during the dry season when fodder was characteriswtically in short supply free range grazing and browsing in the forest and shrub area, grassland and terraced agricultural land after harvest constituting the other part of the livestock management and production system. However, the study also examined about the reasons for declining the rate of livestock in the Hindukush Himalaya resgion, mainly due to the heavy pressure on land or forest by growing number of an already over high population that has far exceeded the carrying capacity of the forest. (Mahat, 1997).

Shrestha (2013) have reported that livestock farming and it's linkay in agriculture and forest. The state that examine the livestock distribution, existing fodder situation and relationship of pasture land, animal and agriculture production. He also state that demand of fodder is 2376.69 mts where as supply is very low which is 1537.89 mts. The supply is fodder only 64.73 percent of the total local demand. There is 34.27 percent fodder is deficit which is fulfill by illegally entering in to the community forest and do not feed proper requirement of their animals, other considerable aspect of livestock is it's contribution to farmer income beside animals have much social and religious importance in the VDC. (Shrestha, 2013)

Dahal (2005), did a close study of interdependence of livestock situation and the farming activities in terms of their products and income, where he tried to assess the scope for improvement in the livestock enterprises for increasing benefits from both crops and livestock farming in the village called jarayotar. His main objective of the study was to study the composition and trends of livestock farming in the village. He also states that his study area was predominantly agriculture including livestock farming. The average size households owned around 17 heads of local breed livestock. The study further shows a significant correlation between the farm size and the number type of livestock. Finally he remarked that development of livestock in his study area has been handicapped due to low educational level of community, improper management of grazing system which further led to the degradation of forest, low verities of fodder foe feeding animals. Even stall feeding was not practicing in a significant manner.

Joshi (2014) tried to show the specific role of livestock in the development of agriculture in Nepal. He introduced the concept of 'animal-man relationship.' He has reported that Nepalese that Nepalese farmers specially small farmers in the rural context cannot increase their agricultural productivity without improving the animal husbandry practices. So he strongly emphasis's that the rural sector of the country should be provided sufficiently the basic infrastructure for increasing animal husbandry practices.

CHAPTER III

RESEARCH METHODOLOGY

This section deals with the methodology used in this research and is divided into introduction of the study area, research design, source of data method or data collection, questionnaire and interview, method of data analysis and so on.

3.1 General Introduction Of the Study Area

Marek Katahare VDC is situate to north-west side of Dhankuta district and in number 2 electoral zone. This VDC is surrounded by Tehrathum district from the east Sankhuwashava district from north, Dadagun, Chanuwa VDC (Dhankuta) from west and jitpur, murtidhunga VDC from South. From the point of view of longitude and latitude. It is located from $27^0$6'56" to $27^0$10'26" northern latitude and $87^0$19'11" to $87^0$24'36" eastern longitude. Total area of this VDC is 3,343 hector. Lowest high of this VDC is 345 meter in leguwa laxmi stream and highest of this VDC is 2505 meter of Thamdada.

In Marek- Kathahara VDC most of the people are engaged in livestock farming. M-K VDC we find no households without livestock population. It is found that they keep she-buffaloes mainly for milk and manure. Framers were found and not to prefer he-buffaloes. Oxen are kept mainly for draught power. Similarly cow are kept because it has an important religious status and in addition it gives milk and manure. Goats are kept mainly for meat and the sale of such animal being additional cash income to the farmer. Goats are sold at the time of economic difficulties.

3.2 Research Design

This study is based on descriptive research design. It will use both the qualitative and quantitative data and information. This research is mainly based on primary sources of data collected through field survey be using structured questionnaire.

3.3 Nature of Data

The study will both primary and secondary data and information. The present study has been basically based on the primary information. Thus to fulfill the objective primary data has been collected through field survey Marek Katahare VDC while interview with structure

questionnaire. For the secondary information, different sources like government office and libraries had been used. Relevant literature including both published & unpublished has been used from the library of the university.

3.4 Methods of Data Collection

There are different types of data collection method. 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 livestock farmers travelling door to door. It is because, most of the farmers in rural area like Marek Katahare are illiterate so they are unconscious about their responsibility and contribution for t he 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.

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

3.5 Population and Sample

Marek Katahare VDC is the targeted area of the study. Altogether there were 1334 household involved in livestock farming. Out of the population 132 farmers were selected as a sample for present study with the method of judgment sampling. Thus, the selected 132 household (10 percent of the population) represents the sample of the study.

The study area consists of nine wards village Katahare, Machepu, Puwar Gaun, Marek, Mulkharka Parikhaprange, Ghumaune, Majkharka, Telung with 1334 total numbers of households (CBS, 2011). Due it the limitations of time, energy and cost the present study adopted a sampling method while taking 10 percent of the sample size of the total household from every ward. However, selecting the particular sample size was mainly to get suitable proportion of household number from all nine wards as the number of household is not equally distributed.

Even in sampling method, random sampling (lottery method) has been adopted for the study. After collecting each ward's total number of household number of each ward has been written

in pieces of paper, which have been put in to the container after folded them properly. Then later on according to the required number on the basis of sample size, randomly numbered slip has been take out from the container. In total 132 households has been surveyed out of 1334 households.

Table 3.1

Distribution of Sample Size

Wards Name	**Total Household**	**Sample Household**
Katahare	177	18
Manchepu	153	15
Puwargaun	62	6
Marek	228	23
Mulkharka	144	14
Parikhaprange	183	18
Ghumaune	150	15
Majkharka	105	10
Trlung	132	13
Total	1334	132

Source: *Field Survey, 2016*

3.6 Questionnaire and Interviews

Questionnaire and interviews are the method 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 fulfill 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.

3.7 Method of Data Analysis

After collecting the necessary data from the respondent possible errors and inconsistencies will remove. The data has been processed by tabulating under different heading an sub heading with help of manual process. The required frequency and table were generated based on collected data. Furthermore information was classified, categorized and sub-categorized based on acquired data. The information has been analyzed and interpreted with simple

statistical method. Different type of tables figure and diagrams has been used to present the results.

CHAPTER IV

DATA ANALYSIS AND PRESENTATION

4.1 Present Status of Livestock

Livestock farming plays an important role in Nepalese economy. It contributes on third to the total agriculture GDP. The contribution of livestock to the economy has been cover5ed approximately about 32% of total agriculture gross domestic product (GDP) and about 11.5 percent of total country GDP (CBS, 2011). Numerous people are involved in the production, slaughtering, processing and trading of livestock and livestock products. More than 2 million household own cattle and over 1.4 million households raise chickens. The growth rate of livestock is less than that of fishery and cash crops, but the contribution of livestock farming in the overall agriculture GDP is more than fishery and cash crops agriculture. According to ministry of agriculture development (MOAC) statistics (2011/12), the overall growth rate of livestock is around 5.3 percent per annum. The growth rate buffalo, pigs, milking buffalo and fowl was very good compared to cattle, sheep duck, laying duck (MOAC, 2011/12).

Livestock 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 cow, yaks are mainly domesticated for milk.

Livestock is an important component of agriculture it provides cash income a source of security, draught power and dung for compost. Substantial amount of such income is generated by selling livestock products. Meat production is a good source of income and is considered on the high quality food. Animal can be a good source of security in the sense that they can be sold during the time of crop failure in order to provide family income.

Price of land is increasing tremendously due to high demand for land specially caused by population pressure. As such, rural poor people cannot afford enough land in order to earn a livelihood. In such a deteriorating condition, they are likely to depend on domestic animals that need small scale investment for which most of the peasants living in rural area easily afford. Milch buffaloes as well as cattle can be the effective means of earning for peasants living in rural areas.

Livestock raising is important for producing raw materials for livestock based industries, which help to increase the income and employment through subsidiary occupation at the household level. Being a labour intensive occupation, it helps to utilize the family labour comprising old people, women and children. It indirectly helps to improve the productivity of crop farming providing cash to purchase improved agricultural inputs.

In the hill area where the role system has not been well developed, animals such as yak and even high altitude goats and sheep are being used for transportation. This system can be further promoted. If oxen are also used for transportation after the cropping system is concluded.

Nepalese agriculture system is suitable to use animal power rather than machines. The scope of using machines as substitute for draught animal is limited by several factors. Acute shortage of capital has been the main obstacle in the regard. Physiographic of the country restricts the use of machinery equipments. In addition to these above mentioned factors, continued fragmentation of land holding is further reducing the viability of mechanization in agriculture. Livestock provide dung as fuel for household where there is shortage of firewood. In Terai belt where there is shortage of firewood. In Terai where firewood is not easily available dung has an important place in household use. Livestock raising in Nepal is also influence by religious and cultural values. Cow dung and urine are regard sacred. People belonging to various ethnic group use goat and hens to celebrate the different festivals.

4.1.1 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.

4.1.1.1 Livestock Population of Nepal

Table : 4.1

Livestock Population of Nepal

Category	2008/09	2009/10	2010/11	2011/12
Cattle	7175198	7199260	7226050	7244944
Buffaloes	4680486	4836984	4993650	5133139
Sheep	802993	701371	805070	807267
Goat	8473082	8844172	9186440	9512958
Pgies	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 and 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 mulching cows has stood at 1.02 million (14.0 percent). The number of improved cows is on the rise. Like waise 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 previous fiscal year reaching 1,225,000 (MoA, 2012).

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, it's production is expected to fall this year due to low import 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 number of horse/donkey are estimated to stand at 49,426 (MoA, 2012)

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

4.1.1.2 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 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 19860 MT (7.0%), Fowls at 40.690 MT (13.0%) while that of ducks meat is estimated to remain at 227 MT (1.0%) (MoA, 2012).

As compared to the previous fiscal year, total eggs production is estimated to drop by 5.0 percent in the current 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 estimate to reach 586 million 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 it's production (MoA, 2012).

Table : 4.3

Production of Animal and Fowls

Production types	**Fiscal year**		
	2013/14	**2012/13**	**2011/12**
Milk Production (MT)	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)
Total Meat Production (MT)	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)	271 (-3.57)
Egg production (In 1000 unit)	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)
Wool production (kg)	586830 (-0.17)	587834 (0.14)	587017 (0.13)
Fish (MT)	65770 (14.35)	57515 (2.71)	56000 (6.76)

Note: *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*

4.1.2 Socio-Economic Characteristics of Livestock Farmers

Socio-economic characteristic includes ethnicity, age of respondents, size of land holding, family size, food sufficiency condition. The analysis is based on the sampled households in the study area.

4.1.2.1 Ethnic Composition

There are multi ethnic people resided in Marek Katahare VDC of Dhankuta district. To estimate the ethnic composition the sample was categorized indifferent caste and the result obtained is presented in to following data.

Table 4.4

Ethnic Composition of Sample Household

S. N.	Caste	Number of HH	Percent
1.	Brahman	12	9.09
2.	Chhetri	54	40.90
3.	Magar	28	21.21
4.	Gurung	20	15.15
5.	Newar	8	6.06
6.	Limbu	6	4.54
7.	Dalit	4	3.03
	Total	132	100

Source: *Field Survey 2016*

Table 4.4 shows that out of 132 household sampled households, 12 households were Brahmin 54 households were Chhetri, 28 households were Magar, 20 household Gurung, 6 households were Limbu, 8 households were Newar and 4 household were Dalit. This table has indicated that Chhetri are in major number of household of sampled respondents in the study area.

4.1.2.2 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 the condition, the respondents were asked to provide their age. The data obtained for this aspect are summarized in following table.

Table 4.5

Age Group of Respondents in the Study Area

S.N.	Age Group	No. of respondent	Percent
1.	15-30	20	15.15
2.	31-45	56	42.42
3.	46-60	42	31.81
4.	61 and above	14	10.60
	Total	132	100.00

Source: *Field Survey 2016*

Table 4.5 shows that out of 132 sample households. 20 respondents were with 15-30 age groups. Similarly 56, 42 and 14 were with 31-45, 46-60 and 61 above age groups respectively. This table shows that with age 31-45 are involved more than other age group in keeping livestock. The average age of respondents of livestock farmers was 42.80 years.

4.1.2.3 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 labor to look after livestock. On the other hand larger the size of family greater demand for livestock inside the family. The family size of sampled household is shown in table 4.8.

Table 4.6

Family Size of the Sample Household

S.N.	Family size	No. of respondents	Percent
1.	0-5	28	21.21
2.	6-10	82	62.12
3.	11 and above	22	16.66
	Total	132	100.00

Source: *Field Survey, 2016*

Table 4.6 shows family size group of respondents. The number of respondents 28, 82, 22 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.

4.1.2.4 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 in to standard metric system units and there average size of holding is presented in table 4.7.

Table 4.7

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

S.N.	Land size (in Hectare)	No. of HH	Percent
1.	0-2	44	33.33
2.	2-4	64	48.48
3.	4-6	16	12.12
4.	6 and above	8	6.06
	Total	132	100.00

Source: *Field Survey, 2016*

Table 4.7 shows out of 132 livestock farmers. 44 households belonging to the size of land holding group of 0-2 hectare. Similarly 64, 16 and 8 household were with 2-4, 4-6 and 6 above size of land holding group respectively.

4.1.2.5 Food Sufficiency Condition

Only 21% of the households have surplus production in terms of agriculture products. But at the same time as mentioned earlier high percentage of households are not even in the average level regarding the land holding size. As a result, it makes differences regarding the food sufficiency of each household.

Table 4.8

Food Sufficiency Condition of Sample Household

S.N.	Period	No. of HH	Percent
1.	Less than 3 months	36	27.27
2.	3-6 months	32	24.24
3.	6-9 months	36	27.27
4.	More than 9 months	28	21.21
	Total	132	100.00

Source: *Field Survey, 2016*

Although 48% can live on their own production up to 6 months (table 4.8). however, about 27.27% of households production does not last for even 3 months. This very bad condition has been found to those household who does not have enough land for cultivation. Even those who have the land, it is not so fertile which make them think twice before growing anything as they are putting their money, hardship and time. Some people's land were destroyed by landslide. These reasons led to low production.

However, it is interesting to know that those households or people who are not sufficient in terms of land and good production from agriculture are more engaged in livestock farming. Those who work in other land as tenants are more engaged in livestock rearing. However, at the same time they were not free from the risk of bearing lose in the livestock farming which is the major negative impact for them. As they are economically weak and if their animals die suddenly then they will be in highly vulnerable situation.

4.1.3 Livestock Population of Marek-Katahare VDC Area

Nepal is one of the countries which has the highest per capital livestock holding. Total livestock population of Nepal in 2013/14 was 7304902. Among them 7243916 cattle, 5178612 buffaloes, 789216 sheep, 10177531 goat, 1190138 pigs, 48079406 fowls and 390209 duck are consists. (Stastical year book, 2014). This distribution of livestock population in different part of the country.

In the sense of Marek Katahare VDC, the local people of the village raise large number of cattle, buffaloes, goats, pigs, and fowls as they can. But sheeps and ducks population is totally absent in this VDC.

Table 4.9

Livestock population Of Marek Katahare VDC since 2010-2014

Category	**2010**	**2011**	**2012**	**2013**	**2014**
Cattle	2690	2475	2412	2540	2668
Buffalo	789	816	850	921	928
Goat	5180	5217	5335	5410	5315
Pig	607	620	745	848	886
Fowl	22,315	24400	25880	26,000	27388
Total	31581	33528	35222	35719	37185

Source: *VDC record, 2015* (unpublished data)

The table shows that the total population of buffalo, goat, pig, fowl are slightly increasing continuous, but the position of cattle is quietly separate. The total population of cattle is continuous decrease since 2010 to 2012 and after 2013 it's total population is start slowly increase. Here main causes to decrease the total population of cows may be the local people to start substitute the improve breeds of vow replacement of the local cows. As a whole above table shows that the total populations are increasing trend. In 2010 the number of total livestock are 31581 and in 2014 the number of total livestock are 37185.

Table 4.10

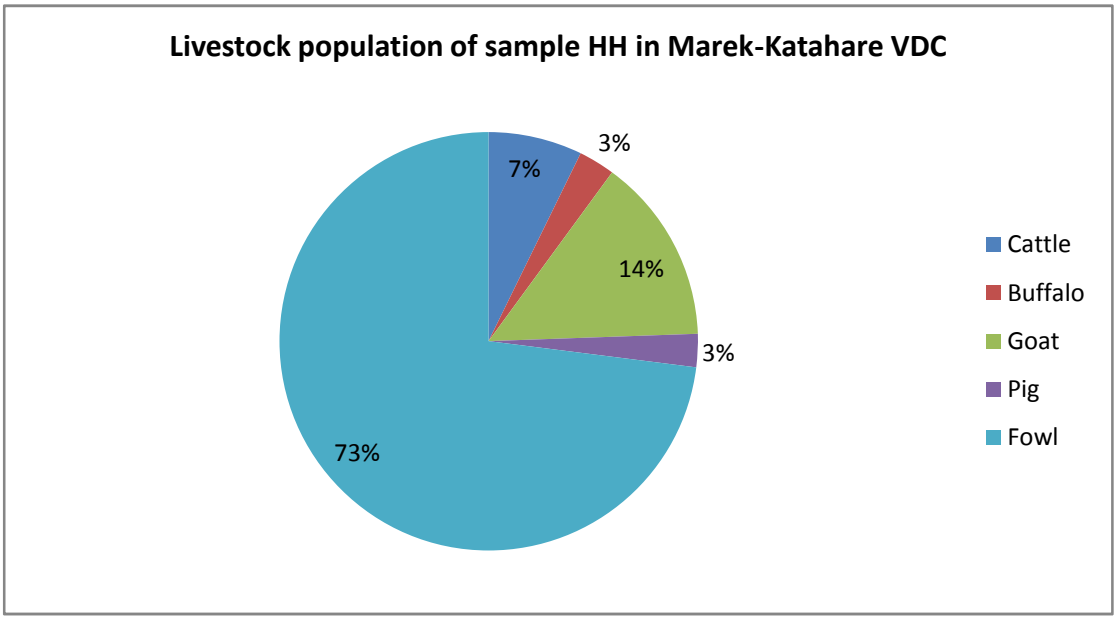
Livestock Population of Sample Household

S.N.	**Types**	**No. of Livestock of Sample Household**	**Percent**
1.	Cattle	271	7.24
2.	Buffalo	104	2.80
3.	Goat	538	14.38
4.	Pig	96	2.58
5.	Fowl	2731	73
	Total	3740	100.00

Source: *Field Survey, 2016*

This Table can be Shown by the Pie Chart

Figure 4.1



Source: *Field Survey, 2016.*

The above table shows that the sample of 130 household reveal that there are 3740 livestock are found. The distribution of these total livestock of the sample households, show that cattle 7.24 percent buffaloes 2.80 percent, goats 14.38 percent, pigs 2.58 and fowl 73 percent are consist. The average number of livestock per household is 27 units. The table obtained from sample households is more or less similar as to the results of the whole VDC.

Table 4.12 is revealed that the importance given fowls, cattle, goat, buffaloes and pig are more or less the same. Cows still occupy religious place and is important for milk and manure, oxen for draguth power and manure, buffaloes mainly for milk and manure and goats and pigs are kept for meat. In the other hand to analyze the sample observation of table 4.12. We can also says that the total livestock population of the whole Marek-Katahare VDC is about may be 38500 in the year of 2016. Among the highest population is consist fowls followed by goats. (table 4.12)

4.1.4 Source of Livestock Feeding

One of the most serious problems of livestock keeping in the hills, of Nepal is the shortage of livestock feed. The scarcity of feed is felt more acute during the winter or dry seasons. Green grass and fodder leaves are easily available during monsoon time but they are not available in winter.

The productivity of livestock is low in the hills because they are half feed most of the times. The reasons are larger number of livestock population than can be properly managed. "Nepal has highest number of livestock per household and perhaps the lowest livestock productivity in the world (Shrestha, 1985).

In the hills of Nepal, the main sources of livestock feed are grazing in the forest pasture and wastelands. These sources provide leaf fodder, green grasses for stall feeding and grazing for livestock. This source contributes more in the high Hills followed by mid-Hills. "It contributes 65 percent 55 percent, and 30 percent in high-hills, mid-hill and terai farming system respectively (HMG/DFAMS, 2001). However over the time period the contribution of forest grazing for livestock feeding seens to be declining because of the intense process of deforestation.

The next source of livestock feed is crop residues like paddy, straw, maize stover, millet straw and other agricultural by products. It constitutes and important source of livestock feed in the winter, wheat, flour, sweet potatoes and vegetable wastes also play a major role for

contributing feed to the livestock. This source is more important in the terai followed by mid-hills.

Similarly the next source of livestock feed is fodder trees and green grasses. Farmers of higs-hills, mid-hills and terai use to plant fodder trees and green grasses around there home ested and the bunds of their terraced land besides there are fodder trees found in the forest as wed as on the waste land. Fodder trees are the main sources of green fodder during late November to may when an acute shortage of green forage is felt in the hills of Nepal. Green grasses are found on the bank of rivers, sides of roads, around homestead, forest, terrace bounds and also from cultivated land. This source highly contributed in high-hills followed by mid-hill.

In addition, the next source of livestock feed is kitchen left over. The farmers use to feed kitchen left over called khole to their livestock particularly the lacting animals. But local concentrace ratio is used for all the livestock.

In Marek Katahare Village, generally animals are taken to the various grazing land for five to six hours per day. Specially by children except the lacting cows and the buffaloes which are stall fed with green grasses, lopping sum the fodder tree, crop residues and also some kitchen by products (Kudo) and local concentrated feed.

Goats fully depend upon community pasture land with some green grasses. Mostly pigs are kept in stall with kitchen left over, rice husk, wheat flour, maize and oil cakes if available one very interesting aspect of piggery in M-K village is that pigs are always kept in stall feeding with specially kitchen residues and oil cakes when over available. But some time after harvesting pigs left for garzing too.

In Marek Katahare Village paddy as a major crops residues is found to provide feed for the period extending from November to may. Wheat straw is generally used for roffing and some is used to feed the animals. Millet straw is mostly fed to non-loctating animals but farmers don't millet straw. Maize stove rig generally feed immediately after harvesting in July to September. But some farmers were found to dry maize stover and use it to feed non-lactating animals during winter month. In addition to the above mentioned sources, green leaves and vegetable leafs are also used as livestock feed whenever it is available, table 4.15 shows the importance of various crop residues as feed in winter.

Table. 4.11

Crop Residues Feed Sources for Marek Katahare VDC [In Winter]

Types	Percent
Paddy straw	60
Maize Stover	20
Wheat straw	4
Millet straw	6
Other	10

Source: *VDC record, 2014* (unpublished data)

The table shows that paddy straw is the most important feed source in winter followed by maize solver. Paddy residues represents more than half of feed sources. Wheat and millet straw are the least important feed sources. But in summer (June to October), fodder trees have green leaves which are major sources for livestock feed. It is reported that green forage provides about 70 percent of livestock feed. The rest is contributed by crop residues (25 percent) and kitchen let-over (5 percent).

4.1.5 Method of Stall Feeding

Stall feeding is crucial for developing fodder resource in the hills of Nepal. Because of lower grazing pressure, stall feeding increase the chance of regeneration of the desirable species of grasses and legumes. Stall feeding may be helpful to restore the productivity of forest and privately owned grazing lands. Without stall feeding it is very difficult to protect the newly planted fodder and other winter forages.

Stall feeding practice is widely carried out during pre-monsoon and monsoon months in the hill of Nepal, when all possible land is under cultivation. Because during the monsoon, farmers have no time for animal grazing. They will be engaged in cultivation. During the time, livestock are mostly fed green fodder trees, available green grasses, crop residues, with kitchen left over and local concentrates feed.

The method of stall-feeding has many advantages and should be considered by a farmers, with the stall feeding method, we can produce more fodder and green grasses per unit of land

compared to grazing the same area and land. This means, more fodder will be available per year from a given area of land. On the other hand, stall feeding will make easy the collection of manure. It helps to collect greater quantity of manure. It helps to collect greater quantity of manure and quality will also be better as it can be correctly stored. Thus with the stall feeding, more fodder and green grasses can be produced which directly helps to obtain more manure and ther by increase agricultural production. Similarly, stall feeding will also help to limit the spread of infections disease. Some of the disease are very infections and spread rapidly to the animals with the close survive. So stall feeding will be less risky them those on communal grazing.

Extreme temperature, heavy wind and rain can have a market negative effect on the production and productivity of livestock. Assuming that the stall is correctly constructed, it will provide protection against climatic effects.

The way of stall-feeding helps to reduce overgrazing, which further helps to reduce soil erosion and to maintain ecological balance.

However, one of the disadvantages with stall feeding is the fodder must be cut and carried to the animals. This will increase the demand for labour and price of bring fodder and also may increase the cost livesthock keeping and it's production.

In Marek-katahara village, method of livestock feeding are mixed. Although stall feeding are widely practiced by the farmers, they are basically periodical, animals are kept in the barn usually during plantation time and when crops are standing on the fields.

4.2 Contribution of Livestock in the Marek-Katahare VDC

There is a close relationship between livestock and human beings in the Hills economy of Nepal. It plays and important role in the economy of the Hills farmers. Farmers keep livestock for different purpose. The main livestock breeding in the Hills are cattle, buffaloes, goats, pigs and poultry. But in the high Hills regions Yaks, Muels, chauries and sheep are of greater importance. Many farmers are also engaged in cattle, marketing instead of farming in the high Hills. Yeaks and chauries are more valuable to farmer than the private ownership of land animals skin, wool and hair are exported to different countries for processing and are sold to the factorize which manufacture consumer goods. Most of the wool and hair are used by farmers to produce blankets, radi and warm clothing mostly for domestic use and some for export.

In Marek Katahare Village we find no household without livestock population. It is found that they keep she buffaloes mainly for milk and manure. Farmers were found not to prefer he-buffaloes. Oxen are kept mainly for draught power. Similarly cows are kept because it has an important religious status and in addition it gives milk and manure. Goats and kept mainly for meat and the sale of such animal being additional cash income to the farmer. Goats are sold at the time of economic difficulties. Here some items of the income sources which we get for livestock are livestock are given below.

4.2.1 Milk Production

The farmers of Marek Katahare Village, although the produce milk, were found not to sale milk because of the lack of market. As most of the household is self sufficient in milk production, marketing of surplus milk is a problem. Since milk is a perishable, commodity and can not be carried long distance without proper chilling and suitable transportation system. The farmer were found to consume milk production at the household level. They are found to consume not only milk but also curd, butter and other milk products. Although milk could not be directly sold butter was found to be sold Dhankuta bazaar and it's adjoining areas.

Table 4.12

Quantity of Milk Production of M-K VDC by the Different Years (In Litres)

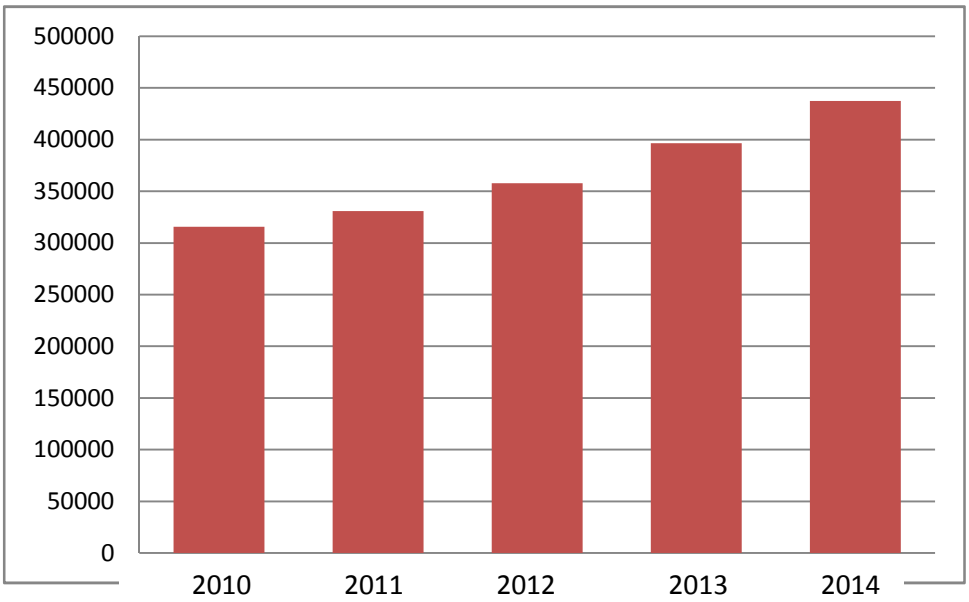
Category	**2010**	**2011**	**2012**	**2013**	**2014**
Cows	182340	192556	213750	225465	256067
Buffaloes	133292	138201	143930	171035	181266
Total	315632	330757	357680	396500	437333

Source: *VDC record, 2015* (unpublished data)

This table can be shown by the following figure.

Figure 4.2

Quantity of Milk Production of M-K VDC by the Different Year



Source : V.*D.C. record 2015 (unpublished data)*

The figure 4.2 shows that the quantity of milk production is continuously increasing in every year. Just like in 5 years time period the net amount of milk increase is 121701 litres which is very high. In the year 2010 total amount of milk production was 315632 litres among them the contribution of cows and buffalo's was 57.76 percent and 42.24 percent respectively. Similarly in the year of 2014 total amount of milk production has became 437333 liters among them the share of cows and buffaloes is increase 58.55 and 41.45 percent respectively. Comparison between 5 different years. We found that in the initial period of above table the quantity of milk was increasing in slow rate but since 2013 the quantity of milk is increasing is very rapidly. Furthermore it is seen that in total amount of milk the contribution of cow's is very high rather than buffaloes.

In this way to analyze the table 4.13, we can easily say that the intention of local peoples for livestock is positively in Marek Katahare VDC. Among them of livestock, their interest is uniquely increased to keep of cows. As a result the quantity of cow's milk is very high rather the quantity of buffalo's milk. Here the above table in the year of 2010 per day per household milk production was 0.64 litres but which in 2014 has became 0.89 litres per day per household.

4.2.2 Meat Production

Meat is another important component of livestock farming of Nepal. This include the meat of buffalo's goat, pig and chicken are more important. Now a day's meat production and it's consumption is increasing day by day.

In the other hand Marek Katahare VDC meat production is being increasing graduall. Which show as following table.

Table 4.13

Quantity of Meat Production by the Different Year of M-K VDC (in K.g)

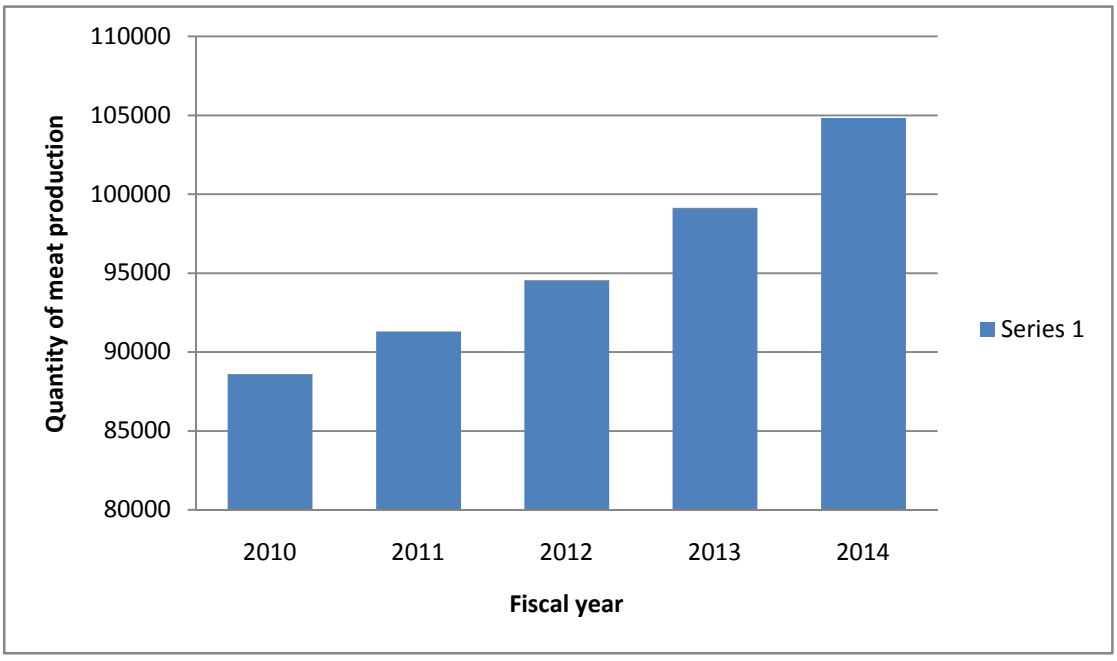
Category	2010	2011	2012	2013	2014
Buffaloes	39278	40576	41752	44583	47833
Goat	15142	15324	16268	16262	16667
Pig	11393	12473	13553	15173	17033
Chicken	22790	22915	22980	23110	23300
Total	88603	91288	94553	99128	104833

Source : V.*D.C. record 2015 (unpublished data)*

This Table can be Shown by the Following Figure

Figure 4.3

Quantity of Meat Production by the Different Year



Source: *VDC record, 2015* (unpublished data)

The above figure 4.3 shows that meat production is increasing gradually in every item of every year. Total amount of meat production was 88603 k.g. in 2010 when total amount of meat production is 104833 in 2014. Here the time gap of five year net meat production is increase in 16230 Kilogram. In the year of 2010 and 2014 total meat production of per household per day is 0.18 k.g. and 0.21 k.g. respectively. Hence to comparison between five year we found that buffalo's contribution is very high rather than other animals in every year.

In this way to analyze we found the farmers of Marek Katahare VDC is generally forward in buffalo farming. So past and present period buffalo's meat is over production rather than other animals i.e. goat, pig, chicken etc. Duck's and sheep's meat is completely absent in the study area. Therefore at present time we can say that people's intention is increasing of the livestock sector.

4.2.3 Income

Livestock plays vital role in then agriculture rural economies of Mark-Katahara VDC. For many smallholder farmers, Livestock are the only ready source of cash to by in puts for crop production-seeds, fertilizer and pesticides. Livestock income also goes towards buing things the farmers cannot make for them selves. And that includes paying for school fees, medicine and taxes. Income from cropping is highly seasonal. In contrast, small stock, with their high rates of reproduction and growth, can provide a regular source of income fro sales. So can milk and milk products like butter and chees. So livestock is the principle occupation of the M.K V.D.C.

To analyze the income-structure of the Marek Katahare VDC of the respondents the various sources of income. These income sources are mainly selling agricultural product, selling livestock product service, wage, remittance, business, return from investment etc. the sources of income situation from the different sources is as below.

Table 4.14

Sources of Income Structure of the Respondents of the Marek Katahare VDC

S.N.	Sources	Amount	Percentage
1.	Selling agriculture product	6595332	12
2.	Selling livestock product	5482066	10
3.	Service	8386600	15.26
4.	Wage	4474266	8.14
5.	Remittance	20638033	37.57
6.	Business	3730100	6.80
7.	Return from investment	976633	1.78
8.	Others	4642066	8.45
	Total	54925096	100.00

Source: *VDC record, 2015* (unpublished data)

Table shows that income from selling agriculture product about 12 percent. Contribution of selling livestock product about 10 percent of the total income. It includes milk, meat, calves and manure. Income from government service is about 15.26 percent. Remittance has contributed 37.57 percent of the total income. Business has contributed about 6.80 percent, and other sectors contributes if about 8.45 percent of total income.

4.2.4 Livestock as Main Occupation

Residents of this M-K V.D.C are engaged in various occupation. These main occupation are Agricultural and livestock, Business, Services, industry (small scale) etc. Among them agriculture and livestock is their main occupation. M-K Village that total population is 6,196 among them the highest population are engage in jointly agriculture and livestock. That livestock is one of important basis of important basis of employment in the study area. Occupational structure of people is indicated below.

Table 4.15

Occupational Structure of Residents of Marek Katahare VDC

S.N.	Occupation	No. of population engaged	Percent
1.	Agriculture and livestock	3825	61.73
2.	Business	194	3.13
3.	Services	296	4.77
4.	Industry (Small scale)	119	1.92
5.	Others	1762	28.43
	Total	6,196	100.00

Source: *VDC record, 2015* (unpublished data)

Table shows that total population is 6,196 among them the highest population 3825 (61.73%) are engaged in jointly agriculture and livestock 3.13% business, (4.77%) services, 1.92% industry, and 28.43 people and depend in others occupation. It show that agriculture is the most importance occupation of Marek Katahare VDC.

4.3 Problem of Livestock Farming

Despite the advantage of livestock farming to the people in both the study area and it's surrounding areas, certain problems have been observed thus this part essentially deals with the problems that are largely faced by the villagers regarding livestock farming.

4.3.1 Shortage of Fodder

Thought the study area has quite high potential for livestock farming, however some families face problem like shortage of fodder due to it's terrain. Just as a spark plug action, which ignites and gets the engine started automatically. Likewise, animal production also depends largely upon the quantity and quality of food they are provided by the farmers. There are some households who have very small land and therefore, for them especially during wintertime getting surplus amount of fodder like green grass or straw is out of question. Further, due to in adequate land they cannot even grow fodder trees to feed their animals. They have to cover a long distance to get grass or fodder every morning. As a result they are forced to keep limited number of livestock.

4.3.2 Inadequate Veterinary Service

One of the main problems being faced by the people in the study area is the sudden outburst of livestock disease and the inadequate veterinary services. There is no adequate veterinary service of facilities to cope with such problem in this area. There only one veterinary hospital or service outside the study area. Hence it is nont possible for all to reach there during the time of emergency. Even the service which are being provided there is nont satisfying. Most farmers either take their livestock to the main hospital covering more than 6 k.m distance and sometimes they get the doctor to their villages to treat their animals.

4.3.3 Government Price and Policy

As compare with the market price, the price which is fixed by the government for the milk is not a sufficient amount. The government rate is Rs 31 per liter where as the market price is Rs 35 to Rs 40 per liter. Moreover those who supply their milk to the milk collecting center, are required to reach at the collecting content before seven in the morning, and on failing to do so, they cannot sell their milk the day. Thus such condition used to create immense problem to the farmers on that particular day.

The study area is not free from people living below poverty line, in fact, majority of the population lives below poverty line. For them livestock is only source for living. But as the price of the good quality of livestock is so high that it is beyond aggravates, as the concerned people do not take keen interest in providing loan facilities to the farmers interested in livestock farming.

4.3.4 Man Power

In order to make money, the villagers have two options either sell their livestock or it's products within village in fewer prices or take it outside the village in order to get relatively higher price. But due to lack of man power, as is found in some households they are forced to sell it within the village in low prices even though they have sufficient quantity (milk) to sell these product outside the village.

Lack of man power not only hamper in getting some handsome price but also drains an individual income to others. During the cultivation period the people who do not have their own oxen either do Arm system (i.e. pay up to Rs. 1500 per day for a pair of ox to plough their field with one person) or parma system (i.e. to help other people at their field to help them during cultivation period with three persons for on pair of ox an man).

4.3.5 Marketing problem

Lack of market is a very greatest problem of livestock farming in the hills of Nepal. In the absence of regular and stable marketing facilities, milk, meat, wool etc. producer always have to depend upon the local traders who might exploit then severely, moreover, in case of small producers, this is still more-important.

The development of milk, meat market in inevitable for extending and developing the production of milk, meat etc. It encourages to raise the production level. In addition to this, marketing and distribution can significantly help in improving the availability of goods and service to consume and also provides a stimulus to producers.

But the situation in the study area is nont satisfactory. Convenient marketing facility is severely constrained because of transportation difficulties and also of the absence of market information system. Due to large number of subsistence paramours, who cannot manage themselves transportation of the product to the product distinction problem has been acute. Uncertainty in the market of livestock feed is also a great hindrance in the study area. Sometimes farmers have to purchase inferior quality of feed for there animals. This severely affects the quality of milk production.

Besides this, there is no livestock policy in the country. Lack of proper marketing system, insufficient attention of the planners and livestock development administrators to take effective steps in collecting reliable statistics of livestock and its products has been and obstacle for the development of livestock.

CHAPTER V

FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Major Findings

This study reveals the situation of livestock farming at Marek Katahare VDC in Dhankuta district. As the study area is a hilly region, the main objective of study is to analysis the present status of livestock farming in the study area, to analyzed the contribution of livestock farming in M-K VDC and to identify the problem of livestock farming process.

This research is based on descriptive research design. The survey was carried was carried out with 132 sample households by using simple random sampling method. The researcher used questionnaire, interview schedule and field notes as a research tools. Livestock are considered as an important component of the farming system because they provide cash income source of security, high quality food, draught power and manure. This study also presents some problems faced by the farmers during livestock farming. The summary of finding is as follows:

(i) 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.

(ii) 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.

(iii) Highest percentage of livestock has found in the hills due to lack of alternative occupation for people, availability of forages, proper pasture land and suitable climate condition etc.

(iv) The production of cow and buffaloes milk (excluding yak) is estimate 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 cows milk is estimated to remain at 562,000 MT while that buffalo milk to remain at 1,135,00 MT. despite the number of buffaloes in recent days has dropped, cows milk production has increased as a result of flourishing improved cow raising business (Ministry of Agriculture, 2014)

(v) 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 59050MT (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%)(Ministry of Agriculture, 2014).

(vi) In this study, it is found that local feeding practice varied with availability of types of grass from season. During the rainly 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.

(vii) Out of 132 households, 44 households belonging to the size of landholding group of 0-2 hectare, 64 households have 2-4 hectare, 16 households have 4-6 hectare and 6households have 6 and above hectare of land. Most of the farmers are M-K VDC belonging to the size of land holding group of 2-4 hectare.

(viii) In total population is 6,196 among them the highest population 3825 (61.73%) are engaged in jointly agriculture and livestock.

(ix) The study found that income from selling livestock product about 10 percent of the total income. It includes milk, meat, calves and manure.

(x) In M-K VDC in 2010 the number of total livestock are 31581 and in 2014 the number of total livestock are 37185.

(xi) In M-K VDC the production of cow and buffaloes milk is continuously increasing in every year. Just like in 5 years time period the net amount of milk increase is 121701 litres which is very high. In the year 2010 total amount of milk production was 315632 litres and in 2014 total amount of milk production nahs became 437333 liters.

(xii) Shortage of fodder, man power, government price and policies and inadequate veterinary service are problems faced by study areas population with livestock farming.

5.2 Conclusion

The study although confined to only one village development committee, the problems encountered reflect the whole mid-hills of Nepal where agriculture, livestock farming and common resources like the forest and grazing land are closely interrelated. Nepal has been

practicing mixed farming system for over. Many years, where agricultural, livestock keeping and pasturing are inter-linked together. The high hills and mid-hills have sufficient forest pasture and grazing land for livestock development and the Terai has more cultivable land for farming.

Nepal is one of the countries which has the highest per capital livestock quantity of manure in their agricultural production activities. The per household is more or less similar to the result for the whole VDC.

The majority of household in M-K village development committee are as in the rural area of the country. Each household maintains same animals like cattle, buffalo, goat, pig and poultry which provide manure, milk, meat, curd, ghee, draught power, bio-gas etc. oxen are kept mainly for draught power but male buffaloes are not used for draught power. Cows are kept with religious status but sheep it totally absent and pigs is also popular to the other costs except the Brahman and Chhetry in the village.

Most of the households is self-sufficient milk production. Although milk could not be directly sold because of the lack of market, butter was found that the per household per day milk availability is 0.89 litre. The households of the village also generate their income by selling of springs of livestock. The majority of farmers are not satisfied with their breeds. Most of the farmers have local breeds yielding which have low productivity.

One of the most serious problems of livestock rearing in the hills of Nepal is the shortage of livestock feed specially in the winter. So that the productivity of livestock is low. The main source of livestock feed in the Hills of Nepal are grazing in the forest, pasture wasteland, crop residues and other agricultural by products and kitchen left-over (Khole). In M-K village, generally animals are taken to the various grazing cows for four to five hours a day specially by children. But lactating cow and buffaloes are stall fed. Paddy straw is major source for livestock feed in winter and green leaves in summer. Stall feeding practices are widely carried out during pre-monsoon and monsoon month.

Most of the livestock are found to suffer from many diseases. The most common diseases in the village are liver fluck, foot and mouth disease and numerous worms. The majority of the farmers in the village use traditional method to treat their sick animals. The mortality of goats is high compared to other animals.

Thus from the above discussion there is no doubt that the study areas has high potential for the development of the livestock farming. Beside off farm sector, it is livestock farming

which provides high proportion of income to the people in the study areas in present days. However, as advantage and disadvantage are sides of same coin in the preceding chapter. Similarly, the positive aspects and advantages of livestock forming in the study areas have been discussed in the same chapter. Thus, if one can devote his time and energy then there is no doubt that the study area can be independent in terms of income. At present days, the farmers of the study area are facing certain problems mainly related to the lack of finance and manpower, however attempts are carried out by government and people themselves to overcome these problems and develop the area.

5.3 Recommendations

The study area has seen high prospective on high prospective on the development of the livestock farming as the area is one of the main source of livestock and its products to its market centers. However, it seems that in the existing situation, farmers of the study area apparently using their animals quite efficiently within the limit of existing resources. However following are some recommendations which would help to overcome problems and further improve the economic condition of the people in the area.

(i) Some people cannot provide adequate fodder for their livestock. At the same time, it is not possible for everyone to plant fodder trees or grass around of their house. Although for those who can actually afford to plant fodder trees or grass around their places are actually benefited during rainy season as it helps to save time to travel longer distance to collect fodder. However, most of the villagers are compelled to face this problem.

(ii) Government can provide better facilities of grazine land and grass in the area. furthermore, the government can to time make the availability good quality of feeds for the livestock.

(iii) Enough veterinary hospital with proper facilities in terms of medicines and well experienced staff should be made available. This will help the villagers to tackle the situation during the time of emergency or when there is a sudden outburst of animal disease.

(iv) The government should provide free checkups and vaccines for preventing diseases for the livestock.

(v) Knowledge about animal diseases, both old and new (bird flu in the present days) should be imparted to the villagers by the animal husbandry department or by professionals.

(vi) Simple preventive method should be taught to the farmers so that can understand different type of diseases and their symptoms. This way they can help their animals by taking preventing measures to protect their animals during the time of emergency.

(vii) Most of the people in the study area are poor people. Hence in order to generate employment to reduce poverty, government should provide loan facilities in low interest.

(vii) Government should provide improved livestock for the betterment of the people.

(viii) Government price should be raised. At present context, the households which have enough livestock and its products are still compelled to sell their milk in low price due the shortage of manpower.

(ix) Government should make efficient policies and strategies to develop livestock farming keeping in mind the vital role played by it and its contributions to other sector like agriculture, as they are interlinked with each other.

APPENDIX

A STUDY OF LIVESTOCK IN MAREK-KATAHARE VDC, DHANKUTA

HOUSEHOLD QUESTIONNAIRE

1. Name of the household head :

a) Age : b) Sex :

c) Education : d) Village :

e) Ward No. : f) District :

g) Language : h) Religion :

i) Major occupation :

2. Number of family member and their age, sex, education, level and occupational status.

S. No.	Age	Sex	Literate	Illiterate	Level of Education	Occupation
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						

3. have any children go to school or college for study in your family?

a) yes b) No

if yes, tick the following.

a) son b) Daughter

If No

4. Why some of your children do not go school?

a) Busy in agriculture

b) They have to look after animals

c) Help the parents

d) Others

5. Is there any land property in your family member's name>

a) Yes b) No

6. How much and what kind of land do you have?

Type	Irrigated	Non-irrigated	Total land ropani
Khet			
Bari			
Pasture land			
Other			

7. What kind of animals is keeping and who many?

Types	Cow	Ox	Buffalo	Goat	Sheep	Other	Total
Numbers							

8. Why do you keep animals?

Milk	Meat	Manure	Transport	Draught	Bio-gas	Others

9. How many incomes have you got from different type of livestock per year?

S. No.	Kinds	Per year income in Rs.
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

10. If you produce milk, how much per day and for how many months?

a) Per day:

b) Month:

11. Do you take animals for grazing?

a) Yes

b) No

12. If yes, where do you take the and how many days or month in one year?

	Attendant day of month
a) To the forest	
b) around homestead	
c) Private pastureland	
d) To local pastureland	

13. What do you feed your animals in different seasons?

Feeder seasons	Graze then	Collected fodder	Improved feed	Agri by product	Khole	Others
In summer						
In winter						

14. What do you do when your animals get sick?

a) Take them to the vetenary clinic.

b) Invite a vetenary health workers.

c) Only use the medicine as he/she knows.

d) Others.

15. How many animals born in the last one year?

Types	Cow	Ox	Buffalo	Goat	Pig	Other
Numbers						

16. How many animals died in the last one year?

Types	Cow	Ox	Buffalo	Goat	Pig	Other
Numbers						

17. What is the causes of animals died?

Causes Types of animals

a) Natural death
b) Death while giving birth
c) Disease
d) Accident
e) Plague
f) Other

18. Do you have your own pastureland?

a) yes:

b) no:

19. If yes, specify the size:

Hectare/Ropani

20. Do you have community pastureland?

a) Yes: b) No:

21. If yes, what is the approximately area?

In Ropani/hectare:

22. How many animals were kept in previous years?

Years	Cow	Ox	Buffalo	Goat	Pig	Other	Total
Before 1 year							
Before 2 year							
Before 3 year							
Before 4 year							
Before 5 year							

23. Identify the problems related to livestock farming.

a) Not enough grazing land

b) Not sufficient improved breeds

c) Lack of support services

d) Others

24. Do you like to say anything, which is not covered in the interview?

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