

CHAPTER ONE

INTRODUCTION

1. Background

Nepal is an agricultural country. Agriculture is the most important economic activity or occupation of the Nepalese people. It is not only the occupation or a source of earning; it is also a way of life for the majority of people. Agriculture contributes about 66% of the country's total income. Man is a social animal s/he lives in a family and society. A family cannot run properly without income. The prosperity of a family depends upon its occupation and income. Economic activities mean any types of job or occupation to earn income for a living. There are three main areas of economic activities in Nepal. They are (a) Agriculture (b) Industry and Tourism and (c) Trade (Thebe & Bataju-2065).

In Nepal, most of the people depend upon agriculture for their livelihood. But, nowadays, with the changes in time and situation, farmers have brought changes in their occupation. Farmers, not only grow agricultural crops for their livelihood, but also are interested towards changing their occupation, which bring them more profit. Now farmers can be seen engaged in activities like poultry farming, fishery, goat rearing, horticulture, bee-keeping, etc.

Nepal, having a total area of about 147,181sq.km is one of the economically poorest but prosperous country in natural resources. It is surrounded by two giant leaders of development i.e. China and India. But, it is struggling itself just for the management of subsistence economy.

Nepal is one of the richest countries in natural resources as well as in biodiversity. Around 7,182 variety of plants are cultivated in various areas like forest, kitchen garden, farm etc. From there the nectar and pollen grain is collected by the bees to form honey. Thousands of insects are observed in this earth. Some of them are helpful for the human race and some are harmful. Bee comes under the helpful insect for human being. It is a social, conscious, laborious, self dependent and disciplined insect which motivates us to be like it (Adhikari, 2061). Our country which is extended from high hill to Terai is seen blooming by different types of flower in different seasons is

favorable place for bees. Through bee-keeping we can not only generate income but also conserve biodiversity and environment.

Due to small landholding and other inherent problems of hilly areas farming alone is not sufficient to make an adequate living. Thus, there has always been a need to explore alternative income generating opportunities which help to alleviate the pressure on land, on the one hand and improve the economic conditions of the people on the other. Bee-keeping is one such farm based food and income generating activity for those who are involving in this sector. Bee-keeping as a profession means rearing honeybees for the production of honey and other bee products and for pollination.

Honey bees use the unharnessed ecological niche-nectar and pollen from various plants that cannot be harnessed for human use without the mediation of honeybees. Bee-keeping is a flexible occupation and it creates off farm employment opportunities for many sectors including women and the landless. An equally important role of bee-keeping is the increase in productivity of agricultural, horticultural and forage crops. This recognition role of honey bee in the conservation of natural ecosystems and biodiversity is rather recent but is gaining ground (Partap, 1999).

Bharatpokhari is one of the richest villages in natural resources. The majority of the land of this village is covered with forest, where plants can be seen blooming throughout the year. Other agricultural crops and horticulture of this area supports the bees to collect nectar and pollen. That's why Bharatpokhari village is suitable area for bee-keeping.

According to the findings, bee's existence have been seen before human being. It is also said that since "Hunting Gathering" age of human race they used to collect honey from the bee hives using sticks, stone, etc. Hence, it shows very old relation in between bees and human beings. This relationship is more clarified by the fossils found in the "Landruk Bhir" of Annapurna range (Rayamajhi & Rijal, 054/55). Worldwide bee-keeping had been started in 1851 after the discovery of modern tool of extracting honey from the bee hive by the father of church in America called **Lorenzo Lorraine Langstroth**. In context of Nepal it had been started in the year 2029/30 by the "Kit Bigyan Mahashakha" under department of agriculture. "The Bee Development Center", Godawari had been established later. It has been renamed as 'Bee Farming Training and Expansion Center'. At present this training and program

has been executing in various sectors of Nepal like Terai, Inner Madhes and Mid Hill regions. Not only this, various organizations of Nepal like Small Scale Industries, Women Development Branch, ADB, GTZ, etc. are working for the upgrading of bee-keeping. They are helping in providing required training, tools, financial imports, etc. Various research oriented projects are running related to bee-keeping have been going on. During May 1991 to June 1992, the ICIMOD had done study on the hereditary diversity of local bees known as 'Apis Cerana'. To improve the hereditary qualities of bees, the comparative study on pollination and to discover the natural resources of honey bee had been done in between July 1993 to July 1995. On the basis of this study various books and journals had been published. Since 1995, the organization has started providing training and required technical services (Sukla, 2000).

Much investment is not needed in bee-keeping. Most of the equipments can be made themselves locally and nothing is to be invested for feeding. The materials needed to starting such farming can be available easily. No higher technique is needed and a farmer can operate it without much difficulty. Bee-keeping is concerned not only with the production of honey but with pollination which is manifested to increase and improve the quality of crops. Bees do not only work as their main occupation to pollinate the crops but also derive their food nectar and pollen from one flower to another and provide the most favorable conditions for selection of pollen which helps to increase and improve seeds and their generation. Due to these various reasons the bee culture is very lucrative and more advantageous. If much attention is devoted, it can be a genuine income generator. It may help the farmers to uplift their economic position and increase the national income. The geographic setting of Nepal, climatic conditions and vegetation abundance are more suitable for this occupation.

Bee-keeping is done in Nepal from the very ancient period in traditional way. It was done for decorative purpose, entertainment and a hobby, it is said that if a bee comes inside home the respect of home increases and luck favors in all the works.

Regarding Bharatpokhari VDC, bee farming has been adopted as a full phase and also a substitution occupation, too. As a substitution occupation, farmers include tomato farming with it. Whereas some of the farmers have adopted it as a main source of income. According to modern bee farmers of Bharatpokhari, the modern bee-keeping has been started since 2049/050. Many farmers from the VDC had taken training from

“Godawari Bee Development Branch”. Among them, Mr. Lal Bahadur Thapa Magar of Bharatpokhari VDC-2 is one who has transformed his old traditional bee-keeping practices into modern bee-keeping. At present, recently he has started making modern bee hives using electricity for sales purpose. Bee-keeping farmers have been united in organization to involve in various required trainings.

1.2 Statement of the Problem

Human beings are the social creatures. They fulfill their basic necessities according to their economic standard and socio-cultural status whatever they have. Bee-keeping is an agricultural occupation. It can be included as full-phase as well as alternative occupation based on agriculture and forestry. Honey is one of the tastiest and most nutritious foods. We are well known about honey which is collected by bees. But we are not known about the uncountable contributions of bees in the development of biodiversity. Honey is also one of the nutritious (elixiry) substances which play an important role in health. Bee-keeping contributes a lot for earning. Not only for income generation but also to get employment and conservation of nature bee-farming is one of the best occupations for farmers. It is also one of the healthy professions. While extracting honey, the children of bee-keepers eat honey and wax, from where they get essential nutrition to their body.

The Nepalese economy is very poor. So it is required to invest less and earn more. For that bee-keeping is one of the best options. Due to favorable natural resources of Bharatpokhari VDC, many villagers are adopting this occupation. Followings are the causes why modern bee-keeping is so much popular for Nepal and Nepalese farmers.

- Nepalese honey is chosen as one of the best in world market.
- Solution of employment problem.
- Presence of favorable natural resources.
- Can be conducted with less investment.
- Modern bee-keeping can produce 8-10 times more than the old traditional bee-keeping.

As farmers are getting more benefits from bee-keeping, there are still many problems in this sector. There is lack of knowledge and skill in bee-keepers of the study area. Some of the bee-keepers want to keep bees in large scale but due to their poor socio-

economic condition they are not able to invest much. About gender, the participation of male and female are not so different but females have to work a lot in such field. On the above issue, the related problems are pointed out in the form of questions to be answered for the solution:-

- What kind of technology has been adopted by the farmer?
- How is the involvement of people based on caste, class and gender?
- What is the result/reaction of the product in the local market?
- What kind of change has been observed in their (farmer) social, economical and cultural conditions due to this?
- What is the condition of satisfaction?

1.3 Objectives of the Study

This study generally aims to analyze the overall impact of bee-keeping and its contribution on people's life. Specifically it has the following objectives:

- To analyze the role of bee-keeping to uplift the socio-economic condition of the farmers.
- To analyze the gender based contribution.

1.4 Importance of the Study

This study focuses on the impacts of bee-keeping on rural people who have been involving in this occupation. Various types of bees are found in the study area due to favorable natural resources of Nepal. It is found that the existence of bees was before human being. The importance of honey is mentioned in religious and historical epic. The importance of bees and honey was mentioned in the oldest epic 'Rig Veda' The intellectual 'Aryans' used honey as one of the sacred and useful substance. Even today the necessity of honey can be seen in religious and paternal deeds. Bees had been kept by the farmers since time immemorial; still they use the calendar of astrology to extract honey. Thus honey is not only the sweet substance but also a nutritive food and medicine being used since early civilization. The geographical setting and favorable climate is boon for bee-keeping in Nepal. The importance of bee-keeping is increasing due to demand of honey for religious and medicinal purpose. Honey is taken as a tonic to reduce malnutrition. This occupation is a

medium to reduce country's poverty as well as to generate employment opportunities. Bee-keeping is one of the attractive occupation because with low investment farmer can get comparatively more benefits. Nepal Government has given priority to expand bee-keeping for the sake of production of seeds. At the end of 8th five year plan many farmers got benefits by training given by Nepal government. Nowadays, bee-hives are distributed to the farmers in 25% donation. The management of bees forage and bee-keeping training programme is holding in different parts of our country.

During the field study, questions were raised about the importance of bee-keeping. The importance of bee-keeping quoted by farmers during fieldwork are given as:

- Economic importance
- Nutritious importance
- Religious importance
- Social importance
- Entertainment importance
- Agricultural importance

From these points bee-keeping is always a matter of worth study. Further- more, it is believed that this study attempts to reveal the impact of bee-keeping in rural life.

1.5 Limitations of the Study

It is necessary to give attention on its boundary while studying at any subject. This study is held for the partial fulfillment of the requirements for Master of Arts in Anthropology and is obviously limited in terms of time and the budget. More significantly, this study is limited only about the bee-keeping of Bharatpokhari VDC Ward no.2, 3, and 4 of Kaski District, so the findings from this study may or may not be fully applicable for the other such places and cases. Further the small sample size automatically, provides some degree of limitation to the study.

1.6 Organization of the Study

This study is divided into six chapters. The first chapter deals with the introduction, the second chapter is all about the review of literature, the third chapter is research methods. Likewise, environmental settings are described in chapter four, and chapter five is data Analysis and presentation. The final chapter i.e. chapter six is related to

summary, conclusion, findings and recommendations. At the end bibliography and appendixes have been included.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Perspective

It is true that the significant feature of the scientific research is interactive. That is to say, the previous research always guides the upcoming research and the result made by new research may transform the earlier findings. From study to study, research methods and strategies are progressively refined, research subjects are redefined and transformed, and new ideas are sparked by earlier findings and changing concerns. Thus, the review of literature always deserves high potentiality for systematic study and the valid outcome. By accepting these facts, the materials related with this study have been considerably reviewed. Thus, this chapter is all about the review of the related theory and the previous studies.

2.1.1 Ecological Models

Ecological models have become a popular approach in anthropology to describe a subsistence economy and to determine what constraints of limiting factors operate in that system. If the ecological model is comprehensive then it would enable the researchers to examine the interrelation of environment and economy. Any environment of a subsistence economy includes elements of the physical environment, such as climate, soil, water, elements of the biological environment, such as flora and fauna. Setting up a complete model allows the researcher to see which constraints are important and how they affect economic decision making.

One example of the theoretical application of this model in a cultural area is similar to Hitchok (1974). His analysis is on Leipzig's law, a theory that one constraint will be more limiting than any other. If one can identify this constraint, he argues, one will have found the basic economic strategies. One can also predict the future trend of adaptation.

Bharatpokhari is also one of the well developed and rich VDCs on the basis of nature and ecology. Its ecology provides bee-keeping as one of the best options for business purpose.

2.1.2 Gender Perspective

Gender model or perspective is one of the important models in which gender analysis is done. Every animal community can be differentiated into male and female biologically, which is accepted as natural phenomena. But, other characteristic behaviors, roles etc. that are heavily influenced by biological features are ‘maleness’ or “masculinity” and femaleness or ‘feminist’ is the precondition for organizing human social life in cultural pattern. Gender refers to the socio-cultural differences between men and women that are learnt changeable, within and between cultures. In the former studies, the gender discrimination has not been seen in bee-keeping in Bharatpokhari VDC. Both the genders have been seen equally involved and working hand to hand here.

2.1.3 History of Bee-keeping in the World

It is not yet searched out the exact year of bee-keeping in the earth. But according to the proof obtained from the Stone Age onward people started eating honey while searching their foods in the jungle. It is guessed that the evolution of plants having flowers and bees were at the same period. They used stones and woods for making out the bees from their hives to get the honey. Later, as they liked the honey, they started making fire to collect honey from the hives which was proved from the inscription found in Africa, Spain, Australia, India etc. Honey is taken as the first sweet tasting food. In Hindu religion honey has been stated as a pure food and included in all rituals work.

According to assumption of scientist-Prahas, honey was discovered 23crore years earlier in Mosoic Era. Bee-keeping actually had been started since last 5000 years in Neolithic period. In that same period it had been found that the wooden frame was used to keep bees. Such kind of frame helped in protecting the hive from sunlight, rain and wind etc. In fourteenth century in Europe modern wooden frame used for keeping bees had been discovered. Hence it can be said that time onward bee-keeping was in a good shape (Bhandari, 2066).

Before 1600 BC in some European, African and Asian countries bee-keeping was done. At the same period bee hive had been started to transfer or taken to America, Australia and New Zealand. In the year 1622, from UK to North America the bee

called 'Apis Mellifera' had been taken. Similarly, bee hive had been taken in year 1688 from France to Caribbean, in year 1822 from UK to Australia, in year 1829 to New Zealand. In this way the European originated bees in 19th century spread out in the whole world.

As time passed the development of bees were increased in the process of development. Later the improved hives were also introduced. The modern bee-keeping was started after the discovery of modern tool of extracting honey from the bee hive by **Lorenzo Loraine Langstroth**. In 1865 another person named **Major Huska** introduced the technique of extracting honey which was known as "Mahadani."

2.1.4 History of Bee-Keeping in Nepal

In Nepal bee-keeping is done from the very ancient age in traditional way. Though it was done for decorative purpose and as a hobby, it is said that if a bee comes inside home then the respect of home increases and luck also favors in all the works. Similarly if bee flies away from home then it is not a good sign for that family.

In Nepal the bee-keeping was based on the traditional thought of good luck and bad luck. The bees used in farming are Apis Cerana, which can be kept in the wooden frame. With the development of various technology in Nepal, bee-keeping also has been developed and now we find modern way of bee-keeping here. Honey is taken as one of the necessary substances in Hindu religion. In religious functions and festivals honey is used compulsorily. In the process of development, the technique of bee-keeping is also improving in Nepal. Nowadays bee-keeping has been doing in modern form.

In the year 2025/26, Local Development Committee had launched various programmes related to bee-keeping. In the year 2029/30 Kit Bigyan Mahashakha was established under department of Agriculture and research programme was started at that time, modern wooden frame hive had been provided in some districts like Lalitpur, Kavrepalanchowk, etc. In the year 2036/37 a company named "Nepal Punarbas" had provided modern wooden frame hive in 5 districts Banke, Bardiya, Kailali, Kanchanpur and Sarlahi. In the year 2036/37 "Small Peasant Development Project" and UNICEF had launched various programmes.

Nowadays modern bee-keeping has been launched in various districts. From this farming the economic condition of farmers has seen best. After importing of bee named 'Apis Mellifera' in the year 2052/53, the professional bee-keeping was established. But in case of hilly region local 'Apis Cerana' has been used for bee-keeping. In case of Bharatpokhari, there found local 'Apis Cerana' is found for bee-keeping.

2.2. Review of Previous Studies

There are three major services of honey bee to farmers in Nepal. Farmers from high altitude areas in Jumla district (above 2000 meter above sea level) usually do not have land for rice growing therefore, since long time there is system of bartering honey with rice from lower altitude areas. Bee-keeping is one of the major income sources mainly for those bee-keepers who have limited option for cash income. Bee-keepers, therefore, provide not only cash income, but also other benefits like food, nutrition and medicine. It is equally important to maintain biodiversity at society, national, regional and global levels. Honeybees perform several ecological functions without competing for scarce land resources. Honeybees provide benefits for better farm yield through pollination service.

The local organizations facilitate to develop an organized group of bee-keepers, which can work together for promoting sustainable bee-keeping in the communities. The main role of local organizations is to facilitate communities to undertake Apis Cerana selection, training and extension, awareness rising about conservation of indigenous honeybees and market related activities. Local organizations help beekeepers to prepare a common work plan and implement together through self-learning, action research and farmers-to-farmers training and village-based workshops. There are 67 bee-keepers groups formed in Jumla district. Local organizations encourage women participation in all activities related to bee-keeping. There are 17 women groups formed in Jumla district of Nepal. Similarly a total of 2 and 3 bee-keepers groups are formed in Dadeldhura and Kaski districts of Nepal respectively. These groups are responsible to undertake regular meetings, regular savings and mobilization of local resources and utilization of local skills for income generation activities in their respective areas (ICIMOD, 2001).

There are various government, non government and grass root organizations carrying out research and development activities into the development of bee-keeping, honey collection and marketing. The work is scattered and has very limited sharing of information and collaboration among agencies working in bee-keeping. Such approach of working in isolation resulted into very little impact on the overall bee-keeping scenario. ICIMOD's project is, therefore, facilitated to create Apiculturist's Network- Nepal (Api-net), a network of bee-keeping organizations and individuals linking the whole honeybee community in Nepal. This network has formulated its own vision and objectives based on issues and problems prevalent in bee-keeping in Nepal. The vision statement of the network is "conservation and development of sustainable apiculture in Nepal through active participation of member organizations and other stakeholders". Primarily, the network will make valuable contributions to improve exchange of information and sharing experience among agencies and individuals working in bee-keeping (Gurung, et al -2001).

Chepang is one of the ethnic races of Nepal. They are very poor. They mostly live or depend upon millet, maize and edible roots for their livelihood. They live in Luina, Raaksirang village of Makawanpur district. This place is very backward and remote. But due to the help of Agricultural Development Office and Praia Development Program, the lives of the Chepang and other local communities have changed. These People have been given the help and encouragement to follow the occupation of bee-keeping. This occupation has not only helped them to look after their house and the family, but also enabled them to send their children to school. Their source of income and economic status has increased. Training and required materials are given free of cost to these people. Laupmar Praja, a bee-keeper of the same village is very happy to see better changes in his life. Besides producing honey, he has planned to produce wax from the bee hive in the near future. He is lucky to earn about fifteen to twenty-five thousand rupees in a year. The Agricultural Development Office and Praja Development Program have also made the provision of the market to sell the honey products. Now the honey is taken to Hetauda, Manahari and Bharatpur for sale (Thebe & Bataju, 2065).

Nepal is an agricultural country. Forest is the other main natural resource. Bee is wealth of both agriculture and forest because the food and different types of bee

production are found from the plants' flowers. The bees collect the raw materials from the flowers and plants. Bees also help for the production of both quality and quantity of the plants due to pollination. As a result the farmers as well as the country are benefited with it. Some time there is conflict between the bee-keeping farmers and other general farmers because of the lack of understanding so that those who have known the importance of bee-keeping should make others to know its benefit. Most of the land of Nepal is covered with agriculture and forest. There are different vegetation and sufficient flowers. The bees find sufficient food from these vegetations and flowers. This is the natural system. Sufficient number of structure of bees are found in Nepal. These structures are found either in the trees of the forest, wall of the house, safe and log-hive or in modern hives. This is the reason why people are devoted to keep the bees. Every species in the earth has their own needs. Their needs are called their (infrastructures) basic things of their livelihood. Some basic things that are needed for successful bee-keeping are structures of bees and their types and physical infrastructure.

The hilly region of Nepal is suitable for bee-keeping. The climate of this region is favorable for bees. If the unemployed youths can be attracted in such farming then the problem of unemployment can be reduced. Knowing the importance of bee-keeping, people are increasing in this sector day by day. The demand of organic honey is high in international market. People of hilly region do not mix any kind of other substances on it. That's why if we produce more honey from professional way then foreign currency will follow us. Nepal is already member of WTO. In this context honey can be supplied in world market (Neupane, 2064).

Thapa (2011) has conducted research on "Socio-economic Impact From Bee-keeping in Famers Life" in Armala VDC of Kaski district. She has chosen the bee-keepers who followed bee-keeping in modern way. Her study has pointed that the bee-keepers in study area are satisfied and they are curious to keep bees in professional way. On the research period, she has used method of observation, interview, focus group discussion, etc. According to her objectives she has found that the bee-keepers have been generating income through bee-keeping which has supported the life of bee-keeper. Her study shows that the social and economic change has occurred in the bee-keepers lives.

Gurung (1983) has conducted research on bee-keeping in Kaski district of Lumle. His study pointed out the existing problems on bee-keeping that is lack of technical knowledge and capital to invest. Before the establishment of LAC and implementation of improved method of bee-keeping within the target villages, farmers were totally dependent on centuries old method. But LAC after its establishment has introduced the improved method of bee-keeping to replace the traditional method by the use of improved technology and equipments. The policies described in the annual report of LAC are more or less sufficient to promote the impact of the improved method of bee-keeping in its target area. But these are less implemented in the field. Some of the bee-keepers of the study area have mentioned that they failed to run the bee-keeping in the form of major source of income generator.

Farmers living in more than dozen villages in Kavre district are attracted to commercial bee-keeping economic activities. The reasons for being attracted are because of the less money required to run the business and they do not have to pay much attention for this activity. Gauri Prasad Poudel who lives in Sathighar, Bhagwati VDC has been engaged in bee keeping economic activity for the last eight years. He earns about fifty thousand rupees per year from bee-keeping. People who are engaged in this economic activity can sell the honey and wax either at home or in the nearby markets in Banepa, Dhulikhel, Panauti and Panchkhal. They earn three to four hundred rupees per kg. of honey (Thebe & Bataju, 2065).

Many types of bees are found in nature. But, among them only few bees can collect nectar and store in their hives. Apis Cerana is one of the few bees that collect nectar and prepare honey. Apis Cerana is its scientific name. Especially these Cerana bees are found in hilly region of Nepal though it is also found in Terai region. The honey consumed by our ancestors was the honey of Apis Cerana which has been eating since centuries, keeping them in log-hives and stone hives in traditional way. Nowadays the type of honey bees named Melifera is imported from foreign country for the sake of business. The bee-keepers of one place can obtain different types of taste of honey than in other places. Because of the geographical setting and climatic condition different types of plants are found in different places. All the plants are not suitable for bees. Only selected plants are useful for them. The taste of honey is different due

to different types of flower juice taken by the bees. According to the informal information about 5-6 different tastes of honey are found in Nepal from Cerana bees. Kaski District is famous for its natural beauty. Because of its natural ornament like mountain, lake, spring, cave and hills this district is taken as a district of natural resources. Besides it, now Kaski district is taken as the availability of different types of taste of honey. To save the existence of bees, the plants give its nectar and pollen in a same way to preserve the existence of plants the bees play the role of pollination. That's why there is close relation in between bees and plants. Bee scientists have proved that the value of increase in production from plants by the process of pollination is higher than that of honey and wax (Shrestha, 2068).

The youth of Nepal are going abroad searching employment. Narayan Neupane of Balaju is busy to serve the bees. To find out diseases of bees, doing treatment and extracting honey is his daily routine. Neupane has been involving in this sector for seventeen years. According to him, it is better to serve our own country rather than going abroad. That's why he has chosen this occupation and has seen its future. He is busy in International Pvt. Ltd situated in Gongabu, where bees are kept for professional ways. According to him to earn dollar we have to produce our won product and have to export them rather than going abroad. As a job holder he gets Rs. 20,000 per month. Business activity of International Pvt. Ltd per year is Rs. 150,000,000 and its profit is Rs. 50,000,000 (Acharya, 2012).

The farmers of Arghakhanchi district are attracted in beekeeping due to good income from it. This profession is increased because of low investment and farmers have to do less work. By selling honey, the bee-keepers of Dhanchaur VDC and Dhikura VDC of Arghakhanchi district import Rs. 5,000,000 every year. Every household keeps bees in traditional as well as in modern way. The income of bee-keepers is increased after they keep bees in professional way. Around 180 household of Dhanchaur and Dhikura VDC has kept bees in professional way. Among them the range of income is from Rs. 10 thousand to 400,000 per year. Farmers have extracted honey once around 8kg from modern hives and 3-4 kg from traditional hives. In one modern hive around 15kg honey can be produced. The productive honey is supplied near the market like Sandhikhark, Dang, Bhairahawa, Kathmandu, etc. The honey is being sold at Rs. 400 per kg. To extend bee-keeping profession the villagers of these

VDCs have formed groups. Member Basudev Pandey of Dhanchauri bee-keeping group told that the VDC imported more than Rs. 5,000,000 from bee-keeping. The villagers have kept one hive to 30 hives. Bee-keeping profession is increased when District Agriculture Development Office has provided them modern hive in donation. In the same way Suprakash Khanal of Dhikura VDC has kept 20 hives in his home. He added that by selling honey and hives, his income was more than Rs. 1,500,000. Dhanchaur of Arghakhanchi District holds second positions in the field of bee-keeping in Nepal. The demand of honey in high price has encouraged to keep bees in professional way. Parwati Saru of Dhanchaur said that her yearly income was Rs. 50-65 thousand which supported her children's education (Acharya, 2068).

Different types of climates of the world are found in Nepal. Although it is small country, it has different kinds of climate and plants. In Nepal, around 7,182 kinds of plants bloom. Their nectar and pollen are being wasted. Bee is that kind of insect which consumes the waste going materials from the flowers. Throughout the year flowers can be seen around us. Those flowers are the forage to bees. A crore of rupees has been wasted from plants in a form of nectar and pollen. The only solution to consume that waste going substances is to do bee-keeping. By the pollination the production of crops also increases around 30% to 60%. That's why the future of bee-keeping in Nepal is good. Some of the developed countries keep bees not for honey but to increase their crop production. Deforestation, pesticides, environment pollution, depletion of Ozone layer, etc. are the factors which decrease the number of pollinator insects. The crop production of Nepal is decreasing due to such reasons. The probability of bee-keeping in Nepal is high. Many of the countries like Australia, America and Europe do not have favorable climatic condition because in winter the climate is so cold and in summer so hot which cannot be adjusted by bees. So the favorable condition in those countries for bees is only for 4-5 months. But the climate of Nepal is suitable for bees up to 8-10 months. This is the fact why there is high probability of bee-keeping in Nepal. Also the honey of Nepal is announced as the best honey in the world in 2003. The concept of Nepalese people is that from the bee-keeping beekeepers only produce honey. But the more valuable substances like Royal Jelly, wax, Pollen, Propolis and Bees poison can be produced more than honey. The demand of Nepalese honey is increasing day by day. By selling these products foreign

currency can be imported. By using modern technology the production of honey can be increased 8-10 times (Bhandari, 2066).

Professionals pointed out many problems in their field because even today it is hard to educate public about the medicinal and nutritious value of honey. Nepal Government Agriculture Directorate General Jagadishbhakta Shrestha has pointed out that the problems created in beekeeping are due to lack of interest of states and political parties, in the field of beekeeping and its production capacity. He has added that practically agricultural sector of Nepal is unnoticed though it is backbone of economy. The government of Nepal has not given attention in professional production of honey which is medicinally important for humankind. According to the Norwegian report it has mentioned that in Nepal 10 lakhs metric ton honey can be produced and for that it has to rare around 90l lakhs beehives. Though there are not targeted beekeepers in Nepal who keeps bee-keeping in large skill. President of Api-Net Pawan Kumar Samal himself have been involved in this field since 30 years has pointed out that there are many places like Chitwan, Sarlahi, Dang etc. for bees forage. Because of the sub-tropical climate of Nepal it is suitable place for beekeeping and there is more probability in this field. Horticulturist Rajendranath Adhikari, President of Honey Business Union, Dharmaraj Shrestha and businessman Raju Khatiwada have emphasized to declare pocket area of bees and regulate planning. Bees that sacrifice their lives for the sake of others are in critical phase due o climatic change, deforestation, using pesticides. So, to reduce such problems the government has to give attention in this field. The honey from Nepal is best in the world and has high demand. That's why Nepal govt. has to construct international standard (ISO) lab accordance to WTO and European Union. If Nepal could do such kind of work then foreign currency would follow (Upreti, 2068).

Farmers in Ilam district are attracted in professional bee-keeping. When organic farming system is introduced in this district, the farmers have desired to keep bees. In organic farming system farmers would not use chemical or pesticides. The investment in bee-keeping from government as well as non govt. sector is increasing. Cottage and small industry have also provided bee-keeping training and beehives to them who are interested in this sector. Even District Agriculture Development Office has given 25% donation in beehives and 50% donation on bee equipments. Bee scientists have

informed that local 'Apis Cerana' bees are useful for professional bee-keeping. Agriculture Alliance has launched program at Barbote and Sulubang of the district. Different bee groups are formed and promoted beekeeping programme. Lekhanath Dahal of Laxmi Bee-keeping Center has privately run training and also supplied beehives near neighboring districts. Agricultural Alliance Center has provided 160 modern beehives, honey extractor, smoker, swarm bag, bee veil and gloves. This commission has also given training to farmer at Chisapani, Laxmipur Mangalbare, Amchowk and Ivang. Chandrakala Niraula of Sulubug-3 has exchanged her experience why beekeeping is attractive to women. The skills needed for modern bee-keeping was given by Alliance. Ananta Rai of Alliance has said that bee profession will be better due to organic farming system (www.ekantipur.com).

Honey is tasty foodstuff. We are well known that bee collects nectar from different plants and invest honey. But still we are unknown to its role in whole earth's bio-development process. Not only this, honey is one elixir substance that gives life to those who are physically weak. From beekeeping one can sustain his/her prosperous and healthy life. We can increase our income as well as we can conserve environment and bio-diversity through bee-keeping. Bee-keeping profession is regarded as a profession of natural conservation. That's why bee-keeping is also regarded as healthy profession. It is seen that the children of bee-keepers are healthy because while extracting honey they get chances to eat honey.

Science and technology has fastened our lives. To apply modern farming we have to improve our old agriculture practices and follow modern technology. In this case bees can play important role of pollination. To raise the economy of poor and to reduce poverty bee-keeping is taken as good option. This profession is regarded as self employment profession. Bee-keeping can be done by any community, having different caste, race etc. To make productive profession one has to use modern technique given in bee-keeping and have to add bee-hives in time (Thapa, 2060).

Kumal family of Dagantundanda, Baglung has been engaged in bee-keeping and earning a lot. Their traditional occupation was making clay pot and fishing. Their tradition occupation is not well enough to sustain their life in modern society. So, nowadays besides making clay pot and fishing they are interested in profit oriented occupation. They themselves make bee-hives. Tej Bahadur Rana Kumal of

Dagantundanda and his family has been involving to construct modern bee-hives. Traditionally, they sustain their lives by fishing and pottering. Since 2066 BS they are involving in bee-keeping and getting good income (www.aicc.gov.np).

Farmers of Bayarban in Morang are being example for others that they can earn enough by staying in their own land. Because of unemployment problems, many youths are being flown away in foreign countries to earn money. Farmers of this area are keeping developed kind of bees and are satisfied with the income. Local rural improvement community forest program has encouraged them to keep bees. The farmers of Bayarban-8 have decided to form “Pariah Bee-keeping Group” and bring out bee-keeping in professional way. Group chairperson Nilchan Bhattarai wants to give package program to youth (Mandal, 2068).

Hitman Shrestha of 81 years old from Kapan, Kathmandu uses honey daily. Because of medical quality in honey it keeps one healthy and fit, he said. He added that he didn't have to use other medicine. Honey is used as medicine nearly for 300 diseases and the doctors also give advice to the patients to use medicine. For this reason, the demand of honey is increasing in the market, Ganesh Basnet president of bee-keeping central co-operative organization said. With the demand of honey the farmers are also attracted towards honey production vocationally. Late king Birendra, while visiting Europe showed his concern in bee-keeping and a team of expert came to Nepal to study about its potentiality in 2051 B.S. Arjun Pokhrel vice president of the organization said. The team summated the report that *Melifera* would be suitable in Terai region. On the basis of the report the government of Netherlands provided bees with hives as a gift. The same type of bee has been extended all over the country and kept in vocational way Arjun said. Bees collect different types of flowers and nectars from different vegetations and make honey. *Melifera*, *Cerana*, *Pulka*, *Laboriosa*, *Florae* types of bees produce honey. Among them *Melifera* and *Cerana* have been kept in vocational way. According to Basnet there are altogether one hundred and sixty thousand hives of bees all over the country and nearly twenty five thousand farmers have been involved in it. Bee-keeper central co-operative organization bee-keeper Federation has collectively produced honey sold in the market. Except them, multinational company Dabur, private firms such as Sagar Honey, Gandaki Bee Concern, Royal Honey, Gorkha Honey, Satya Bee and Chitawan Bee-keeping have

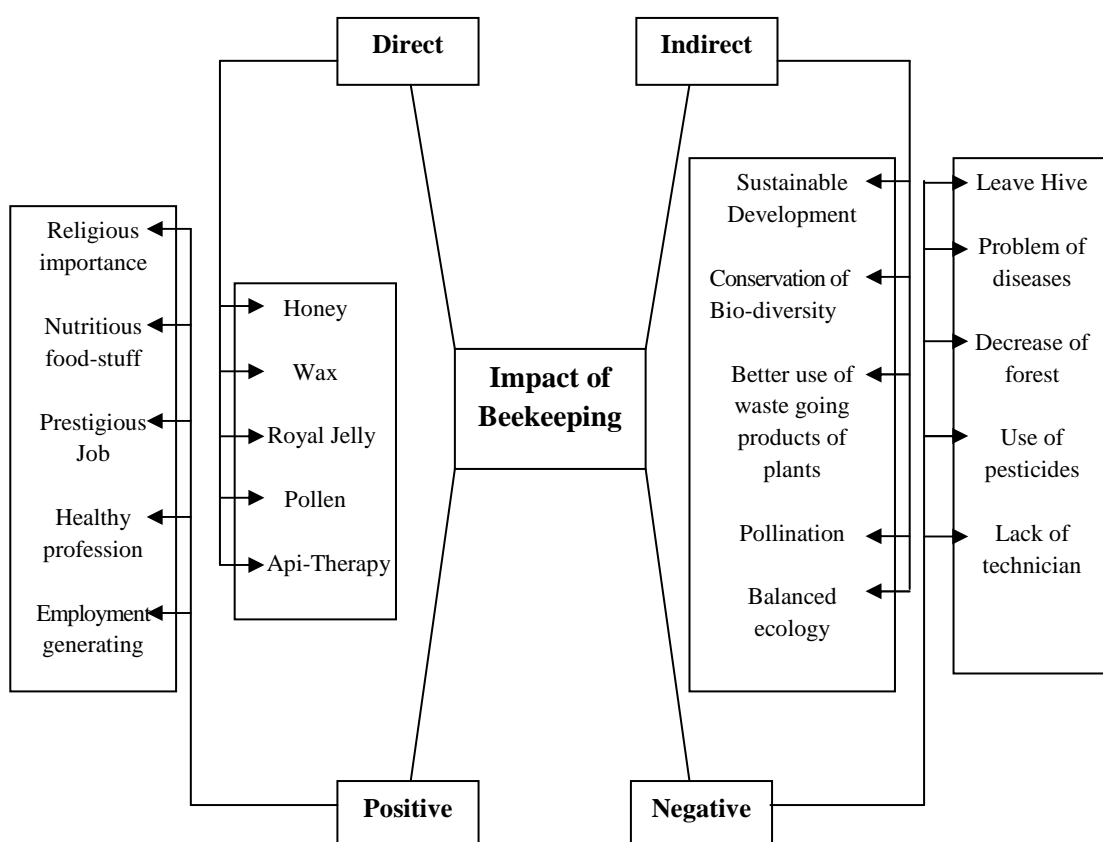
been producing honey. Dabur has claimed for nearly 70 percent market of its branded honey. According to Pokhrel there are 40 brands of honey all over the country. Basnet has said that one thousand two hundred ton honey is produced in a year and it is worth of 39 crore rupees (Ghimire, 2010).

Farmers are benefited greatly from honeybees. They produce honey and other bee products which can be sold, consumed, or used as medicine, and they play an important role in pollination of crops and other plants, thereby enhancing farm productivity and conserving biodiversity. Beekeeping with the indigenous hive bee *Apis Cerana* is an integral component of Hindu Kush Himalayan mountain farming. *Apis Cerana* is well adapted to the climatic conditions at higher altitudes: it can survive under low winter temperatures and extreme temperature fluctuations and continues to work on dull days. In recent times, however, the newly introduced species *Apis Mellifera* has been promoted in the region for commercial honey production because of its higher honey yield, and lack of awareness of the other important roles that bees play. Population of *Apis Cerana* and other indigenous honeybees are declining in the region, leading to problems with pollination of early flowering crops and loss of native plant species. ICIMOD's Bee-keeping Project is conducting a number of activities to promote sustainable management of *Apis Cerana* and other indigenous honeybees. Various techniques are demonstrated at the Godavari site including *Apis Cerana* selection and management and integration of pollination in farming systems. The bees are kept near to the plant nursery and a number of fruit orchards, thus supporting pollination on site. There is rich tradition of bee-keeping in remote villages of Nepal, which is associated with genetic diversity of *Apis Cerana*, availability of bee forage plants and a wealth of indigenous knowledge in sustainable management of bee-keeping in traditional log hives. It is the fact that the native *Apis Cerana* bees now are kept only by those, who are poorest of the poor in the remote villages of Nepal. Traditional bee-keepers who keep bees in log and wall hive are poorer than those practicing bee-keeping in movable comb hives. Within the beekeeping communities in Nepal, *Apis Cerana* bee-keepers are poorer than those keeping exotic bees (*Apis Mellifera*). However, *Apis Cerana* bee-keepers possess high degree of social capital and are strongly integrated within the society as compared to commercial bee-keepers. Selling bee products contribute cash income to the livelihood of remote and isolated communities in Nepal. Bee-keeping with *Apis*

Cerana doesn't require a lot of management like sugar feeding, disease control and migration. So, it is easy for an isolated farming, community to practice bee-keeping with this bee species on the basis of their indigenous knowledge (Joshi et al-2001).

2.3 Conceptual Framework

The main focus of study is to analyze the impact of bee-keeping in rural livelihood. To fulfill the aim, this study is concentrated on the following variables, in short the conceptual framework of this study is follows.



Bee-keeping can play an important role in rural livelihood, mainly by providing products for household consumption and income from sale of honey and other bee products as well as an important source of pollinators to improve productivity especially for horticultural crops. Bee-keeping technologies and practices don't require much capital and poor farmers can afford them. As bee-keeping takes up little investment, it is also ideal as a way for women to earn some income.

There is close relationship between bees, forest and soil which keeps environmental balance in nature. Bees collect their food in nature by themselves. Waste going nectar from flower can be consumed by the bees. That's why farmers do not have to worry about the food for bees. This helps the bee-keepers to invest less economy. With the less investment bee-keepers comparatively gain more benefits. Bee-keeping is taken as healthy profession. It is free from smoke and dust which is specially seen in industrial area.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

Research Methodology is the way for systematic resolve of the research problems. It indicates the methods and processes employed in the entire aspect of the study. Research is a systematic and organized effort to investigate a specific problem that needs a solution. This process of investigation involves a series of well thought out activities of gathering, recording analyzing and interpreting data with a purpose of finding answer to the problem. So research is systematic and organized effort which is used to study a problem for the purpose to investigate facts that are always guided by previously collected information and methodology is the systematic, planned and sequential process followed by the researchers to complete their research problem in well manner. Thus research methodology is supportive to guide and manage the research work, prepare framework for the study, achieve the objective of research and provide the guidelines for the data collection, presentation, analysis and generalization. In this ground, this chapter is concerned with rationale of the selection of the study area, research design, sources and nature of data collection, universe and sampling, technique of data collection, data analysis and presentation.

3.2 Selection of the Study Area

Bharatpokhari VDC is situated to the southern part of Pokhara valley which is prosperous in its natural and cultural diversities and other various fields. The study is conducted in ward no 2, 3 and 4 of Bharatpokhari VDC of Kaski District, which is nearer to Pokhara that is not an exception to this situation. More importantly, this VDC is effectively trying to work in bee-keeping sector many of the people of this VDC have kept traditional as well as modern bee hives in their home. Especially in this area farmers are keeping modern bee-hives for income generation. Field visit shows that their income from selling honey is good. Most of the villagers have consumed honey for their children's health. That's why this area is chosen to do sociological and anthropological study among the people of bee-keeping and its impacts in their lives.

3.3 Research Design

Research design is the plan, structure and strategy of investigations conceived so as to obtain answers to research questions and to control variance. It provides the specific outline to the study. The concentration on sample, observation and statistical design is the most for result oriented research design. Objectivity, reliability and validity of research that could be generalized are the main features of outstanding research design. There are various types of research designs according to the branch of study. In general, it can be divided in to empirical, analytical, exploratory, descriptive, diagnostic and experimental. Among them descriptive and exploratory methods are used in this study as per the requirement. The descriptive design is comparatively, the simplest one which is used to present the report by describing the collected data.

3.4 Nature and Sources of Data

Both the primary and the secondary sources were used for the collection of the required data. However, more emphasis was given over primary data. The primary data were collected through questionnaire schedule, interview, and the observation. Whereas the secondary data were collected from the review of theory and previous studies and even from the reports, booklets and bulletins published by different institutions. Both qualitative and quantitative data were gathered.

3.5 Universe and Sampling Procedure

There are 1,222 households in Bharatpokhari VDC of ward no. 2, 3 and 4 of Kaski district. And of them 276 households are engaged in bee-keeping. It was obviously very difficult to interview the total population. Thus, for the convenience, 56 respondents of the universe were selected representing every ward, caste, age group, education and sex. However, the sample was selected through the stratified random sampling.

3.6 Techniques of Data Collection

Primary and secondary data were collected as per the requirement of the study. Both quantitative and qualitative data were aimed to be collected. Qualitative data were collected for the facts related to the bee products. Likewise, quantitative data were

collected to get the information's about the products and the composition of age, sex, and occupation and so on of the respondents. For the fulfillment of this purpose, the following techniques of data collection were used.

3.6.1 Questionnaire Schedule

Questionnaire schedule was used as a main source of collecting primary information especially for qualitative information. For this all the bee-keeper houses were selected. The questionnaires schedule was used to collect information from the bee farmers. The quantitative data such as age and sex composition, education status, income, marital status, family types and their ways of living were gathered.

3.6.2 Observation

Observation was followed in various steps in order to collect information. Individual observation of bee-keepers helped to get information about the real daily activities of the farmers. Direct observation technique was used to get the information about the socio-cultural setting of the study area, agricultural practices, uses of the natural resources, etc. The involvement of male and female in bee-keeping as well as various activities have been observed employing participatory and non participatory approach.

3.6.3 Interview

The structured and unstructured interviews have been mutually used as per the necessity. The structured interview was held to know the facts from the real members of bee-keeper and the unstructured interview was used to collect information from the members and beneficiary. Mostly, the household heads were interviewed. This interview helped to know the attitude of the respondents towards the bee-keeping along with their activities related to the demand and supply of the bee product.

3.7 Data Analysis and presentation

All the collected data from field were analyzed both quantitatively as well as qualitatively as per their nature. The information collected from the field were edited first and coded. Simple descriptive statistical tools were used to analyze the data and necessary tables were inserted under suitable headings. The non-quantifiable, qualitative data have been managed manually and analyzed descriptively.

CHAPTER FOUR

ENVIRONMENTAL SETTING

4.1 Physical Setting

4.1.1 Introduction

Kaski district is a beautiful district with varieties in nature and culture, having the total area of 201,700 hectares. It lies in the western part of Nepal having boundaries with Lamjung in the east, Tanahun and Syngja in the south, Parbat and Mygdi in the west and Manag in the north. Politically, this district is divided into four election constituencies, one municipality and one sub-metropolitan city. It is situated in the lap of Mt. Machhapuchhre with the biological diversity and natural ornament of lakes, caves, mountains and rivers. The famous goddess' temples and gumbas are also other attraction of this district. Pokhara is the headquarters of this district and the western development region as well. According to the information given by the District Agriculture Development Office, the number of bee hives in Kaski district is around 8,700. In current fiscal year 068/69 Rs. 113,000 have been put out from the district agriculture development office to invest in bee-keeping sector. 140 hives and 20 colony bees were donated and distributed. Lamachaur, Dhampus Hemja, Lwang-Ghalel, Rivani, Kanhu, Kalika, Mijure, Bharatpokhari, Thumako Danda, Nirmalpokhari, Sarangkot, Chapakot and Lahachowk are selected as pocket areas for bee-keeping in this district. Related bee-keeping instruments are distributed in this pocket area. District Agriculture Development Office have given training to the bee-keepers of these areas.

There are different saying of the people in the context of Bharatpokhari's naming process. The people of this area made many more pools for collecting water in the rainy season because of lack of the water in winter. There was serious problem of draught in this region. These ponds especially help to introduce this VDC. There are many ponds like, Bharat Pokhari, Hnuman Pokhari, Bhote Pokhari, Bando Pokhari, Bhanji Pokhari, Dandai Pokhari, Budai Pokhari, Kalo Pokhari, Thuli Pokhari, Lamcho Pokhari, Tinkune Pokhari, Hile Pokhari, Jhalkane Pokhari, Gauri Pokhari, Khatri Pokhari, Kaji Pokhari, Bhandari Pokhari, and Naya Pokhari. Among these

ponds, there is always water in Bharatpokhari. The people used to say Bhari Pokhari as well as Bharti Pokhari which is changed into Bharatpokhari. Moreover, it was the place to select the candidate of Nepali soldiers as well as foreign soldiers during the period of unification of Nepal. Because of it, the people said Bharti Pokhari' and the term "Bharti Pokhari" is changed into 'Bharatpokhari'. This is the reliable fact as it was named Bharatpokhari. It was included in Kaski district in 2033 B.S. from Syangja District. It's the greatest VDC among 43 VDC of Kaski district. This VDC is historical, religious as well as a famous tourism areas. Bharatpokhari is very important with the perspective of tourism. The various countries of the world have tried to form its foundation and developmental activities. Bharatpokhari VDC has accepted to develop this region by applying its biological heterogeneity, cultural variation, natural resources and religious tolerance. It also has been making an attempt to develop internal (tourism) and external tourism by indentify its important natural resources. There's possibility of paragliding trekking, sightseeing for the tourists in this VDC. The Minister of Civil Aviation Prithivi Subba Gurung had already announced Bharatpokhari VDC as the tourism area in 2065 Poush 17.

4.1.2 Location

Bharatpokhari VDC is one of the VDCs among 43 VDCs of Kaski district in. There's Dulegaunda VDC of Tanahun district in the East, Nirmal Pokhari VDC of Kaski district in the West, Pokhara Sub-Metropolitan city and Lekhanath Municipality in the North, and Taksar VDC of Syangja District in the South. Its border has been linked with Phirphire and Dhorphirdi VDCs of Tanahun. Its geographical situation is 28°, 04'38" North to 28°, 09'39" North and 84°, 00'03" East to 84°, 05'28" East. Its height is 500 meter to 1,144 meter from the sea surface. It has covered 2.19% of the land of Kaski district. It has been extended in 4,418 Square kilometer. Bharatpokhari VDC has been situated in between Seti river and Suraudi river to the southern part of Pokhara city and it has been decorated by the mountain series, green forest, fountains and others beautiful scenery.

4.1.3 Climate

Generally, the climate of the study area are of sub-tropical monsoon and cool temperate monsoon types. The summer is hot and wet and the winter is generally cold

and dry. Bharatpokhari is very famous for caves, gorge, etc. There are Chamere Cave, Kashyar Cave, Batase Dulo, the gorge of Seti-river and Gagan Gaunda etc are popular here. The climatic condition in Bharatpokhari is moderate. The maximum temperature of this region 33° centigrade and the minimum temperature is 6° centigrade. The rainfall is average 3370mm yearly. Here are different types of vegetation, birds, animals and plants. We can get local delicious fish as well in the river following in Bharatpokhari area. The government's collaboration is needed to develop this region as a tourism area. Besides, the enrichment of natural resources, this region is quite back so that the concerning department of government should pay the attention to develop it.

4.1.4 Vegetation

The study area is located in the mid land region of the country where warm and moist conditions are found for the growth of tropical and sub-tropical plants. About 2081.28 hectares of land is covered with forest area. Due to the sub-tropical monsoon climate, mixed and deciduous types of forest are found here. Among them the important spaces are Shorea robusta, Schima, wallichii, Castanopsis', Indica, Alnus nepalensis, Cinna momum, Zelylancicum, Dalbergia, Latiflora and other fodder trees.

4.2 Cultural Setting

4.2.1 Introduction

Bharatpokhari VDC has varieties in age, sex, caste, ethnic group, marital status, occupation, education and the like. In spite of their variation, all the members are united for the betterment of their bee-keeping. All the bee-keepers in the study area are conscious and sincere for the bee-keeping and its management. So, they can maintain sustainability in available resources. From the universe, this study deals with 56 households as the sample of this study.

Bharatpokhari is the common house of various religions. There are many more Hindus than the people of other religions. Therefore, there are many religious temples and Matha regarding Hinduism. There are temples like Bhulbhula Devi, Manisthan, Bhimsenthan, Dhugdeshwor Mahadev, Hareshwor, Omkareshwor, Rudreshwor Mahadev, etc. There are Durgamata, Kalika Bhagawati, Saraswoti Mandir

Laxminarayan, Bala Devi temple, Chandi, Kot Bhairav, Ganesh, Kanchhi Kalika, Siddha Baba, Maharudra, Kanchho Baraha temples. These temples were made in ancient period upto modern period. Bharatpokhari VDC is very famous for Sorathi, Ghatu, Rodhi, Dohori Geet, Naumati Baza, Bhajan Kirtan, and Nepali folk songs for the lovers of literature and culture. There are 2,403 houses in this VDC. The total population is 12,618. Among them the total number of female is 6,178 and the total number of male is 6,440. The density of population is 285.60 per square kilometer. The people of different castes live here such as Brahmin, Chhetri, Gurung, Magar, Kami, Damai, Sarki, Newar, Bhujel, Thakuri, Giri, Dura, Gandarva and so on. Though, there are the people of different religion and caste, there's religious tolerance and mutual cooperation among them.

4.2.2 Economic Activities

The habitants of Bharatpokhari are farmers. The number of lower class farmers is quite big. Although some of the people have been engaged in business, industry, government service and foreign employment, there are not any useful programs for avoiding poverty, generating income, and increasing employment. The process of settling to the town from the village has been increasing day by day for finding out the facilities and services. Consequently, the people of a few wards like 1, 2, 5, 6, 7, 8 and 9 have the problem of Barium dream. The people living in Bharatpokhari VDC have been organized to increase income source by using crude materials and establishing the industry, identifying the local resources. The people of this region have established several co-operative organizations such as, Saving and Debt Co-operative Organizations, Dairy Development Co-operation, Bee-keeping Resource Center, Orange Farming Co-operation and People Oriented Consumer Co-operative Organization for generating their income.

4.2.3 Age and Sex

Age and Sex of the members also matter high for the betterment of the bee-keeping. If youths are mobilized in this sector they get more benefits. Among the 56 respondents 37 are male and 19 are female.

Table-4.1: Distribution of the Respondents by Age

Age	No. of respondents	Percentage
20-30	8	14.28
30-40	13	23.21
40-50	12	21.42
50-60	8	14.28
60+	15	26.79
Total	56	100

Source: Field Survey, 2012

As shown Table 4.1, the respondents are categorized in to 5 groups i.e. 20-30 years, 30-40 years, 40-50 years 50-60 years and 60 above. Here out of 56 respondents, 14.28% are in the age group 20-30, 23.21% are at 30-40 age groups and 21.42% are between 40-50. Similarly, the respondents between 50-60 are 14.28% and above 60 are 26.79%. The percentage of old aged seems the highest in the given table and the lowest is of youth people. The following table clearly, presents the age of the respondents.

Table-4.2: Distribution of the Respondents by Sex

Age	Sex				Total	Percentage
	Male	Percentage	Female	Percentage		
20-30	5	8.92	3	5.35	8	14.29
30-40	3	5.35	10	17.85	13	23.21
40-50	9	16.07	3	5.35	12	21.43
50-60	6	10.71	2	3.57	8	14.29
Above60	14	25	1	1.78	15	26.78
Total	37	66.07	19	33.93	56	100

Source: Field Survey, 2012

From the given Table 4.2, the proportion of male respondents is higher in comparison with female respondents. The percent of male respondents is 66.07% and of female is 33.93%. Also, most of the female are housewives.

4.2.4 Marital Status

The information on marital status is collected because it plays vital role for the participation in different socio-economic activities and also in division of labor. Thus marriage on the one hand can limit the freedom of both male and female on various activities and on the other hand, early marriage definitely promotes the increase in population and the number of population is directly related for the consumption of resources for the income. In this sense, the marital status of the respondents is as follows.

Table-4.3: Distribution of the Respondents by Marital Status

Marital status	Male	Percentage	Female	Percentage	Total	Percentage
Married	34	60.71	19	33.93	53	94.64
Unmarried	3	5.36	-	-	3	5.36
Total	37	66.07	19	33.93	56	100

Source: Field Survey, 2012

As shown in Table 4.3, among 56 respondents the percentage of male is 66.07. Here, the percentage of married male is 60.71 and of unmarried male is 5.36, whereas 33.93% females are married.

4.2.5 Level of Education

Education is the light which brightens the world. Importance of education can be underestimated nowhere. For the better affectivity of bee-keeping, education is one of the most desirable factors. Due to this reason the level of education of the respondents is studied here.

Table -4.4: Division of the Respondents by Education Level

Level	No. of Respondents	Percentage
Master	2	3.57
Bachelor	4	7.14
Intermediate/+2	6	10.72
SLC	5	8.93
Literate	35	62.50
Illiterate	4	7.14
Total	56	100

Source: Field Survey, 2012

Table 4.4 shows that majority of the respondents are literate. The involvement of people having Master level education is 3.57%. Similarly the involvement of the respondents having Bachelor level qualification and intermediate/+2 level is 7.14% and 10.72% respectively. Only 4 respondents are illiterate.

4.2.6 Months of Food Sufficiency

Food sufficiency denotes the class of the respondents and it makes easy to study the necessity of the various income sources of the concerned family. In this study, the respondents who have the sufficient food for the running year and also have some surplus are regarded as rich people the respondents having food sufficiency for 8-12 months are regarded as middle class people and rest of the respondents seem poor as they don't have the sufficient food for more than 4 months.

Table- 4.5: Division of the Respondents by Months of Food Sufficiency

Months	No. of HHs	Percentage
Up to 4	9	16.07
4-8	12	21.42
8-12	20	35.71
12+	15	26.78
Total	56	100

Source: Field Study, 2012

Table 4.5 shows that 16.07% respondents seem poor as they don't have the sufficient food for more than 4 months. Similarly, 21.42% people have no food sufficiency for more than 8 months. The majority of the respondents (35.71%) seem as middle class because of their food sufficiency for 8-12 months. 26.78% respondents are rich as they have surplus sufficiency of food which is more than 12 months.

4.2.7 Land Ownership

Land plays major role in the livelihood in the study area since majority of the respondents are by anyway involved in agriculture. Though agriculture seems as prime occupation, size of land holding doesn't seem so big.

Table-4.6: Division of the Respondents by Land Ownership

Land Amount in Ropani	No. of HHs	Percentage
0-0.5	3	5.35
0.5-2	12	21.42
2.5-4	25	44.64
4-8	7	12.5
Above 8	9	16.07
Total	56	100

Source: Field Survey, 2012

Table 4.6 shows that among 56 respondents, the highest number i.e 25 respondents (44.64%) have 2.5-4 ropani land and a few of the respondents (5.35%) have 0-0.5 ropani land. The percent of respondents having 0.5-2 ropani land is 21.42%. 7 respondents (12.5%) have the ownership of 4-8 ropani land. 9 respondents (16.07%) have above 8 ropani land.

4.2.8 Agricultural Crops

The varieties of seasonal vegetable and crops are harvested in this area but not professionally. The main vegetables are tomato, beans, soyabean, green vegetable, radish cauliflower and the like. Likewise, the main crops are rice, wheat, maize and millet. The problem of unequal distribution of land was noticed during the study. The bee-keeping farmers have no enough land and those people who are not fully dependent on agriculture keep their land barren. It decreases the productivity of the area and the production couldn't be found even in accordance with the land holding size.

4.2.9 Livestock

The researcher has collected the information of types of livestock for the general information of the respondents. Nepal is an agricultural country. Animal husbandry is one of the major occupations here.

4.2.10 Family Member

The number and size of the family has reciprocal relation with the consumption of the resources and that is related with income. The larger will be the family, the higher

will be the need of income. In the same way the small family is happy family that it runs easily with low income. The number and size of the family stands not only as the indicator for happy life but it also indicates towards the level of education and awareness of the respondents. Because of the rapid increase in population, nowadays lack of natural resources has been the problem faced globally. In this scenario, uneducated people are found to have large number of children that increases nothing more than the scarcity and poverty of the family.

Due to these reasons, the data for the number and size of the respondents family were collected. They are presented below.

Table-4.7: Division of the Households by the Family Members

Family Member	No. of HHs	Percentage
1	1	1.78
2	3	5.35
3-5	24	42.85
6-8	26	46.42
9+	2	3.57
Total	56	100

Source: Field Study, 2012

Table 4.7 shows the range of family member from 1-9 and more. One respondent was found staying alone and had no other member with her. It is the 1.78% of the total respondents. The average size of family was found 7-8 as the highest percentage (46.42) of the respondents had 6-8 members in their family. 5.35% respondents had just two members in their family and the percentage of the households which had 3-5 members in their family is 42.85% while 3.57% of the respondents had even 9 and more members in their family. The stated data does not mean that all family members are continuously staying together.

4.2.11 Family Type

The size of the family is believed to be one of the most important factors that determines the livelihood. To be more clear the researcher has demonstrated the collection of family size. The nuclear family includes a husband, a wife and their unmarried children and it is comparatively small in size. Joint family includes a husband, a wife, their married or unmarried children and other relatives living in one

house. Family is the basic social institution. The size of the family shows about individual and it directly affects the economy of the family.

Table-4.8: Division of Households on the Basis of Family Type

Family Type	No. of HHs	Percentage
Joint	15	26.78
Nuclear	41	73.22
Total	56	100

Source: Field survey, 2012

Most of the respondents from the study area were found having nuclear family. The percentage of the respondents having nuclear family is 73.22% and of joint family is 26.78% (Table 4.8). Through this finding, we can assume that the average fertility rate of the respondents of study area was high as there was more nuclear family and again the average number of family was seen as 6 to 8.

4.2.12 Caste

Nepalese society is running in unity. There is unity in diversity. Previously people involved in occupation according to their caste. In modern days people having different caste can choose occupation according to their interest. Bee-keeping is known as sacred occupation which can be done by any caste.

Table-4.9: Distribution of the Respondents by Caste

Caste	No. of Respondents	Percentage
Brahmin	35	62.50
Chhetri	12	21.42
Janjati	8	14.28
Dalit	1	1.78
Total	56	100

Source: Field survey, 2012

Table 4.9 shows that among 56 respondents, the percentage of Brahmin is 62.50, Chhetri 21.42, Janjati 14.28 and Dalit is 1.78. The majority of bee-keepers in study area are from Brahmin community and the least are from Dalit.

CHAPTER FIVE

DATA ANALYSIS AND PRESENTATION

The main reason behind this study is to know the condition of modern bee-keeping and its impact on the rural livelihood as these both assist in analyzing the effect of the concerned bee-keepers. Income, inseparable thing to run the life of human being, has both short-term and long term positive impacts which are uncountable. But because of the time, budget and objectives this study has mainly focused the socio-economic condition of modern bee-keepers in Bharatpokhari VDC, ward no. 2, 3 and 4. Only the very general information on environmental impact found during the study period were also collected. The socio-economic, gender and environmental impacts were judged in terms of various indicators which are tried to be presented clearly in this chapter.

5.1 Initial Status of Modern Bee-keepers

Modern bee-keeping was introduced in Bharatpokhari VDC in 2049B.S. Before it, they used to keep bees in traditional way. Period of engagement in modern bee-keeping ranged from a minimum four years to maximum twenty years. Initially bees were kept as a hobby or for honey, later the demand of honey and its products made people to do this occupation as professional way. In rural livelihood this occupation is suitable because with a less investment they could start it and get a lot of benefit.

Table –5.1: Period of Involvement of the Respondents

Period (in year)	No. of Respondents	Percentage
0-4	17	30.36
4-8	13	23.21
8-12	12	21.43
12-16	9	16.07
16-20	5	8.93
Total	56	100

Source: Field Study, 2012

Table 5.1 shows that 30.36% of the respondents started modern bee-keeping between 0-4 years ago. 23.21% of the respondents started this activity before 4-8 years ago, 21.43 percent of them started 8-12 years ago. Similarly 16.07 percent started it 12-16 years ago and 8.93 percent started it 16-20 years ago. This information indicates that this occupation is very sound and good especially in rural lives.

5.2 Gender Division on Bee-keeping

Gender is the role, constructed by society. In the study area the researcher has found that both male and female have been actively involved in this sector. Both male and female have discussed about the management of bee-keeping. It is seen that from the bee-keeping occupation both male and female have got opportunity to generate income. Before adopting this occupation, most of the women in the study site did not have any income source and also they lack nutritious food and honey. Now they have not only access to financial resources but also gain health. Bee-keeping is the most important occupation for bringing the change of rural living standard. Both males and females are found involving in bee-keeping.

Table-5.2: Division of the Respondent with Sex and Number of Bee-hives

No. of bee-hives	No. of HHs					
	Male	Percentage	Female	Percentage	Total	Percentage
01 - 10	19	33.93	15	26.79	34	60.72
10 - 20	3	5.36	4	7.14	7	12.5
20 - 30	4	7.14	-	-	4	7.14
30 - 40	6	10.71	-	-	6	10.71
Above 40	5	8.93	-	-	5	8.93
Total	37	66.07	19	33.93	56	100

Source: Field Survey, 2012

Table 5.2 shows that the numbers of the respondents were 34 who kept bee-hives in between 1-10. Of them 33.93% were male and 26.79% were female. Female participation seems progressive. The ratio of bee-hives was 10-20 of 7 respondents, of them 5.36% were male and 7.14% were female. Similarly 7.14% male respondents had bee-hives 20-30. 10.71% male respondents had 30-40 bee hives and 8.93%

respondents had more than 40 bee-hives. Female participation in large scale seemed low from the table.

5.3 Social Relation through Bee-keeping

Human being cannot live alone. They need help from each other to satisfy their needs. Life becomes easier and comfortable when we live in a community. It consists of people of all races, classes and ages. By bee-keeping, farmers have been seen benefited and their socio-economic status has changed and on other hand their social relation has been expanded. Many of the bee-keepers have been involved in bee-keeping group. By chance the researcher had got an opportunity to take part in bee-keeping training given by the chairperson of bee-keeping group Mr. Baral, Shreebhadra. The program was given by NGO named HEPHER. The members who were taking that training of five days were all females. It was held in Bhagawati Chautara ward no-3 of Bharatpokhari VDC. The participation of female shows that flow of female bee-keepers is increasing. Those participants were not respondents but the researcher asked them about this sector. All of the women wanted to keep bees for honey which they could use for better health. Social relation is increased due to their involvement in this sector. According to them, if there is any problem then they visit and consult the member of bee-keeping group. There is unity in bee-keepers. They do not hesitate to help other bee-keepers rather they encourage to new bee-keepers. So bee-keeping is going to be as a professional occupation in the study area.

Table-5.3: Division of the Respondents by the Involvement in Bee-keeping Group

Particular	No. of Respondents	Percentage
Involvement	39	69.64
Noninvolvement	17	30.36
Total	56	100

Source: Field Study, 2012

Table 5.3 shows that 39 respondents (69.64%) were involved directly in bee-keeping group. Similarly 30.36% respondents were not involved in beekeeping group. Those who were not involved in bee-keeping group also got benefit from the group. This

group provides and gives knowledge about new tools and technology related to this field.

5.4 Trainings and Opportunities for the Respondents

Bee-keeping is not merely related with production and consumption of its products. A number of trainings can be held for the betterment of bee-keeping management together with widening the range of opportunities for skill development and income generation among the member of beekeepers. Training is the basic tool to grab the various opportunities. Large numbers of the respondents were aware about training while some respondents were found not attending the training. It can be presented in the following table.

Table-5.4: Division of the Respondents by the Knowledge on Training from Different Sectors

Trained from	No. of Respondents			
	Male	Female	Total	Percentage
NGO/INGO	13	10	23	41.07
Govt. Sector	6	4	10	17.86
Private sector	1	-	1	1.78
Non Trained	17	5	22	39.29
Total	37	19	56	100

Source: Field Survey, 2012

Table 5.4 shows the fact that 60.71% respondents were involved directly in the training program given by different sectors, which enhance their capacity and skills. Whereas 39.29% of the respondents were not having the chance of participating in such kind of training organized and run by various sectors. However, majority of the respondents were found trained through NGO/INGO. In village, bee-keepers consult with the bee-keeping group members if there is any problem.

5.5 Perception of the Respondents towards Environmental Impact and Pollination

The households were asked for their perception on environmental impact by bee-keeping. As the respondents were not found well informed about the environmental part of bee-keeping, the discussion was limited mainly on importance of pollination process done by bees. Before a few years ago professional farming were introduced in this area. People started tomato and other vegetable farming. With lack of right knowledge in using pesticides, after a year production capacity has gone out. After that, the consciousness of environment was developed among the farmers. Nowadays people are attracted in organic farming and used to rear cows. At the research period the researcher found that most of the respondent had garden in their household premises where flowers were blooming. Mustard, buck wheat and other crops were seen yellowish in front of their houses for the forage to bees. Bee-keepers unknowingly preserved the environment. Their response on pollination process through bees was as follows.

Table-5.5: Division of the Respondents by the Knowledge about Pollination through Bees

Response	Male	Female	Total	Percentage
Yes	34	7	41	73.21
No	3	12	15	26.79
Total	37	19	56	100

Source: Field Study, 2012

As shown in Table 5.5, 34 male respondents had good knowledge about the important role of bees in pollination process. It came to 60.71% which shows the increment of bee-keeping not only for honey also for good environment and other bees production from plants. Only 12.50% female responded the positive impact of bees in pollination process. Among 56 respondents, 29 respondents said that their crop production had increased due to pollination process. 26.79% respondents were unknown about the pollination process.

5.6 Purpose of Bee-keeping

Every man who invests money in any occupation has some purpose. On the research period the researcher found that most of the respondents were involved in this field due to importance of honey in religious, paternal deeds and healthy tonic. Some of the respondents were inspired from bees and their works. In society there are different class of people some are rich and some are poor. Even there are disadvantaged and marginalized group too. Those who are not able to invest more can do this occupation from small scale size. According to bee-keepers they wanted to keep bees because they did not need much money for harvesting hives and also this is the easiest way to do. The practice of bee-keeping is much cheaper than others. The response is like this.

Table-5.6: Division of the Respondents by Purpose of Bee-keeping

Purpose	No. of Respondent	Percentage
Own consumption	21	37.5
Business purpose	11	19.64
Both	24	42.86
Total	56	100

Source: Field Survey, 2012

The table 5.6 shows that 37.5% respondents used honey for their own consumption. Few respondents (19.64%) argued that the main purpose of bee-keeping was for business purpose. About 42.86% respondents answered that the purpose of bee-keeping was both for their own consumption and for business purpose. Because of the demand of honey in religious, paternal deeds and medicinal use it is easily gone out. According to bee-keepers they were not able to fulfill the demand of honey to public. Villagers of their own ward or people from other villages came in their own home to buy honey, bees comb and bee hives. The beekeepers sell honey and its all product from their own home.

5.7 Equipments and Tools of Bee-keeping

To apply modern knowledge and skill special equipments are needed. In absence of modern equipment the new way of bee-keeping cannot be done properly. Therefore

modern bee-keeping means the way of utilization of modern tools such as bee veil for protecting face from the bite of bees. It is used specially observing beehives and to transfer bees colony into another hives. Gloves are used to save their hands from bees bite. Skilled bee-keepers can move beehive without gloves. Smoker, hive opening tools are also needed while working with bees. Honey extractor is important equipment used in bee-keeping. By using this equipment only honey can be extracted and comb of bees would not be damaged and again bees can fill these combs with honey. With this technique, the production of honey can be two times better than traditional way of extracting honey. Knife, Honey Tray, Strainer, Honey Jar, etc. are the other important tools. On the research period, the researcher found that most of the bee-keepers applied modern tools in their home. They borrowed expensive tools like bee extractor from the bee-keepers organization.

Table-5.7: Division of the Respondents by Use of Equipment and Tools

Equipments and Tools	No. of Respondents	Percentage
Modern	41	73.21
Traditional	-	-
Both	15	26.79
Total	56	100

Source: Field Survey, 2012

Table 5.7 indicates that 41 respondent use modern tools in bee-keeping. They are interested in new knowledge and technology of bee-keeping. There were 15 respondents who used both traditional and modern equipments and tools.

5.8 Cost of Production and Profit Analysis of the Respondents

We can see that in urban area people who invests money in their business keep record of expenditure and income. By analyzing cost/profit it is easy to go ahead in their business. But in rural area, general farmers are found not keeping their expenditure and income record. During the study period, it was found that most of the farmers consumed their agricultural products and bee products without analyzing their expenditure and income. It was found that only the bee-keepers who invested more

amounts in bee-keeping were keeping their income and expenditure record because they were getting more profit. Bee-keeper who was investing low was found not keeping record of income and expenditure. Most of the bee-keepers realized to keep the record of it while asking question.

Table – 5.8: Cost of Product & Profit Analysis of Initial Period (10 Hives)

Particular	Qty/Unit	Rate	Total (Rs)
First year:-			
Newton hive (B)	10pcs	2,000	20,000
Nucleus colony with Queen bee (4 frame)	10 colony	2,000	20,000
Bee Veil	1pcs	250	250
Smoker	1pcs	1,000	1,000
Bee bag	1pcs	250	250
Foundation comb	5 kg	500	2,500
Bee Stand	10pcs	300	3,000
Bowl	40pcs	20	800
Queen door	10pcs	50	500
Queen cage	5pcs	50	250
Honey Extractor	1pcs	3,000	3,000
Feeder	10pcs	20	200
knife	1pcs	100	100
Gloves	1pair	250	250
Sugar	50kg	68	3,400
Honey Jar	2pcs	250	500
Labor Cost (Yearly)	12prsn	500	6,000
Cost price			62,000
Interest of current expenses			9,300
Total Cost		=	71,300
Production			-
Second year:-			

Average per hive 12.5 kg honey@ 10 hives	125kg	400	50,000
Nucleus colony (per hive 4 frame)	10 colony	2,000	20,000
Total Production (Prices)			70,000
Current year Labor etc. expenses	10 hive	1,000	-10,000
Benefit(net)			60,000

Source: Field Study, 2012

Above table shows the investment of initial period of 10 hives. For the above materials bee-keepers can borrow from related government office or private sector. This table is prepared with the help of the respondents to know the cost of bee-keepers and how they get profit. With the direct involvement of bee-keepers the data were collected. This would help the other bee-keepers to involve in this sector.

5.9 Reason for Keeping Bees

Economy of Nepal is very backward due to the lack of adequate capital. Therefore, one should seek for additional income generation or capital accumulation. Here the researcher's main attention is focused on bee-keeping and its impact on rural livelihood. There are certain reasons for studying the bee-keeping as a source of income generation. Firstly not much investment should be made for this farming and secondly, most of the equipments needed can be made by the farmers themselves locally at a low cost. And nothing should be invested for feeding. The materials needed for starting such farming can be available easily. Thirdly, no higher technique is needed and a farmer can operate it without much difficulty. Lastly there are several rooms for the market of produced goods. No farmer should worry about over production. Bee-keeping is concerned not only with the production of honey but with pollination which is manifested not only through increase in yield but also by an improvement in crop quality. Bees do not work as their main occupation to pollinate the crops but they derive their food nectar and pollen from one most favorable conditions for selectivity of pollen because of this the viability and absolute weight of

seeds increase and their generation improves. Due to these various reasons the bee culture is very lucrative and more advantageous and if much attention is devoted it could be a genuine income generator. It may help the farmers to uplift their economic position and increase the national income. Because of the geographic setting of Nepal climatic condition and abundance vegetation are very suitable for this occupation.

5.10 Yield of Farmers in Bee-keeping

Knowingly or unknowingly the bee-keepers in the study area are involved in this occupation. Being a bee-keeper, all the respondent are satisfied with this occupation because their socio-economic status has been changed. Tools and equipments that once invested are for lifetime. That's why after second years of initiation the beekeepers get more profit from it. If little attention is given, one can sustain his/her life easily with income through bee-keeping.

Table- 5.9: Attitude of the Respondents about the Growth of Size

Response	No .of HHs/Male	No. of HHs/Female	Total	Percentage
Yes	30	17	47	83.93
No	7	2	9	16.07
Total	37	19	56	100

Source: Field Study, 2012

Farmers are interested to keep bees in a large scale. All the respondents were well known about the advantages from bee-keeping. Among 56 respondents 47 or 83.93% want to keep bees in the large scale, but 9 respondents or 16.07% do not want to keep bees in the large scale. (Table 5.9)

5.11 Participation of Women in Bee-keeping

Participation of women in bee-keeping seem praiseworthy in Bharatpokhari VDC of 2, 3 and 4 wards. Their participation and activity is notable in contrast with their level of awareness as most of the house owners are only literate, they don't have high level of education except the basic literacy state. The most remarkable feature is that the participation of women in bee-keeping is high. They care bees like their own family

members. It is already mentioned that the women participation in training was also good. New technology used in modern bee-keeping introduced women about the new equipments and they were familiar with those equipments. Women were interested to keep bees in large scale and wanted to get high income. The access in income seemed to be in the hand of male but the access in bee products seemed to be in the hand of women, which indirectly supported the health of women. In a question on the proportionate benefits, almost all of the respondents answered that women got benefits in proportion to their contribution.

5.12 Role of Bee-keeping on Respondent's Economy

Nepal is an enormous agricultural country. In Nepal 80% of the total population depends on agriculture for their livelihood. Agriculture is the largest sector and the pillar and backbone of Nepalese economy. It is also the main occupation and basis of livelihood of rural people. Bee-keeping is an important branch of agricultural occupation which fulfills the need of households as well as it can be considered as a source of income. Honey we get from beekeeping is full of nutrition. These diets help us to protect from different kinds of disease and provide energy. The change brought by the application of modern tools and technique and cash crop oriented farming on farmer's socio-economic status is significant. Bee-keeping is the most important profession for bringing the change of rural living standard. Economic status is an important and determining component of socio-cultural change and development. Positive changes in economy, health, education and women's status are regarded as the hallmarks of social development of a country.

Table-5.10: Status & Annual Income of HHs from Bee-keeping

Annual Income (Rs)	No. of HHs	Percentage
< 25,000	14	25
25,000-50,000	20	35.71
50,000-75,000	7	12.50
75,000-100,000	4	7.14
Above 100,000	11	19.64
Total	56	100

Source: House Hold Study, 2012

Table 5.8 shows that the income from bee-keeping of bee-keepers in study area is that 25 percentage of the respondents have taken less than Rs. 25,000. 35.71 percentages of the respondents have taken Rs. 25,000-50,000 income. Similarly, 12.50 percentage of household have taken Rs.50,000 -75,000. Likewise, 7.14 percent of household have earned Rs. 75,000-100,000 and 19.64 percentages have earned more than Rs. 100,000 from honey and other products related with bee-keeping. During the field study time overall bee-keepers annual income is increased day by day. They have brought changes in lifestyle, education, behavior, health etc.

5.12.1 Assets of Households

The study has resulted in the possession of household assets in the study area. It has changed the living standard, custom and way of living with the change in household assets. During the field study, the beekeeping income helps in various sectors i.e. education, economy, facilities as they have radio, television, computer, means of transportation and others facilities. Almost all the respondents have good possession of household assets. Assets of household are visible impact through the income of bee-keeping.

5.12.2 Institutions for Educating Children

Education has been regarded as a vehicle of change for development. Here the researcher has focused on the institutions educating children of the respondents like government school/campus, private school/campus.

Table-5.11: Institution for Education

Institutions	No. of Respondents	Percentage
Government	14	25
Private	40	71.43
Both	2	3.57
Total	56	100

Source: Household Survey, 2012

Above table indicates that 25% of the respondents have taken education from government school/campus. 71.43% children of the respondents have taken from private school/campus and only 3.57% children of respondents have taken from the both institution (govt., private). Income from the bee-keeping has improved economic condition of many households as well as has brought changes in education. Many people of the study area are able to send their children in private schools to get quality education. We can say that it is the influence on education of bee-keeping.

5.12.3 Impact in Health and Sanitation

Health is one of the important infrastructures of development. The condition of remaining physically and mentally fit is called health. A healthy person can think better, perform better and contribute more towards his/her family. The respondents' response states that the health condition of the family members is improved that is due to use of bee products which is full of nutrition. 100% of the respondents agreed that their health condition is improved and are able to contribute more which is positive impact of bee-keeping.

Bee comes under the helpful insect to sustain balanced environment. Directly or indirectly it helps the existence of human. Bees like to stay in clean and quiet surrounding. It is a peaceful insect. So, the bee-keeper always should be ready about the cleanliness for the surrounding. After bee-keeping the awareness about sanitation has been increased. In the study period, it is found that most of the houses of bee-keepers are neat and clean. The flower gardens are enclosed with house yard. Bees could be seen wandering from one flower to another. This is the great impact from bee-keeping that every bee-keeper is conscious about the sanitation.

5.13 Improvement Occurred in their Livelihood

In recent time bee-keeping is the interested occupation by the intellectual. In short time after investment in bee-keeping, the bee-keepers start getting benefits. It is found that almost all respondents are benefited from bee-keeping and their status of living is comfortable. The positive impact of bee-keepers on livelihood could not be underestimated. The importance of bees and its products in human health cannot be described. If a person uses honey daily he won't have to go for any kind of treatment.

He gets all nutrients from honey which keeps him far from diseases. Being healthy he can use himself in other productive works. The respondents have answered that after bee-keeping the source of income is increasing which has supported their household expenditure easily. The study demonstrated that bee-keeping has a significant change in bee-keepers life. They have a lot of changes in many things after their involvement in bee-keeping. Some of the changes are judged in term of monetary value while others are invaluable southing as their name, fame, self-esteem, self dignity etc. which they have considered as invaluable and necessary changes in their life. There have been positive improvements in the economic status, health condition, education situation, social relation, entertainment and knowledge of new technology in the study site.

Table – 5.12: Attitude towards Livelihood Improvement

Particular	No. of Respondents	Percentage
Income	31	55.36
Health	56	100
Employment	26	46.43
Social relation	42	75
Entertainment	36	64.29
Education	41	73.21
Knowledge of Technology	39	69.64

Source: Field Study, 2012

Table 5.12 shows that 55.36% of the respondents have reported that their income is highly improved and feel more comfortableness to support their lives. 100% respondents have reported the fact that they have gained good health. Similarly 46.43% of the respondents directly or indirectly involved in this sector from where they are utilizing their waste going time. 75% of the respondents have reported that their social relation has been increased due to this. Likewise, 64.29% respondents have answered that they have been engaged in entertainment programme through the money they get from bee-keeping. Whereas 73.21% of the respondents have

contributed the income through this in education sector of their children. Similarly, 69.64% respondents have said that they have used income in using new technology and easiest methods.

5.14 Problem in Bee-keeping

There are problems in every sector. A few general problems are faced by the bee-keepers in the study area. With the increment in population, forest products are going to decrease which create problem in bees' forage. With the modern agricultural farming pesticides and insecticides are being used without any measurement which harm the bees. The knowledge and technical assistance is lacking in bee-keeping. Sometimes natural enemies of bees like Pollen Mite, Varroa Jacobsoni, Tropilaelaps Clareae Mite etc. attack bees which can be treated with little attention. For that the hives should be cleaned regularly and preserved from other insects. In the study area, not many problems are seen. Bee-keepers consult the members of bee-keeping group or use their own knowledge obtained from the training.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATION

6.1 Summary

This research has been conducted in Bharatpokhari VDC of Kaski district of Gandaki zone. The limited number of respondents (56) were taken as the sample including different caste/ethnicity, education status, etc. The respondents were taken only from three wards of the VDC i.e. ward no 2, 3 and 4. Total bee-keepers of these wards were 276. Among them 56 households were taken as sample of this study. Major summary is presented in the following points-

- Both primary and secondary data have been collected during the interview.
- Primary data have been collected through the interview, questionnaire schedule, field observation and discussion with key informant .
- Secondary data have been collected visiting District Agriculture Development Office, Chairman of bee-keeping group and from the review of various published and unpublished books, magazines, newspapers and record of bee-keepers along with surfing the net.
- The nature of data were both qualitative and quantitative.

6.2 Major Findings of the Study

- Though the participation level of male and female is satisfactory, the trend to involve in bee-keeping activities is increasing.
- Bee-keeping programs in Nepal are renowned for their socio-economic backings in the livelihood of the bee-keepers.
- All the respondents are selected from the bee-keeping in modern way.
- Almost 62.50% respondents are literate and only 7.14% are illiterate.

- 62.50% of the respondents are from Brahmin group, 14.28% from ethnic group, 21.42% from Chhetri and 1.78% from Dalit.
- All of the respondents are from Hindus.
- Bee-keeping is popular in poor family or rich. They have kept bees in modern hives and felt proud of being bee-keeper.
- Almost 83.93% of the respondents are in favor of continuing bee-keeping in large scale because of its benefits.
- Likewise all the respondents argue that there is positive change in their health after consuming bee product.
- Majority of the respondents report that bee-keeping has changed their lifestyle through the income of bee-keeping.
- The period of engagement in commercial bee-keeping by the respondents ranges from a minimum 4 years to maximum 20 years.
- Collected information indicate that this occupation is very sound and good occupation for rural livelihood.
- The scenario of women participation has been changed after adopting this occupation. Women have access in income and they are able to take part in other activities in the community. Women's role has been diverted from productive as well as cash earning work in some extent.
- The level of consciousness is increasing among the respondents. They are eager and curious for further training opportunity.
- Awareness on environment is increased after bee-keeping in the study area.

6.3 Conclusion

It is needless to say that the bee-keepers are able to uplift their socio-economic status. The economy of the study area is mainly based on agriculture with the combination of

bee-keeping. The bee-keepers of study area have been keeping bees for long. But modern bee-keeping was introduced from 2049 B.S. The farmers are attracted towards the bee-keeping from various reasons. There is increase in income, low investment takes high income, no over work, healthy work and socially valued work. The bee-keeping has contributed in various sectors of rural village i.e. education, employment, income, living standard, etc. This study is agricultural study linked with anthropological models and theory. Mid hill area of Nepal is the important area for bee-keeping. Bharatpokhari VDC of Kaski district has also suitable environment for bee-keeping.

There are many socio-economic benefits of bee-keeping. The farmers of the study areas have various income sources. Likewise beekeeping is most important source. The farmers do essential work for bee-keeping. Bee-keeping gives income, employment to promote living standard. So that economic status of people in study area is increased. Every household respondent is interested to keep bees in large scale but there seem problems in bee's cultivation. It can be concluded that if the disease and other problems that are faced by farmers are solved, it's no doubt that bee - keeping farming can be one of the genuine income generators to farmers. Geographical conditions are suitable for bee-keeping in the study area. The farmers are recommended to extend bee-keeping so that they will be self employed with higher income and profit with the utilization of local resources.

6.4 Recommendations

Following recommendations are made from this study.

- More awareness programmes and encouragement to keep bees in the community are required.
- The participation of women should be increased to uplift their status and income.
- The government should formulate the better policy on bee-keeping

- Excursion and tour of farmers is needed to visit in several areas of bee-keeping.
- Those plants that secret nectar and pollen for bees should be protected which is possible in co-operation with the forest department.
- Technical knowledge and management trainings like bee-keeping grafting and post harvesting should be given.
- Gender sensitive programmes and seminars, skill development trainings and programs should be launched and access of Dalit women should be increased in this programme.

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