

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

Agriculture is backbone of the Nepalese economy, which is the production of food and goods through farming. Agriculture in Nepal is labor intensive and farmers use their family labor in agricultural activities. From the beginning of human civilization, agriculture has been the main source of people's livelihood. Nepal is agricultural country up to now, 81 percent people and 34 percent of GDP depends on agriculture, 65.5 percent working population are engaged, 80 percent raw materials products for agro-based industries. Any method of farming may be seen as part of an agriculture system. Agriculture 'Inputs' include seeds, water, pesticides, herbicides, fertilizer, and livestock which are introduced to the 'plant': the building, machinery, and land. The 'output' is the produce of the form (Oxford dictionary, 2006).

The Agriculture Perspective Plan (1995) has emphasized agricultural growth through agricultural productivity, crop diversification and commercialization of high value agricultural commodities. In this connection, various diagnostic studies carried out and they have indicated that Nepal has comparative advantages in producing number of agricultural products. But, the growth of such commodities is limited due to low farm yield, weak infrastructure and institutional support, transaction delay, high transportation cost, unclear regulatory framework and poor investment climate etc (APP, 1995).

In 1995, Nepal approved a 20 year Agriculture Perspective Plan (APP). It is designed to accelerate agricultural growth for fast-track poverty reduction in a sustainable way. The Tenth Plan (2002 - 2007), which is also the Poverty Reduction Strategy Paper (PRSP) of Nepal, has also identified poverty reduction as the goal with the highest priority to the agriculture sector. Due to this reason the traditional farming slowly is being transformed into a commercial occupation. Such occupation generates produces mainly for marketing. The dissemination of accurate and timely marketing information is vital in helping farmers make good marketing decisions to reduce

marketing costs and that increase producers' share to consumers' expenditure on food items.

Vegetable farming is a traditional custom in the Nepalese community, particularly for culinary purpose. Vegetables, the main source of minerals, vitamins and protein, are the most important constituents of the Nepalese diet. Vegetables are one of the important short seasonal and major components of Nepalese agricultural system. Vegetables, supply essential micro-nutrient in human nutrition that act as preventive agents to several ailments. Increased vegetable production may improve food security and offer employment opportunities to the populace, especially women who form a substantial proportion (Mlozi, 2003).

Throughout the ages, efforts have been made by different scholars to unfold the mystery of the intricate relationship of man with nature from different perspectives. Serious attempt to analyze this relationship with a focus on livelihood and adaptive strategy issues is, however, a recent phenomenon. Livelihood as a concept and focal point of study and research is still recent; it emerged as a catchword only in the mid-1990s.

The credit for initiating a serious discourse on livelihood goes to Robert Chambers, who is often called father of the concept of sustainable livelihood. The term livelihood can be used in many different ways. A livelihood in its simplest sense is a means of gaining a living. Livelihood patterns are changing rapidly in the world with respect to time and space. Livelihood Strategies include how people combine their income generating activities; the way in which they use their assets; which assets they chose to invest in; and how they manage to preserve existing assets and income. These are planned activities that men and women undertake to build their livelihood. Livelihood strategy means the way that is sought out by every one to secure their living (DFID, 2002). By following different activities and strategies people want to spend their life in a sustainable way. In this context the present research seeks to understand the livelihood patterns of vegetable farmers of hill area particularly to evaluate the strength of the farmers involved in agricultural practices.

## **1.2 Statement of the Problem**

The farming systems differ from place to place and season to season depending upon the terrain of the country ranging from the Tarai, the hill and the mountain. This diversity provides some comparative advantages also to their individual region. People of each and every pocket area have been taking different livelihood strategies. Dharma Devi Municipality being a rural area, the people have been adopting their own livelihood strategy by utilizing their capital assets and local resources of the area.

People of Dharma Devi are famous for agricultural production, where large numbers of people are involved in agricultural activities particularly in commercial vegetable farming. Production of the vegetable from this Municipality is going to the international market like India and Bangladesh. This Municipality is well known as commercial vegetable farming area.

In this context, the proposed study is an attempt to seek answers to the following research questions:

- i) What socio-economic backgrounds do the vegetable farmers represent?
- ii) Is there any change in livelihood of vegetable farmers?
- iii) What are the problems of commercial vegetable farming which are facing by farmers?

## **1.3 Objectives of the Study**

The general objective of this study is to find out changing livelihood patterns of vegetable farmers of Dharma Devi Municipality of Sankhuwa sabha district while the specific objectives of this study are as follows:

- i) To examine the socio economic conditions of vegetable farmers in the study area;
- ii) To analyze the impact of vegetable farming on livelihood of the farmers;
- iii) To access reflection of the farmers regarding problems and prospects of commercial vegetable farming.

## **1.4 Significance of the Study**

Because of the being livelihood as burning issued for the research many research in concentrated on issue of urban poor and their livelihood strategies. There are limited studies on self dependent farmers which have changed their livelihood better off through commercial farming especially vegetables. This study has provided help to assess of rural farming situation; it has also provided insight into the rapidly changing farming system, vegetable types and occupation including importance of vegetable farming which could provide important guidelines to policy makers and decision makers. It is hoped that, this study would become a useful reference for the researchers working in the similar field in future days. Furthermore, it could be also helpful to the planner to formulate future plans related with the livelihood strategy of the marginal and poor people in rural areas.

## **1.5 Delimitation of the Study**

Due to the lack of sufficient time, financial constraints, the rigorous time schedule and researcher capacity the study will be limited in the following points:-

- i) This study was conducted only on three word of Dharma Devi Municipality of Sankhuwa Sabha District. So that it may not be generalized all over the country and other area.
- ii) The study was delimited to small size therefore the findings cannot be generalized as national indicator.
- iii) Only 45 household was selected on the basis of purposive and simple random sampling by lottery method without replacement.
- iv) Primary data was collected from those farmer households who were directly involved in vegetable farming, therefore the results may not be generalized for other similar area.
- v) The study was based in firsthand information that will be collected through the help of interview and questionnaire. The researcher was taken interview to the people collect information data.

## **1.6 Organization of the Study**

The study has been organized into five chapters. First chapter deals about the introduction, background of the study, statement of the problem, objectives of the study, significance of the study, limitation of the study and organization of the study. Second chapter is literature review; theoretical review, sustainable livelihood approach, theory of livelihood analysis and the major findings of studies on livelihood in Nepal. Chapter three is research methodology that includes research design, selection of the study area, nature and source of data, techniques of data collection, data processing, analysis and presentation which has done to complete the study.

Chapter four is analysis part which is the core of the work. It included socio-economic background of commercial vegetable farmers. Where, included family size of the households, age & sex composition, ethnic group, income, land holding pattern etc. Likewise major impact of vegetable farming to the livelihood and problems of the commercial vegetable farming has described. The work is synthesized in chapter five which covers summary and conclusions of the work with certain workable recommendations to improve the farmers' livelihood and future research works.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

Review of literature is a very essential step to develop ideas as well as analytical framework for research. It is also a very important aspect of academic and professional research and essential element of research design. It provides knowledge and concepts required to address the issue systematically from right perspective. In this research literature will be reviewed in the following:

#### **2.1 Theoretical Review**

This study is closely related with man nature relation. By the utilization of land resource people are fulfilling their livelihood. There are different theories/models that have been developed to understand the relationship between man and environment from different facts. Some of the reviewed theories relevant to the issues of the present research are reviewed in the subsequent sections.

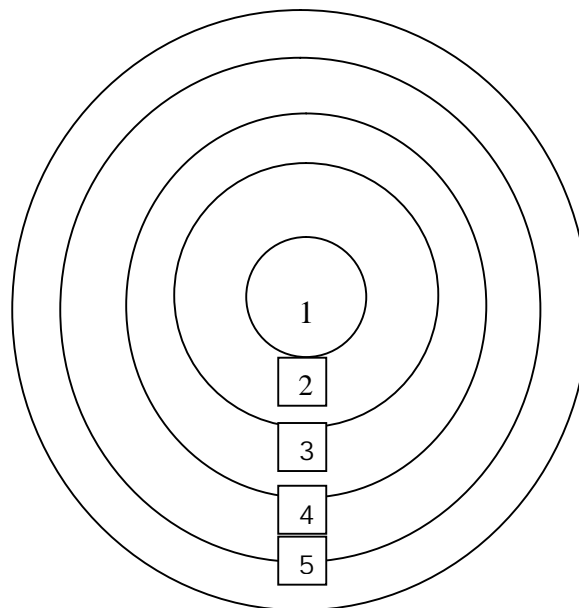
##### **2.1.1 The Von Thunen Models (1826)**

For a better understanding of the distribution of agricultural patterns and types, it is essential to examine theories of the location of economic activities.

According to the Von Thunen's Model each agricultural product has a closed market system having a specific zone around the central market in which it can be produced under the most favorable economic conditions. The optimum location of each production sector is obtained by comparing the net income from the land to each product (which can be achieved at a specific distance from the market, i.e. the gross income obtained per unit-area less the production and the transport costs). Competition for acquiring agricultural locations closest to the market is always won by the products that yield a higher income from land than all the other products in the location. The former include vegetables from which very high cash returns per unit-area can be obtained since several vegetable crops may be produced in a field during an agricultural year. Moreover, vegetable growing involves high outlay and also because transport is comparatively expensive owing to the quantity and perishability

of the produce, vegetables are grown near the market. In the developing countries too the initial stages of this development can now be observed in the vicinity of larger cities (Jasbir Singh and S.S. Dhillon, 2005).

**Figure 2.1: The Von Thunen Model**



**Index**

- 1 = Central city
- 2 = Intensive Farming/ Dairying
- 3 = Forest
- 4 = Extensive Field Crops
- 5 = Ranching/ Animal Products

Source: Singh and Dhillon, 2005

There are four rings of agricultural activity surrounding the city. Dairying and intensive farming occur in the ring closest to the city. Since vegetables, fruit, milk and other dairy products are perishable products they must get to market quickly; they would be produced close to the city.

Timber and firewood would be produced for fuel and building materials in the second zone. Before industrialization (and coal power), wood was a very important fuel for heating and cooking. Wood is very heavy and difficult to transport so it is located as close to the city as possible.

The third zone consists of extensive fields crops such as grains for bread. Since grains last longer than dairy products and are much lighter than fuel, reducing transport costs, they can be located further from the city.

Ranching is located in the final ring surrounding the central city. Animals can be raised far from the city because they are self-transporting. Animals can walk to the central city for sale or for butchering.

Beyond the fourth ring lies the unoccupied wilderness, which is too great a distance from the central city for any type of agricultural product.

Even though the Von Thunen model was created in a time before factories, highways, and even railroads, it is still an important model for the study of land use pattern. The Von Thunen model is an excellent illustration of the balance between land cost and transportation costs. As one gets closer to a city, the price of land increased. The farmers of the Isolated State balance the cost of transportation, land, and profit and produce the most cost-effective product for market. Of course, in the real world, things don't happen as they would in a model. However, this model still works in the sub-urban and peri-urban vegetable growing areas of developing countries like Nepal.

## **2.2 Sustainable Livelihood Approach**

Robert Chambers, who is often called father of sustainable livelihood, has introduced and initiated a serious discourse on livelihood in the mid-1980s. Later, it was further developed by Chambers and Conway and others in the early 1990s (DFID, 1999).

The concept of sustainable livelihood goes beyond the conventional definitions and approaches to poverty reduction. The conventional concepts of poverty considered to be narrow as these concepts focused only on certain aspects of manifestation of poverty such as low income or did not consider other vital aspects of poverty such as vulnerability, social inclusion etc. (Krantz, 2001). The sustainable livelihood approach as a development concept is legitimized through several international forums. The Brundtland commission in 1987 introduced sustainable livelihoods in terms of resource ownership and access, basic needs and livelihood security, especially in rural areas (World Commission on Environment and Development Our

Common Future, 1987). Likewise, the 1992 Earth Summit legitimized and adopted the concept referring 'Sustainable Livelihoods for all' in its agenda 21. The Copenhagen social summit linked sustainable livelihoods explicitly to full employment and the Beijing platform reemphasized the importance of women's livelihood to successful development. In 1997, British Department for International Development (DFID) adopted sustainable livelihood approach to its development activities particularly in poverty elimination. Besides, international organizations like the European Commission; the World Bank, Food and Agricultural Organization of United Nations (FAO), International Fund for Agricultural Development (IFAD) are further developing this approach (Wyss, 2004).

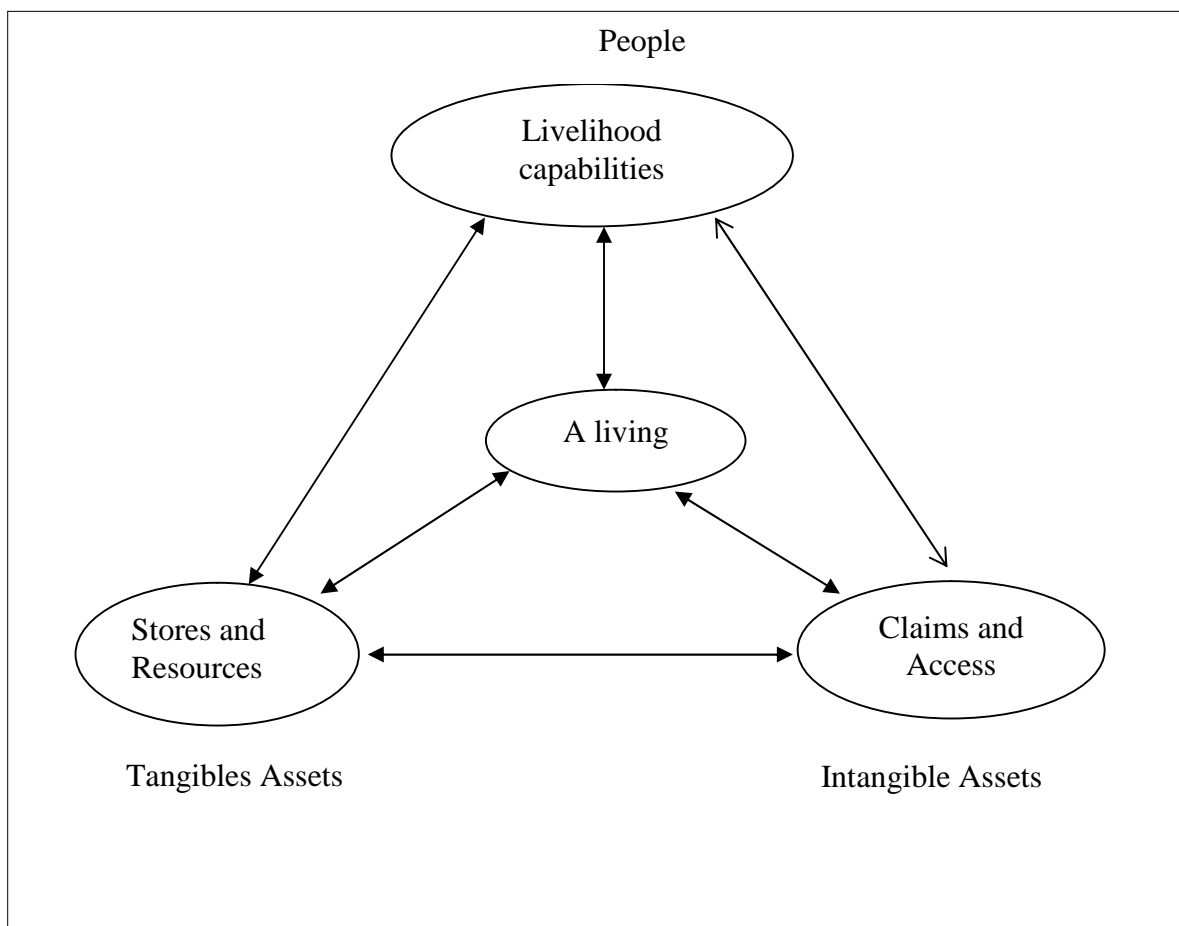
In a classic paper on sustainable livelihood in 1991, *Sustainable Rural Livelihoods: Practical Concepts for the 21<sup>st</sup> century*, Robert Chambers and Gordon Conway defined modifying the earlier definition of World Commission on Environment and Development (WCED) panel as:

A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term (Chambers and Conway 1991:8).

Chambers and Conway (1991) have analyzed an approach for sustainable livelihood, which has given in figure 2.2. The figure depicts the interaction and interplay between different assets, capabilities of households or an individual and livelihood. Households or individual have certain capabilities with which they mobilize different assets (the resources and stores they have) to make a living. A living is the output or gain from the activities (livelihoods strategy). Livelihood capability greatly influences in capturing available livelihood options and hence gaining decent living capabilities and assets are interdependent to each other. Higher capabilities of households enable them to undertake better livelihood strategies (activities for gaining a living) which in term enhance the stock of assets. Similarly, better stock of assets forms the basis for enhancing capabilities. The capabilities and assets together enable households to adopt sustainable livelihood strategies, the central idea of which is to ensure

sustainable decent living. Household's assets provide material and social means to realize a livelihood. Livelihood sustainability is a function of how assets and capabilities are utilized, maintained and enhanced in order to preserve livelihood (Chambers and Conway, 1991).

**Figure 2.2: Components and Flows in Livelihood**



Source: Chambers and Conway, 1991.

According to the livelihood approach, assets could be tangible or intangible. Stores and resources, which households command are the tangible assts. Stores include food stocks, valuable such as gold jeweler and saving. In the same manner, resources include land, water, livestock, tree, form, equipments and domestic utensils. Claims and access are intangible assets of households. Claims are the appeals and demands that can be generally made at times of stress and shocks or at times of contingencies or emergencies for materials, moral or other supports. The supports may take any form e.g. Food, loans, implements gifts or work i.e. exchange of hands. Access refers

to the practical opportunity to use resources, stores, services (transportation, education, health, shops, market etc) or to obtain information, material, technology, employment, food or income. Social capital (social network of a household and prevailing policies, institutions and process) largely determine the extent of claims a household can make and access it has to different services.

Similarly, Carney (1998) has presented a slightly modified definition of livelihood. She defined it as

A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stress and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base.

With regard to sustainable livelihoods, DFID (1999) published a set of ‘guidance sheets’ with a view to attempting to summarize and share on the sustainable livelihood approach. The guidance sheets are the outcomes of the White paper on International Development issued by Government of UK in 1997. Following the approach of Chambers and Conway, DFID defined livelihoods with some modifications but exactly the same as defined by Carney (1998). The guidance sheet presents origin, core concepts and framework of sustainable livelihoods.

## **2.3 Empirical Review**

Since Robert Chambers popularized the livelihood approach in mid-1990s, the academicians and researchers have been undertaking research on different aspects of livelihoods. An attempt has been made in the following sections to review relevant literatures on livelihood pattern, land use and vegetable farming.

### **2.3.1 Works Related to the Land use**

Mukherjee (1968) studied about the agricultural land use pattern in Hawarah district of West Bengal, India. He classified the cultivated land use based on the dominant crops in Hawarah. The dominant crops included paddy, jute, pulse, and potato. The

agricultural pattern of this area had changed over time; the changes were mainly from multicultural to mono-cultural.

Shrestha (1975) reviewed the changes in land use pattern developing countries particularly of Nepal. According to him the forces driving the land use change were growth of population, migration of people, development project and programs under the economic policy of the state.

Vink (1975) has remarked that the land use is a dynamic phenomenon, which has been changing in different times in different geographical areas due to various socio-economic and natural forces. Besides in some places land use changes are happening on the basis of government policies.

Shrestha (1988) studied changing land use and land cover of the Tinau Watershed. It revealed that there have been the intensive uses of land because of the concentration of animal and human population. Forestland was converted into the agricultural land. Agricultural practices in the marginal land without proper soil conservation and water management and over exploitation by the community had resulted in the loss of topsoil.

Manandhar and Shrestha (1992) concluded that land use change is basically concerned with the government decisions. Acquisitions of land forces people to adapt new occupation and large areas come under non-agricultural land. The study also revealed that the conversion of forest into agriculture resulted to the shifting of occupation structure towards secondary and tertiary activities.

### **2.3.2 Works Related to the Vegetable Farming**

Amatya (1975) has described about the agriculture system, pattern, and distribution of crops in Nepal. He has presented the general land use pattern of country and distribution of cereal grains. He concluded that the requirements of food grains by the growing population led emphasis food crops. He focused the growth of individual cash crops and importance of cash crops. He had analyzed the distribution, pattern of Jute Tobacco, Sugarcane, Tea and Mustard Oilseeds.

Pradhan and Subedi (1985) have studied fresh vegetables markets in Kathmandu city. In this study they have attempt to analyze the locations of fresh vegetables markets, the vegetable marketing systems and the price structure of difference marketing system. For this study they have been taken 45 vegetable traders as samples.

Rai (2004) conducted a research study on the impact of potato cultivation on the livelihood strategies of the Sankhu. The researcher recognized that the Sankhu was famous and was a popular village for potato cultivation in the Kathmandu Valley where potato crops were cultivated, not only for household consumption, but also grown as an income generating cash crop. Therefore, potato farming has been regarded as the main economic source of livelihood of the people in Sankhu village. People of the Sankhu had been growing winter and summer potatoes in between paddy cultivation. So far as the cost of potato production was concerned, the winter cultivation was comparatively cheaper than summer potato cultivation. Winter and summer potatoes had occupied the second largest area of land during their cultivation. Potato production and productivity were high enough to improve household income, nutrition and living standards thus improving overall livelihood strategies.

### **2.3.3 Works Related to Livelihood Strategy**

The concept of livelihood is very new and emerging issue in the context of Nepal and as a result there are very few works on the issue. Most of the available studies are related to community and occupational caste groups.

Bishop Berry could be credited as the first scholar to initiate the study of livelihood issue in areas of Karnali region, high mountain ecological belts of Nepal. In 1990 he carried out a study on livelihood strategies of the people of Karnali basin. The researcher identified subsistence system of livelihoods in the Karnali Basin and explained how such system changed due to the external forces. Karnali basin having rugged topography, low productivity and inaccessibility in terms of road network bears very hard circumstances for the people to seek their livelihood. Livestock ranching is the most important activity characterized by seasonal movement to higher elevation areas in summer and to lower areas in winter. Agricultural activities require long growing season due to the lower temperature in long winter season. This study gives an idea about changes in livelihoods by external forces over time.

Stevens (1993) studied Sherpas' subsistence and environmental changes in the higher parts of the Himalayas. The study examined the contemporary economy of the Sherpa and discussed historical change in the economy, environment and the culture. He identified five broad traditional subsistence agricultural strategies and several common sub-strategies in the central and western Himalayas. These were settled mixed farming, sweden agriculture, middle altitude agro-pastrolism, high altitude agro-pastrolism and pastrol nomadism. This study is helpful in understanding the adaptive strategies of mountain people under the influence of environmental changes.

Bhurtel (2000) studied the livelihood strategies of the Kumal living in Lekhnath municipality of Pokhara valley. The findings of the study based on census, have shown the changes in the livelihood strategies of Kumal had been related to changes in natural, socio-cultural and economic environments. Agriculture, pottery and fishing were the major activities of the past. Later the mode of farming changed from food crop farming to horticulture and market gardening. Their way of living is more diversified than in the past as it is influenced by the force of globalization. Wage labor, business and services are other additional options adopted by the people along with their previous activities. This study provides an idea about changing livelihoods of the people.

Dahal (2001) observed a change in livelihood practices of Baramus community of Gorkha district. He found that the changes that occurred in the natural, economic and socio-cultural environment in the area brought immense changes in the livelihood strategies of the Baramus. The traditional practice of *Dole* (chariot bearer) system totally collapsed and *Bani* (porter/wage labors) system was declining rapidly and was in its final stage of collapse. The collapse of traditional occupations and the insufficient agricultural land compelled the Baramus to find other income earning activities like wage labor, pottering and small business, i.e. selling firewood and liquor etc. Modernization and the expansion of local market centers brought significant changes in the socio-cultural sphere of the Baramus. This study shows the impact of globalization on natural, socio-economic and cultural environment on diversification of livelihoods of the local people.

Subedi and Pandey (2002) have observed livelihood strategies of Rai community in two villages of different elevation levels in Arun valley, namely Sitalpati in lower

elevation and Makalu in higher elevation. This comparative study shows that over time in both villages, Rais have adopted various strategies to earn their livelihood. A specific sequence of changes in land utilization and conversion of land into more productive categories was evident. In the lower elevation, change in land utilization pattern reflected from *Bari* (non-irrigated land ) towards *Khet* (irrigated land) and in higher elevation it was more towards *Bari* from *Khoriya* (slash and burn).Adoption of multiple cropping and crop diversification together with working as wage laborer, borrowing, pottering, crediting and livestock selling were sequences of livelihoods adopted under pressure. This study illustrates how people's responses to environmental and economic pressure can differ in two different environments.

Timilsina (2003) has studied the impact of road on the livelihood strategies of rural people in Dhading district. The study shows that agro- based economy of rural people has transferred into market oriented production due to the construction of Bhimdhunga-Lamidada-road and establishing of market centers. Productions of cereal crops have been displaced and local people have started intensive vegetable farming for their livelihood. After construction of road, regular flow of strangers have resulted increase of conflict incidents of social evils and deforestation rate has increased due to the establishment of saw mill. This study examines the socio-economic and infrastructural changes as well as interaction of urban rural linkage in Jivanpur VDC.

Baskota (2005) has attempted to examine the working condition and vulnerability of porters in Kathmandu and impact of policies on them. This study observed that most of the porters are immigrants from other districts and the major cause of their marginalization and migration are poor access to the productive assets such as inadequate and low quality of land, lack of infrastructure and social isolation. Porter's traditional occupations, tailoring, smithing, cobbling became marginalized due to the globalization and industrialization. Their livelihood has not improved in the city. They have lower income, are food insecure, have children beyond schooling and on the other hand new city policies like privatization of Bus Park have further marginalized them .This study has presented vulnerable condition as well as impact of policies upon porters.

Subedi (2007) has presented the changing livelihood pattern in upper Manang Valley. He observed that the livelihood pattern is complex and at times puzzling. Agriculture,

out-migration and tourism comprise three pillars of livelihood but out-migration and tourism are more vibrant. Agriculture is the oldest and time-honored, out migration is a later adoption but quite established historically and finally tourism is the latest adoption as a reflection of state policies and modernization. This study concluded that despite being mountainous, remote and limited growing season crop farming remains integral to livelihood. But out-migration and tourism have become so important that these two activities have ultimately changed the traditional agricultural based livelihood pattern to more of modern one. This study discussed the seasonality of these activities and their implications on labor supply.

Pokhrel, (2013), Nepal resource base for agriculture is severely limited by the nature of the terrain. Only 3.1 million hectares or 21 percent of the total land area is cultivated and there is no significant potential for expansion. Due to high population pressure the average landholding is declining over the years. Poverty, food insecurity, social and economic inclusions are the major problems. Especially in the rural area of Nepal. The mountain agriculture is traditionally composed of elements of self-sufficient. Nepal hill farming includes the field crops, livestock, horticulture, forest and beekeeping cover the risk against famine and other natural disaster.

Ojha, (2014), Agriculture and rural development are intrinsically interrelated elsewhere in the developing countries, especially true for a country like Nepal. It is claimed by the scholar that for Nepal, agriculture is and will remain a major contributor to the sustenance, employment and development of the poor as well as the better off sections of the population for a long time. (Even in Japan, which is now a well-known as an industrialized developed country, the number of people relying on agricultural sector did not reduce during long period between 1870 and 1940. Such number did not decline even until the 1960s, although non decline employment grew substantially by that time. In countries and areas such as Taiwan, Kenya, Thailand, Costarika, Columbia, and Punjab (India). It was the development of agricultural sector that chiefly led to economic growth and overall prosperity among the people.

## **2.4 Literature Gap**

Many studies on livelihood have done in Nepal on the human ecological perspective some of them are reviewed in earlier section. Most of the studies are followed the

sustainable livelihood framework. Many studies have done only on economic perspective on vegetable farming. Studies have laid their foundation on livelihood assets. What are the assets and resources do the people have and how have them been mobilized to earn livelihood have been the central focus of the studies. The focus is justifiable. Of the various components of a livelihood, the most complex is the portfolio of assets out of which people construct their livings. This portfolio includes tangible and intangible assets and access, which is opportunity in practice to use a resource, store (tangible assets) or service or to obtain information, material, technology, employment, food or income (Krantz 2001).

In the concern of the researcher it has not found the previous study about livelihood of vegetable farmers of Sankhuwasabha District. So this study has been designed to study about livelihood of vegetable farmers with their problems.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

Research methodology is a coherent set of rules and procedures which can be used to investigate a phenomena or situation within the framework of disciplinary research philosophy. The methodology we adopt in research comes from our world perception, world view, expression and consequences of our understanding of the world. This section deals with the methods and procedures that will be employed to acquire relevant information on different aspect of vegetable farmer's livelihood and rationale behind the choice of methodology.

#### **3.1 Research Design**

"A research design is the arrangement of conditions for collection and analysis of data manner that aims to combine relevance to the research purpose with economy procedure." Research design is the plan, structure and strategy of investigation conceived. So as to obtain answers to research question and to control variances to achieve of the study, descriptive and analytical research design was used.

A research design is the specification of methods and procedure for acquiring the information of the information needed. It is the overall operational pattern of framework of the project that stipulates that stipulates what information obtained is relevant to the research question and that it was collected by objective and economical procedure.

#### **3.2 Selection of the Study Area**

Dharma Devi Municipality is well known as commercial vegetable farming and milk production area in Sankhuwa Sabha district. On the basis of following major characteristics, Dharma Devi Municipality has been selected as the study site. First; it is highly occupied by the commercial vegetable farmer. Second; the vegetable farmers have been improving their livelihood due to the intensive commercial vegetable farming. These features and the opinion motive the researcher to the study area because it is agricultural study.

### **3.3 Introduction of the Study Area**

Sankhuwa Sabha is a hilly district of Koshi zone. Dharma Devi Municipality is situated at mid east part of the district and it is look like as rectangular shape. In the eastern part of this Municipality there are Laligurans and Mahalaxmi Municipality of the Terhathum and Dhankuta district. Thus Chainpur Municipality lie in the west, Murtidhunga Municipality lies in the north, Mahalaxmi Municipality in the south. Mude bazaar is the Municipality centre and market centre which is on the way of Koshi highway. Total area of the Municipality is 26.24 square kilometre.

#### **3.3.1 Physical Setting**

Physical means the feature which we can see or touch. Main physical feature of the study area has described in different sub topics.

##### **3.3.1.1 Location**

Dharma Devi Municipality is situated in 27<sup>00</sup>1'21" northern latitude to 26<sup>06</sup>' 00" northern latitude and 87<sup>02</sup>1'43" east longitude to 87<sup>02</sup>5'57" east longitude. It is lies in 700 meter to 4200 meter from mean sea level. Total area of the Municipality is 26.24 square kilometer. Koshi highway crosses the Municipality through ward no. 4,5and 6.

##### **3.3.1.2 Climate**

Climatic conditions vary to a large extent in view of several geographical factors (topography and altitude). Five major climatic regions have been deciphered in Nepal. Dharma Devi Municipality lies at average elevation of 1700 meters from the mean sea level and it falls under the temperate zone where the climate is fairly pleasant. In some low land of the Municipality represented as Warm Temperate Zone. Such type of area lies in Piluwa khola area of ward no. 4, 6 and 7 . Thus in ward no. 4, 5, and 6. There is cold type climate. Mude bazaar lies in ward no. 3 and 5 where people can feel always cold. The rainfall which is mostly monsoon based (about 80% of the total concentrated during the monsoon months of June to August). Rainfall range during in the summer from 150 centimeter to 250 centimeter. Likewise range of 25 centimeter to 50 centimeter during the winter season. In the initial time of summer this Municipality has fall high wind and hail.

### **3.3.1.3 Land Structure**

Land structure of the Municipality is not smooth it is differ according to elevation range. Uneven distribution of land structure is the characteristic of the Municipality. Estern part is in high elevation range and the range of high is decries sequentially to the south east. Gupha Pokhari which is the highest part of the district not only Municipality is in the east boarder of the Municipality. Maximum streams of the Municipality drain to the south east part from North West.

### **3.3.2 Socio-economic Setting of the Study Area**

Socio-economic aspect is related with capability and awareness of the people of any area. In other word it is software part of the development which we can feel not to touch and see. Major socioeconomic aspect of the study area has given below.

### **3.3.3 Ethnic Groups**

More than fifteen cast and ethnic group population live in Dharma Devi Municipality. Among total population *Khsatri* is the largest one which population is 32.28 percent of total. Second large ethic group is *Limbu* with 31.49 percent of total. There are *Newar* 7.79 percent.

### **3.3.4 Economic Setting**

Economic activities mean the source of income of individual, family, society and the nation. It is the major index of development and directly linked with poverty reduction and livelihood of the people. Dharma Devi is mainly a rural village area located at Sankhuwa Sabha Dristrict. The main occupation adopted by the people of this Municipality is agriculture. According to the village profile of Mahalaxmi Village Development Committee (2067) there are 42.23 percent people are depended on agriculture. In the Municipality 4.5 percent people has gone to foreign employment which is the main source of income generation of those families. Other people are engage in Business, government and non government service, wage laboring etc.

### **3.3.5 Infrastructure**

Infrastructure is well known as pre basis of development in an area. In Dharma Devi Municipality road network is available to all wards. Koshi highway links this Municipality to headquarter of the district, Terai and other neighbor district. Other rural roads are helpful for the local people to link economically as well as spatially. There is three health post in this Municipality. More than 5 community higher secondary school is there.

### **3.4 Size of Universe and Sample**

Universe and sample size are most important for the validity and reliability in the research. According to the record of the Municipality office, there are altogether 650 households in the study area (Ward no. 4, 5, 6,) and all households are involved in agriculture but 300 household are involved to the commercial vegetable farming that number is universe of the study. First of all Dharma Devi Municipality has been selected by purposive sampling. Among all total household of vegetable farmer of the study area 45 household (15%) has been selected by purposive sampling method. Among all households of vegetable farmers of three ward 15 households from each ward has been selected.

### **3.5 Nature and Sources of Data**

In this study, data was collected from both primary and secondary sources. Primary data will be obtained from the field study by employing various techniques and tools in the proposed time frame. The obtain data was not be only quantitative, also qualitative in nature. Different books, journals, data from district education office, resources center also was used in this study as a secondary source of information.

### **3.6 Data Collection Tools and Techniques**

To collect reliable information different tools and techniques was applied. The following methods will apply:

### **3.6.1 Questionnaire Survey**

Questionnaire survey was applied to gain information about vegetable farming related with livelihood aspect of the farmer.

### **3.6.2 Key informant Survey**

To acquire more information about vegetable farming system, market situation, demand and supply etc. key informant survey will be applied. Key person was forward farmers, farming related group and cooperatives etc.

## **3.7 Data Analysis & Interpretation**

The survey data was both quantitative and qualitative in nature. Therefore analysis will be done on the basis of nature of data. Quantitative information was presented on tabular form and analyzed the table. Different statistical tools like percentage, average will be presented with different analytical tools like charts, bars etc. Presented data and information was analyzed on the basis of the objective of the study.

## **CHAPTER FOUR**

### **DATA ANALYSIS AND INTERPRETATION**

The data were processed by editing, classifying and tabulating. In this research descriptive as well as analytical methods were used to analyze the data and information. The simple statistical tools and techniques were used to present the information and data. Necessary tables, chart, diagrams were used when ever appropriate in the presentation of data.

Gathering information of the chapter is concerned with the field study and it's finding. This chapter is concentrated to the objectives of the study and divided on different sub topics. In this chapter researcher has tried to present the Socioeconomic aspect of vegetable farmer like age and sex composition, family size, income and expenditure, educational status, health status etc. Moreover livelihood aspect of the farmer has included in different topics. Overall major finding of the study has presented at the end of the chapter in bullets. Quantitative analysis is much more frequently pursued than qualitative.

#### **4.1 Social Condition of Vegetable Farmers**

Socio-economic aspect is related with capability and awareness of the people of any area. In other word it is software part of the development which we can feel not to touch and see. Major social condition in this section includes age and sex composition, family size and household population, marital status; religion of respondents, caste/ethnic status, level of education, occupation etc., of the study area has given below:

##### **4.1.1 Age and Sex Distribution of the Respondents**

The age and sex composition is one of the most basic characteristics of population. All aspects of individuals or community's life social attitudes, economic activities, and political propensities and so on are affected by age. Age influences the socio-economic life of community (Ghosh 1985). Age and sex composition of respondents is very important in case of time engagement, labor contribution, and idea sharing and

decision-making process. It has been grouped in class interval 10 which has been shown in table 4.1.

**Table 4.1: Age and Sex Group of the Respondents**

S.N.	Age Group	Male Respondents		Female Respondents		Total	
		No.	Percentage	No.	Percentage	No.	Percentage
1	< 20 Years	0	0	1	2.2	1	2.2
2	21 – 30	2	4.4	7	15.5	9	19.9
3	31 – 40	3	6.7	9	20	12	26.7
4	41 -- 50	4	8.9	4	8.9	8	17.8
5	51 – 60	3	6.7	3	6.7	6	13.4
6	61 – 70	3	6.7	2	4.4	5	11.1
7	>70	3	6.7	1	2.2	4	8.9
<b>Total</b>		<b>18</b>	<b>40.1</b>	<b>27</b>	<b>59.9</b>	<b>45</b>	<b>100</b>

Source: Field Survey, 2018.

The table 4.1 shows that among the all age group of the respondents, the higher percent was in the group of 31 – 40 years (i.e. 26.7 percent). According to the table there are only one respondent of below 20 year. Likewise there are 4 respondents from 70 years above where as 3 are male and only 1 female. It also shows relatively small population in young and old age group. Vegetable crops need special and specific care and management for better result and return. If household member provides special care with more time, frequent visit, monitoring and management it results better yield. The field observation revealed middle age members busy in vegetable farming rather other groups. Old farmers generally can't adopt new technology easily because of their traditional attitude and practices. Similarly, younger group people also can't provide sufficient time to contribute in fieldwork. The middle age population is the productive in the sense that they can provide more time in farming in taking rational decision, seek, accept and apply new technology in the field.

#### 4.1.2 Age Group of Family Members

The age group of the family members was considered to find productive age group. The field work is directly related with age of family members. Very old and children play in significant role in vegetable farming. Here the age group of family members was studied, which is shown in table 4.2.

**Table 4.2: Age Composition of Family Members of Vegetable Farmers**

S.N.	Age Group	Male	Percentage	Female	Percentage	Total	Percentage
1	<10 Years	30	10.6	40	14.2	70.	24.8
2	11 – 20	27	9.5	26	9.2	53	18.7
3	21 – 30	33	11.7	38	13.4	71	25.1
4	31 – 40	14	4.9	15	5.3	29	10.2
5	41 – 50	9	3.2	12	4.2	21	7.4
6	51 – 60	5	1.8	3	1.1	8	2.9
7	61 – 70	8	2.8	7	2.5	15	5.3
8	>70	6	2.1	10	3.5	16	5.6
	<b>Total</b>	<b>132</b>	<b>46.6</b>	<b>151</b>	<b>53.4</b>	<b>283</b>	<b>100</b>

Source: Field Survey, 2018.

Table 4.2 shows that large numbers of the family members are between 21-30 years and below 10 years male and female both contribute (24.8%) of the total. Family group of age of 51 – 60 years are found to be lowest in the least number. i.e. 8 out of 283. The average family size is 6.3 people per family. From analyzing the information the age group, 11-70 years age group contributed (69.6%), up to 30 years age group (68.8%) people are mostly not working in the field or they are found in other non farming job like study, any other skilled or unskilled job etc. The age group between 31-70 years which constitutes (25.8%) of the total population, only contribute their potential life in the agriculture farming. Generally 70 years above people are not directly involved to the occupation.

The analysis shows that vegetable farming is labor intensive job, it needs physical labor for the field work and without manpower it is not viable for the vegetable production.

#### 4.1.3 Family Size and Household Population

Small or big family size is also important in view of person available for field work and participation in vegetable farming. Vegetable farming is labor intensive work and therefore the family size affect in cultivated area, production and income.

**Table 4.3: Family Size of Household Population**

S.N.	Family Size	No. of Households	Percentage
1	3	3	6.7
2	4	9	20.0
3	5	8	17.9
4	6	6	13.3
5	7	11	24.4
6	8	2	4.4
7	9	1	2.2
8	10	3	6.7
9	11	1	2.2
10	12	1	2.2
<b>Total</b>		<b>45</b>	<b>100</b>

Source: Field Survey, 2018.

Table 4.3 shows that out of the 45 total sampled household, majority have family size of 7. There are 11 household i.e. 24.4 percent who have this size. There are 9 having a family size of 4. The maximum sizes of family members are 12. Such type of household is only one. Likewise family with 9 and 11 members' households are same. The average household size of study area is 6.3.

#### 4.1.4 Marital Status

Marital status refers to proportion of population that consists of single, married, widowed or divorced people. Marriage is the legal union of persons of opposite sex. The legality of the union may be established by civil, religious or other means as recognized by the laws of a particular country. The well being of a society is conditioned by the proportions of its people, falling within the several marital groups. It is important to analyse the marital status because it also shows the social status of people in the society.

**Table 4.4: Marital Status of Respondents**

S.N.	Marital Status	No. of Respondents	Percentage
1	Married	42	93.3
2	Unmarried	3	6.7
<b>Total</b>		<b>45</b>	<b>100</b>

Source: Field Survey, 2018.

Table 4.4 shows the marital status of respondents of vegetable farmers by two categories such as married and unmarried. 93.3 percent respondents were currently married and the numbers of unmarried were 3 or 6.7 percent.

#### 4.1.5 Caste/Ethnic Composition of Vegetable Farmers

Nepal is a multiethnic country. According to CBS (2011), 125 caste/ethnic groups are found in Nepal. Ethnicity is social component of population. It reflects socio-cultural characteristics of population. *Kshatries* are mostly found in the study area.

**Table 4.5: Caste/Ethnic Composition of Vegetable Farmers**

S.N.	Caste/Ethnic	No. of Households	Percentage
1	Thapa	18	40
2	Bishta	12	26.7
3	Newar	5	11.1
4	Gurung	4	8.8
5	Basnet	3	6.7
6	Limbu	3	6.7
<b>Total</b>		<b>45</b>	<b>100</b>

Source: Field Survey, 2018.

Above table shows that most of the vegetable farmers are from *Kshatri* cast. Among total 45 household 33 are *Kshatri*. Thapa, Bishta and Basnet are found among 33 *Chhetries* household. Of the total 45 household Thapa are 40 percent and second largest ethnic group is Bishta. Below figure shows clear feature about it.

#### 4.1.6 Level of Education of the Respondents

Education plays vital role in the socio-economic development, aware and practice become easy from education. Educated person can easily take any decision quick and better than uneducated person.

**Table 4.6: Level of Education of Household Head**

Status	Male	Percentage	Female	Percentage	Total	Percentage
Illiterate	0	0	10	22.2	10	22.2
Literate	6	13.3	4	8.9	10	22.2
Primary	3	6.7	4	8.9	7	15.6
Secondary	6	13.3	7	15.6	13	29
Higher Secondary	2	4.4	2	4.4	4	8.8
Bachelor	1	2.2	0	0	1	2.2
<b>Total</b>	<b>18</b>	<b>40</b>	<b>27</b>	<b>60</b>	<b>45</b>	<b>100</b>

Source: Field Survey, 2018.

Table 4.6 shows the education level of household heads. The literate and illiterate percentage was 77.8 and 22.2 respectively. Among educated groups larger numbers were found for secondary level. Whereas 29 percent has passed secondary level, moreover among 27 respondent 22 female are illiterate.

Education is an important component to impact of vegetable farming. The attitude of farmers towards vegetable production was found positive and shows need of education for vegetable production, out of 45 respondents, 29 respondents feel education is compulsory for better knowledge of vegetable cultivation. Education is most important factor to change attitude, understand and adoption new technology regarding practice, seed, fertilizer and marketing management. Other positive aspect toward education and occupation from the farmers is that they give their introduction as a farmer without any hesitation. Educated persons respect their work.

Farmers feel education is important thing, so every farmer family wants their child get more education and higher the graded than own self and want to provide good education to their children.

**Table 4.7: Children Send to School/College**

S.N.	Parameter	No. of Household	Percentage
1	Government	29	64.4
2	Boarding	4	8.9
3	Both (Gov. & Boarding)	7	15.6
4	No children	3	6.7
5	No Children for School	2	4.4
<b>Total</b>		<b>45</b>	<b>100</b>

Source: Field Survey, 2018.

Education is an important component of life, which can change socio-economic condition and betterment of the living. Most of the household head feel education only the matter which can drive the life of human towards successes and feel pleasure. So that every body realized that education is an integral part of the social life. According to the table most of the households send their children to the government

school and college. Some household send their children to the private school and college. There is a secondary boarding school. Some students are going to Barun Multiple Campus in headquarter, Sankhuwasabha and some are in Sankhuwasabha Multiple Campus and other districts too.

Vegetable farming is one of the profitable jobs. Which can give economic return easily, and it can also change the socio-economic condition of vegetable grower. Majority of vegetable farming HHs think that incomes generated by vegetable farming have contributed in their children's educational expenses.

**Table 4.8: Production of Vegetable Help to Get Education**

<b>Parameter</b>	<b>No. of Response</b>	<b>Percentage</b>
Yes	41	91.1
No	0	0
I don't know	4	8.9
<b>Total</b>	<b>45</b>	<b>100</b>

Source: Field Survey, 2018.

Table 4.8 shows that, 41 out of 45 vegetable farming households were able to send their children to school 4 household head out of 45 (which consist 8.7 percent) do not respond clearly.

From this discussion, commercial vegetable growing farmers were able to send their children to the school for education. If anyone has productive land they can grow different types of high value crops and its growing period also is short because vegetable farming is low investment and less risk occupation. From some field, farmers can take multiple harvests from the seasonal and off-seasonal crop. So that certainly vegetable production helps to get education from their income. This probability is less in cereal growing farmers' condition.

#### **4.1.7 Health and Sanitation**

It is says that health is wealth. So health is very important aspect of the development of any society. Health is connected with overall activities of the people. So to be

health each person it is necessary of health facility as well as their own awareness. The general health condition is considered very important, both physically and mental, for the betterment of the peoples. Living good health represents good social and economical status of the household. If the health condition is not good other factors of development could not work well. Below table shows the condition of toilet facility of the households:

**Table 4.9: Sanitation and Availability of Toilet**

<b>S.N.</b>	<b>Parameter</b>	<b>No. of response</b>	<b>Percent</b>
1	Yes	41	91.1
2	No	4	8.9
<b>Total</b>		<b>45</b>	<b>100</b>

Source: Field Survey, 2018.

Table 4.9 shows the health conditions of the vegetable farmers, most of the families use toilet or mostly feel it is necessary for the health. 41(91.1 percent) out of 45 households have already prepared toilet. Only 8.9 percent have no permanent toile, they have local material used toilet.

## **4.2 Economic Condition of Vegetable Farmers**

### **4.2.1 Land Holding Pattern**

Land holding is also major component for the vegetable production. Productions itself depend upon the size and types of land available, market accessibility for the product and other infrastructure.

**Table 4.10: Land Holding Pattern**

<b>S.N.</b>	<b>Land (In Ropani)</b>	<b>No. of Households</b>	<b>Percentage</b>
1	Below 5	3	6.7
2	6-10	4	8.9
3	11-15	10	22.2
4	16-20	16	35.5
5	21-25	4	8.9
6	26-30	3	6.7
7	Above 30	5	11.1
<b>Total</b>		<b>45</b>	<b>100</b>

Source: Field Survey, 2018.

Table 4.10 shows that out of 45 households 35.5% possesses 16 – 20 Ropani land. The table shows there is no problem of land for vegetable farming. Among 45 households 5 house have more than 30 ropani land but they do not utilized all land to grow vegetable. Thus only three households have less than 5 ropani land The majority of farmers grow high value crop i.e. cauliflower, cabbage, tomato and green vegetables, which require frequent irrigation facility.

#### **4.2.2 Motivating Factors Towards Commercial Vegetable Farming**

People should do any economic activities to fulfill the need of individual and households. Most of the farmers have selected this occupation within this broad category of cause. There are some specific factors that motivated those to adopt this occupation as a livelihood option. The production of vegetable depends on the various biophysical and socio-economical factors which influence the vegetable production and income of farmers. Most vegetable farming households have begun this work with someone's motivation.

**Table 4.11: Motivating Person to Begin Vegetable Farming**

<b>S.N.</b>	<b>Motivational Factor</b>	<b>No. of Respondent</b>	<b>Percentage</b>
1	Organization	24	53.3
2	Self motive	6	13.3
3	Parents	7	15.6
4	Neighbor inspiration	8	17.8
<b>Total</b>		<b>45</b>	<b>100</b>

Source: Field Survey, 2018.

Table 4.11 reveals that of the total 45 households 53.3 percent have motivated by organization. There was an organization which had vital role to start commercial vegetable farming in Dharma Devi Municipality. Name of the organization was SEPRED. Thus 8 households started this occupation through neighbors' inspiration.

#### **4.2.3 Income Sources**

The socio-economic condition of the family depends upon the income source. The permanent source of income strengthens the standard of the living. Vegetable production is also most profitable job as compared to other cropping system. All the households under study consider vegetable farming as a main source of income.

**Table 4.12: Main Income Source of Family**

<b>S.N.</b>	<b>Income Source</b>	<b>No. of Household</b>	<b>Percentage</b>
1	Vegetable	16	35.6
2	Vegetable and Livestock	18	40.0
3	Vegetable and Business & Industry	2	4.4
4	Vegetable and Pension	1	2.2
5	Vegetable and Job	2	4.4
6	Vegetable and cash crop	6	13.4
<b>Total</b>		<b>45</b>	<b>100</b>

Source: Field Survey, 2018.

Table 4.12 shows that the highest number of household (40 percent) are doing vegetable farming with livestock. Most of them have cow and then buffalo, goat, pig etc. Some household members are job holder and pensioner too. Livestock keeping is also a part and parcel of the agriculture and it contributes the organic manure from livestock for better production. Therefore, in many cases livestock and vegetable or crop production goes together.

### **4.3 Livelihood Pattern of the Household**

During the course of change in time, the change in human activities and physical features of the earth surface as well as change in use of natural resource also occurs. The modern use of resource indicates the human civilization. Because of the growing population man has to do more struggle to survive. 'Struggle for existence' is the central concept of livelihood strategy, who cannot adjust himself in a changing environment, cannot survive in this earth.

Because man is a social animal he uses to do group work to do struggle with the natural change as well as different natural calamities. Because of the introduction of modern technology man has brought tremendous change in the use of natural resources. But in the context of our poor country the impact of new technology is very low. People of Nepal have not been able to use existing resources with modern technology. They use local resources traditionally for their livelihood. Similarly, the people of Dharma Devi Municipality have been using their local resources in traditional way for their livelihood.

Farmers of The study area mainly participating in different levels of farming activities for their livelihood. Most households of that Municipality had their own land and produce agricultural products. Agriculture is the basic activities found in this area. Majority of the people are involved in agricultural activities. However, income from the agriculture depends on the size of land holding and its productivity. The agricultural income of the villagers is also based on the production of cereal as well as vegetable farming. There is high scope of vegetable farming and all the farmers nowadays are attracted to this. Almost all the respondent family used to grow vegetable and their main source of income seems to be farming these products. The vegetable farming is extensively increasing in this settlement.

The people of this settlement are also changing their way of life due to the development of road and electricity facilities. They have not totally shifted from one set of livelihood options to another but their functional and intensity of work as well as production has changed. Whatever amount of vegetables was produced at that time it was primarily for their own use. Only a few households who have large family size were able to grow vegetables for sale. Nowadays the situation has reversed. Almost all households give top priority to vegetable farming. Vegetables like cabbage, cauliflowers, radish, beans, pea, chilly and green vegetable are grown in this settlement. Vegetables farming have become the most important source of earning livelihood in this area. Cereal crop production gets second priority. Cereal crop is done for subsistence needs only. Only a few households give priority to cereal grain production. Another important activities that changed after the road construction and electric facilities, are the livestock keeping, job (services), business and industry in this. Now they are running parallel different types of cooperatives like saving and credit, milk collective, consumer etc. with commercial agriculture.

#### **4.3.1 Characteristics of Vegetable Farming in Dharma Devi Municipality**

Characteristics of vegetable farming of the study area are uses of typical knowledge and practices, input use, use of pesticides, use of agriculture tools in vegetable farming.

##### **4.3.1.1 Knowledge and Practices on Vegetable Farming**

Vegetable production depends upon various factors such as bio physiological and socio- economic factors and its verification. In order to increase production and income from vegetable production to the farmers, it is necessary to provide numerous services and input requirements such as seed, fertilizer, irrigation and pesticides as well as pest management. Then, it also needs to improve cultural practices, improvement in seed use, crop rotation and off-seasonal vegetable practices, which increases the vegetable production. If the knowledge and practices used are based on own experience or based on scientific ground then its result increases production and if technologies is inappropriate then it leads to wrong practice and production could not be satisfactory. In this study, farmers are growing vegetables not only for survived but also for the commercial purpose. They are becoming like technician because of

the practice of farming. They take help from related agencies and organization when they feel need.

#### 4.3.1.2 Input Use in Vegetable Farming

It is the most important factor for the production. Manure and fertilizer increase the crop production by supplying essential elements to the crop. Most of the professional farmers are very much knowledgeable in the matter of vegetable production. They know the amount supply to the particular crops, however, due to lack of irrigation, they use reduced dose of chemical fertilizer as compare to organic matter. The following table shows the use of different inputs in the vegetable field.

**Table 4.13: Input Uses in Vegetable Farming**

Parameter	Household head responses in input							
	Seed use			Manure use		Fertilizer and Pesticide use		
	Local	Improve	Both	FYM	Urea	DAP	Potash	Pesticide
Yes	5	27	13	40	42	40	25	35
No	0	0	0	5	3	5	20	10
<b>Total</b>	<b>5</b>	<b>27</b>	<b>13</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>

Source: Field Survey, 2018.

Table 4.13 shows that seed, manure, fertilizer and pesticide use variable result were obtained. Where 5 households still use local seed, 27 households use improved and 13 use both types of seed. Where 40 household heads used FYM and only 5 uses FYM in other crop in same field and that FYM ultimately use by vegetable but directly not used.

Commercial vegetable grower group use FYM per year basic and use in rotational basis in same field. Due to insufficient available of FYM, that is the causes of lack of foraging areas, decrease of cattle herd size. Earlier, farmers did not use balanced fertilizers due to not knowing its importance, but now a days Potash fertilizer is also easily available and practice of used in case of balance fertilizer, even through farmer know the value and importance but it is difficult to afford the cost of fertilizer and

confusion with trademark, color and size of the fertilizer grains. At last the problem of using fertilizer in time and in required quantity is also problematic due to unavailable of irrigation facilities and market availability.

#### **4.3.1.3 Use of Pesticides in Vegetable Farming**

Generally pesticide is not advisable to use in fresh consumptive vegetables. Some time its use is essential to protect against attack of disease and insect pest. Earlier every house hold head use maximum time and quantity of pesticide to protect the crops against various diseases and insect pests. But several effort were given to reduce the spraying, quantity and increase the interval by conducting work shop, meeting group discussion and integrated pest management training. Now days every household head are sensitive about the pest management and pesticides. The level of spraying was varied with person to person.

#### **4.3.1.4 Use of Agriculture Tools in Vegetable Farming**

In agriculture sector use of tools and equipment reflect the degree of mechanization in the production of vegetable. It makes easy for intercultural operation, land preparation and harvesting, grading etc. Especially it is useful for reduction of workload of human resource in the field. Production and profit maximization depends on efficiency of the tools. However, the result indicated that they were not using modern tools sprayer, water cane. Because of the hilly area there is problem to use modern tools like tractor. Usually they were practiced to use traditional wooden plow and spade for land preparation. Sickle is the harvesting tools and harvesting and grading also done alone manually. From this study, it is found that vegetable farming was less mechanized and small sector based technologies are in operation mainly due to small size of households.

#### **4.3.2 Vegetable-based Livelihood**

The vegetable farming in the study area exhibit certain distinctive characteristics like growing mainly cabbage, cauliflower, potato, beans, pea, carrot, radish, chilly, green vegetable and mix vegetable farming. However, the type of landform is the major factor to influence the typology and productivity of vegetables. Generally, *khet*

(irrigated low slope areas), *bari* (un-irrigable dry land) are the major categories of land. Vegetables farming have become the main source of earning livelihood in this Municipality.

#### 4.3.2.1 Yearly Income from Vegetable Farming Occupation

All vegetable farmers are not same in their socio-economic status, so their income is not remaining the same because all vegetable farmers do not have equal access to land, labor, capital and other opportunities. The variation in income has been shown in table below.

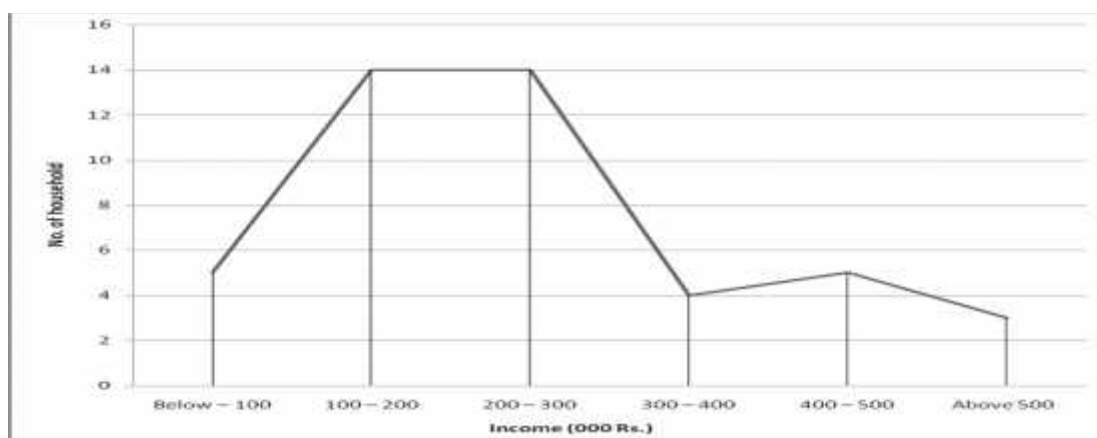
**Table 4.14: Yearly Income from Vegetable Farming Occupation**

S.N.	Income (000 Rs.)	No. of Household	Percentage
1	Below – 100	5	11.1
2	100 – 200	14	31.1
3	200 – 300	14	31.1
4	300 – 400	4	8.9
5	400 – 500	5	11.1
6	Above 500	3	6.7
<b>Total</b>		<b>45</b>	<b>100</b>

Source: Field Survey, 2018.

Table 4.14 shows that the highest 16 vegetable farmer households are earning NRs. 100000 –200000 in a year. The yearly average income of vegetable farmers is 247000Rs. Most households earn between Rs.100000-300000 annually. Those household incomes are obviously high, which have totally involved in vegetable farming and utilization of land is high. Furthermore explanation has shown in following figure:

**Figure 4.1: Yearly Income from Vegetable Farming Occupation**



#### 4.3.2.2 Utilization of Vegetable Income

Utilization of income shows the area of the expenditure. Farmers are utilizing income primarily in food, cloths, children education and daily required goods. As their earning increased, they utilize it in other sectors, such as purchasing cultivated land, improve the housing conditions, built toilet, other luxuries things etc. They earn more by investigating into productive sectors like expenditure in business, saving in bank; land purchase in urban areas and purchase fix assets. Table 4.15 shows the sector of utilization of income from vegetable farming.

**Table 4.15: Utilization of Vegetable Income**

S.N.	Area of Expenditure	No. of Household	Percentage
1	Food and daily use expenditure	45	100
2	Land purchase far cultivation	20	44.4
3	House construction / improvement	37	82.2
4	Health and sanitation	37	82.2
5	Children education	45	100
6	Land purchase in urban area	5	11.1
7	Bank balance	15	33.3
8	Livestock purchase	15	33.3
9	Social function	20	44.4

Source: Field Survey, 2018.

Table 4.15 shows that every family utilizes the income in food, cloth, and daily use and education activities. 82.2 percent farmers also utilize the income in additional social functions, improvement of housing condition, health and sanitation. Of the total 44.4 percent farmers utilize the income in land purchase for cultivation, 33 percent farmer use this income for both livestock purchase and bank balance and 11 percent farmers invested in land purchase in urban area. Children education and to purchase daily uses goods is common area of expenditure for all household. These activities indicate the vegetable farming is being a profitable and income generating occupation among the farmers group in commercial vegetable farming.

### **4.3.3 Benefits of Commercial Agriculture Farming**

Definitely all things have both positive and negative impact. Commercial vegetable farming in Dharma Devi municipality has same case.

#### **4.3.3.1 Positive Benefits**

Before starting commercial vegetable farming people of Dharma Devi Municipality produced potato and the used to exchange their production with cereal crop to the neighbor Municipality like Madirambeni and Chainpur. They used to give two times potato for single unit of paddy. They used to grow maize in their land but it took about nine months (from Magh to Kartik) to prepare. On the other the productivity was very low. SEPRED (a project) inspired to do commercial vegetable farming in 2051 B.S. and then they started it. The project was lunched through Ankhibhuin Multipurpose Cooperative Limited. There were different programs i.e. small group making program, vitamin A program, seed distribution & awareness program etc. People shifted toward commercial vegetable farming gradually. Now Dharma Devi Municipality produces average about 20 truck vegetable per day. One to two trucks consumes in Nepal rest of the other go to India and Bangladesh. People of Dharma Devi Municipality have changed their lifestyle.

Because of the increasing income rate of the farmer they are enable to get health and education facility. They can spent money to health and they can go to out of the district. The grate thing is human perception and awareness. It is not easy task to change human perception which is digging in the mind. Now we have culture to see

farming as a low level occupation in the society but the commercial vegetable farmers of Dharma Devi have broken to this bad culture. So the most important output is that the farmers give their identity as farmer with proud. They do not feel any hesitation to be farmer. They are now becoming united in different cooperative. So they have developed concept of institutional development.

#### **4.4 Problems of Commercial Vegetable Farming**

No one and nothing are free from problems but they are not similar in all cases and sort. In the current time whole system of Nepal is in the web of problems. Similarly, there are also some problems in commercial vegetable farming in Dharma Devi Municipality which are facing now a day. These are described below in detail.

##### **4.4.1 Market Related Problem**

Market is the place where goods and services buy and sell. Because of the globalization and transportation facility market becomes worldwide. In the case of vegetable of Dharma Devi Municipality market of the product is not only local. Local market consumes so little percentage of total production. Middleman from Khadbari, Chainpur and this municipality come and buy some vegetable in certain day in a week. Rest of the production goes to the out of the district. There are some cooperatives and collection centers in Bihbare Bazar and Mude bazaar to sell vegetable but the price rate is not same in all time and season. Because of the lack of the cold store some time the vegetable become waste and farmers should bear lost in large scale. At the time of vehicle striking and Nepal Banda they face such type of problems. Because of the political instability and transaction period different organizations and political party organized striking program at the moment farmers face the problem. To solve the problem government should create farming friendly environment and market.

##### **4.4.2 Seed Related Problem**

It is essential to be the best quality of seed for quality production of vegetable. Farmer can get more profit from quality production than low quality production. So seed is

base for profit. In the study area most farmers used local seed. The table shows seed used situation:

**Table 4.16: No of Household according to Crop and Seed Source**

Crop Name	Source of Seed			
	Own Production	Agricultural Office	Local Market	Other
Pea	32	5	8	0
Radish	28	3	11	3
Potato	33	0	10	2
Cauliflower	10	6	20	9
Cabbage	0	4	27	14
Carrot	21	2	22	0
Green Vegetable	42	0	3	0
Other	37	1	4	3

Source: Field Survey, 2018.

According to the table most of the respondents used their own seed. It means they prepare seed for themselves. Source of seed depends on crop type. Among 45 households 42 households grow green vegetable from their own seed. They do not produce cabbage seed. Only a few farmers bring seed from agriculture development office and the volume that office is very small. Here other source refers to other market beyond local and relative. If they do not manage seed they can not get in market in time. But it is necessary to use better seed than they use now. All of them want to get from agricultural service centre in fewer prices. But they are unable to get such type of facility.

#### **4.4.3 Labor Related Problem**

Commercial vegetable farming is labor intensive occupation. Farmer who have sufficient worker in their house they can do more farming and can get more benefit

otherwise they cannot do more farming and do not get more profit. There is no any house which does not have farming. So it is hard to get manpower for work in season.

#### **4.4.4 Diminishing Productivity**

If we harvest a crop on same land regularly for long time per unit production will decrease which is called diminishing of productivity. Who have sufficient extra land they can exchange yearly otherwise farmer face such type of problem. On the other hand because of the imbalance use of chemical fertilizer and pesticide productivity is affected. Other reason like top soil erosion, gully erosion productivity is decreasing. New diseases are entered as a result farmer faced the problem.

#### **4.5 Expectation of the Commercial Vegetable Farmer**

Commercial agriculture is a major characteristic of Dharma Devi Municipality. Another neighbor Municipality Madirambeni has also same feature. Both Municipality have name and fame in the sector of agriculture. Now we have developed distribution oriented culture in all sectors in the society and country. At the time farmers of the study area have developed production culture and it is necessary to promote and motive to the farmer for their contribution. Nevertheless government sector has no attention to promote it. Now the vegetable farmers have some expectation they are as follow:

- ❖ It will be very better if government take responsibility to marketing the product. If so they will not have bear about investment lost and they will motive too.
- ❖ It is necessary to develop agro tourism to the area so that they could get double benefit.
- ❖ It has expectation to get new innovative training about how to do more profitable farming and how to use new technology in this field.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATION

#### 5.1 Summary of Findings

Following are some of the highlighted of the key findings:

- ) Dharma Devi Municipality of Sankhuwa Sabha District was the study area.
- ) The main objectives of this studies were to analyze the impact of vegetable farming of livelihood of the farmers and to identify the problems and ways to solution of commercial vegetable farming.
- ) Only 45 household was selected on the basis of purposive and simple random sampling method.
- ) The research design was descriptive and analytical ways.
- ) Among the all age group of respondents the higher percent was in the group of 31-40 year which includes 26.7 percent.
- ) The total population of the sample household was 283, male 132(46.6%) and female 151(53.4%).
- ) Out of the 45 total sampled household, majority have family size of 7. Where there were 11 household members.
- ) Out of 45 total household 42(93.3%) respondents were married groups.
- ) Highest number of household in the study area were thapa (40%) and lowest in Limbu (6.7%).
- ) The average literacy rate of household was 77.8 percent and illiterate was 22.2 percent respectively.
- ) Out of 45 household, 41(91.1 percent) were able to send their children to school where 4 (8.9 percent) house hold head do not respond clearly.
- ) All household have toilet facilities among them 91.1 percent have modern types of toilet where 8.9 percent have no permanent toilet.
- ) Out of 45 household, 11.1 percent have above 30 ropani and 6.7 percent households has below 5 ropani.

- ) Majority of the respondents, 53.3 percent responded were motivated by different organization.
- ) Highest number of household (40percent) were doing vegetable farming and livestock.
- ) Majority of yearly income from vegetable farming occupation were 31.1 percent farmer are earning NRs 1-2 lakh annually.
- ) All household respondents, 100 percent are utilizing of vegetable income in food and daily use expenditure.
- ) Out of 45 household, 5 household still use local seed, 27 household improved and 13 household use both types of seed. Where 40 household heads used FYM and only 5 household are not used.
- ) Thirty three respondents used potato seeds their own production, where six household were cauliflower seeds at agricultural office and twenty seven household were used cabbage seeds at local market.

## **5.2 Conclusion**

Agriculture farming in Nepal is labour intensive and it is based on family labour. From the beginning of human civilization, agriculture has been the main source of people's livelihood. Vegetable farming is a traditional custom in the Nepalese community, particularly for culinary purpose. With the course of development and globalization vegetable farming is becoming one of the major sources of income and livelihood. Being an economic activities activity it is closely related with livelihood and employment and semi-employment generation work. So the present work has sought to explore socio- economic condition of vegetable farmers and their impact on livelihood, problems which they are facing.

Dharma Devi Municipality a commercial vegetable pocket was chosen as the study area. It covers an area of 26.24 square kilometer with a total population of 6982. Ward no. 4,5, and 6 is mostly commercial vegetable farming area. Cabbage, cauliflower, pea, beans, radish, carrot and green vegetable are cultivated in this area. Farmers do not utilize their total land to vegetable farming. Majorities of the farmers use to grow high value vegetables as cauliflower, cabbage, tomato, pea, radish, carrot and green vegetables. Vegetable is one of the major cash crops and everybody realized that it is

one of the superior for earning, which can easily provide opportunities of economic activity in settlement. Regarding the start of vegetable cultivation study area 24 out of 45 household heads told that the beginners of the vegetable production are encouraged by organization.

The major theoretical grounds underlying studies on livelihood in Nepal is sustainable livelihood framework defined by DFID and other development agencies. But this study is based on the livelihood approach developed by the Chambers and Conway. The livelihood pattern of the people of the study area is associated with a range of activities. Agro-based livelihoods are characterized by several distinctive types such as vegetable farming, cereal crop, livestock, and mix of all these. A large number of households shifted to vegetable farming as cabbage, cauliflower, pea, carrot, beans, garlic, chilly, green vegetable and mix vegetable farming. Vegetables farming have become the main source of earning livelihood in the study area.

The main reason to success of vegetable occupation is the better utilization of available resources in the concerned locality. Fresh vegetable is perishable product which can't store long time after harvest. Good transportation facilities help in flourishing the vegetable farming. Therefore, there is need of the cooperative marketing facility. It was observed that there are improper uses of chemical pesticides for controlling vegetable from pests. There should be awareness of the improper use and handling of chemical fertilizer and pesticides too. The grower should be made aware of hazards of pesticide to all living being including mammals.

### **5.3 Suggestions/Implications**

#### **5.3.1 Future Research Direction**

- The study covers small area because of limited time. Future researchers who have interest in the similar issues can pursue a larger study area so that better understandings can be derived.
- A comparative study of taking several vegetable farming areas within or without the Municipality could be a good research for further researchers.

### **5.3.2 Suggestions for the Development of Vegetable Farming**

Based on the study findings, the following actions are suggested to improve the livelihood status of rural people.

- There is high scope of vegetable farming but it cannot be developed as it has possibilities due to the lack of timely availability of means of transportation all area in the Municipality in rainy season and other agricultural inputs like fertilizer, pesticides, insecticides and equipments. Those inputs should be made available in local small market in a timely manner in this area.
- Some farmers in the study area have made comment on damage to crop by diseases. So there is a need to provide JTA or agricultural specialists to provide necessary knowledge and support.
- Frequent workshop/training should be organised to provide good knowledge and use of pesticides and fertilizers so that their magnitude impacts can be checked.
- As vegetable farmers are flourishing commercially, cooperatives must be encouraged to form for marketing imposes so that the farmers gain much.
- To promote such types of occupation it is necessary to establish this area as agro tourist area so that people get double benefit.

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# APPENDIX

## Questionnaire for Households Survey

### Impact of Vegetable Farming on Livelihood in Sankhuwa Sabha District at Dharma Devi Municipality

Date: .....

#### A. General Information

1. Name and Caste/ethnicity: .....
2. Place of Origin: .....
3. Age: (a) <15      (b) 15-30      (c) 30-45      (d) 45-60      (e) >60
4. Sex: Male/Female
5. Marital status: Married/Unmarried
6. Education: Literate (.....) Illiterate
7. Previous occupation (If there is ): .....
8. Family Size: .....

#### B. Information about occupation

1. When did you start this occupation? .....
2. Why did you attract to this occupation?  
.....
3. Information on land ownership (Land area in Ropani & production in kg.)

Land Type	Own land	Other land	Crops produced	Production in kg.
Khet				
Bari				
Kharbari				
<b>Total</b>				

4. Number of cattle now they are keeping?

Types	Cow	Buffalo	Oxen	Goat	Sheep	Horse	Pig	Others	
No.									

5. House type (observation)

a) Cemented    b) Mud-Brick    c) Wood and Stems of Plant

6. Other facilities: Electricity, television, cassette player, radio, separate kitchen, biogas, use of LPG gas, toilet facilities

7. Annual income and Expenditure

S.N.	Sources of income	Amount(Rs.)	Title of Expenditure	Amount (Rs.)
1	All Vegetables		Food	
2	Agriculture		Housing	
3	Livestock		Clothing	
4	Business and Industry		Education	
5	Wages		Health	
6	Pensions		Transportation	
7	Others		Entertainment	
<b>Total</b>				

8. Do you have any debt (loan) in your family? If yes

S.N.	Sources of Debt	Amount(Rs.)	Purpose	Rate of interest (%)	Remarks
1					
2					
<b>Total</b>					

9. Where are you sending your children for schooling?

a) Boarding b) Governmental c) Both d) No one e) No children for schooling

10. Are you practicing same vegetable pattern? Yes or No

The vegetables produced at present are:

.....

The vegetables few years back:

.....

Reason for the change:.....

11. Do you consume all your production? Yes or No

If it is sold, the vegetable quantity.....amount in NRs.....

Selling place: In own village, neighboring village or local market

12. Is income from this occupation sufficient for your family?.....

13. What types of problems do you have to face in the occupation?

.....

14. What type of training is essential for further more improvement for vegetable farming?

.....

