

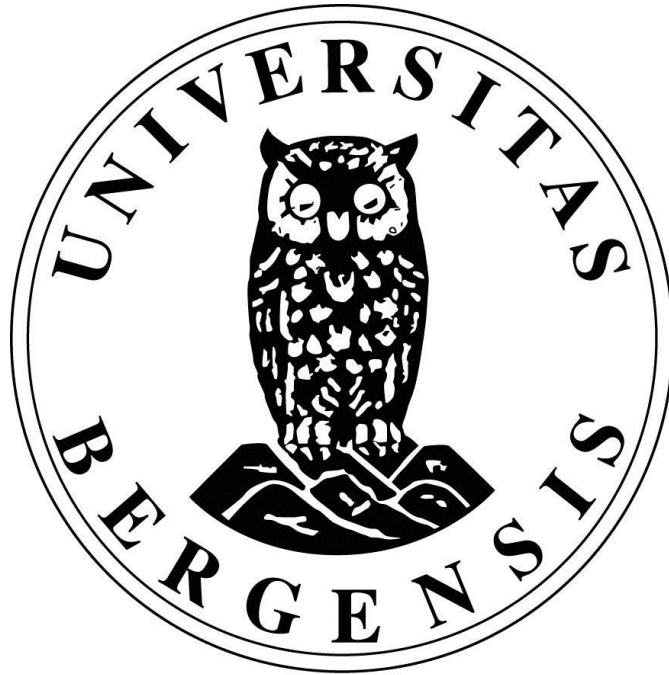
Do Women Work and Men Decide?
Gender Dimensions of Cash Cropping in the Middle Hills of Nepal



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ABSTRACT

The study entitled “Do Women Work and Men Decide? Gender Dimensions of Cash Cropping in the Middle Hills of Nepal” was carried out in two villages in the Kaski District, Nepal, with objectives to document the existing farming system, motivational factors for adopting cash cropping and gender roles, especially in decision-making and labor division of agricultural activities. Data for this research was produced from two and half months of fieldwork conducted in 2012. Primary data were collected from a household survey (N=50) with purposive sampling, field conversations, case studies and observation. Acquired data were analysed using NSDstat to produce tables, figures and frequencies. The results show that the farming system is based on traditional skills and largely depends on monsoonal rain. In the past, farmers were largely involved in cereal crops for self-consumption but the farming system has been gradually transformed into market oriented production over the past two decades. Cash crops such as tea, amriso, cardamom, cucumber, garlic and seasonal vegetables are the main cash crops cultivated. Although farmers are involved in commercial agriculture, they largely use organic fertilizers such as compost and manure rather than chemical to increase growth. Institutions, migration, training and the high economic value of cash crops were the main motivating factors for adapting and increasing cash crops. Males appear to have increased their participation in a wider range agricultural activity since the establishment of cash crops, previously, the subsistence farming work was primarily done by women. The decision-making process in agriculture was found to be different depending on caste. The high caste (Brahman) involved all family members before the decisions were made and implemented, however women were rarely given the chance to take on any financial responsibility. The women of the middle caste (Gurung) made most decisions in agriculture and income because the majority of males had migrated domestically or internationally. Males were found to have exclusive decision-making power in the lower caste (Dalit). Regarding gender knowledge of crops, in particular lentils, no difference was found between genders, differences were observed only between the young and older generations.

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GLOSSARY

<i>Adhiya:</i>	Share-cropping
<i>Aama:</i>	Mother
<i>Amriso:</i>	A type of grass, the flower is used to make brooms
<i>Baba:</i>	Father
<i>Bari:</i>	Un-irrigated land generally used to grow millet and maize during the main cropping season. This type of field is also used to grow the majority of seasonal vegetables.
<i>Ban Samiti:</i>	Conservation area management committee (CAMC) formed by ACAP
<i>Barkhe Bali:</i>	Summer crops
<i>Bhari:</i>	A head load of forest product such as foliage/wood collected in the forest (generally 40 kg in the case of wood products such as fire wood and 20 kg in the case of foliage such as fodder)
<i>Bheti:</i>	Gift
<i>Bidesh:</i>	Foreign country
<i>Birta:</i>	Land grants made by the state to individuals usually on a inheritable and tax-exempt basis
<i>Brahman:</i>	The highest caste of Nepal according to Hindu religion
<i>Chhetri:</i>	The second highest caste of Nepal according to Hindu religion
<i>Gurung:</i>	A common hilly people of eastern and western hills of Nepal especially famous as Gurkhas in the British and India army
<i>Dal:</i>	Lentil
<i>Dalit:</i>	The lowest caste of Nepal according to the Hindu religion
<i>Dai:</i>	Older brother
<i>Didi:</i>	Older sister
<i>Dashain:</i>	A greatest festival of Nepali people celebrated in Hindu communities
<i>Guras:</i>	A particular type of lentil
<i>Guthi:</i>	A land endowment made for a religious purpose
<i>Hude Bali:</i>	Winter crops
<i>Janajati:</i>	Ethnic group
<i>Jimmuwal:</i>	Head of the village
<i>Raksi:</i>	Local liquor
<i>Jamindar:</i>	Land owner with a large plot of land

<i>Khet:</i>	Irrigated land generally in lower elevation and terraced normally used to grow rice during the main season
<i>Khoria:</i>	Slash-and-burn
<i>Majdoori:</i>	Labor
<i>Magar:</i>	An ethnic group
<i>Mukhyia:</i>	Head of the village
<i>Pakho bari:</i>	Less fertile, un-irrigated land mostly used to plant <i>amriso</i> and trees for animal feed
<i>Pariyar:</i>	Family
<i>Parma:</i>	Labor exchange
<i>Raikar:</i>	State land
<i>Ropani:</i>	Unit for land measurement (20 ropani = 1hectare)
<i>Rupees:</i>	Nepalese currency
<i>Samitti:</i>	Committee
<i>Tihar:</i>	The second greatest festival of Nepalese people

ACRONYMS AND ABBREVIATIONS

ACAP	Annapurna Conservation Area Project
BS	Bikram Sambat Nepali official calendar for public and private purpose. (It is about 56 years, 8 months and 16 days elder than the Christian Calendar Anno Domini (AD)).
CBS	Central Bureau of Statistics
CAMC	Conservation Area Management Committee
CMV	Cucumber Mosaic Virus
CSW	Commission on Status of Women
DADO	District Agricultural Development Office
DDC	District Development Committee
DFID	Department for International Development
FAO	Food and Agricultural Organization
FPA	Farmer Participatory Approach
FSA	Farming System Approach
GAD	Gender and Development
GDP	Gross Domestic Product
ICIMOD	International Centre for Integrated Mountain Development
IDS	Institute of Development Studies
I/NGO	International/National Government Organization
KMTNC	King Mahendra Trust for Nature Conservation
MoAC	Ministry of Agriculture and Cooperation
NARC	National Agriculture Research Council
NPC	National Planning Commission
NSCDP	National Spice Crop Development Programme
SAS-N	Society of Agricultural Scientists, Nepal
SSNCC	Social Service National Coordination Council
UN	United Nations
UNDP	United Nations Development Program
UNFPA	United Nations for Population Activities
VDC	Village Development Committee, (lowest administrative unit in Nepal)
WID	Women in Development
WAD	Women and Development
WRCO	Western Regional Climate Office

CHAPTER I: INTRODUCTION

1.1 Background

Since ancient time agriculture has been the main source of livelihood in the developing countries of the world. Nepal is no exception. It is the mainstay of the national economy and provides employment to more than two third of the total population (NPC, 2010). The majority of people depend on agriculture, it contributes 35 percent of GDP (ibid). It is the most important source of food, income and employment particularly for rural poor people and is thereby considered to be the backbone of people's livelihood. Although agriculture is backbone of the majority of people, Munyua (2000) has stated that in developing countries, people often lack access to basic food due to population pressure. In Nepal, agricultural growth has remained almost the same for two decades but the highest population growth rate increased at a rate of 2.62 annually from 1971-1981 and population density reached up to 180 per/sq.km in 2011 (CBS, 2011). Nepali agriculture is characterized by small farmer, rain fed mixed subsistence and low productivity (NPC, 1995). On average, Nepalese people have small landholding size with 0.83 hectare and even 45 percent households have less than 0.5 hectare due to continuous fragmentation of land. The growth rate of agricultural production was 2.7 percent in the 1990s but it decreased to 2.1 percent in 2008/09 (NPC, 2010) which aggravates food insecurity in Nepal.

To ensure food security and socio economic improvements in Nepal, the development of small scale agriculture is necessary. In recognizing this, the agriculture sector has been given high priority by the government and various non-government organisations with shared goals of sustainable development, poverty reduction and food security. The government is trying to increase productivity by implementing agricultural plans and policy at a national level that support small scale agriculture. The national agriculture policy basically aims to promote small scale commercial agriculture (MoAC, 2004). As an example of this is the Agriculture Perspective Plan (APP) which was implemented by the government as part of the Eighth Plan (1997-2002). The plan focuses on different sets of priorities regarding investment, policies and institutions. The private sector is

encouraged to invest in four main input¹ and output² areas. The government provides support through agencies such as Agricultural Development Bank who provides loans to farmers in need, District Agricultural Development office who provides different training and shares knowledge to the farmers. Ministry of Agriculture Cooperative (MoAC) is the main body for the development of agriculture. Further other organizations including National Agricultural Research Council (NARC), academic institution such as the Institute of Agricultural and Animal Science (IAAS) and several I/NGOs including the International Centre for Agricultural Research in Dry Areas (ICARDA), International Crop Research, Institute for the Semi-Arid Tropics (ICRISAT) and Annapurna Conservation Area Project (ACAP) and several organizations have been involved in agriculture development in Nepal through research as well as extensions services. These organizations assist farmers through knowledge, funding and equipment.

On the other hand small scale farming has become a predominantly female occupation lately due to out-migration. In rural farming about seventy percent of the total labor comes from women (Bhadra & Shah, 2007). Along with as part of the long term vision, the national agricultural policy has given emphasis to a participatory approach in order to empower women by enhancing their efficiency in agriculture.

Consequently effects have been seen in agriculture development. Various efforts on agriculture sector have led to rapid change towards new perspectives. Today commercial agriculture offers an opportunity for many rural people to move above the poverty line (World Bank, 2008). The growing of cash crops is now increasing rapidly and is seen as an important way to help small farmers provide food security and to improve their situation (Gautam 2011; Sharma, 1997). This study is about documenting to what extent agriculture has become commercialized, the factors which have motivated farmers to adopt cash crops, and the role of gender especially in labor division and decision-making in agricultural activities.

¹ Irrigation, roads, power, technology and fertilizers

² Livestock, high value crops, agri-business and forestry

1.2 Some Existing Studies in Agricultural Commercialization and Gender

Issues

Cash crop farming has become increasingly popular in recent years and is being widely practiced for food security. In many areas cereal crops have been replaced by different cash crops that provide better profit and this is changing socio-economics of people. Cash crops provide new opportunities for food security, reduces poverty and increases local employment for the rural people (Paolisso *et al.*, 1993). There is a lot of research documenting the positive impacts of commercialization at the household level, showing raised household income and improved health, education and wellbeing. A study by Kennedy and Brann (1994) found that commercialization of agriculture enhances economic development by raising employment and income which brings food security and improves nutrition, especially in the rural communities. Technological changes and commercialization in agriculture were found to be positive for economic gain which ultimately improves employment opportunities and expands food supply (Binswanger & Von Braun, 1991). Regarding health and nutrition, Kennedy (1994) has examined the effects of commercialized agriculture on the health of children and women, and concludes that by increasing household income ultimately have positive results. Likewise in South western Kenya the transformation of maize crop into commercial sugarcane production has increased household level food security which in turn increased the calorie intake of households (Kennedy & Cogill, 1988).

Gautam (2011) recently studied how transformation of the agricultural system has affected food security in Ilam, a hilly region of Nepal. His study focuses on how cash crops have changed the sources of food, the pattern of food production and diet of farmers. Several studies have also documented the transformation of subsistence agriculture into cash oriented production in the periphery of urban centres for income generation. Several decade, farmers have been shifting their cultivation from cereal crops towards cash crops but mostly in urban fringes and villages that have road access, market and institutional development (Brown & Shrestha, 2000; Gautam 2011; Pibleam, 1999). A study analysed the factors determining agricultural commercialization and mechanization in the hinterland of urban centre in Morang (Nepal & Thapa, 2009). They found that the urban centre helps to facilitate agricultural commercialization by creating increased demand for food and other agricultural products and supplying the necessary

inputs. Market oriented agriculture also has positive impacts on the environment and socio economic condition of the people. Agricultural intensification has become the key socio economic measure of farmers as it brings increasing wealth and social status to farmers (Dahal et al., 2009). Several factors influence the commercialization of agriculture including population pressure, market, technology, employment opportunity, income, transport facilities, institutional development and government policies (Ananda & Herath, 2003; Blaikie *et al.*, 2002; Templeton & Scherr, 1999). Aase, et al., (2010) studied the radical change in the agriculture system over the last few decades and found that a lot of new crops such as tea, coffee, fruit, different types of vegetables and greenhouse farming are being tried out on small landholdings. More recently the issue of climate change and its impact on agriculture, the flexibility of farming system and farming dynamics have been the focus of researchers. They have found that the potential impacts of climate change are leading farmers to adapt a variety of transformations in their farming practice, in various study areas in the Himalayan region (Aase, et al.,2010; Holmelin, 2010; Joshi, 2012).

Along with the commercialization of agriculture, gender in agriculture has become an issue in development policy and academia circles throughout the world. Several scholars have written about gender issues in agriculture. Less attention was given in the development sector until the publication of Boserup's 'Women's role in economic development' in 1965. Boserup was a pioneer in raising the gender issues. She stated the important role of women in agriculture production, and particularly in the rural labor force in developing countries. Her study drew attention to the cultural diversity in the division of labor by sex in agricultural production (Deere, 1982). Studies on land and agriculture in Asian/other developing countries showed that gender inequalities affect rural agricultural development (Agarwal, 2003; Song & Chen, 2012). Gender based agricultural in division of labour in developing countries have been mentioned by Buvinic and Mehra (1990). In Thailand, aquaculture has become an alternative agriculture for Thai women and solves the social and economic problems created by out-migration (Setboonsarng, 2002). Slater (2001) discusses the positive social effects resulting from urban agriculture which has become particularly important for women in households of low income. Commercial agriculture has become a source of empowerment for women; it helps to establish social networks and encourages community development.

Adhikari (2008) observed women improve their economic status through commercial vegetable farming in urban fringe of Nepal. He mentioned that market integration of agricultural economy has resulted in economic improvement for farming households. World Bank (2008) highlights the vital role of men and women in agriculture for sustainable development. In many developing countries, women are the main farmers but their roles remain largely unrecognized (ibid). Gender inequalities limit agricultural productivity, thus women should be encouraged to move beyond subsistence production into high value market oriented production. Vargas Hill & Vigneri (2009) discuss gender inequalities and report that women have less access to assets and market than men, even though women are as equally productive. Women in rural locations have access to land for agricultural production through their husbands, however they have limited control over income and decisions in agricultural activities (Lyimo-Macha & Mdoe, 2002). Gender roles in livestock have been identified in a study in rural Nepal, it concluded that the participation of women in livestock programs and their involvement in decision-making was negligible even though the women play a substantial role in livestock rearing (Paudel, et al., 2009). This proves that in Nepal gender is still an issue particularly in rural agriculture.

The literature focuses on how the transformation of subsistence agriculture to cash crops brings food security to developing countries which is driven by the integration of markets, development of roads, urban locations and demand as well as innovation and technology. However, they have neglected to address what motivates farmers to convert to commercial farming in rural areas. Many studies highlight the large role women play in caring for agriculture, however decision-making behind agricultural activities and how significant a role women play in this area has not been widely addressed. There is general lack of gender specific data relating to work division in the agricultural sector. Therefore, this study aims to shed light on the adaptation process and motivations behind farmers changing crops and also tries to assess the specific work division of gender in agricultural activities. In addition, the study focuses on how the farming families make decisions in agriculture.

1.3 Research Questions

The main objectives of this study are to obtain an understanding of the gender issues in agriculture, factors that motivate farmers towards cash generating crops, and general farming system. In order to fulfil the objectives the following research questions are raised.

- What is the existing farming system of Lawangghalel?
- Has cash cropping increased during the last 20 years? And if so, what are the most important factors causing the increase?
- Who decides on agricultural activities? Is it like men decide and women do the work? Or are decisions in farming left to the women as well as men?

1.4 Organization of Thesis

The present thesis has been organized into seven chapters. The first chapter provides a background to the study. The second chapter presents theories and concepts that are used in the study. The third chapter is about the methods and tools that have been used to acquire information. In addition it also includes positionality of the researcher and how she managed to get back to the stage of researchers for information. The fourth chapter gives a glimpse of national and regional context of the study area. It also presents the demographic, social and economic aspects such as age, sex composition and education of the respondents and their family. Chapter five begins with an analysis of the empirical findings. It presents the farming system of the study area which has been classified according to Turner and Brush's classification. Chapter six identifies the existing major cash crops of the study area. It also identifies the motivational factors of farmers for adaptation of cash crops and addresses the problems farmers face in agriculture. Chapter seven aims to identify the specific labor division of gender in agriculture, gender knowledge and decision-making in agriculture at the household level. Finally, results are discussed and conclusions are drawn.

CHAPTER II: THEORETICAL CONSIDERATIONS

Theoretical framework assists the researcher in understanding how social scientists perceive the world and provides guideline for the study (Aitken & Valentine, 2006). Theories of Farming System Approach, Livelihood Approach and Gender related concepts have been applied in this study as guidelines. Addressing the objectives of the study, the farming system approach and livelihood approach provide multidisciplinary ways to analyse issues of agrarian society. This study is concerned with the human dimension and tries to analyse decision-making and farming changes. To address gender issues gender concept has been mentioned.

2.1 Farming System

2.1.1 Development Concept

There was limited research available addressing the issue of agriculture before 1960s. At this time the Green Revolution came up with the new concept in the agricultural development. It brings change in agricultural production using various techniques to increase production. However, green revolution was successful only in homogeneous environments and it was not appropriate model to be used in developing countries with mountainous landscape. Thus, the farming system approach evolved as an alternative created perspective in development and evaluated new technologies for use in different environments. The farming system approach focuses on rural farmers and their families who participate individually for their sustainable livelihood on small holdings.

The farming system approach was largely used during 1960s to 1980s by various research projects and researchers to analyse rural agrarian livelihoods. During the period, the assessment of farm management was limited to production economics mainly focused on analysis of budgeting, linear programming and applied decision analysis (Johnson, 1981). The farming system approach moved to the second phase of development from the 1970s to early 1980s. During this period, the approach was adopted and used by many research institutes from around the world (Dixon, et al., 2001; Norman, 2002). Technical scientists and social scientists also involved to address and evaluate farmer's situation and the use of new technologies. The participation of farmers themselves, 'the bottom up approach' has been developed and widely used in agricultural research and development.

In the mid-1980s, the farming system approach moved to focus on farmer's problems with a goal to understand farmers and their production environment. It also focused on farm management development including biophysical and socio economic aspects in the technological and evaluation process. In the late 1980s to early 1990s, the Farmer Participatory Approach (FPA) was developed which raised the issue of farmer's participation in the research and development process. During this period, various farming groups collaborated with national and international institutes and research project. At the same time, the issue of ecological sustainability and environmental degradation in the farming system approach, as well as gender related issues in farming activities and the decision-making process in the farming families were addressed. Now the farming system approach has widened its area of focus and address the nature of farming as well as finding appropriate methodologies that can be implemented in a wide range of conditions. These days it is an approach widely used by a range of multidisciplinary researchers in the field of social science. Farming system is an interrelationship between different units engaged in agricultural production and involves social, political, economic and environment factors to make an ideal system (Turner & Brush, 1987).

2.1.2 Farming System Approach

Various researchers have defined the farming system approach differently in different fields and apply it in different ways. However, the approach defined by Turner and Brush is widely used in social science research. According to Turner and Brush (1987: 13) farming system is “*any level of unit (s) engaged in agricultural production as it is weeded in a social, political, economic and environmental context.*” This approach describes “*unit (s) in its context and/or explores some characteristics of the units(s) in terms of all or parts of the context*” (ibid). The approach has a broad concept and is widely known as a holistic approach. It is descriptive rather than explanatory (ibid: 27). It tries to capture and make the researcher able to understand and analyse the complexity of agriculture and its changes conceptually in the context of peasant economy, social change and agricultural decision-making. It assists to ‘identify *what* processes exist and *how* sets of interrelated components function together’ (ibid).

Based on scale, the farming system can be categorized into two levels; micro (individual household) or macro (village or small area) (Turner & Brush, 1987: 3). The approach is

used to provide case studies that describe a representative range of world agricultural systems, make comparisons of system and address factors that bring changes to the system. Focus has been placed on the internal dynamics of micro level agricultural units and involves various level of investigation from small individual household level to village level (Turner & Brush, 1987).

2.1.3 Sub-systems

A farming system has several sub-systems. Turner and Brush (1987: 13) discuss three sub-systems; human, environmental and genetic. They further added that a large number of components comprise within these sub-system to form a single farming system. The human sub-system is mostly studied by social science researchers which concentrates on use of resources particularly land intensity and availability, labor intensity and availability, demography and innovations. The environmental sub-system is studied by agronomic science which focuses on natural condition such as climate, soil, land type and water. The third sub-system is about genetic components of agriculture such as genotypes and phenotypes of crops and animals. The third sub-system is mostly studied by agronomists and botanists (Turner & Brush, 1987). This study is more concerned with the human sub-system which tries to analysis agricultural change so the human sub-system has been focused.

The human sub-system is concerned with the mobilization of resources and interlinks closely with the other sub-systems. Land and labor are considered as universal resources. Water, fertilizer, plant and animal are additional resources. These units interact at the individual level together to make a system (ibid). Human aspect is recognized as most important aspect in order to mobilize and organize other units. The human sub-system has four different aspects in farming system; custom and rules, institutional frameworks, population and technology (ibid). Customs and rules refer to the existing land tenure system especially control and access of land that affect the use of land, and mobilization of labor. Several formal and informal institutions such as village, regional and national forms of social organization, household, kinship group and community enforce those rules. Institutions such as agricultural administration that makes customs and rules, apply new technologies as additional mechanism for good mobilization of farming units to make viable agriculture. Control refers to permanent ownership and access refers to the temporary ownership to utilize land. Changes in size, density and structure of the

population affect the farming system. Technology means knowledge and application of different types of inputs such as chemical fertilizers, pesticides, irrigation, seed varieties and tractors. These inputs play an important role to make good farming system. In most peasant societies, the household is a primary unit of production and consumption. Individual household has rights of land and mobilizes labor for production. The household organizes other units to produce food and meet their goals through the management of available resources that bring change in a farming system. The farming system is characterized by the external rural and urban environment (Dixon, *et al.*, 2001). In the management of farming system, social capital such as communities and social network, household structure, gender, local institutions, techniques and indigenous knowledge play great role, and they bring change in farming system (ibid).

In this study, the focus is given on farming families, the division of work and the decision-making regarding agricultural activities. The household (men and women), the various types of land such as *khet* (irrigated land generally paddy land) and *bari* (un-irrigated land generally used for corn and millet), animals, forest, water and technology are identified as farming system units (Dixon, *et al.*, 2001; Turner & Brush, 1987).

2.1.4 Classification of Farming System

Several scholars have tried to classify the farming system. The most widely known and used is the classification by Turner and Brush (1987: 6). They classify the system into three category; *Output intensity*, *Technology type* and *Production type*. These components are interrelated and a change in one of the components will affect the other components as well (ibid).

Output intensity of agriculture is assessed by 'yield or production per unit area and time' which is measured by monetary value, weight and calories. The measure depends on types of production and cultivars in question (ibid). It needs detailed study of production per unit area and a long period of time to find out the output intensity of agriculture. Because of the time shortage, it is difficult to calculate accurate figures of output intensity in this study. Thus it can only be roughly estimated. The farming system can be categorised according to low, medium and high output intensity. It differs depending on the place on the basis of this category (ibid).

The second component the *technology type* of cultivation ranges from Paleotechnic to Neotechnic of agriculture which discuss the level and types of agriculture production. Paleotechnic means traditional agriculture which involves high labor (human) and seed inputs rather than technology, while neotechnic (modern) agriculture involves high outputs such as soil nutrients, irrigation, pest control, mechanization and genetic material rather than human labor (ibid: 8). Paleotechnic and neotechnic system are two extreme poles, all farming systems function somewhere between these two poles (ibid). Turner & Brush (1987) explain that all farming systems have varying mixes of paleo and neotechnic input that makes different in ratio via input and output intensity.

Third component *production type* involves to “produce either direct consumption (producing unit as consumer) or for the market (commodity production)” (ibid: 8). It deals with the structure of agricultural economics and farm unit decision. According to Turner & Brush (1987) most of the households in developing economics peasant produce crops for subsistence and some for market. Pure non-market is exceedingly rare (ibid: 9) so both types subsistence and commodity production is practiced in most farming systems. Thus, production type trajectory has to be placed on every farming system.

The concept of the farming system approach has changed over time. In the current phase of farming system evolution, it has been linked with the sustainable livelihood approach. The farming system approach is to understand the farmer’s livelihood and their interrelationships with other units which can be better understand by people centred sustainable livelihood approach. Therefore, sustainable livelihood approach has also used as a guideline in this study and will be discussed below.

2.2 Sustainable Livelihood Approach

Sustainable livelihood approach was developed in 1990s (Norman, 2002: 8) since then it has been used to address the livelihood of farmers. There are some distinct components of the livelihood approach such as migration and market; however, remaining units are similar to the farming system approach. For two decades, this approach has been central in development studies including the Department for International Development (DFID), the United Nations Development Program (UNDP) and other non-governmental organizations (Carney, et al., 1999 in Scoones, 2009). The sustainable livelihood approach places emphasis on complex activities, assets sets, entitlements and social

relationships managed by households to improve productivity for sustainable livelihood. Many scholars from different disciplines have conducted their studies under the livelihood framework. Many livelihood studies have been inspired by the work of Robert Chambers and Gordon Conway in an Institute of Development Studies (IDS) in 1992 (De Haan & Zoomers, 2005: 27).

Sustainable livelihood is defined as *"a livelihood comprises the capabilities, assets (stores, resources, claim 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, provide sustainable livelihood opportunities for the next generation which contributes net benefits to other livelihoods at the local and global levels and in the short and long term"* (Chamber and Conway, 1992 in Bessant, 2006: 63).

In the sustainable livelihood framework, Carney (1998: 7) identifies five livelihood assets; human assets (knowledge, skills, physical capabilities), natural assets (land, water, forest), financial assets (savings, credits, wages, remittances), physical assets (transport, production, shelter, equipment), and social assets (relation, networks, membership in groups). People have control over these assets and use them in their livelihood strategies (ibid). This approach primarily analyses people's access to resources, their different livelihood activities and relationship between relevant factors at micro, intermediate and macro levels (Adato & Meinzen-Dick, 2002). It looks at people's lives through various aspects and recognizes people themselves have assets and capabilities to achieve their livelihood goals. The concept of this approach is to be dynamic, recognizing changes due to both external movement and as a result of people's own actions (see Adato & Meinzen-Dick, 2002).

The practice of the sustainable livelihood approach in agricultural research is mentioned by Adato & Meinzen-Dick (2002) in their paper. They mention that agricultural research can fit in: "by affecting the vulnerability context through linkages to the asset base, or as part of policies, institution and process" (ibid: 13). The assets can be reduced or enhanced at any time. A reduction of an individual's assets makes his/her livelihood vulnerable (Swift, 2006: 46) and assets can be gained or maintained through investment. Investment includes training, education and stores or physical resources (ibid: 44). Farmers have to

purchase the seed crops when the conditions are not right or farmers may get profit when certain criteria are met for production. Institution and process affects how individuals use their assets in pursuit of his or her livelihood strategies. They may shape the decision of agricultural researchers in technology development at the national level. Livelihood strategies are the combination of activities that people pursue in order to achieve their livelihood objectives (Scoones, 1998). Scoones (1998) identifies the livelihood strategies of rural people. First agricultural intensification or extensification (where rural farmers invest or increase labor in their farm to yield more output per unit area and where farmers put more of their land under cultivation as described in FSA). Secondly, livelihood diversification where farmers diversify their livelihood to off farm income earning activities and migration where people temporally or permanently move away and seek a livelihood elsewhere. His livelihood strategies mostly focus on farmers and almost exclude rural non farmers who are natives of their villages. Farmers may invest in their farm or expand their farm size or human capital (skills) to seek employment or finances to expand their market or business.

2.2.1 Criticisms of Sustainable Livelihood Approach

Although sustainable livelihood approach has been widely used by various scholars, this approach has been criticized by various scholars. The livelihood approach is said to be broader (De Haan & Zoomers, 2005). In addition, Livelihood approach has four weaknesses which have become more prominent in the past decade (Scoones, 2009: 181). The first weakness point is that the approach fails to deal with global economic market and politics that can bring change on process. It only emphasizes on local perspectives and not compatible with real world challenges and decision-making process. Secondly, this approach lacks attention to power and politics and fails to link livelihood and governance regimes for agrarian development and social movement. The third failure point of the livelihood approach is that it lacks rigorous points to deal with long term changes in the environmental condition (ibid: 182) especially climate change, as mentioned by Adger (2003 in Scoones, 2009). And finally it only focuses on short term change which fails to deal with long term change in rural economics (ibid).

Despite these criticisms, sustainable livelihood framework has been widely used in recent decades. It focuses on the micro economics of farm production and patterns of households (Scoones, 2009). This approach is people centred that assists to understand

the realities of people's livelihood influenced by institutional structure and processes. It recognizes multiple influences, multiple actors, multiple strategies and multiple outcomes. The assets of livelihood framework related to rural livelihood are key elements of this study. The study is an analysis at the household level regarding gender role and agriculture. It also focuses on whether farmers are agriculturally subsistence or market oriented. Therefore I have broadened the scope of my study with the approach as a guideline.

To address objectives of this study, it is also necessary to address the issue of feminism.

2.3 Approaches of Feminism

Various issues related to gender have been mentioned by feminists. Moore (1988) explains that gender can either be seen as a symbolic construction or a social relationship. Emphasis has been placed on the categories of men and women as culturally constructed. Many Scholars have discussed what men and women do i.e. the sexual division of labor. Feminism emphasizes that women should have social, sexual, intellectual, political and economic rights equal to the men. Various feminists express their view that women have been subordinated by men, and they work to improve women's status in different arenas.

From the epistemology perspective, the feminist theory is one of the major achievements for feminist scholars. Feminist theories argued that 'A woman's consciousness is socially constructed' (Sachs, 1996). In addition two types of feminist approaches; social feminism and radical feminism have been discussed (ibid). The social feminist approach is based on the viewpoint that all knowledge is socially constructed and focuses on women's position within the economy and the family (Acker, 1987). Thus, it is said that woman's mentality emerges from the social context throughout their lives. Rose (1983) explains how a woman's work and activities are characterized by the unity of hand, brain and heart while a man's activities are characterized by mental and manual labor and thus lacks emotion. Like social feminists, radical feminists also see a fundamental change in the social structure one which will eliminate male dominance and patriarchal structures. Radical feminism argues that it is the sexual exploitation of women by men that determines woman's consciousness. However, both approaches emphasis on woman's feelings and emotions that comes from social construction.

2.4 Feminism in Geography

Gender issues in geography emerged in 1970s through political context addressing the unequal status of women in the society. Rose (1983) in 'Feminism and Geography' mentioned the geography discipline has been dominated by men perhaps more so than other disciplines. In addition, the inequality of male and female geography professors has been mentioned by Valentine (2007). Feminist geographers have mentioned the inequality of gender reinforced by class, race, and ethnicity. They also addressed the inequalities in power of male and female. Gender studies in geography have been expanding their scope by addressing the differences of men and women according to place. Feminists have contributed to the understanding of the division of labor and identified relationships between gender work and development.

Feminism enters into geography by two theoretical perspectives of post-modernist and post-colonial. They focused on dichotomous categories such as man-woman, public-private and mind-body (Shrestha Thapa, 2009). Several feminist geographers have contributed to visualizing the situation of women in their studies within Human Geography. Finding everyday life people and thinking about differences of gender has become one of the issues in human geography. Postmodern feminists are concerned with specific contexts. In patriarchal society, men place themselves in a higher social standing and women are secondary (ibid). For example in Nepal, economic activities and decision-making process is in the male's control in most sectors. Women are often engaged in 'unpaid family labor,' for example household work and childcare for which they are unpaid. Women are framing with the paradigm of domesticity in South Asia, where women cannot cross the proverbial '*Laxman Rekha*'. The term '*Laxman Rekha*' in Nepali refers to the fact that women should not expand into roles other than those of housewife.

2.5 Development of Feminism

Feminist theories have evolved in various fields of development and environmental perspectives. Feminist theory aims to understand the nature of gender inequality and examines the role of women, their experiences and social relations.

Women have defined as a category to understand their lives, their angle of vision and differences on their rights in west through United Nations in 1946 with the establishment of The Commission on Status of Women (CSW) (Bhadra, 2001). It advocated creating guidelines to improve and bring change to every sector of women's lives including social,

political, economic educational and cultural fields, and as a result Women in Development (WID) was established. Women and development is a Marxist feminist approach which emerged in 1970s. This approach focuses on women both in and out of the household (Hellum, 1992). After the declaration of 'International Year of women' in 1975, the UN focused on women from a protection oriented approach to a status oriented approach. The issues of heavy work load (burden), low productivity and low efficiency were addressed. The women's movement started and various debates developed during 1970s regarding women's access to education, health, training and technology. Various policies were formulated to enhance women statuses and to improve their conditions. Women and Development (WAD) included the debate on inequalities and marginalization of women in developing countries (see Beneria & Sen, 1981; Bhadra 2001). The voice for women in the third world also emerged after 1970s. During this period, the empowerment approach came to achieve equality and equity between male and female. Since then various agencies have been talking about the women voices for their rights. In addition, women rights regarding the above mentioned parameters were further addressed and elaborated by the Rio Earth Summit 1992, Beijing conference, 1995 (UNFPA, 2007 in Shrestha Thapa, 2009).

Prior to the 1970s, gender issues related to agriculture were not prioritized by many scholars. Boserup was the first to note women's labor participation in the early 1970s. Boserup's publication widely known as Gender and Development (GAD) (Moghadam, 1999). Recognition of women as agent in development has been addressed after the publication of a book by Boserup (1970). The study was carried out as an extensive research work in various developing countries of Asia, Latin America and Africa (Bhadra 2001). Gender and sex have their own distinct meaning. Sex refers to biological and reproductive characters that people are ascribed from birth. Gender refers to patterns of behavior which is recognized as feminine or masculine. Moore (1988) identifies gender as a cultural interpretation of biological differences between men and women. It is socially constructed thereby can vary among different societies with regard to space religious, culture, classes, values and beliefs. Therefore, it can be used as a tool for understanding social process. The behavior of people changes over time and context. Lorber (1994) says that it is what makes people's life different and organize their lives. He further says that every society classifies people, their roles and responsibilities that create a division of labor. Division of labor and decisions among males and females differ

according to gender, caste, and ethnic group (Lorber, 1994), hence feminism should not be misunderstood as being only the promotion of women.

Feminism movement was divided into three waves. The first wave arose during late 19th to early 20th century. It created a voice for liberal women's rights. The focus was on justice, equity and women's rules, access to the resources and position as men. The second wave emerged from the 1960s to 1970s. It was linked to a radical approach which raised the voice for women's empowerment and differential rights (DeVault, 1999). During this phase, feminism addressed the issue of inequalities in both office and non-office (family and the workplace) (Shrestha Thapa, 2009). And the third wave came during mid-1990s. It focused on violence against women, sexual harassment and trafficking on a local, national and international level. Feminism advocates equality for women and opposition to patriarchal society. Feminist theories focused on women's experience and the subordination of women by men. In this wave feminist tried to portrait the real life practices of women and make their work visible, thus focus on power relation between men and women in society.

Women's issue in Nepal was initiated from early 1950s after establishment of first democratic political system. Nepal became a member of United Nations and formulated its first five year plan for economic development. During the period, women training centers were established to aid progress towards gender equality. Nepal committed to make rapid progress in women development by editing *Muluki Ain* (The National code) in 1975. In 1977, the Social Service National Coordination Council (SSNCC) established the Women Service Coordination Committee with the aim to promote activities of women (Bhadra, 2001). Continuously, government plans and policy included women issues in various field for their rights and development. In the seventh fifth year plan a 'participatory approach' came into force to make users active participants in development. In the eight year plan, government brought in mainstream policy in eight five year plans that emphasized women's representation at decision-making levels. The women Farmer's Development Division was established at the ministry of Agriculture in 1992. Accordingly, gender related issues in different sectors such as agriculture, health, education and decision-making process were addressed in government policy (UNFPA, 2007 in Shrestha Thapa, 2009).

This study is related to gender in agriculture thus the feminist concept assists in explaining gender issues. In addition, Miller (1990) and Jiggins (1998) have two different views on the decision-making process in agriculture. Jiggins (1998) discuss gender issues in agriculture and development of Asian countries. Her empirical findings show that farming has become primarily a female occupation in developing countries. However, the decision-making process in agriculture remains male dominant. The household head is often male, he makes decision and other family members must obey and respect his decision. Jiggins states that gender relations within farming households and in society are complex and embedded in space context.

On the other hand, according to Miller (1990) the decision-making process in Nepal is more democratic. He feels the household head often male creates open discussion (meeting) among family members especially on meal time and looks for consensus. “The ideal which is operative in the decision-making process, even stronger than visible male dominance, is that each person involved in the decision should be heard. *Sabaiko sallah* (everyone’s advice) is needed” (Miller, 1990: 240). Other members of the household sometimes even outsider express their opinions; however the head mostly listens to the opinions of his wife in agricultural matters. In addition, most agricultural decisions are based on traditional ways that are accumulated from the advice of past generations. The opinions of Jiggins (1998) and Miller (1990) regarding the decision-making process exist in agriculture. The question I look into is if all or most decisions in Nepali agriculture are taken by men. And I also will look into Miller’s view and see if my data confirm Jiggins or Miller.

CHAPTER III: METHODOLOGY

In this chapter, I discuss how information was collected during the field work. It covers the methods and tools that have been used to acquire information, my status and role dilemma during field work. It discusses positional spaces and how I was able to interact with respondents in order to gain relevant information for the study. It also discusses the methodological challenges I faced during field work.

3.1 Qualitative and Quantitative Methods

In order to explore the hidden meaning behind the scene, researchers use methodology (Aase, 1997). Thus, prior to going into the field, a researcher needs to identify the appropriate methods and tools to obtain deeper meaning of phenomena which can help fulfil the demand of research questions. Methodology is a theory of how research should proceed (Harding, 1986). Methodology has mainly two approaches: qualitative and quantitative. These approaches are two domains of social science research.

Qualitative method uses a naturalistic approach that seeks to understand phenomena in natural context (Golafshani, 2003). Qualitative analysis explores process, deeper meaning of phenomenon, subjective experiences, feelings, social activities and understanding of human behaviour. However, this method lacks scientific rigour, may have anecdotal and personal expressions so is subjective, thus may sometimes be biased (Sandelowski, 1986). In contrast, quantitative method tests the hypothetical generalisation and emphasises on the measurement and analysis of relationship between variables (Denzin & Lincoln, 2008). The information obtained in the numerical form thus can be quantified and expressed in statistical terms (Charles, 1995). Quantitative approach involves the use of mathematical modelling and statistical techniques (Valentine, et al., 2010) through cross tables, correlation, regression analysis, frequency and distribution of phenomena. However, quantitative method is objective thus lacks expression, feelings and processes (Jayaratne & Stewart, 1991). Taking into account the weaknesses of these two analytical methods, to find empirical facts and to minimise error, mixed method are used in most social science research (Creswell & Clark, 2007).

In this study, quantitative method has been used to understand and analyse social phenomena such as to trace changes, demographic pattern, income and cropping pattern in simple tabular form and figures. Qualitative method has been used to explore knowledge, perceptions of farmers especially on gender roles in agricultural activities and problems of farmers. In order to fulfil my research questions, it is very important to obtain a good understanding of current agricultural practice, influencing factors and dimensions of gender role. To find empirical facts and minimise error, both (mix) methods have been used but the analysis is primarily based on qualitative.

3.2 Access to the Informants

After arrival in Kathmandu, I headed to Pokhara the next day. My classmate was waiting for me as she was also there for her field work. The next morning, we went to Astam, her research venue as well as my parents' village. I was planning to conduct my research in the nearby villages of Lawang and Koleli. While I was staying with my friends, I discussed my questionnaire with her. During my stay in Nepal I also visited some libraries in Kathmandu to review literature related to my study. During my stay in Kathmandu I met with my former lecturer at Tribhuvan University and discussed the questionnaire for my field work with him as well.

3.2.1 My Status: Insider/Outsider and Role Dilemma

Agriculture in Nepal, the monsoon is the peak season so I had planned to do my field work just prior to the start of the monsoon. But unfortunately my field work was delayed due to unforeseen events. I had planned to stay in field to complete my household survey before peak time; however my grandmother became very unwell and had to have an operation. So I was required to leave the field and attend to her in hospital and arrange the required treatment. When I was able to return to the field I resumed survey, however my father then had a motor bike accident which again required me to leave the field. Being a responsible researcher and a daughter I was in a dilemma and confused about how to fulfil both my roles at the same time. These unfortunate family issues meant that I had to postpone my field work until the peak season for agriculture and therefore had to change my strategy to approach the farming community to complete my survey.

During field work I expected to have the status of a researcher, but I discovered that in Nepal it is not possible to maintain this status at all times. Status is a social position

defining one's rights and duties. The rights and duties are formal and informal and are connected to rules and norms known as role expectations. In the field, I had a dual (ascribed and achieved) social position (Linton, 1936). The study area I had chosen was unfamiliar to me having never visited it before so in this regard my position was as an outsider. But I also had insider positionality given I spoke the same language, and was familiar with the culture and nationality of the study participants.

When I headed to the study area first time, I was accompanied by husband and a friend. On the way to the village we met some locals who guessed my friend and I were both foreigners and my husband our tourist guide. But when I spoke Nepali language to them, they said “*oh! You are a Nepali girl? We thought you were Japanese*”. I greeted people saying “*Namaste baa, aama*” (Nepali way to greet people). They also replied with “*Namaste*” and a smile. This made it much easier to talk and start conversation with them. Every time I met people in the village, I first greeted them in this way and everyone would reply immediately with a smile. It was much easier for me when they smiled at me, and I was able to explain about my study to every household before I started to collect information.

I felt happy and soon realised I was very welcome in the village when several informants assured me saying “*chhori bhyera pani dherai padnu bhako chha. hami le janeko kura sabai bhanna tayar chhau*”. (Even though you are a girl, you have studied a lot. We will definitely tell you actual information what we know about agriculture). This statement shows that I was taken as an insider. Most of the respondents were ready and happy to give me the information I needed. I realised it was very advantageous, doing research in the same culture and language, making it easier for the researcher to be close and obtained all the required information from informants.

When I went to Koleli village for the first time, I stayed in a Brahman family's house recommended me by a woman (Gurung *aama*) I stayed with in Lawang village. At first, they felt uncomfortable when I asked for accommodation. But when I spoke about the Gurung *aama* they gave a good response. All members of the family were in the house because it was evening time and raining heavily. I began my talk to them by complimenting their active participation in cash crops. They felt at ease talking with me, at the same time I told them in detail about my studies at Bergen University and the need

for information about local agriculture from them. The owner of the house immediately phoned to his friends and asked them to come to his house. They came in the house within half an hour. I noticed their excitement in cash crops agriculture. At that time I was quite happy with their excitement that I was in their village. There were five young men. Among them four had been to gulf countries for work. One of the men stated that he was very happy to have started cash crop agriculture in his own field. He stated it earned him more money than working abroad.



Picture 3.1: Participation of farmers in community monthly meeting

During that first meeting, the group of young men invited me to monthly general meeting in the village. I happily accepted invitation and attended the meeting. I was surprised when I entered the meeting hall because almost every member of all households attended the meeting. More than half were women (picture 3.1). Krishna the chairperson of Agriculture and irrigation cooperative organization, whom I met the first night in the Brahman household, introduced me at the meeting, and explained I was a student and doing master's research in agriculture. He asked the villagers to help me by sharing their experience and knowledge. He gave me the opportunity to speak at the meeting; so I was able to explain my project and introduced myself as a researcher. The meeting was about the current agricultural situation and future possibilities of cash crops. It was particularly important as the village was preparing for a public hearing to be held in the village the

following day regarding commercial almond agriculture (picture 3.2). I was given the opportunity to give my opinion and addressed them to be careful and consider all possibilities before starting almond farming. This meeting helped me to establish good rapport with villagers. They all promised to support me with all information I needed. I was happy that I was able to establish a comfortable environment for sharing their experiences and agricultural activities. At that time I felt that I achieved the “researcher status” within the community.



Picture 3.2: Public hearing for commercial almond agriculture

Though I was of the same nationality and culture, sometimes this was not enough to get access to information. Although I spoke the Nepali language, some informants perceived me as I/NGOs staff and were reluctant to give information. Later I discovered the reason some people did not agree to be interviewed. During my household survey, one of my informants was denying for interview even though I clearly explained my purpose to him before I started my questionnaire. Instead, he replied “*you are educated person and have lot of information, you know everything. If I give you information what shall my family and I get in return?*” (a farmer, 57, Lawang). I realised the thought, as an outsider I must have been from some organization and he expected something from me in exchange for information. But as I was a student I could not fulfil his expectation. I spent a couple of hours with such respondents and made it clear that I was just a student. To help ease the situation with these people I started conversation with some other topics such as Nepali

festivals and education for their daughters. Later I found those respondents slowly changed and agreed to give information.

Another example of such resistance was during a key informant interview, one of the key informants did not allow me to record the conversation. He was afraid that I was from a newspaper or from the government office. He felt uncomfortable with recording or taking notes. It is not possible for a researcher to obtain accurate records of information without recording and taking field notes, so this was a problem for me. The reason I had the problem was because I was unknown to him. So I spent a long time talking about other issues with him and offered him snacks at a restaurant. In the restaurant, we talked about our village, education and family. He was quite interested particularly when I talked about my inter-caste marriage as it is rare in Nepal. Later during our conversation, we came to realise that he was a classmate of my husband during school. After discovering this, he completely changed his mind and felt safe to share information and agreed to recording of our conversation. I realised at that time it is challenging for an outsider to win respondent's trust and get information.

3.3 Methods

Data was collected mainly from primary and partly from secondary sources. Most information was collected from the study area. Related textual and numerical information used in this thesis was collected from secondary source as well. Secondary data was collected from previous research, reports, journals and text books. The information of Nepal, Kaski district, Village Development Committee (VDC) were collected from the VDC, District Agricultural Office (DAO), CBS and local organizations which are active in agricultural sector.

3.3.1 Reconnaissance Visit to the Study Area

(To familiarise myself with the respondents, I went to the Lawang village (see map 4.1) in the first week of May for a reconnaissance visit. I needed to get insight into village life first, including social, religious and cultural to have real information. On the way to Lawang, I met some people from the village; they asked “*you are also coming for the arrangement?*” When they asked the question I was confused for a while, then I knew there was an event for promoting eco-hiking with an emphasis on local food. All the villagers were actively participating in the arrangement and performed Gurung cultural

dance as well as other performances from guests. Many professionals from outside the village including singers, dancers, journalists, artists, poets, professors and businessmen were involved. Among those people, I saw a past professor of mine and we discussed the reason for my visit. After hearing my plans, he gave me the names and contact details of the main people of the village. This helped me a lot to know the key informants whom I needed to interview. The day after, while having tea I talked about my research with the owner of the guest house I was staying in. He gave me a lot of information about agriculture in the Lawang village as well as nearby Koleli village (map 4.1). After lunch, I headed to the nearby village of Khoramukh to meet a person; my supervisor³ knows well and had advised me to visit. He gave me good information about cash crops agriculture. During our conversation he told me about the Koleli village, where the farmers are actively involved in commercial farming. So with this information I decided to do my field work in Koleli village as well.

3.3.2 Household Survey

I collected the majority of information by household survey. A researcher has to think carefully when selecting participants for questionnaire surveys. Gobo (2004) has criticised the qualitative research sampling in social studies for not using probability methods stating that you therefore cannot generalise the findings. However, it is not practicable to conduct a survey on the entire population of a targeted research area in most studies (McLafferty, 2010), thus appropriate sample has to be chosen to address the research questions. According to my research questions I chose purposive sampling. This sample allows us to identify various cases within a wide range of possible situations (Gobo, 2004). Based on the purposive sampling, I surveyed 50 households who involve in cash crop farming. One person from each household was selected as a respondent.

Questionnaire was used as a main tool for gathering information in the survey. A semi-structured questionnaire was developed based upon the objectives of the study (Annex II). From the questionnaire, I received information and opinions from the respondents on particular topics and if needed asked follow-up questions. Demography, caste, landholdings, household management in farming, consumption of agricultural production

³ Aase, T. H. is a Professor of Bergen University, has previously done field work in this area for his research

and market was included in the questionnaire. Further information about the problems and influencing factors for the choice of cash crops, specific work division by gender and decision-making related to agriculture activities were also acquired through the household survey.

3.3.3 Participant Observation

Observation is an important method in research during the data collection period and it minimizes possible fallacies and inaccuracies in the collection of information (Jackson, 1983). Participant Observation involves spending certain time with people within familiar and unfamiliar environments in order to understand them (Valentine, et al., 2010). It is a widely used method in social science research. I involved in participant observation during my study to obtain a clear idea of farmer's decision-making processes regarding agriculture and an understanding of the people's perception towards gender. Participant observation allowed me to see real events and collect experiences.

It was very important for me to observe everything in-depth before reaching any conclusions. During my fieldwork in the village, I stayed with some families. I observed and participated in various activities like helping the women cleaning vegetables, prepare *ghee* (butter) from yoghurt and preparing tea from fresh tea leaves in order to get a proper understanding of the issues and direct access to the phenomena. During my stay with the families I observed how the family members worked, learned about who made decisions regarding what and when they planted in their fields and other agricultural activities. I was able to gain a much more accurate picture of gender related issues from observation, compared to the answer given in the questionnaire.

3.3.4 Case Studies

Case represents and enhances personal experience related to the issues in order to improve and make better decision in analysis (Scholz & Tietje, 2001). So case study is one of the important methods for obtaining knowledge in qualitative research. According to Silverman (2009), researchers use this method to study/understand issues of social phenomenon in detail. In this study, case studies were a useful to get information from individual households regarding the perception of gender, labour division and the decision-making process for agricultural activities. I selected six households from different castes for case studies.

3.3.5 Key Informants Interviews

I performed several interviews with key informants to gain general information on farming system. Six key informants including the Village Development Committee (VDC) secretary, a local school principal, the chairperson of *aama samuha* (mother group), the chairperson of *Sahakari Sastha* (cooperative organization), an ACAP staff member and a manager of a tea factory were interviewed. The interview process was flexible and varied according to the individual. This method assisted me in getting a general picture of the farming system and how it has changed. Information was also collected about the traditional practices of farming system and motivating factors towards cash crops. Face to face interviews were done with the help of a checklist. A recording and field notes were taken during the interviews.

3.3. 6 Other Supplement Methods

Besides the above mentioned methods, additional methods and techniques were used during the fieldwork. Notebook and voice recording were used during field work to record conversation. Every day activities, farmer's perceptions and stories, local sayings and events from observations were written in field notes. Voice recordings were done during key informant interviews. An annual agricultural calendar was sketched with the help of some experienced local farmers. To identify the differences in knowledge between genders, different types of *dal* (lentil) were shown to respondents. Eight respondents were randomly selected and a semi-structured interview was conducted. Among them four respondents were male (two young boys and two adult men) and four female (two young girls and two adult women). An index was made from ten different types of lentils. Nine types of lentils were taken from a shop and a lentil named *guras* was added to the list because it was being used by some of the farmers in the study area. The respondents were asked about local name, taste, local price, growth requirements at the different *dals* and answers were charted to compare the differences in knowledge between gendered and age. Three different values were fixed for measuring their knowledge. According to the value the tendency of gender knowledge on lentils were mapped.

3.4 Methods of Data Processing and Analysis

The empirical facts what researcher obtains from the field is not the data. Data is not collected; it is produced by researchers (Aase & Fossåskaret, 2007). Researcher interprets

the raw data in order to make the data/information. Our mind interprets the events and it consists of matrices of categories. Categories are bodily experienced which is real and concepts are cultural and constructed. And our concepts determine how we reason about the categories (ibid). So we categorised the things whatever we see, feel and observe in the surrounding environment. But categories can be perceived differently according to different culture, environment of interpreter and respondent and thus can be describe in different ways. Therefore it is important to understand the concept and category of respondents prior to analyse the events. Concrete events, natural phenomena, people of the study area, their culture and natural settings had categorised. The analysis was done on the basis of the nature of data. The obtained data was analysed by both qualitative and quantitative methods.

For the quantitative analysis, all completed questionnaires were coded and entered on a data code sheet. Coding helps to organize data and identify categories. The data code sheet was constructed on a computer with the help of the NSD statistical software programme, and then has been displayed in charts, tables and figures. They are powerful tools to display details of information. Qualitative data obtained via different methods was analysed with the help of structural metaphors to explain to unfamiliar phenomena farmers experiences described in narrative form. The information taken in a field notebook and voice recordings were transcribed into MS office word.

3.5 Reliability and Validity

A researcher has to understand the concept of reliability and validity in order to make research perfect. The main aim of a research project is to generate new understanding and deliver this from researcher to general public on a particular topic. There are two different concepts; correspondence and coherence used to see/find objective reality. The correspondence theory states that one can reach to the objective reality by understanding culture so theory and knowledge should correspond to reality. According to Aase & Fossåskaret, (2007) there is reality beyond the domain of a human, and our knowledge has to correspond with that domain of reality. Contrary to the correspondence theory, the coherence theory states that we can never know/reach the objective reality so we have to make logical analysis or one can reach to the reality through his/her senses and individual perspectives (ibid). Therefore one has to understand people's intention and their actions

to know the truth and one should be very careful while delivering new understanding without modifying the reality.

Different scholars have explained the concept of validity and reliability according to different assumptions of real and natural phenomena. Reliability simply refers to the repeatability and consistency of research methods while validity can be defined as the degree to which the findings of research match the reality (Golafshani, 2003). According to Silverman (2009: 275) "*validity is another word for truth*" The validity of a research is determined how researcher successfully represents reality of the world based on the objective of his/her research through certain methodological approaches. The concepts of validity and reliability emerged in natural sciences as a tool of quantitative research under positivistic epistemology but later have been accepted in naturalistic approach (Golafshani, 2003; Kirk & Miller, 1985; Ritchie & Lewis, 2003) and are now widely used in both quantitative and qualitative research.

Social reality can be identified and measured by quantifiable variables in the quantitative approach (Golafshani, 2003). The quantitative approach tries to measure and find common variables and analyse the causal relationship between the variables (Denzin & Lincoln, 2008). While qualitative approach seeks to understand social and natural phenomena in context specific settings. Qualitative researchers believe that there is no single truth and is ever changing. Therefore, the term validity has been rejected by some scholars in qualitative research (Guba & Lincoln, 1985). They suggest to replace it with other terms such as credibility, dependability and transferability to ensure the trustworthiness of qualitative research. Credibility is the confidence how well data and process of analysis is addressed and how to judge the similarities within and differences between categories (Graneheim & Lundman, 2004). Dependability "seeks means for taking into account both factors of instability and factors of phenomenal or design induced changes" (Guba & Lincoln, 1985: 299). And transferability is "the extent to which the finding can be transferred to other setting or group" (Polit and Hungler, 1999 in Graneheim & Lundman, 2004: 110). Quality research must have rigour to ensure the findings that can be trusted and believed. The validity and reliability of a research paper depends on rigour, trustworthiness and the quality of the data and also skills of researcher (Golafshani, 2003). Thus, in this study I have put effort into making my research trustworthy by employing the methods discussed.

Various scholars have different philosophical assumptions to minimise debate and maintain validity and reliability. Multi-method approaches such as triangulation have been developed to generate data by using various methods (Guba & Lincoln, 1985; McMillan, & Schumachers, 2006; Merriam, 1995). Consistency can be ensured through triangulation. This method has been one of the most widely used strategies for measurement of validity and reliability in qualitative research. In this method, a researcher can check information through different methods. In my study, I applied various methods for data collection such as interviews, household surveys, case studies and discussion to reduce dilemma and enhance strength of my findings. Moreover, to strengthen the validity of the findings, observation was also performed. By choosing to stay in the two villages more than two months, respondent's activities were observed repeatedly which have assisted in validity conclusions.

3.6 Ethical Issues

Ethical issues are very important in research. Orb, et al., (2004) mentioned three principles in ethics; autonomy, beneficence and justice. It is about ensuring respondents rights, privacy and reduces potential harm during research work. Researchers should inform his/her participants the purpose of the study before collecting information (Aagaard-Hansen & Johansen, 2008). Social research requires interaction between the researcher and informant, so he/she has to ensure that informant has agreed to give information without any kind of pressure and with no physical, social or psychological harm (Dowling, 2004; Ritchie & Lewis, 2003).

The monsoon season starts early June and it is very important time for farmers. During the peak time I had to conduct household surveys. Therefore, it was difficult to find the right time for conversation without any disturbance to my informants. Being a native of the country I had a good idea of what time the farmers would prefer. I mostly arranged morning and evening interviews, when the farmers were not busy and when they were available in their homes. The best time was during afternoon lunch (*dal bhat*) hour and the evening time. Sometimes I had to perform the household interviews while the respondents were working in their fields if that was more convenient for them. During the interviews I took audio recording and photos of the farmers with their permission. Everyone was happy to have their photo taken. The response was overall very good and

respondents were happy to give information even though they did not get any profit. Sometimes a researcher has to be patient if informants want to talk about other issues. During data collection, I was good listener of my informants and some of the interviewees often digressed from the research topic to discuss family problems and political matters. I tried my best to console and reassured them that their private matters would keep confidential. I never pressured anyone to give information if they refused. Whenever I noticed respondents felt uncomfortable with me I spent time to familiarise myself with them. Usually, after some general conversation they were to share personal information with me. I never interrupted their stories instead I welcomed their ideas and knowledge. I was conscious not to offend or hurt them during our interaction.

Each informant has the right to know the purpose of the study and have a clear idea about what the information will be used for. As a student researcher, I explained the aim of the study to my informants. I explained that the information I needed from them was just for academic purpose, not for any other benefit and that their personal details would be kept confidential. Consent was obtained from informants before each interview and survey. During key informant interview when interviewees felt uncomfortable with audio recording, notes were taken instead.

Researchers must be sensitive to ethical issues throughout their projects. During field work, researchers must respect informants and ensure they are informed of the purpose of the research. I am thankful my informants donated their precious time and information to my study particularly as it was during their busiest time of the year.

CHAPTER IV: STUDY AREA IN THE CONTEXT

4.1 National and Regional Setting

The study area was carried out in Nepal which is bordered by China to the north and India to the east, the west and the south. It is in rectangular shape roughly and stretches from approximately 885 km long east to west and 145 km north to south with the total area of 141181 square kilometres. It lies in the central Himalayan country. Nepal is divided into 75 districts and 14 zones. Each district was further divided into Village Development Committees. During the 1980s, Nepal was divided into three Ecological zones and five development regions. The ecological zones reflect the climatic condition and variation of agricultural activities. Though Nepal is small in size, it is unique and rich in physiographic, social, cultural, historical and religious prospective. It has many different agricultural characteristics.

My study area belongs to Kaski district. The Kaski district is one of the hilly districts of Nepal, located between 28°06' to 28°36' N latitude and 83°49' to 84°12' E longitude. It is located in the Gandaki Zone and is bordered by six districts. The main city of Kaski is Pokhara which is the second largest city of Nepal. Pokhara is the headquarters of the western development region and holds an important place in the political and administrative history of Nepal. Therefore, it has been growing into the main economic centre of the district and development region. Kaski has a total area of 2017 square kilometres (201700 ha). Administratively, it has 43 VDCs, a municipality namely Lekhnath municipality (*Nagarpalika*) and the Pokhara sub-metropolitan city (Pokhara *Upa Mahanagarpalika*), with four electoral constituencies and 13 *Ilika* (sub-district). Kaski has a mosaic of different geographical features and there is great variation in height; within 25 km horizontal distance there is wide variation in altitude, from 450m to 8091m above sea level. There are various types of land, climate and availability of water due to the differences in topography and altitude. Thus, Kaski has sub-tropical, temperate, temperate-cold and tundra climatic regions. Kaski receives one of the highest amounts of annual rainfall in Nepal. The average annual rainfall and temperature are 781.15mm and 18.25 degree C in 2010/2011 (WRCO, in DADO, 2011). Therefore, this district has potential for a range of agriculture productions.

The residents around the city areas have a heavy focus on commercial agriculture (Adhikari, 2008 ; Adhikari, 2011). Kaski district had a population of 3,80,527 in 2001 (CBS, 2003). According to a census in 2011, population has increased by 2.54 percent annually with the total population of 4,90,429 in 2011 (CBS, 2011; DADO, 2011). In Kaski, the average household size is 3.75 with 52 percent female population. Kaski has several caste\ethnic groups with their own languages and culture but has dominant of hill Brahman people (CBS, 2003).

4.2 A Brief of Historical Context of Kaski District

History shows that the Brahman and Chhetri castes occupied the majority of the lower part of main river valleys of Kaski. The villages in upper parts were dominated by Gurung people (Adhikari & Bohle, 1999). However, there was no settlement before 1910. The settlements were developed due to the result of migration from the north part. The Gurung migrated from Tibet and Burma to the hilly region before 11th century and the Indo-Aryan castes migrated from the south during 12th – 13th centuries (ibid). Prior to 600 years ago, Gurung settlements existed in central Nepal (Adhikari & Bohle, 1999). The Brahman, Chhetri and Gurung have settled in different place in search of work. Later other ethnic group such as the Magar and Tamang migrated from other districts. Again, the reason for migration was in search of work. The resettlement was related to slavery which was common all over Nepal. However in 1925, slavery was abolished by Prime Minister Chandra Samsar. When the slaves were freed many chose to resettle in different places, separate castes developed their own settlements together and later other people from different castes also started to live together.

Changes in farming agriculture developed due to inter linkages between village and city (Adhikari & Bohle, 1999). The development of roads resulted in opportunities for the expansion of market and other development around the time of the First World War. Agents from the India and British government travelled to villages in search of young people to recruit into the British and Indian army. It was a good opportunity for young people and as a result most Gurung boys were recruited by the British-India army during First and Second World War. This resulted major changes in farming in the area as a lot of the young male population left the villages during the first and second world wars. Previously, there was slash-and-burn agriculture practiced (locally called *Khoria*) around their settlements. Millet was the commonly cultivated crop. The *Khoria* land was

abandoned due to labor shortages and the high earnings brought by army service (Adhikari & Bohle, 1999).

Abandoned land was used for grazing cattle. Most households also owned livestock (buffalo, cow and goats). Buffaloes were allowed to graze in the forest or used to keep at home for milk (ibid). This practice is still common in many households of the study area. People used to grow only few cereal crops, so wild fruits and vegetables were collected and wild animals hunted to supplement diets. The introduction of new seeds, vegetables, chemicals and pesticides through by the government, under USAID programme appeared after the political freedom in Nepal during the 1960s. From that period farmers started to cultivate wheat and other crops in their *Khet* land and maize, millet, wheat and barley in *bari* land.

Settlements were surrounded by dense forest. This was advantageous as people could collect firewood from close by their settlement. At that time, the forests were managed on a group basis. However, member of the group would be from close kinship. Forest used to manage and control by *Mukhiya* and *Jimmuwal* (head of the village) until the 1960s. However, forest was nationalized and the government started to control it by the end of the 1960s. During this period, many trees were cut down and many steep slopes became treeless. Later, the forestry department afforested trees in barren areas and handed over to local people. Thus, community forest user groups were formed to manage and control forest areas near to settlements. Since the establishment of ACAP in 1992, the CAMC (Conservation Area Management Committee) was formed for forest management. This practice still exists in the study area. Under the CAMC, villagers have mostly planted *utis* (*Alnus nepalensis*) in public and private barren land. In addition, people have started to cultivate cash crops on the barren land. Changes in the village developed rapidly in the 1990s. Different types of agricultural farming were developed on co-operative and individual basis and subsistence based farming system started to develop into change on commercial farming (Adhikari & Bohle, 1999).

4.3 Land and Agriculture of Kaski District

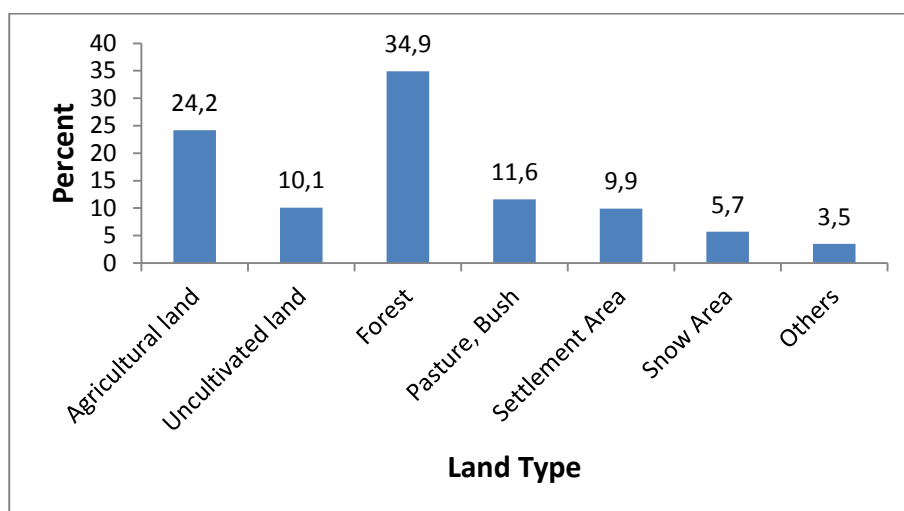
Agriculture is the main source of economic activity for the people of Kaski. Therefore land is most important for the majority of people. Generally main agricultural production takes place in plains but agricultural activities are also done on hilly land with gradients

of less than 30 degree. Most agricultural land is terraced and some in plain lands at the bases of river valleys. Agriculture is largely dependent on the monsoon since there is limited irrigation facility. Heavy rainfall occurs during July to October. The highest ever monthly rainfall on record for Kaski was September 2010 where 5956mm water fell (WRCO, in DADO, 2011). Thereby the monsoon period is the busiest time for farmers.

Agricultural land is locally categorized into *Khet* (irrigated land), *Bari*⁴ and *Pakho bari*⁵. The Seti and Mardi are the major rivers in the area and supply water irrigation for the most of the paddy fields in plain areas. These rivers flow through the Pokhara valley to the southern border of the district. *Khet* fields are mostly found in plain areas around the river valleys as well as can also be found in sloping areas, if there is good available of water. *Khet* is considered an important land, farmers use it to grow rice during rainy season and wheat during dry season (staple food of Nepal). Traditionally, *khet* and *bari* used to be more important for agricultural production, however these days *pakho bari* is growing in importance for farmers as they are now also using it for cash crop agriculture.

As can be seen in figure 4.1, forest area covers more than one third of the total land (35%), followed by agricultural land (24%). A portion of land to the north is covered by snow. Generally all types of agriculture can be found in the district due to the variation of altitude, climate and physical structure.

Figure 4.1: Land use pattern of Kaski district



Source: DADO, 2011

⁴ Bari is non-irrigated land where mainly maize and millet are grown

⁵ Pakho bari is steps, less favorable non-irrigated land used for growing *amriso* as well as trees to provide feed for livestock

In Kaski district, out of the total agricultural land, 55 percent is irrigated. Of the total irrigated land, just under half (45.71%) has irrigation facilities throughout the whole year (DADO, 2011). Thus, most agricultural activities are based according to rainfall. Cash crops, the topic of this study, are becoming increasingly popular in the district. In some parts, especially urban fringes subsistence agriculture has been transferred into commercial agriculture and rest is dominated by subsistence cereal crops. There is high inequality in landholding size among the farmers of Kaski district. More than two thirds of households have less than 1 hectare thus can produce only a small amount of food. Some of the households do not have any land other than except their shelter. Very few households have more than 2 hectare, and they are considered as wealthy people (DADO, 2011).

Paddy, maize, millet, wheat, oil, lentil, vegetables and potato are the major agricultural products. Some VDCs are well recognized for specific agricultural production such as vegetables, fruits and fisheries. Maize and millet are grown in *bari* fields where there is no access to irrigation facility. Rice is the major cereal crop, maize constitutes the second major crop and millet and wheat constitute third and fourth major crops. Modern machines used in agriculture elsewhere are almost impossible to use terraced land. Thus livestock are an important unit of the farming system in the Kaski district.

Kaski is prone to natural disasters including floods and landslides during the rainy season which also disrupts agricultural land and farmer's livelihood. In addition, the weather has been uncertain during the recent decades due to global warming. Thus, rain fed agriculture has significantly affected in recent years.

4.4 Outline of the Study VDC

Lawanghalel VDC was selected for detailed study (map 4.1). It is about 25 km north-west from Pokhara city. The VDC has 9 wards and the study was carried out mainly in wards 2, 3 and 4. The Lawang village consists of wards 2 and 3 and the Koleli consists of ward 4. The elevation varies from 1000 m to 5500 m. The study area is located at around 1500m above sea level. The total land area is 151.37sq/km. The Mardi River is on the north-east side and Idi *Khola* on the south (map 4.1). Most of the land has been covered by dense mixed forest on the southern and northern sides (map 4.1). The two study villages are settled on an east facing slope, at the base of the Annapurna mountain range.

This area has different types of vegetation such as *utis* (*Alnus nepalensis*), *chilaune* (*Schima wallichii*), *katus* (*Castanopsis indica*), *kafal* (*Myrica esculenta*), *mauwa* (*Engelhardia spicatas*) *champ* (*Michelia champaca*), *mallato* (*Macaranga postulate*) and *gurans* (*Arboretum*). *Utis* is re-planted by villagers on their own barren land to supply the needs of wood and it also helps maintains environmental balance.

The study area lies in the Annapurna Conservation Area Project (ACAP) region. ACAP is internationally known for the conservation of natural habitat in this region of Nepal. Since the establishment of the ACAP in 1986, it has helped to develop tourism activities, economic development as well as conservation of the environment. ACAP also encourages local people in the conservation of the area in order to bring sustainable social and economic development. It helps local villagers to improve their quality of life and helps empower them with appropriate knowledge, technical and financial support (details in chapter VI).

There are 852 households with a total population of 4690 in the Lawangghalel VDC (VDC Profile, 2012/2013). This VDC has inhabitants of different caste/ethnic groups. The majority are Gurung, Brahman and Dalit⁶ communities. Most of the people are Hindu and Buddhist by religion. In the study area most Gurung people are Buddhist and the other castes are Hindu. The VDC has a gravel road which connects with Pokhara city. It has access to electricity, telecommunication, basic health and education services. Most of the land is in hill with and few plains. The main occupation of the people is agriculture. In addition, they have homestays⁷ (small guest houses) for domestic and foreign tourists, and some of the households are involved in business or other professions such as teachers, small shop keepers.

Food Sufficiency of the Households

Besides other sources, food sufficiency of the interviewed households from their own land has been shown. The table 4.1 reveals the food sufficiency of households by caste found during my survey. It shows that more than one third of Brahman households produce more food than their yearly consumption only from their land. Only 26 percent

⁶ Dalit= low castes including Kami, Damai and Sarki

⁷ Homestay is a small guest house for tourists in a village where local food is served and minimal modern amenities are available

of Gurung⁸ produced surplus and no Dalit households produce a surplus. More than half of the total Brahman and Gurung households and only few Dalit households produce enough food from their fields. Nearly two third of total Dalit households cannot produce enough food for the whole year. The households who have food deficit generally have small landholding size, most of the Dalit people have small landholding size. Some of Dalit people even cannot produce enough food for two months. A study done by Adhikari and Bohle (1999) also shows that Dalit people have food deficit due to small landholding size in rural area which is what I found in my survey. The solution for the households who do not have enough food from their own land is to do share-cropping and labor practice. Food shortage is seen commonly in Gurung households, with nearly one third of total households in deficit because they have abandoned land due to out-migration and labor shortage.

Table 4.1: Distribution of food sufficiency according to caste (N=50)

Caste	Food sufficiency			Total
	Surplus	Just Enough	Deficit	
Brahman	5 (29.4)	11 (64.7)	1 (5.8)	17
Gurung	6 (26.0)	12 (52.2)	5 (21.7)	23
Dalit	-	3 (30.0)	7 (70.0)	10
Total	11	26	13	50

Source: Field Survey, 2012

*Note: Only cereal crops included. The figures in the parentheses indicate percentage of the total households. **Surplus:** enough food throughout the year and able to sell surplus crops, **Just enough:** food enough for a year none left to sell, **Deficit:** not enough food for the whole year.*

Educational Status

The education is the first step in leading individuals and society towards creative thinking and development. Education is an important factor in life and contributes to the decision-making process. It plays a vital role for the development of the community, the nation and the economy. Thus education is a central to the process of empowering both men and women. According to the CBS (2011), the literacy rate of Nepal has increased from 54.1

⁸ Gurung = ethnic group including two households from Magar caste, they closely related group

percent in 2001 to 65.9 percent in 2011. The literacy rate of males is higher than females; 75.1 percent and 57.4 percent respectively. This demonstrates that there is still large group of women who are illiterate.

The educational status of the interviewed households is shown in table 4.2. The overall pattern of education varies between castes. None of the Brahman males are illiterate but 18.1 percent Brahman females are illiterate. More Brahman women are literate compared to men. However, almost half of total Brahman (46.8%) men continue their study up to higher secondary level and only few Brahman women attended higher secondary education. In case of Gurung, all men have attended secondary and higher secondary education while some females are illiterate. As compared to males, less than one third (21.7%) females are attended higher secondary education. In case of Dalit, some male and female are illiterate, 18.5 percent male and 21.7 percent female are just literate and 66.6 percent male and 30.4 percent female have attended secondary level. None of the Dalit male and female has attended higher secondary class.

Table 4.2: Distribution of educational status of interviewed households (N=50)

Edu\Caste	Brahman		Gurung		Dalit	
	M	F	M	F	M	F
Illiterate	-	6 (18.1)	-	8 (17.4)	4 (14.8)	11 (47.8)
Literate	4 (12.5)	7 (21.2)	-	14 (30.4)	5 (18.5)	5 (21.7)
Secondary	13 (40.6)	14 (42.4)	33 (63.4)	14 (30.4)	18 (66.6)	7 (30.4)
H. secondary	15 (46.8)	6 (18.1)	19 (36.5)	10 (21.7)	-	-
Total	32	33	52	46	27	23

Source: Field Survey, 2012

Note: M: Male and F: Female. Figure in parentheses indicates percentage of total male and female according to caste. The total number of population presented in the table is the educational status of interviewed households above than 16 years old is 208*. Education of less than 16 years old population is not included because they do not play important role in decision-making in agriculture.

Settlement Pattern

Settlement in the Lawang village is agglomerated and dominated by the Gurung people. Traditionally Gurung people like to live together and therefore build their houses close together (picture 4.1). In contrast, the Koleli village has a scattered settlement and is dominated by Brahman people. They like to have their own territory; so typically individual Brahman houses are surrounded by agricultural land (picture 4.2). Most pathways in the study area were noted to be paved by stone. Most of the households have a private water tap but there are also public taps available in the village. The houses are typically similar in structure, stone wall coloured with white and red mud and roofed with special slate stone. The Lawang village is especially famous for organic tea cultivation. The Koleli is famous for the production of cucumber seeds, beans, *amriso*, cardamom and seasonal vegetables. The Pink colour in map 4.1 indicates the study villages.



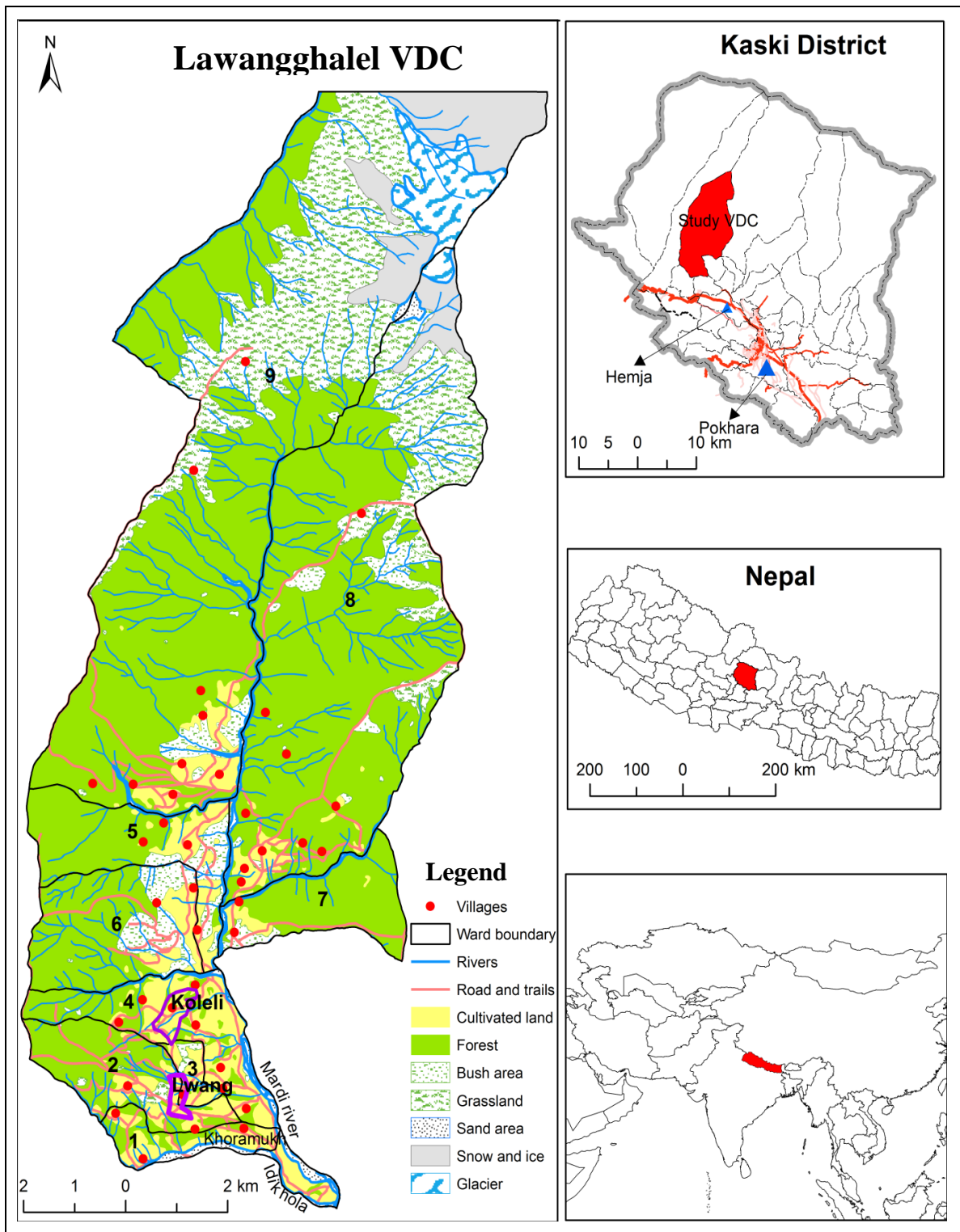
Picture 4.1: The Lawang village



Picture 4.2: The Koleli village

The study settlements have been selected for many reasons; firstly the study area has experienced development of cash crops since the establishment of ACAP in the Lawang village. Subsistence farming practices are changing into commercially oriented farming system. Secondly, the Pokhara valley is the main center for trade with good network to the local, regional, national and international markets. The study area is near to the Pokhara valley. Farmers sell their agricultural productions as well as purchase households items and agricultural equipment as necessary in Pokhara. Thirdly, this area is physically and climatically suitable for seasonal crops. It is near from the base of the Annapurna mountain range, thus has a fairly cold climate. The annual temperature of this area varies from 9°C min to 33°C max and 85 percent rainfall occurs during the summer months (VDC profile, 2012/2013 [2069 B.S.]).

Map 4.1 Study Area



Source: Department of Survey, Kathmandu, Nepal

Elaborated by Keshav Prasad Paudel, modified by the author, 2013

CHAPTER V: FARMING SYSTEM OF LAWANGGHALEL

In this chapter, the farming system of Lawangghalel, Kaski Nepal is discussed. The structure of the farming system presented in this chapter is guided by the concept of Turner and Brush (1987). The farming system analysis outlined in the chapter is based on the primary data collected during field work.

5.1 Agricultural Calendar

Agricultural lands are terraced and spread out around the villages, at an altitude of approximately 1500masl and is characterised by different types. Farming is based on traditional skills with little use of external input. Agriculture is the main occupation, but agricultural activity largely depends on rainfall. A limited part of the land (especially paddy land) has traditional irrigation facilities. The traditional agricultural cropping pattern is similar throughout the western hills. There are two main agricultural seasons; the monsoon season, locally known as *barkhe bali* and the winter season, locally known as *hiude bali*. The farming system is characterised by rain-fed agriculture, thus the monsoon plays a crucial role in the agricultural activities of the study area.

Before the monsoon starts in early June, farmers plough their *bari* (un-irrigated land), and manure is spread on the fields, typically at the beginning of February. After the preparation of *bari* land, the annual agricultural activities start with the sowing of maize seed. The paddy cultivation starts with sowing in the early monsoon period, and it is a main cereal crop. Plantation of paddy starts after the fall of monsoon in *khet* (irrigated land). Therefore the transplant of paddy largely depends on the monsoon. At the same time farmers sow lentils such as black gram, moth beans and soybean in the *khet* and *bari* terraces. Harvesting and threshing activities of paddy occur from early October to late November. During the weeding of maize, farmers transplant millet seedlings and millet is intercropped with maize. Maize is ready for harvest in August. Seasonal vegetables such as gourd, bitter gourd, lady's finger, pumpkin, chilly, beans and cucumber are the major vegetables grown in *bari* in the beginning of the monsoon season.

Figure 5.1: Agricultural calendar

	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dce	
<i>M.A.S.</i>	Winter season					Monsoon season						W.S	
Paddy				P							H		
Wheat	H										P		
Oat	H										P		
Barley	H										P		
Corn		P						H					
Millet					P						H		
Mustard	H										P		
Black gram						P				H			
Month beans						P				H			
Soybean						P				H			
Red Lentil	H									P			
Pea	H									P			
Gourd					P						H		
Lady's finger					P						H		
Bitter gourd					P						H		
Long beans					P						H		
Potato	H										P		
Cauliflower	H										P		
Cabbage	H										P		
Onion	H								P				
Garlic	H								P				
Spinach		P						H					
Radish		P						H					
Tomato	H			P									
Tea	P					H							
Cardamom	P					H							
<i>Amriso</i>	P					H							

Legend: *M.A.S.*=Main agricultural season, *W.S*=Winter season, Gray areas= Growth Period, *P*=Plant/sow, *H*= Harvest

At the time of maize harvesting, farmers also sow *Chalise* radish (*Raphanus sativus*) and spinach. Farmers sow onion and garlic in October and November. This is a peak time for farmers to prepare and plant crops in their fields. It is time for the harvesting of paddy, and during the same period, farmers celebrate Dashain and Tihar the biggest festivals of the majority of Nepalese people. The summer season ends with the harvesting of paddy, millet and lentils. Straw from paddy and millet crops are collected and stored for animal fodder during winter. The monsoon time is perfect for the planting of tea, cardamom and *amriso*. Tea is planted in *bari and pakho bari* in the upper part of the settlement, while *amriso* is planted in *bari and pakho bari* in the lower part. Cardamom is planted in gullies and under the shade of trees near the jungle. Weeding of *amriso* and cardamom is rarely needed. The best time for harvesting cardamom is during late August, nearly the same time as maize harvesting. These three crops tea, cardamom and *amriso* are long-term crops. Once these crops are planted, they last for several years. Farmers generally start plucking tea leaves over an eight month period from April to November.

The winter crop starts with the sowing of wheat, oat and barley. Wheat is the main winter crop planted in *khet* land, while oat and barley is the main winter crop of *bari* land. Red lentil and green peas are sown at the time of paddy harvesting in *khet* land. A wide range of vegetables such as cauliflower, cabbage, carrot, onion, coriander, local radish, spinach and potato are grown during winter on *bari* land. The best time to harvest potatoes and other vegetables is late March. April is the ideal time to harvest wheat, oat and barley. After they are harvested, land is left fallow and is used to graze livestock until the arrival of the monsoon again.

Table 5.1: General annual cropping pattern of the study area

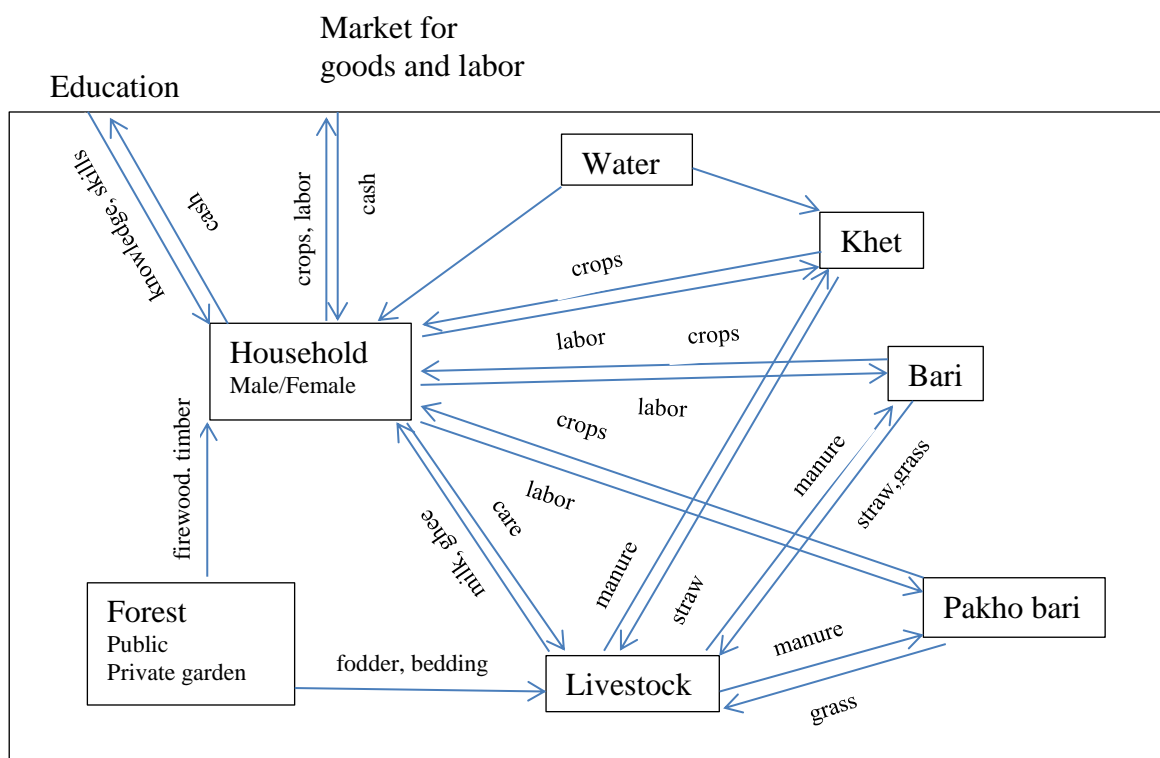
<i>Khet</i>	rice - wheat – fallow - rice rice - red lentil/ green peas - fallow - rice
<i>Bari</i>	maize - barley/oat - fallow - maize maize (intercropped millet) - mustard - fallow - maize maize with cucumber - fallow - maize garlic - fallow - garlic vegetables - vegetables
<i>Bari and pakho bari</i>	Tea, <i>amriso</i> , cardamom and coffee throughout the whole year

Crop rotation is a common practice. “*We cultivate different crops throughout the year in the same land, because it will not grow well after some years*” (a farmer, 29, Koleli). This quotation explains that crop rotation is practiced to increase production and to avoid reduction of soil capacity. The cropping pattern of this area is similar to other regions of the western hills however, due to the micro climate environment there are some differences. Cropping pattern is furthermore influenced by various factors of social, cultural and physical difference. The study area is known for the tea plantation in the western hilly regions. The cereal cropping pattern is based on the traditional farming system and it is largely for self-consumption, while cash crops such as tea, cardamom, *amriso* and cucumber seeds are planted mainly for commercial purposes.

5.2 Farming System Approach

The farming system of Lawangghalel VDC is shown in figure 5.2. It shows the farming units and the interrelationships between units. Furthermore, it also shows the various resources that are available to farmers in the study area.

Figure 5.2: Farming system of Lawangghalel



5.2.1 Household and Labor

The household is considered the main unit of a farming system. A household is comprised of all family members, all sons have equal ownership of a household's land, whether or not they are still living in the family home. It includes the husband and his wife/wives, any unmarried daughters, all sons, and their wives if married, as well as their children. The family is called *pariwar* in Nepali. Every household has a household head. Nepal is a patriarchal society, thus the head of the household is often eldest the man who has the rights of the property (house and land). However, women can be household heads in the absence of males, but women rarely have the rights of a property. Generally, the household head has responsibility of household affairs. In a farming system, the household is a main unit which mobilises other units. Each member of a household has different roles and statuses which provide work in harmony according to their capacity. However, household members can be enrolled in different professions and thus their arrangements are heterogeneous according to caste, gender and religion. For instance, Gurung males are recruited to the Indian and British army and Brahman males are often engaged in government sectors.

Members of the household, who stay at home usually, work in agriculture field the whole year. The other members of a household including students, and other professionals work at the farm during their holidays. Household labor alone is not sufficient in the peak season for land preparation, weeding and harvesting. Therefore laborers (*'majdoori'* in Nepali term) are commonly employed. A laborer can work for eight hours a day. In addition, there are some types of work which are related to caste/ethnicity and gender. For example, Dalit people generally plough fields. Mostly the Dalit caste and poorer people who are landless seek work as laborers. They get cash in return and spend most of the money on food. There is wage variation depending on the kind of work. In addition, there is a great variation in the wages of females and males. Generally, men get a higher wage than women, even when they do the same work. Gender issues will be presented further in chapter VII.

The farmers are largely engaged in the production of cereal crops for self-consumption and cash crops for commercial purpose. Previously here was a *huri*⁹ system in the village for agricultural activities. However, large parcels of agricultural land have been abandoned due to out-migration. Thus, these days, the *parma*¹⁰ system is largely practiced instead of *huri* in subsistence agriculture. In addition, laborers are hired when there is high demand of labor, but hired labor is mostly common in commercial oriented agriculture. Moreover, some people who have large parcels of land and are economically wealthy do not live permanently in the village and hire people to work for them. Such households who are settled in the city come to the village only during peak seasons. One of the informants stated that “*we only come to the village during the peak time of agriculture when the crop is ready for harvest and we hire people to work*” (a farmer, 50, Lawang).

5.2.2 Land

Land is the primary unit of the farming system and plays an important role in the agrarian society. Land is broadly categorized into cultivated land and uncultivated land. Cultivated land is categorized into *khet*, *bari* and *pakho bari* in the study area, this is also common throughout Nepal. Uncultivated land consists of forest, settlement, pasture, snow and rivers. The distribution of land use and land cover of Lawanghalel VDC is shown in map 4.1. Most land (46.6 %) is covered by forest followed by cultivated land; *bari* and *pakho bari* (27.3%) and *khet* (18.2%) (DADO, 2011). The cultivated land is around the settlement area. *Khet* (irrigated land) is located on the lower part of village with temporary irrigation facilities. *Bari* is located on the middle slope near the settlement area and *Pakho bari* is generally on the upper part of the settlement area. The majority of households have *khet*, *bari* and *pakho bari* land, but the distribution of land among households is unequal (table 5.2). Land is connected to the social prestige and wealth of people in the village. This is supported by Regmi (1976) who stated that land is a symbol of social status, wealth, source of economic and power of people in Nepal. People

⁹ *Huri* is a labor exchange system in a large group; more than ten people together worked in one household's field for a day and worked the next day for another on rotation basis.

¹⁰ *Purma* system, the process is similar to the *huri* system, however, in *purma* there are a lower number of people than in *huri*. In the *purma* system, each member of a household works for others in the group, and they get the same number of laborers in return.

who have a large plot of land are considered as *Jamindar* (a wealthy farmer). The Brahman and Gurung farmers usually have more land compared to Dalit farmers. However Dalit people are also involved in different agricultural activities such as providing labor for households with large landholdings and by cultivating their land in crop-sharing agreements.

Table 5.2: Distribution of landholding size of interviewed households (N=50)

Landholding size (in ropani)	No of Hhs	Percent
Less than 10 (6.5)	13	26
11-20 (15.9)	12	24
21-30 (24.5)	8	16
31-40 (36.5)	14	28
Above 41 (52.3)	3	6
Total	50	100

Source: Field Survey, 2012 (20 ropani = 1hectare)

Note: Figures in parentheses indicate average landholding size.

Land Tenure and Ownership System

Historically, land tenure and ownership was limited to the ruler regime, however this system was overthrown in early 1951 in the era of King Prithivi Narayan Shaha. Traditionally land tenure system in Nepal was practiced under two major systems named *Raikar* and *Kipat*. In the *raikar* system, land used to be the property of the state, but individuals could use it for agriculture by paying a charge to government. Individuals were not allowed to sell *raikar* land, they only had the right to its use and its fruits (Regmi, 1976). The *raikar* land system was eventually divided into four secondary land tenure systems; *Birta*, *Guthi*, *Jagir* and *Rakam* (ibid).

“*Birta* land is provided in favour to priests, religious teachers, solders, members of nobility and the royal family” (Regmi, 1976: 17). The Government granted *birta* land to them in order to help grow their livelihood. *Birta* land ownership was regarded as a form of private property which symbolized higher socioeconomic status. The state granted it to religious and charitable institutions such as temples, monasteries, schools, hospitals and orphanages. *Guthi* land was a form of institutional landownership. Arbitrary

governmental action was guaranteed for protection. *Jagir* land was granted instead of payment to government employees and functionaries and this was commonly practiced prior to 1951. In the *rakam* system, people were required to provide unpaid labor on a compulsory basis to meet governmental requirements. In this system people's service was assigned for the performance of specific functions designated by the government, and the land being cultivated by them or the previous tenurial status converted into *rakam* tenure (Regmi, 1976: 18).

Kipat was another type of system that used to be practiced. This system was entirely different from the *raikar* system. Land used to be distributed to communities or to certain groups of people which could not be separated into individuals.

However, most land tenure systems were abolished after the revolution in 1950. Currently only the *raikar* and *guthi* systems exist in Nepal. Under the *raikar* system, individuals have private land which has been registered to them in official records. Once it is registered, people get a certificate of the record which is known as *Lalpurja* in Nepali language. According to the record land owners have to pay tax to the government annually. Now people have the rights to sell and buy private land anytime on their own choice through certain processes and the land owner can transfer land or it can be passed on by inheritance.

In the study area, there are two types of land; private and public land. Private land is registered land by government authority and is used for settlement and crop cultivation. Beside registered land, people also cultivate crops in some parcels of unregistered land, adjacent to their registered land. They have used this kind of unregistered land over many generations.



Picture 5.1: Plantation of lentils in the ditches of *khet*

In addition, share-cropping, locally known as *Adhiya*, is also commonly practiced in the study area. Share-cropping is a verbal agreement between a landlord and a person who wants to cultivate crops. Share-cropping is common among landlords with large parcels of land but no ability to cultivate it themselves. Generally people who do not own large parcels of land do the share-crop cultivation. In this system, the landowner allows a share-cropper to cultivate his/her land for a certain period of time. The landowner provides chemical fertilizer for paddy plantation and the share-cropper arranges the rest of the required inputs and labor. When the crop is harvested, the landowner and share-cropper share the produced crop equally. In the study area share-crop practice is seen only in relation to cereal crops.

Table 5.3: Types of cultivation (N=50)

Types	Area (in ropani)	Percent
Cultivated by owner	592	75.2
Share cropping	196	24.8
Total	788	100

Source: Field Survey, 2012 (20 ropani = 1hectare)

5.2.3 Cultivated Crops

There are two types of commonly cultivated crops in the study area; subsistence oriented cereal crops and commercial oriented cash crops. Major cultivated cereal crops are paddy, maize, millet, wheat and barley. Only cereal crops were practiced traditionally.

Besides cereal crops, in recent decades farmers have started to cultivate vegetables, cucumber, *amriso*, cardamom, buckwheat and tea as cash crops. The cropping pattern of the area is usually two crops in a year. Rice is grown in the *khet*; after the rice is harvested, farmers cultivate wheat or red lentil and green peas in the same area. Maize, millet, oat and barley are grown as the main crops in *bari* land. This cropping pattern is also the same practice used in share-cropping. Soybeans and black gram are grown along dikes of terraces in paddy fields (picture 5.1). Cereal crops grown in this area mainly for a household's own consumption and the resulting straw is stored to feed domestic animals during winter time.



Picture 5.2: Land use pattern of study area

The production of some cereal crops has slowly reduced and is being replaced by high value market oriented cash crops. For instance millet, corn and rice cultivation is replaced by tea, *amriso* and seasonal vegetables. One of my informants stated that “*I have reduced paddy cultivation and replaced with amriso*” (a female farmer, 43, Koleli).

Teas is planted mostly in the upper part of settlement. Before tea plantation the land used to cultivate millet and corn, and graze livestock. Other cash crops such as *amriso*, cardamom, cucumber and seasonal vegetables are widespread these days. During the vegetable growing season, farmers sell their product to Pokhara. Vegetables are cultivated in separate plots on *bari* land. The main seasonal vegetables such as potato, onion, garlic, cauliflower, local green leafy vegetables (*saag*), mustard, beans, soybeans

and brinjal are grown throughout the spring and summer and sometimes intercropped with staple crops.

Table 5.4: Major crops of the study area

Cereal	Paddy, wheat, maize, millet and barley
Pulses/legumes	Lentil (black and red), green peas, soybean, gram, buck wheat and beans
Oil seed	Mustard and sesame
Vegetables	Potato, broccoli, cauliflower, cabbage, radish, , chilly, brinjal, lady's finger, bitter gourd, pumpkin, onion carrot, snake gourd and spinach
Fruits	Banana, guava, papaya, citrus, lemon, orange, pear, mango, pine apple, peach and apricot
Cash generating crops	Tea, coffee, cardamom, <i>amriso</i> , cucumber, garlic and ginger

5.2.4 Domesticated Animals

Domesticated animals are another important unit of the farming system. They play a crucial role in the farming system. Farming practice depends on domestic animals for various purposes and in addition, animals can also provide an important contribution to income from selling their products of milk, meat, ghee, manure and service such as an ox used to plough land. When crops are harvested, manure is added to the land to increase micronutrients in the soil. A variety of animals are important in the farming system. For instance, chicken and goat manure is small in quantity but has a higher quality compared to manure from cattle and buffalo. Chicken and goat manure is mostly used when farmers sow seeds for transplant. Buffalo manure is produced in larger quantities and is spread on the fields. Manure is an essential component for sufficient production, which links the agrarian and pastoral sub-systems within the farming system. Thus, livestock rearing is indispensable to the farming system of the study area.

The livestock which are common in the study area is shown in table 5.5. Out of the total 50 interviewed households, 88 percent households own domesticated animals and 12 percent households have none of the livestock mentioned in the table. Most of the

households keep buffalo for manure. One of my informants states “*I have six buffaloes; they are mainly kept to produce manure for my crops. I haven’t seen anyone using chemical fertilizer except in paddy fields. However, I don’t use chemical fertilizer in paddy fields. It is not good for health and it also reduces soil productivity after a certain time*” (a farmer, 54, Koleli). A few households own cows, mainly for religious and cultural purposes, as Hindu people worship the cow as goddesses, and cow milk also used as an indigenous pesticides. One of my informants said “*I use cow milk for my crops as medicine instead of pesticides (especially for vegetables and fruits) whenever I see insects. It is also good vitamin for crops so I use it once every 15 days*” (a female farmer, 43, Koleli). During field observation, it was noticed that milk was sprayed on young cucumber plants and seasonal vegetables.

Table 5.5: Distribution of livestock in interviewed households (N=44*)

Types	No of Hhs	Percent
Buffalo	35	79.5
Cow	5	11.3
Ox	18	40.9
Goat	21	47.72
Chicken	15	34.0

Source: Field Survey, 2012

Note: Percentage is the total number of interviewed households who reared livestock. Out of the total 50 interviewed households, 44 households have reared livestock. Sum of number of households in the table can exceed more than 44, one household can be more than one variety of livestock.

Some informants have reared livestock for income as well. They sell milk, ghee, meat and buffalo with calf when she gives birth to a calf. One of the respondents states that “*I have ten buffaloes in the jungle without calf and two buffaloes at home with calf. The main purpose for keeping buffalo is for manure and to generate cash. When the buffaloes have a calf, I bring it home and sell it when I get a good price. I use manure for fields. It (manure) is better for our health*” (a farmer, 40, Koleli).



Picture 5.3: Buffaloes kept near the field



Picture 5.4: Small branches of tree used for vegetables and fodder mixed with manure

During summer the buffaloes, cattle and goats graze in pasture land, forest and also in cultivated land when it is seasonally fallowed for a short period. In return, the animals get grass, tree leaves and straw from paddy fields, dry millet plants, private trees and *amriso* leaves. Buffaloes are kept near the fields during summer time so it is easier to carry manure to the agricultural fields and they are moved to sheds during the winter (picture 5.3).

Manure is collected from the stable/shed and spread after harvested on the fields. All interviewed farmers reported that they all prefer to use compost and manure in their fields. Previously, farmers extensively used chemical fertilizers which are an integral part

of modern agriculture for high production. They also used to apply pesticides to control various disease, insects and unwanted plants. However, chemical fertilizers and pesticides are slowly being replaced by organic manure and indigenous pesticides such as cow/buffalo urine and cow milk, for use on commercial vegetable farming. However, a little chemical fertilizer is still used only in *khet* fields for rice cultivation.

5.2.5 Water

The agricultural land is mostly situated in upland areas where the main river water is impossible to use for irrigation. Thus, agricultural activities mainly depend on rainfall in the study area. Several farmers reported that monsoon rain contributes a lot to agricultural activities. One of my informants reported that “*when the rainfall occurs, farmers put other work aside and run for paddy plantation. They always transplant rice plant when there is rain*” (a farmer, 24, Lawang).

Besides rainfall, water is available from a small stream near the study settlements. However, there are only a few *khet* fields in the plain areas that can be irrigated from the stream and river. An irrigation canal has been constructed in Lawang along the contour. The water for irrigation is brought from *Ghattekhol*a (a small stream) about a twenty minute walk from the settlements, however there is not enough water for the whole year. People receive drinking water from the upper part of the village named *Torigaon* which is in the same ward, as well as from a small stream named *Namki Khol*a. They have two big reserve tanks. Farmers use some of the drinking water to irrigate vegetables nearby their house when they have enough. One of the informants stated “*I have a pipe drop irrigation system so I use water from my house tap for my vegetables. From little water I can irrigate my vegetables*” (a farmer, 43, Koleli). Other farmers stated that they experienced a lack of water particularly before monsoon arrives.

5.2.6 Forest Resource

Forest plays an important role in the farming system of the study area. Forest including pasture/bush covers approximately half of the total land of Lawangghalel VDC (map 4.1). There are mainly two types of forest; community forest under CAMC management and private forest. Households have equal access to the community forest. Private forest is more important to the farmers than the public forest. Individual households plant trees near the edges of cultivated fields. Almost all households have private forest, villagers

call it “garden” in local term. Forest has multiple functions; timber is used as construction materials, farmers cut planted trees from their private forest and used them to build houses and animal sheds. In addition, wood is used for farm equipment such as ploughs, spades, yokes and fences to cover cultivated fields. Wooden poles are used to tie up animals and to store rice straw and dry leaves for their cattle. Timber from private forest is taken to market (wood industry) to sell. Men perform the work to cut and manage the big trees. Small branches are used for firewood, which is usually collected by women. In addition, twigs and branches are used to support vegetables such as tomato, beans and cucumber (picture 5.4). Firewood is a resource used by farmers for cooking and heating during the winter season.

Farmers manage fodder and forage from gardens and the community forest. During the winter time the farmers who do not have a big parcel of garden buy or exchange planted trees for ghee or milk. One of my informants states that “*I exchange 4 mana¹¹ ghee with a big tree for my buffalo which is approximately enough for a month and sometimes I buy it when I do not have ghee*” (a farmer, 51, Lawang). Farmers feed different types of straws and seasonal grass to their animals throughout the year. In summer, fodder and grass are collected from the public forest and from gardens. Big tree grass and *amriso* leaves from private gardens are used for animal fodder during winter. Dry leaves fallen from trees during late summer are collected for bedding materials and used for animals and finally mixed with manure. One of my informants reported that “*I collect dry leaves of utis which is very good organic manure for crops. It is better than buffalo manure for vegetables*” (a farmer, 56, Koleli).

Farmers can also make plates from *sal* (*Shorea robusta*) leaves to use for midday lunch or for religious purposes. Additional planted trees around the edges of cultivated fields prevent erosion and landslides. Forest is an important unit which links the agricultural and pastoral systems of the farming system.

5.2.7 Social Organization

The functioning of individual farming systems are influenced by government policy and different institutions. Thus, social organization and communities play an important role in

¹¹ A local unit of measuring quantity which is roughly equivalent to ½ l. or ½ kg.

the farming system. In the study area, there seems to be good cooperation among villagers and institutions. The cooperative labor system *parma* is common. It is a traditionally a common practice in the labor system. Previously, the land used to be cultivated with the help of *nogar* (a group which perform work on member's fields on a rotational basis) similar to *parma* (Adhikari and Bohle, 1999).

In the past, there were the agents called *mukhiya* and *jimmuwal* (heads of the villages) of the government for revenue generation. They had authority to make rules and regulation in the village and they used to manage the resources of their village. (Adhikari & Bohle, 1999). In return, they used to get free labor service and gifts from each household every year. If one did not provide labor and a gift (*bheti*), he /she had to pay a fine to the village head. However, this system was abolished after the down fall of the Rana regime (in the 1950s).

The Mother Group (*aama samuha*) is a committee in the villages. They have particular rules that apply to every homestay's owner for removal of unhealthy competition such as deciding on fixed price for rooms. In addition, those who sell homemade tea must have the same price when they selling to outsiders. This is resulting from an agreement among the farmers to monopolize cooperatives and fixes price. The members of *aama samuha* are changeable after certain periods of time.

The appointed leader and members of *aama samuha* are responsible for making rules and regulation on how to run the committee. A committee named '*Shree Janashakti Kirshi tatha sinchai sahkari*' (shree Janashakti agricultural and irrigation cooperative group) in Koleli village works especially on the agricultural sector. They have their own rules and regulation. The committee have a general meeting once every month and discuss problems and benefits regarding agriculture. Each member of the community has equal access when they get any assistance from other organizations. For instance, if they get seeds of a vegetable from other sources, each member of the committee group distribute them equally. Each member of the community has the right to present their view in the meeting before decisions are made.

Although the household is the primary unit of organization, the Village Development Committee (VDC) the smallest administrative unit of Nepal has authority over

development within its territory. People get economic, social and physical assistance from the VDC. Since the study area is located in the Annapurna Conservation Area Project (ACAP) region, ACAP together with local people manage common resources such as forest, water and roads. Under the ACAP rules and regulation, the Conservation Area Management Committee (CAMC) committee has formed. This committee has now taken responsibility over the management and distribution of forest. Each household has the right to take part in the meetings and has to be informed of decisions before the committee action anything.

5.3 Classification of Farming System

As mentioned earlier, the classification of the farming system of the study area based on the classification by Turner and Brush (1987) is discussed in the following text.

The classification of agriculture output intensity in my study area is measured by monetary value of crops, however it is difficult to calculate it accurately. Since the crop has been changing from subsistence to commercial farming system and farmers earn money for their livelihood, the farming system comes under the medium intensity system. Farmers obtain good incomes from market oriented agricultural production (table 6.6). Farmers earn generally three times more money from cash crops than they get from cereal crops from the same unit of land. One of my informants stated that *‘I could produce approximately three muri¹² of paddy from one ropani khet and earn about 7500 rupees¹³ if I sell it. But I could produce about one quintal garlic from the same unit of land and earn 25,000 rupees’* (a farmer, 24, Koleli). It was found even some farmers can earn above one hundred thousand rupees from cash crops annually. Farmers who cultivate cash crops generate a sufficient income from a small area, which provides them with a good living and good education for their children. Farmers are more concentrated on *amriso*, cardamom and tea in order to increase their income. Due to market oriented crops, the cropping pattern is different compared to other surrounding villages. However, in the study area there is limited irrigation facility, uncertainty of weather and small landholdings. It is also important to note that farmers have low intensity capacity in cereal crops. For example, generally farmers can grow three *muri* paddy from one *ropani* of *khet* land. The majority of the farmers have just enough for themselves from what they

¹² A local unit of measuring quantity of grains, 1 *muri* is approximately equal to 45kg in case of paddy.

¹³ 100 Nepali Rupees (NPR) =6.6 Norwegian Kroner (NOK)=0.87 Euro [Exchange rate of April 16, 2013.]

produce and many of the farmers have to buy food. Thus, it is reasonable to assume that output intensity of the farming system has increased due to commercial oriented crops, but overall output intensity has decreased.

According to the classification of Turner and Brush (1987), the farming system of Lawangghalel should be a mix type in between of plaeotechnic and neotechnic in terms of input of tools and techniques. Farmers use human labor and animals as supplement labor. Labor needed in the fields for activities such as land preparation, sowing, weeding, threshing, plucking and harvesting is provided by humans and animals. Secondly, farmers use organic manure rather than modern inputs such as chemical fertilizer and pesticides. The overview in table 5.6 shows that chemical fertilizer is the least priority of farmers. Animal manure and fodder is largely used as organic fertilizer for crops. Modern tools like tractors and machines are not possible to use in Nepali agricultural fields due to the mountains landscape. However, there are some neotechnic inputs that can increase the output intensity production. There is a good cooperative society and farmers are attached to different organizations. ACAP, District Agricultural Office and Agricultural research centre Lumle provide farmers with different kinds of training, seeds, young plants and small agricultural equipment. Local cucumber seed is replaced with High Yielding Variety (modern seed) which is recognized as the highest income generating crop in the study area. Farmers are taken to different places to receive training and to get ideas and knowledge for better agriculture production. Now, they have modern management practices such as greenhouse farming for tomatoes and drop irrigation systems for vegetables. Thus I would say the second trajectory technology type is likely to be a mix of plaeotechnic and neotechnic input which I will call intermediate technology.

The third category production type and mix is the degree of self-consumption (subsistence) and commercial (market) production. Farmers produce cereal crops largely for subsistence and some of the farmers sell sometimes parts of it, if they have a surplus. Cash crops grown in small area are primarily for commercial use. Over the past two decades, there has been a radical change in agricultural practice in the study area. Cardamom, *amriso*, cucumber seeds, tomato and seasonal vegetables are given high priority for commodity production. Farmers are very much oriented towards commodity production to earn money for a good living, better education of their children and for the purpose of settling in the city. The study area is known especially for production of

cucumber seeds, *amriso* for broom production and tea. Thus I would put the farming system in a mixed type of subsistence and commercial production.

To conclude, this chapter has discussed the units of the general farming system of Lawanghalel VDC. The farming system is based on traditional skills. The land preparation process is entirely done by ox and human labor since modern tools are not appropriate. Irrigation facilities are temporary, thus agricultural activities are largely based on monsoon rainfall. To find what the bottleneck in the agricultural system is, a structured questionnaire was prepared. The farmers were asked their priorities and opinion on what is needed most in order to produce more crops. According to the farmers an index has been prepared (Annex 1).

Table 5.6: Priorities of respondents on variables to increase crops production
(N=50)

Priority	First	Last
Water	15 (30)	1 (2)
Labor	7 (14)	0 (-)
Manure	25 (50)	0 (-)
Chemical fertilizer	1 (2)	27 (54)
Better seeds	2 (4)	3 (6)
Better extension service	0 (-)	19 (38)

Source: Field Survey, 2012

Note: Figure in the parentheses indicates the percentage of the total households.

Table 5.6 presents the variables listed as first and last priority by farmers. It is clear from the table that organic manure is considered the most important component in the bottleneck of agricultural production. Water and labor are considered the next most important. Chemical fertilizer is in last priority. The finding from the current data is similar with the finding of Aase, et al., (2013) who reported that water and manure were the first and second priority and chemical fertilizer was the least priority of farmers. Farmers are not so much concerned with chemical fertilizer since it caused a problem with their tea export. Now farmers have an emphasis on organic crops and quality rather than quantity. ‘*we could not continue our tea trade to Germany due to chemical fertilizer, now we are aware of it and no longer use it*’ (a manager, tea factory).

CHAPTER VI: EXISTING CASH CROPS

This chapter is focused on the major existing cash crops of the farmers involved at the household level and the land use pattern of agriculture. It also discusses the main motivational factors which lead farmers to grow new crops. The problems in agriculture faced by farmers have also been referred to.

6.1 Commercial Oriented Crops

Before commercialization took place, agricultural activities were more or less confined to subsistence production of cereal crops. Now, agriculture has largely been transformed from subsistence to commercial production. Land use cover has changed during the last two decades, which is shown in table 6.1. As can be seen in the table, land use pattern has changed towards cash crops mainly tea, cardamom, *amriso* and seasonal vegetables in recent decades.

Table 6.1: Crop composition during the last twenty years (N=50*)

Main crops	Subsistence agriculture	Commercial agriculture
	(20 years before)	(Now)
Tea	-	30 (60)
Cardamom	-	8 (16)
<i>Amriso</i>	5 (10)	33 (66)
Seasonal vegetables	45 (90)	17 (34)
Maize, millet	47 (94)	0
Rice	40 (80)	2 (4)

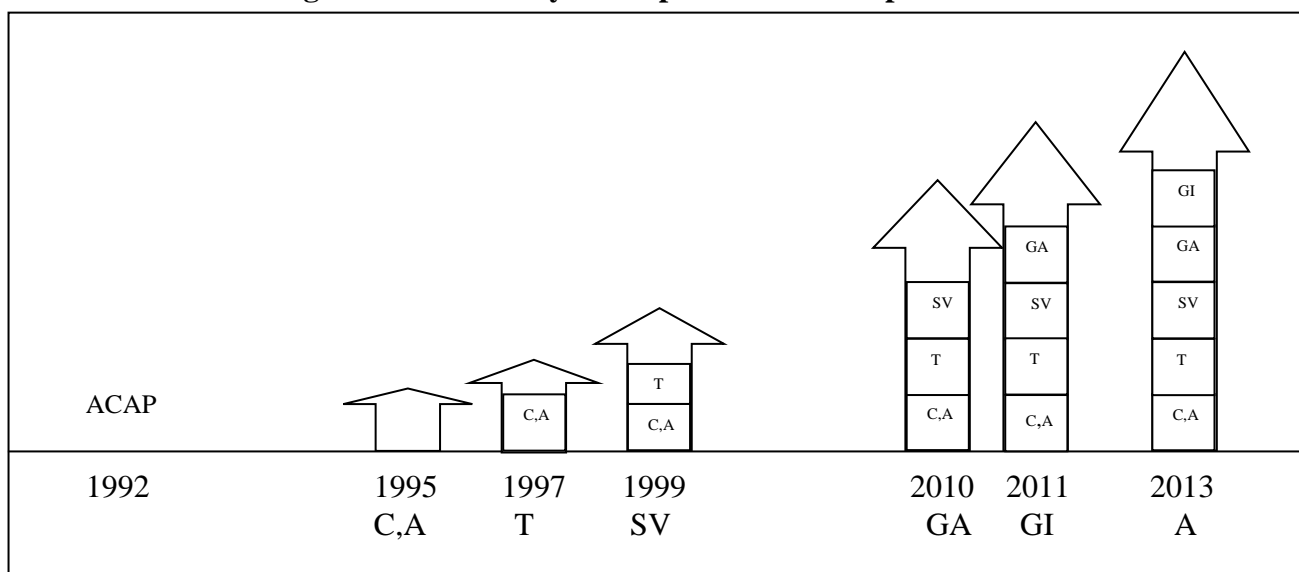
Source: Field Survey, 2012

Note: Figure in the parentheses indicates percentage of the interviewed households. Total sum of households can exceed more than 50. One household can have more than one variety of crops.

Prior to 1992, all farmers were largely dependent on subsistence agriculture. Agricultural land use pattern was mainly dominated by maize, millet and paddy and partly by seasonal vegetables two decades before (table 6.1). The adaptation of various cash crops was

inaugurated from 1995 by farmers. Commercial farming started with cultivation of cardamom and *amriso*. These two crops are grown on different types of land. Cardamom is grown in moist land under trees mostly on the northern slope of the study area. *Amriso* is grown in dry land mostly on the southern slope. In the past, farmers used to make brooms from *amriso* flower which was collected from the jungle just to clean their own house. Farmers then started to plant *amriso* and cardamom in barren land (*pakho bari*), but now it has been extended to *bari* and *khet* land. Another existing crop in the study area is tea. The plantation of tea started from 1997. Many farmers in the Lawang village planted tea for commercial purpose. Tea is planted mostly in the upper part of the village where farmers previously cultivated millet. However millet was not grown year round due to unfertile soil. Farmers have adopted seasonal vegetables such as beans, cauliflower, pea, potato, cucumber, garlic and ginger since 1999. These seasonal vegetables are grown nearby the houses in home gardens so that farmers can care for them. From the year 2013, almond farming has started in the study area for commercial purposes in a partnership between the local people and outsiders (investors).

Figure 6.1: Tendency of adaption of cash crops



Note: C,A= Cardamom and Amriso, T= Tea, SV= Seasonal Vegetables such as cucumber, beans, peas, radish seeds, potato, tomato and spinach, GA= Garlic, GI= Ginger, A= Almond, ACAP=Annapurna Conservation Area Project.

Figure 6.1 shows the inauguration of the main existing cash crops in the study area, however not all the farmers have cultivated of all types of the listed crops. It can be seen

that in the study area, these crops were introduced after 1995. A public hearing for almond farming was held while I was in the field area. It was the first formal meeting with local farmers for the implementation of almond farming. Almond cultivation was going to start in a large area (in one thousand *ropani*) of land. An agreement has been made between an almond study group and local farmers through shree Janashakti agricultural and irrigation cooperative committees. They are going to invest about 67.5 million rupees annually for almond cultivation (Sharma, 2012). At the first stage, an almond nursery is going to be made in 15 *ropani* of land.

Table 6.2: Distribution of land use pattern of surveyed households (N=50)

Type	Area (in <i>ropani</i>)	Percent
Cultivated land	937	82.1
Abandoned land	205	17.9
Total land	1142	100

Source: Field Survey, 2012 (20 *ropani* = 1hectare)

The implementation of new cash crops has increased throughout time. Distribution of land use and land cover pattern of surveyed households is shown in table 6.2. All types of land (*Khet*, *bari* and *pakho bari*) are included in cultivated land. More than 80 percent of land is cultivated and used for growing cereal crops such as rice, corn, wheat, and millet as well as cash crops such as tea, cardamom, *amriso*, cucumber and other seasonal vegetables. Less than one third of total land is abandoned this is due to labor shortage. Aase, et al., (2013) also mentioned that some of the agricultural land has been abandoned due to lack of labor in his study. Cereal crops are grown by almost all the households for self-consumption. Some of the households who do not own enough land participate in share- cropping.

The main cash crops grown in the study area are presented in table 6.3. The table shows the number of households which cultivated cash crops primarily for commercial use but also for self-consumption. The pattern of cash crop cultivation was noticeably different in the two villages in the study area. Mostly tea, tomato, fruit and seasonal vegetables were cultivated in Lawang village for commercial purpose. Market oriented crops mainly cucumber for seeds, *amriso*, beans, cardamom, garlic and green pea were cultivated in Koleli village. Most of the interviewed households give more emphasis to cash crops than

cereal crops due to the high commercial value. Some of the households had left cereal crops cultivation and were completely involved in cash crops. Among those households one of the surveyed households has completely involved in cash crops agriculture:

A farmer, (55), Koleli has two wives and three children. He depends fully on cash crops. He has been producing seasonal vegetables and earning money for living for two decades. Before he started cash crops, he used to cultivate cereal crops for living, but it was not enough to last the whole year. The cereal crops he produced were barely enough for six months and for the rest of the year he had to do labor work. He took advantage of training different institutions, and he started changing his crops from 1997. The main crops he grows now are cucumber, radish, buck wheat, bean, garlic, onion and cardamom. In the year 2012, he earned 40 thousand rupees from cardamom, 15 thousand rupees from cucumber, 8 thousand rupees from pea and buck wheat. Besides these crops, he also earns money from selling other seasonal vegetables.

Table 6.3: No of households involved in cash cropping of various cultivars (N=50)

Types	Commercial	Subsistence	Total
Cardamom	8 (100)	-	8
Amriso	23 (69.6)	10 (30.3)	33
Tea	26 (86.6)	4 (13.3)	30
Cucumber	17 (100)	-	17
Bean	14 (100)	-	14
Garlic	7 (43.75)	9 (56.25)	16
Seasonal vegetables	8 (16)	42 (84)	50
Tomato	6 (100)	-	6
Fruits	10 (25)	30 (75)	40

Source: Field Survey, 2012

Note: Figure in the parentheses indicates percentage of the total number of households involved in particular cash crops. Total sum of households can exceed more than 50. One household can have more than one variety of crops.

6.1.1 Cardamom

Cardamom is one of the important cash generating crops of Nepal. The production of cardamom was introduced from Sikkim, a state in India. Among the 75 districts, it has been established as a commercial crop in 37 districts in Nepal (NSCDP/MoAC, 2010 in Khadka, 2011). The commercial cultivation of cardamom started in 1997, however it is believed that cardamom was introduced in 1865 by Nepalese laborers who went to Sikkim for seasonal work. The establishment of a Large Cardamom Development Centre in Fikkal, Ilam in 1975, paved the way for cardamom as an important crop in Nepal. The total production of cardamom in Nepal was 5233 mt.ton in 2009/10 from 14001 ha (MoAC, 2009/10, in Khadka, 2011). A large amount of cardamom is exported to India. In the Kaski District 10 Mt. ton cardamom was produced from 15 ha of land in 2006/7 (MoAC, 2008).

Cardamom is generally cultivated in hilly regions at an altitude between 1000 to 1800masl. It can be grown in moist area with well-drained soil, in small gullies and under the trees shade, particularly under *utis* trees. The study area is suitable for cardamom plantation according to altitude and climate. Farmers have planted cardamom in surrounding *bari* land. Once it is planted, it can last for approximately 30 years. Cardamom reaches full maturity in 5-6 years after plantation and is then ready to harvest. It can be harvested once a year. Cardamom harvesting starts at the end of the monsoon in August and finishes in November. However, harvesting time is different according to place, depending upon the altitude. The best time to harvest in the study area is September.

The cardamom capsule is known as a high value spice crop. A healthy bunch of cardamom plant contains approximately two thousand capsules. When it is harvested it should be separated and dried for use. Weeding of cardamom is rarely needed, only unwanted plants are cut down before harvest. Therefore, labor requirement is very low. One of my informants states that “*Cardamom is like a pension crop, once it is planted you can get money without doing labor*” (a farmer, 55, Koleli). In addition, it has good price. The general local market price for one kg of cardamom was 800 rupees in 2012 in the study area. However, it can be different according to time and place. The fluctuation in the price of cardamom in the market has been noticed by some scholars (see Gautam, 2011). Besides the capsules, farmers also get a good income from the cardamom root.

During the monsoon period, cardamom roots are dug up for new plantation. A cardamom root costs 2 rupees.

6.1.2 Amriso

The cultivation of *amriso* is mostly suitable in the mid-hilly region of Nepal and is being increasingly used by farmers. In the study area, *amriso* is an important crop grown for cash-generation and has low labor requirements. In the past *amriso* was only grown on *pakho bari* land however these days farmers chose to also plant *amriso* in *bari* land instead of the traditional millet and corn. It has many uses so is in high demand. Its flower is used to make brushes which many people use it to clean their houses (this gives rise to its common name ‘broom grass’). When the *amriso* flower is plucked, it is used as fodder for livestock. Many farmers reported that *amriso* is a good grass to feed their animals particularly after the animals give birth as it is thought to increase milk production. Farmers in the study area were expanding their *amriso* cultivation. Twenty years ago, farmers used *amriso* only to clean their own houses, but these days it is becoming a commercial and cash-generating crop.

One of the respondents has five ropani bari where she used to cultivate corn and millet and 16 ropani pakho bari only used to cut grass for livestock, but now she has replaced millet and corn with amriso and a small amount of seasonal vegetables. In addition, last year she replaced two ropani khet (paddy land) into bari fields for amriso cultivation. She has planted amriso in 10 ropani land now. She sold one hundred thousand amriso roots to the neighbouring villages (a farmer, 43, Koleli).

An *amriso* root costs 1.50 rupees. The reason behind increasing *amriso* production is due to possible income and the uncertainty of climate for cereal crops. The best adaptive crops against climate uncertainty were found to be *amriso*, due to its extended root, thus many farmers are increasing *amriso* plantation (Khadka, 2011). In addition, farmers reported that *amriso* gives a great contribution to soil conservation and prevention against landslides.

6.1.3 Tea

Tea is another major cash crop grown in the study area. Tea is a permanent crop, as it can last for more than a century once it is planted. When it is planted, it is ready for harvest after seven years. Tea plantation started in Lawang in 1997. In the beginning, tea plantation was limited to a small area. Now, it has been extended into a larger area. Some of the farmers have converted cultivated *bari* land into tea crops. It covers approximately 700 *ropani* of the whole Lawang village and 241 *ropani* of the land of the surveyed households. Tea cultivation covers a large share of labor and gives a good contribution of household income. Farmers also do not need to buy tea for their personal use. It is also reported that tea is given to their relatives. They sell 100 grams of packaged tea for 50 rupees to outsiders. The ACAP provided young tea plants to farmers for free at the beginning. Now a young tea plant costs 3 rupees but the ACAP offers them for half price. Hire labor is common while picking tea. A group of farmers established a tea factory in the village. Finally, in 2006 they managed to sell commercially the tea they produced in the factory. Since the establishment of the factory, individual farmers supply fresh raw tea leaves to the factory. The fresh tea leaves cost 35 rupees per/kg. The factory produces three grades of tea first (high quality), second (medium quality) and third (low quality) grade. The prepared tea costs 20, 13 and 7 Euro per kg respectively. All the prepared tea is exported to Germany. This sale arrangement was made by ACAP.

**Table 6.4: Annual production of tea exported to Germany from the tea factory
(2005/06-2011/12)**

Year	Export of tea (in kg)	Income (in 000 rupees)
2005/06	150	180
2006/07	450	450
2007/08	770	847
2008/09	-	-
2009/10	500	282
2010/11	-	-
2011/12	-	-
Total	1870	1759

Source: Field Survey 2012

The demand for wage laborers for the picking of tea leaves increased, workers are paid per working day (see chapter VII). It is a good opportunity for employment in the village

for those who are landless (Storey, 1986). Two to three leaves at the top of the tea plant are picked to make the best quality tea. Once the tea leaves are plucked, they are spread in a warm place for 24 hours to wither and lose about 40 percent of their moisture. However, they have to be protected from direct sunlight. After this, the leaves are rolled to produce long twists of leaves. After the leaves are twisted they are dried. This is the traditional way to prepare tea. However, after the establishment of the factory in the village, tea preparation was moved to be done by machines. A person can pick around 15 kg of tea leaves during a working day. In the study area, tea has been planted mainly for commercial purpose.

The table 6.4 shows the annual production of tea exported to Germany from the tea factory. Tea export gradually increased from 2005/06 to 2007/08. However, tea export has been stopped/interrupted for the past three years. The reason behind this was due to the use of chemical fertilizer and pesticides on the tea plants. Due to the excessive use of chemical fertilizer and pesticides farmers faced a problem for the tea trade. Thus, farmers have realised to make a continuous and long term supply of their production, they need to place an emphasis on organic production. Thus farmers are now largely involved in organic farming even in market oriented agriculture.

There are some factors that discourage poor and small landholding households to become involved in tea cultivation. As referred to earlier, tea plantations last for many years once planted and need regular care for the development of the tea plant. Until the tea plant matures, it should be weeded, fertilized and trimmed on a regular basis. One of my respondents states that *“Tea is like a five months old baby; it needs a lot of care all the time as we do to our baby, but we get nothing from it until it is mature”* (a farmer, 61, Lawang). Thus, farmers need to have alternative income sources until the tea is ready for harvest and starts generating an income.



Picture 6.1: Converted *bari* and *pakho bari* lands into tea garden

6.1.4 Cucumber

Cucumber is a very important crop in Nepal. It is grown commercially and has become a cash-generating crop in urban fringe and village areas where the road is accessible, mostly in the western hills of Nepal (NARC/SAS-N, 2008). Traditionally, cucumber was grown for self-consumption. Its consumption pattern is changing due to the changing eating habit of the population, so its value is growing and therefore there has been increasing demand for more cucumber seeds in the market for plantation. The introduction of *Bhaktpure* local cucumber is common in the hilly region (ibid). Cucumber is commercially produced from July to September.

In the study area, farmers cultivate cucumber for commercial purposes. In recent years farmers have experienced a rising market price for cucumber seeds. Thus they do not sell green cucumber, they grow *Bhaktpure* (local cucumber) for seed production. It is the highest income-generating crop and also the least labor intensive crop. Farmers sell cucumber seeds to shops and agro vets individually. Farmers from urban fringes buy the cucumber seeds from the shops and agro vets. Development of cucumber production enhances the source of income for farmers.

Seasonal vegetables are grown in the home garden, which contributes to generating income for the livelihood of farmers. The home garden is an important centre for crop care, improvement, experiment and domestication. Some of the vegetables are intercropped with maize. For instance, cucumber is also grown in the maize field.

Seasonal vegetables such as potato, radish, beans, cucumber, spinach, cauliflower, cabbage, gourd, ginger, garlic and onion are all grown in the home garden. From these vegetables farmers earn some money, but most of these crops are for self-consumption. However, it has lately changed into commercial purpose. Experience has shown that commercialization of the existing farming practice improves the livelihood of the farmers.



Picture 6.2: Cucumber cultivation and *Amriso* plantation in *bari* and *pakho bari* land

6.2 Motivational Factors

There are several factors which have brought changes in the agricultural activities of Nepal. Market integration and institutional development, migration, lack of labor and the value of cash crops are the main factors which have brought change and led to the introduction of new crops.

The connectivity and accessibility of roads has played a significant role in increasing the production of cash crops. The development of roads in rural villages provides direct market opportunities to the farmers. Prior to the construction of their road, Lawanghalel VDC was relatively isolated from the regional, national and international markets and from the outer environment. Farmers had limited knowledge about crops and high yielding variable seeds simply due to physical isolation from the urban areas. After getting the road connection, farmers have access to sell their products to the market. The integration of market brings changes in adaptation of cash crops such as cardamom, *amriso*, tea, cucumber and green vegetables, when they have market access regionally and internationally. Road also encourages the establishment of new small market centres

along the highway, which furthermore have improved network connection with agricultural experts.

Farmers have been given the opportunity to visit agriculturally developed places to obtain knowledge about new crops. For example, farmers of the study area were taken to Ilam by ACAP for training in tea plantations. In addition, accessibility by road connection contributed to establishing networks with other places, which increased the demand for crops especially seasonal vegetables like tomato, potato, cauliflower, green peas and beans. Several scholars have found the positive impact of the road access on agriculture, which led development of market oriented agriculture in hilly districts of Nepal (Adhikari & Bohle, 1999; Chapagain, 2003; Khandker & Koolwal, 2011). Thus, road connection facilitates integration with city areas that motivates farmers to increase cash crops.

Table 6.5: Distribution of out-migration of interviewed households (N= 50)

Types of Migrants	Brahman	Gurung	Dalit	Total
National and international labor migration	5	26	9	40 (61.5)
Internal and external migration for education	6	16	-	22 (33.8)
Education commuters	2	1	-	3 (4.6)
Total	14 (21)	43 (66)	9 (13)	65 (33.6)

Source: Field Survey, 2012

Note: The total number of economically active population (aged 16-65) in 50 households is 193. Figures in the parentheses indicate percentage of the total number of out-migrated people, aged ≥ 16 .

Out-migration is an important factor which has contributed to labor shortage, which results in land abandonment (Ghimire, 2007). In the study area, out-migration plays an important role in motivating farmers to increase new crop cultivation in two main ways. Firstly, the lack of labor in the village has motivated farmers to cultivate new crops which require less labor. Several farmers have migrated to other places for different purposes as demonstrated in table 6.5. It shows that in the 50 sampled households, 65 active people migrated for various reasons. Of the total group that migrated, 61.5 percent of the active people migrated nationally or internationally for labor work, 33.8 percent were students

living out of home for education either nationally or internationally. These students only come to home for special occasions and during their holidays. 4.6 percent of students live at home, but attend school daily and cannot work during their schooling time. On average, it shows that more than one active person from each household cannot work on the farm due to migration. This result in a labor shortage and thus farmers seek alternative options so that they can produce crops using less labor. From this perspective labor shortage is very important factor that encourages farmers to adopt and increase the cultivation of cash crops.

The second reason migration leads to the adaptation of cash crops is due to their economic value. The reason behind this is due to the dissatisfaction with the salary they received while working abroad. Those people have then involved in cash crops and realised their economic value so actively participated in the widespread adaptation of cash-generating crops. One of the informants states that “*kalla ma in paisa bari ma in paisa*” (Cash crops give money from terraces and plots) (a farmer, 24, Koleli). For instance, *amriso* and cardamom can be cultivated in terraces and in plots which can earn a good income. Several out-migrated young people when they back home are now extensively involved in agriculture focusing on certain crops for commercial purpose.

Table 6.6: Annual income from cash crops 2011 (2067/2068) (N=50)

Crops	Production (in kg)	Rate (Rs per/kg)	Total income (000)	No of Hhs
Cucumber seed	276	2000	552 (46.31)	17
Cardamom	100	750	75 (12.58)	8
	Root 50,000 pc	1.5 pc	75	
Garlic	1500	150	225 (18.87)	7
Soybean	200	50	10 (0.83)	6
Beans	250	180	45 (3.77)	14
<i>Amriso</i>	Flower 3200pc	25 pc	80 (17.61)	23
	Root 1,00,000pc	1pc	100	
	Grass in <i>bhari</i>		30	
Total			1192	

Source: Field Survey, 2012

Note: Figure in the parentheses indicates percentage of the total income of the involved households. Pc: Pieces.

Most of the interviewed farmers agreed that the cultivation of cash crops has raised their economic status and living standard, thus they easily accepted the new crops. The main income of farmers from cash crops is shown in table 6.6. It shows the annual production and income of the farmers. The highest income, nearly half of the total income (46.31%), was from cucumber seeds, which is followed by garlic (18.87%), flower, roots and grass of *amriso* (17.61%) and cardamom capsule and roots (12.58%) respectively. The annual income of tea has not been included in this table because there has been no export for the past three years as shown in the table 6.4. Besides these specific crops, farmers also earned money from the sale of other seasonal vegetables such as potato, spinach, tomato, green peas, potatoes and radish seeds. It shows that a significant amount of money is generated through the sale of different categories of cash crops.

Involvement in cash crop farming has had an enormous impact on individuals, their families and the community. The income achieved by the farmers has allowed their situation to improve dramatically, resulting in better standards of living, health and education. Some of the farmers were able to buy land and build houses in the city area. Furthermore, farmers were able to improve their children's education and other basic needs. Adaptations of new crops also increased social contact and networks of farmers with other people.

A farmer, 43, Koleli, is an active and innovative woman. She has five family members; two children, her mother-in-law and a husband who is a teacher. She started to cultivate cash crops 20 years ago. She is regarded as a role model for commercial vegetable farmers in the village. She has been honoured with some awards, as well as increased social prestige and decision-making power for organizational and agricultural activities in the household and community. Before she started to cultivate cash crops, she was fully dependent on subsistence agriculture. Now she has converted some khet into bari land for cash crops and has a very good income. In 2011, she earned more than 250 thousand rupees from cash crops. The money she earned was mainly from the production of cucumber seeds, amriso (flower for brooms, roots for plantation and grass for livestock), green peas, and planted trees (sell grass to other farmers of the village). Besides, she sells one-two cows/buffaloes when they give birth each year, but she doesn't

sell milk. She uses the milk for her vegetables to provide vitamins and prevent from disease. She expressed her feeling, “previously it was very difficult to have enough food for the whole year even if I worked very hard from morning to evening”. Now, with the income from cash crops she has bought a piece of land and built a house in the city. She also expressed that “I proudly can say that I saved more money than the people who are working in Gulf countries”. Form this sentence; we can say that she is quite happy with her cash crops.

One of my informants stated:

“My family was fully dependent on subsistence agriculture what we produced from our land was hardly enough for the whole year. Due to the crisis of money and food I migrated to Qatar for labor work. But there I could hardly save 20 thousands rupees in one month, even though I had to work for long hours. When I came back home I decided not to go again and started cultivating cash crops. Since then I left the cultivation of cereal crops and started to grow cucumber for seeds, garlic, beans and amriso. From these crops I can easily earn more money compared to what I earned while I was abroad. Now I know the economic value of the cash crops. Previously I used to produce hardly three muri paddy from 1 ropani khet land, but now I replaced it by cash crops and can easily get three times more money from the same unit of land. On the other hand I don’t have to go to the market to sell garlic and cucumber. I earn good money so that I can buy whatever is needed for me and my family. Now, I am fully satisfied with it.” (a farmer,24, Koleli).

The role of institutions in the development of cash crops in Lawangghalel is substantial. Several institutions motivate farmers in the adaptation of different cash crops. Various private and public institutions support farmers to initiate radical change in the study area. They play a great role through dynamic interactions among various stakeholders as well as natural resources that encourage innovation to enable change in agriculture (Aase, et al., 2013). Various institutions have conducted several programs like training, participation in seminars and meetings providing formal and informal educational programs to the farmers. These programs and information from different institutions play a major role in the transformation/adaptation of cash crops among the local farmers. After getting information, knowledge and value of cash crops, farmers have largely been

motivated. Thus farmers have a close attachment with these institutions. The distribution of the households who were involved in various types of training regarding agriculture is shown in the table 6.7. Out of the 50 interviewed households more than half of the households (62%) have had training from different private and public institutions.

Table 6.7: Distribution of interviewed households according to caste involved in training (N=50)

Caste	No of respondents		Total
	Yes	No	
Brahman	12 (70.6)	5 (29.4)	17
Gurung	16 (69.6)	7 (30.4)	23
Dalit	3 (30)	7 (70)	10
Total	31 (62)	19 (38)	50

Source: Field Survey, 2012

Note: Figure in parentheses indicates percentage of total number of households according to caste.

Initially, a branch of ACAP (Annapurna Conservation Area Project) located in the Lawang village played a crucial role in bringing development and new ideas to farmers. The establishment of ACAP in the village was the main motivating factor to the farmers. It was established with the concept to conserve resources where there is settlement. It was developed by King Mahendra Trust for Nature Conservation (KMTNC) in 1986 with the aim to involve local people in the conservation of natural area and resources, for the first time in Nepal.

The aim of ACAP was to protect and manage the conservation area by improving local land use practice, community development and environmental protection rather than establishing a national park (ICIMOD, 1995). It involved local people in all aspects of conservation and development processes and helped local people to improve their life by empowering them with the appropriate skills, knowledge, technical and financial assistance. Special attention was given to women. A village committee named the conservation and development committee was made under ACAP rules to protect natural resources. With the help of this committee, villagers planted trees both in private and public barren land, and farmers started cash crop cultivation in their land. Before the

plantation of new crops, soil tests were provided to farmers which enabled them to choose appropriate crops. It was the first institution to give ideas to farmers. Farmers were provided with seedlings free of charge for plantation as well as various training and seminars regarding cash crops. Farmers also got assistance with a spraying machine for their crops, traditional and digital scale to measure the weight of crops produced and micro irrigation systems such as the drop pipe irrigation system. Farmers also got economic help to make a chamber for livestock urine collection so that they could use it for fertilizing their crops. Moreover, ACAP supported farmers to find markets for their products. The development of institutions and networks further contributed to the establishment of homestays for domestic and foreign tourists, which motivate farmers to cultivate vegetables for tourist consumption.

When focusing on the institutions we should mention the role of government offices as well. In the context of Nepal, the Ministry of Agriculture is the main body for the development of the agricultural sector, which plays a great role for the extension of new crops by giving knowledge to farmers. The District Agricultural Development Office is the main office to provide service in the development of agriculture in Kaski district. These offices produce and transfer agricultural knowledge to local farmers. Previously, there were poor coordination between institutions and farmers, but now farmers of the study area have connected with various institutions. There are several registered farming cooperative groups (DADO, 2011) that play a crucial role in innovating ideas in agriculture. In the hilly district, modern agricultural tools are not appropriate for use, however modern concepts and techniques such as greenhouse farming for off-season vegetables and high yielding seeds were provided to farmers. In addition, organizations such as the VDC, various agricultural service centres and I/NGOs were the main supporting institutions associated with agriculture. These institutions provided various kinds of training and necessary extension service to farmers.

“A farmer, 43, from Koleli has attended more than 25 training sessions from several organizations such as ACAP, Lumle agricultural service centre, DADO, Naulo Ghumti and Khoramukh agricultural service centre. She could do nothing if these institutions had not provided training, ideas, skills and knowledge regarding various cash generating crops. Now she knows how to earn money

from cash crops. She has cultivated almost every crop of those that are cultivated in the village.”

Farmers were introduced to higher-value cash crops appropriate to their field. They were given various types of training for example mushroom farming, livestock farming, bee farming and vegetable farming from the *Naulo Ghumti* organization. Farmers got economic assistance from the land conservation organization for ginger farming. Local cooperative groups such as the women’s committee, agricultural cooperative and youth clubs mobilize farmers in different activities. Young groups of people from the village were very active in promoting cash crop agriculture in the village and are trying to initiate an economic revolution in the agricultural sector.

Another motivational factor for farmers which was noticed is that when local farmers go to the city to sell their products, they discuss both the recent changes in technology and knowledge with each other. Local farmers received information and knowledge from agro vets, agricultural services centres and other farmers from outside village. Receiving knowledge from outsider farmers, local farmers have developed new practices with these ideas.

6.3 Problems in Agriculture

Farmers are motivated towards the introduction of new crops in agriculture, however they suffer from different types of problems. A study done in India found that wild animals have become problematic to farmers in conservation areas as the animals damage and destroy crops (Sekhar, 1998). The study area of this thesis is in a conservation area, and agricultural land is surrounded by forests, as farmers have planted trees in barren land near the cultivated fields. Now, the forest has become the habitat of wild animals like large groups of monkeys, porcupines, deer and wild cats. Wild animals are a problematic to farmers in the study area. The majority of respondents were engaged in some kind of protection actively for their crops. Farmers often have to watch their crops every day until the harvest. *“If we chase the monkey today, they come again the next day”* (a farmer, 57, Lawang). Monkeys eat crops and they destroy the sections they don’t eat. Wild cats destroy cardamom capsules before harvest. Although wild animals have become a big problem, farmers are not allowed to kill them because of the rules and regulations made by ACAP. One of the informants stated *“if we kill wild animals, we have to pay fine. If*

the ACAP give permission, I would kill all the monkeys'' (a farmer, 57, Lawang). After receiving complaints from several farmers, ACAP gives thirty percent economic support to farmers as compensation when wild animals destroy their crops and eat their livestock; however this is not sufficient for the farmers. Although farmers have problem with the wild animals, they received many support from the ACAP so they have positive attitude towards the organization.

Farmers have faced different problems due to the impact of climate change in recent decades (Malla, 2009). Although the impact of climate change is not yet fully known, events such as floods, irregular rainfall and landslides have become more frequent in recent years, which is a great challenge for the farmers particularly those with small landholdings (Gum, et al., 2009; Joshi, 2012; Malla, 2009). In the study area, farmers have stated that they have experienced problems due to climatic uncertainty such as irregular rainfall, hailstorms and frost which all affect the crops. Cash crops, mainly tea and seasonal vegetables have been affected from climate, thus the production of these crops was found to have decreased in the study of Khadka (2011). Farmers have noticed various types of diseases and insects in crops due to untimely rainfall. Sometimes farmers have faced problems in meeting the demand of the market due to uncertain weather. *‘‘Last year there was a demand for more than 500 kg of cucumber seeds but due to a hailstorm, we could not produce enough seeds, now this year the cucumber is very good but we do not have any demand of cucumber seeds so we have to search for the market ourselves’’* (a farmer, 28, Koleli).

Problem with disease has led to a loss in production which makes the future uncertain for farmers. In addition, price instability stood as the main problem to farmers for successful cash crop farming in Nepal for many years (Takahatake, 2001). In the study area, farmers faced problems with different diseases in crops. The major diseases noticed by farmers in cardamom and tea crops were *Furkey* (Stunt Mosaic) and *Chhirkey* (Streak Mosaic), as well as insect (*khumre kira*) and ant (*kamila*) who attack the roots of crops. Cucumber is very sensitive to diseases such as powdery mildew and downy mildew (Gautam et al., 2008). Farmers have experienced ups and downs in their cucumber seed production and seasonal vegetables. Another problem faced by farmers was the lack of a stable market. Unstable markets have affected farmers, even though there is a good price for their cash crops. In addition, an unstable market compels farmers to sell their product through

middle men. One of the informants stated “*The Middle men make more profit than us (farmers). We sell a kilo of cucumber seed for 2000 rupees to a middle man; however the middle man sells the same quantity for 5000 rupees. Due to the lack of a stable market, we could not take full advantage of our crops*” (a farmer, 40, Koleli). Thus the development of a stable market is needed to solve this problem for farmers by bringing stability to prices of crops.

CHAPTER VII: GENDER ROLE IN AGRICULTURE

In this chapter, gender roles in agricultural activities are discussed. It tries to obtain an understanding of the gender roles specifically labor division and decision-making process of households in agricultural activities. Furthermore, gendered knowledge and wage discrimination between men and women in agriculture are also presented.

7.1 Gender Division of Labor in Agriculture

In the realm of small scale agriculture in developing countries like Nepal, agricultural activity is mostly done by family labor. However, cooperative labor exchange is common in the village areas. Gendered division of work exists in agricultural activities in both family and labor exchange. The importance of gender may be different according to place, caste, culture and society. Many scholars have studied gender division in agricultural work. They have analysed men and women specific work, responsibilities and social statuses in relation to cultural perception of masculinity and femininity (FAO, 1995 in Bhusal, 2007). Spring (1995) has observed that men and women appear to have distinct tasks, for instance men prepare and clear the land while women plant, weed and harvest crops .

Women are mostly responsible for global food production (Upadhyay, 2004). In Asia, more than 50 percent of the work in agricultural fields is done by women and about 80 percent in Nepal (ibid). Women are responsible for their ascribed reproductive role and the household work too, which is also considered reproductive work. Women have strenuous work in every type of activity such as rearing children, caring for family members and household chores. In addition, women are also responsible for agricultural activities and men are responsibility for income earning activities, which are considered productive work. Therefore is important to identify the role of gender in agriculture. In the study area, agricultural activities clearly differ between genders.

Table 7.1: Selected agricultural tasks by gender (N=50)

Task	Mostly done by female	Mostly done by male	Done by either sex equally
Ploughing	-	50 (100)	-
Levelling land	16 (32)	12 (24)	22 (44)
Adding/ transportation of manure to the field	30 (60)	2 (4)	18 (36)
Spreading manure	12 (24)	2 (8)	36 (72)
Collection of bedding material for compost	15 (30)	6 (12)	29 (58)
Chemical fertilizer	1 (2)	45 (90)	4 (8)
Cereal Crops:			
Sowing	45 (90)	1(2)	4 (8)
Planting	46 (92)	-	4 (8)
Weeding	30 (60)	6 (12)	14 (28)
Irrigation paddy land	1 (2)	40 (80)	9 (18)
Threshing rice	-	45 (90)	5 (10)
Threshing millet, wheat	39 (78)	2 (4)	9 (18)
Harvesting rice, wheat, millet, maize	2 (4)	4 (8)	44 (88)
Cash Crops:			
Sowing	16 (32)	10 (20)	24 (48)
Planting	17 (34)	11 (22)	22 (44)
Weeding	7 (14)	10 (20)	33 (66)
Irrigation	20 (40)	5 (10)	25 (50)
Harvesting vegetables	10 (20)	9 (18)	31 (62)

Source: Field Survey, 2012

Note: Figure in parentheses indicates percentage of the respondents of interviewed households.

The specific division of labor in agricultural activities of the study area is presented in table 7.1. The degree of involvement of males and females is different in subsistence cereal crops and commercial cash crops even in the same agricultural practices. Some tasks are ascribed to males and some to females. Some of the tasks are universally gendered in developing countries like Nepal. For instance, the ploughing of land is performed by men and the planting of rice is the women's task. There is a traditional

belief in the Nepalese society that only men can plough land. ‘*A Woman does not plough land. If she tries to plough land, it is sign of bad luck, so a woman never dares to plough land*’ (a farmer, 71, Lawang). Therefore, the ploughing of land by women is a social taboo. Even though any male may plough a field, it is mostly the Dalit males perform this activity. Generally, a verbal agreement is made between the landowner of higher caste and the ploughman for a certain amount of years. Instead of paying for the work, they often make an agreement to provide some crop produce to the ploughman when the crop is harvested. Division of labor according to caste in Nepali communities are referred to by Schroeder (see Schroeder, 1985).

Table 7.1 shows levelling of land is done by both sex fairly equally. Sowing and planting/transplanting cereal crops such as rice, millet and maize were found to be exclusively performed by females. It was reported that the sowing and planting of cereal crops is traditionally done by women due to their richer experience and knowledge than men. In addition, it was reported that women plant/sow crops faster than men. In contrast, the sowing and planting/transplanting of cash crops such as green vegetables was performed by both sexes. The households who were extensively involved in the production of cash crops reported that the sowing of vegetables was done by both males and females because men have obtained knowledge on how to sow and plant cash crops through training courses provided by several institutions. It was noticed that in some of the households who depend on cash crops, males were active in the sowing and planting of the crops. One of the male respondents stated that ‘*I have more knowledge of how, when and at what distance we have to plant and sow crops than my wife after I got training. My two wives just help me*’ (a male farmer, 56, Koleli).

Weeding is another time-consuming activity in agriculture. Once a crop is sown and begins to grow it has to be weeded periodically. The weeding of crops generally takes longer than the planting and sowing. It is more labor intensive work so is usually done by family labor. However, hired labor and labor exchange are also common among the households who lack labor. The weeding of cereal crops was found to be generally done by females, however the weeding of cash crops was done by both males and females. It was reported that there is no discrimination among male and female in these activities. Mostly women weed in the plain areas and men weed at the edges of terraced fields. In contrast, picking tea leaves was women’s work, while the trimming and weeding of tea

plants was completely performed by males. Spreading manure and collecting bedding materials for compost were performed by either sex. Digging cardamom and *amriso* roots for plantation was men's work. Labor exchange and wage labor among males was found to be common for these activities. Chemical fertilizer the least priority among farmers according to table 5.6, however farmers use some in paddy fields and the spreading of chemical fertilizer was a men's task.



Picture 7.1: Ploughing by man and transplanting paddy by women **Picture 7.2: Preparation of cardamom roots**

The irrigation of paddy land was mostly performed by men because it was reported that sometimes they have to repair canals if needed. Moreover, irrigating paddy fields may take long time and sometimes has to be done at night. But the irrigation of seasonal vegetables was done by both males and females. Seasonal vegetables are grown around the home garden so both men and women can irrigate depending on who has time. Farmers use gravity irrigation (pipe irrigation systems) for vegetables as well. Threshing rice was exclusively done by males, however the threshing of millet and wheat were done by females. Harvesting crops were done by either sex.

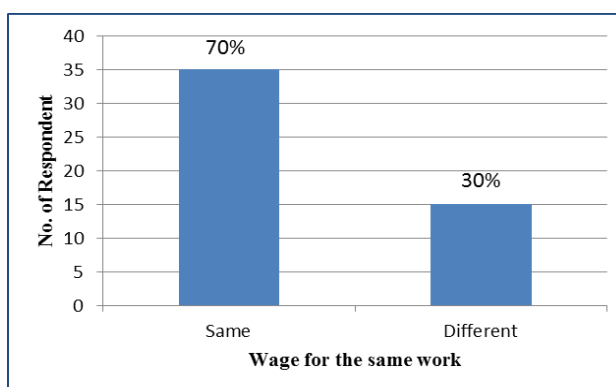
Historically in Nepalese Communities, the majority of agricultural activities were performed by women and men were engaged in non-agricultural work away from home (Schroeder, 1985). However, this has been changing slowly due to commercial oriented agriculture. Table 7.1 shows that involvement of men and women together in market oriented commercial agricultural activities is more common compared to cereal crop agricultural activities. It has been noted that traditional women's tasks such as the sowing

and planting of cereal crops are being performed by measuring numbers of men due to the market oriented cash crop development. There is no gender restriction with regard to cash crop activities. Both men and women are equally allowed to work, farmers agreed that it simply depends on the matter of knowledge and time. It is also necessary to mention that for farmers who were extensively involved in cash crops, both males and females performed activities in sowing, planting, weeding, irrigation and harvesting. However, even though both males and females perform similar activities in agriculture, women do a lot more household work compared to men, and thus women have a higher burden of work. Women are generally obliged to do household work like preparing food, cleaning the house, washing dishes and caring for the children. “The work load and burden of women is much higher than men (16 hours) in Nepal” (UNDP, 2004: 51).

7.2 Gender Wage Discrimination

Although women and men perform equal activities in agriculture, there is an inequality in wages among men and women in some agricultural activities. Wage is an important aspect of gender roles in agricultural study. This section presents the empirical findings of wage variation among males and females in agriculture. The government has determined a minimum wage rate of 150 rupees per day for agricultural labor and it must be equal for both males and females doing the same category of work (Gazette, 2008). However, wage variation is common in different places. Several factors such as cultural norms, caste/ethnicity and different types of contracts and power relations influence the for wage variation between males and females. According to the information collected from this study area, substantial wage differences were noticed between male and female in some activities.

Figure 7.1: Gender based wage discrimination in agricultural work (N=50)



The gender based discrimination among land laborers doing the same work (figure 7.1). Of the total respondents, 70 percent reported that they get the same wage for the same work and 30 percent of the respondents reported that they get different wage for the same work (i.e. women receive lower wages than men). From this result it seems that the majority of wage variation between males and females is due to the fact that they do different types of work. A ploughman gets 800 rupees with one meal and breakfast, since only men do ploughing. On average, a laborer gets 150 rupees for plucking tea whether the laborer is male or female and he/she gets 300 rupees per day for weeding, planting and harvesting crops in a day. However, 30 percent of the respondents reported that there is wage discrimination in some of these tasks even when they do the same work. Generally there is a belief that women are less productive than men in certain tasks. For instance, males get paid more than women for preparing land (*bause* in local term). Women get 300 rupees and men get 400 rupees. It shows that there in some agricultural activities there are gender inequalities. When asked the question of why wages are different, it was reported that men are physically stronger than women so they do more work thus should be paid more. This wage variation shows how women suffer with lower wages in some agricultural activities even though performing the same tasks. When compared to men, we can say that women are not getting a fair evaluation for their work in same agricultural activities.

7.3 Gender Knowledge

Gender knowledge differences may be an important factor influencing the degree of involvement of males and females together in agricultural activities and the decision-making process. Knowledge can be gained traditionally or scientifically. The knowledge which is passed on from the previous generation often called tradition or local knowledge and scientific knowledge is what generated by specialists of associated professions. Local knowledge is quite different from scientific knowledge because it is unique according to place, culture and society (Warren, 1991). Local knowledge is created from local environment by local practice, day to day activities and experience. Therefore it can be affected by social and cultural environment. In the developing countries such as Nepal, most small scale farmers are involved in traditional agricultural practice. Farmers in the study area however have obtained knowledge from both sources.

In the study area, farmers have good knowledge and practice in the utilisation of land. They know how to optimise land utilization and which of the different types of vegetables and crops that can be cultivated in the different seasons. Various types of crops are cultivated in different types of land. For instance, tea is cultivated on steep land, cardamom in moist areas in small gullies under the shade of trees and *amriso* in dry land (*pakho bari*). Further, farmers have practiced lentil cultivation on different types of land, such as black gram lentil in the ditches of paddy land, month beans and soybean on the edges and terraces of *bari* and paddy land (picture 5.1). An index has been made to identify differences in knowledge of local agricultural practice between genders and age groups, results are as follows.

The index has been prepared by obtaining scores according to the following legend;

A score of: 0= indicates no knowledge

1= indicates knowledge of name and taste

2= indicates knowledge of name, taste, local price, growth requirement for specific lentil variety.

Table 7.2: Composite index of knowledge of different lentils

Types	Adult male (N=2)	Young male (N=2)	Adult female (N=2)	Young female (N=2)
Mash (Black gram)	(2+2)=4	(2+2)=4	(2+2)=4	(2+2)=4
Masyang (Month beans)	(2+2)=4	(2+2)=4	(2+2)=4	(2+1)=3
Rajma (Kidney beans)	(1+1)=2	(1+0)=1	(1+0)=1	0
Bhatamas (Soybean)	(2+2)=4	(2+2)=4	(2+2)=4	(1+1)=2
Musuro (Red lentil)	(1+1)=2	(1+2)=3	(2+2)=4	(1+1)=2
Mung (Green gram)	(1+0)=1	(1+0)=1	(1+0)=1	(1+0)=1
Adar (Pigeon pea)	(2+2)=4	(2+1)=3	(2+2)=4	(2+2)=4
Bodi (Cow pea)	(2+2)=4	(1+1)=2	(2+2)=4	(2+1)=3
Keraun (Garden pea)	(2+2)=4	(1+0)=1	(2+2)=4	(2+2)=4
Guras (Ricebean)	(2+0)=2	0	0	0
Total	31	23	30	23

Source: Field Survey, 2012

Note: The scores of the two participants in each category have been combined to give an overall total. For example; a score of 4 indicates that both participants in the category had full knowledge about the lentil.

Table 7.2 shows the knowledge of 8 randomly selected males and females regarding different types of lentil. The overall pattern of knowledge on different types of lentil was good among all informants. All respondents had full knowledge regarding black gram, the next best scores were for month beans and pigeon pea. The majority of households cultivate the above mentioned lentils for self-consumption only. Some of the interviewed households cultivate garden pea, soybean and black gram for commercial purposes as well. Among the above mentioned lentils, black gram (*mash*), soybean (*bhatta*), red lentil (*musuro*), month beans (*mashyang*) and garden pea (*kerau*) are the lentils most commonly cultivated in this study area. The best informants on overall lentils were adult men, followed by adult women, but there was very minimal difference between them. Young males and females had less knowledge compared to adults. This result is likely due to the fact that adult respondents have more practice and experience in the cultivation of lentils, compared to the young males and females. The cumulative index of the knowledge of two individuals in each groups on all types of lentils mentioned in the table, shows that there is no significant difference between knowledge by gender, the only difference in knowledge is between the adults and younger respondents. However, the sample size is too small to generalise, this table only shows the tendency for knowledge of gender. On the basis of this table we might raise new questions that need further investigation. On this occasion I did not have the time or opportunity to complete detailed research on this subject.

7.4 Caste Differentiated Pattern of Decision-making in Agriculture

Nepalese agriculture is characterized by an increasing participation of women. The involvement of women in agriculture is about 90 percent, which is highest in South Asian countries (Bhadra & Shah, 2007). However, women have low status in Nepali culture and the majority have a lack of economic independence and decision-making power. Women always have to obey their fathers before marriage, their husbands after marriage and their sons after their husband's death in Nepali society. It is said that women spent more time in cultivation and food production in their own fields, but their importance is not recognized, they are neglected in the decision-making process (Yiching *et al.*, 2006). Traditionally decision-making in every aspect had been regarded as the men's domain. Decision-making is a process that functions at any level, including the individual household, village, regional or national level which follows certain levels. Miller (1990) has mentioned that the decision-making process has to follow four interrelated steps,

namely planning, decision-making, implementation and evaluation. Decision-making process at a household level may differ according to place, culture and caste/ethnicity.

Table 7.3: Decision-making in different types of agricultural activities according to caste (N=50)

Types of activities	Brahman (17)			Gurung (23)			Dalit (10)		
	F	M	B	F	M	B	F	M	B
What to plant	-	47.1	52.9	56.5	13.0	30.5	10.0	60.0	30.0
When to plant	-	41.2	58.8	56.5	8.7	34.7	10.0	50.0	40.0
Land preparation	5.8	52.9	41.1	52.1	21.7	26.0	-	70.0	30.0
Time of Sowing/planting	23.5	29.4	47.0	43.4	39.1	17.3	30.0	50.0	20.0
Weeding	17.6	35.2	47.0	47.8	30.4	21.7	30.0	40.0	30.0
Manure management	17.6	52.9	29.4	56.5	17.3	26.0	20.0	50.0	30.0
Harvesting	5.8	47.0	47.0	56.5	21.7	21.7	10.0	60.0	30.0
Sale of crops	11.7	47.0	41.2	47.8	17.3	34.7	-	60.0	40.0

Source: Field Survey, 2012

Note: Figures in the table are the percentage of the total respondents according to caste. M: Male, F: Female and B: Both.

The gender division of decision-making in agricultural activities is presented in table 7.3. Decision-making was classified as either male alone, female alone or both male and female together. It can be seen that the decision-making pattern is different according caste. It was found that certain decisions in agricultural activities were taken independently and certain decisions were taken jointly. Table 7.3 reveals that more than half of the total Brahman households took decisions jointly in particular agricultural activities such as what to plant, when to plant, time of sowing/planting, weeding and harvesting. More than half of the total Brahman households made decisions by males only in land preparation, manure management, harvesting and sale of crops. However, it was noted that the men often discuss or convince their wives and other family members before implementation. Less than one third of female Brahmans made decisions alone in agricultural activities and no Brahman females made decisions on what to plant and when to plant.

In the case of the Gurung caste, more than half of the total households' females have decision-making power in all agricultural activities. Nearly one third of the Gurung households made decision jointly on what to plant, when to plant, land preparation, manure management and sale of crops. In more than one third of the Gurung households, the decisions on time of sowing/planting, weeding and harvesting were made only by men.

In the Dalit caste, men have decision-making power in all agricultural activities in more than half of the total households; more than one third households made decisions together; and less than one third households allowed females to make decisions. Most of the Dalit males have stayed at home and thus the majority of the decision-making is done by males. It was reported that it is mostly the men who engage in field and other activities rather than females. And females have to work in house so they do not have enough time and knowledge to make decisions in agricultural activities.

There are several factors that affect the decision-making process among men and women. In the study area, different factors such as education, migration, training and caste influence decision-making power. From the empirical findings, the majority of Brahman household members are educated, compared to the Dalit (see table 4.2), this has led the majority of Brahman households choosing to make decisions together. None of the members of interviewed Dalit households have attempted higher secondary school so the majority of the respondents reported that only men (the head of the household) makes decisions in agricultural activities. However, in the case of the Gurung, even though the majority of household members are educated, decision-making is largely done by women. This is due to the fact that most Gurung males have migrated for service and the women stay at home. Also because women traditionally handled household work and agricultural activities, they are very capable of making decisions.

Table 6.5 shows the out migrated people of interviewed households according to caste. The pattern of migration affected the decision making process in agriculture. Out of the total out-migrated people from the interviewed households, more than half (66 %) belong to the Gurung caste. It can be assumed that due to the lack of males, females take on the decision making role. However, some respondents reported that even if Gurung males are at home, females still make decisions because the women are very experienced and have

more knowledge about agriculture than the men of this caste. In addition, “*Gurung women are more active than men in this village, tea plantation and ginger plantation were initiated by the Women Group first*” (a key informant). Migration also affects the decision-making process in Brahman and Dalit households. Out of the total migrated population, only 22 percent are Brahman and the majority of the decisions in most agricultural activities are made either by males only or jointly by males and females. Compared to other castes very few Dalit people have migrated (table 6.5).

When we look at the households who received training in agriculture, this also appears to affect the decision-making process. Among the three major castes, nearly 71 percent of Brahman households received training, which has resulted in that the majority of decisions are made by both sexes (table 6.7). Training also affects in the decision-making in Dalit households too. The majority of the Dalit households haven’t received training and majority of the men makes decision themselves. On the other hand, in Gurung households, although more than half of the total households have had training, women make decisions.

Table 7.4: Decision-making on the use of income (N=50)

Caste	Female	Male	Both	Total
Brahman	1 (5.8)	8 (47.0)	8(47.0)	17
Gurung	13 (56.5)	2 (8.6)	8 (34.7)	23
Dalit	2 (20)	5 (50)	3 (30)	10

Source: Field Survey, 2012

Note: Figure in parentheses indicates percentage of total number of households according to caste.

The pattern of decision-making power regarding the use of income is presented in table 7.4. In Brahman households, decisions are made jointly or by males independently. In more than half of the total Gurung households, females make decisions, however Dalit women only make 20 percent of decisions, the man make most decisions. It was reported from Gurung respondents that most women are managers because women knew what they need in the house. In addition, it was added that Gurung males are involved more in social work. Some of the Gurung respondents stated that women make only smaller decisions and both the men and women make the larger decisions such as buying of land

and houses. Most of the Dalit respondents reported that males decide because when there is a money crisis in their house the males have to manage help from other households. One of my respondents said “*He is the boss of my house so he arranges everything*” (a Dalit farmer, 56, Lawang).

The household survey reveals that gendered decision-making is different between castes. In the following case studies, three individual castes are presented to show how the decision-making is done in individual families. The case studies are based upon participant observation while I was staying with families during field work, and reflect the situation of the decision-making process in the family. The first case I have chosen to present about is a Gurung family, the second is a Brahman family and third is a Dalit (kami) family.

Case 1: A Gurung family

It was during mid-July, the peak time for rice plantation. One day, in the evening time *didi* (the household head’s wife) was preparing food for dinner. *Dai* (the household head) came in and sat down by *didi*’s side. They began to talk about the paddy plantation. According to their conversation, it was clear that *dai* had just come from the paddy field. He had been to the *khet* to prepare land for rice plantation the following day. *Didi* called him ‘*mukhiya*’ (boss) as a nick name. She asked him “*eh mukhiya* have you prepared all the land?” *Dai* replied ‘yes everything is ready like you said’.

Didi continued with her cooking. When the dinner was supposed to be ready she told *mukhiya* to bring the things needed to make local liquor (*raksi* in local term). He went upstairs and brought what they needed. When the dinner was ready, *dai* put the pot on fire place to make *raksi*. *Didi* asked *mukhiya* “do we still have enough fertilizer for the paddy? I think it has finished so you need to check whether we have enough for tomorrow”. *Dai* replied immediately ‘ok’. It had been raining heavily since morning so most of the farmers were now busy managing and finding labor for the paddy transplantation. Because of that it was difficult to hire labor at this time. *Didi* added, “Today I hired 5 more people to help tomorrow because we must finish the paddy plantation tomorrow”. At that time I looked at *dai* and asked “you don’t arrange/decide all these things?” He replied “*didi le garchha sabai kura paihila mero aama le garnu hunthyo*” (my

wife does everything, and before my mother used to do it). Immediately *didi* said “*dhyan napugera ni*” (he doesn’t have the knowledge) she also added “it may be due to his laziness and maybe he thinks that his wife (me) does everything and thus it is not necessary to think”. *Dai* laughed at her response. After dinner *dai* went into another room and a voice came after a while, ‘*chhaina, chhaina*’ (no no), there was no fertilizer. So *didi* then began to plan and calculate time for the following day. After some time *didi* asked *dai* to go buy fertilizer early in the morning the next day from a small market down in the village. After this, all went to bed. They both woke up early the next morning around 5 am, it was still raining. When they were having morning tea, *didi* gave money to her husband to buy the fertilizer. *Didi* began to prepare food and *dai* went to the shop after having tea. The food was ready when *dai* returned. After having the morning meal, *dai* prepared the things that he needed for paddy plantation and headed to the *khet*.

Later *didi* told me that tea plantation was her mother-in-law’s idea because her father-in-law was *laure*¹⁴ in India. Her mother-in-law used to decide everything including when and how the crops should be processed. Her mother-in-law gave the responsibilities to *didi* when she grew old, even though *didi*’s husband had not joined the army and lived at home. Now *didi* manages everything, however, she discusses things with her husband whenever needed. She had planted beans, ginger, cauliflower, onion, spinach and garlic in her home garden, this was her own idea. These vegetables are grown for guests and also sold if she has enough. She runs a small homestay and a shop as well, both of which she initiated and she manages herself.

This Gurung family case study shows that most of the decisions regarding agricultural activities and household work seem to be made by the woman. Several Gurung respondents agreed that women used to decide in the absence of men previously, but now it seems that women can also make the decisions even if the men are at home. It is almost a kind of cultural development in decision-making in agriculture, in that responsibilities are transferred from the mother-in-law to daughter-in-law among the Gurung people. The

¹⁴ A person who joins the British/India Gorkha army for service

data from the household survey and from the case study have a similar result, thus indicating that many of the decisions in agriculture are made by women in the Gurung families of the study area.

Case 2: A Brahman family

This joint family had seven members. One evening, all the members were in the house except the household head (male, 86). When he came home, he asked his granddaughter to make tea. The granddaughter made tea for everybody. His daughter-in-law was grinding lentils for dinner. After having tea, he informed his family members and us as guests, that he got thirty thousand rupees from ACAP for some cardamom roots. He kept the money himself. He had sold 15 thousand cardamom roots to other farmers through ACAP. He had walked two hours each way to receive the money. He informed his son that there is demand for ten thousand more cardamom roots and he needed to deliver them within a week. The head of the household, his wife and son began to discuss this while the daughter-in-law was cooking dinner. They were planning to hire two people to dig the cardamom roots the following day. His son decided to call two of his friends and arrange a labor exchange. After having dinner his son called his friends on his mobile phone and made arrangements for the following day. The next morning the two men came to the house to dig up cardamom roots and the son went with them.

On my last day with the Brahman family, I wanted to pay some money for the food and accommodation provided. I discussed this with the daughter-in-law, I asked how much I should pay while I was eating morning *dal bhat*. She pretended that she did not need money and replied, “*no no you don't have to pay,.....um... if you really want to pay, you can give some money to my children*”. After food, I looked for her children but they had already left for school. I sat next to the head of the household to give some money instead. After a while his daughter-in-law came in and I had a dilemma of deciding to whom I should give the money. Being from the same culture and nationality I knew that mostly the Brahman men keep money, but on the other hand I had already spoken with his daughter-in-law. So I put the money between the household head and the daughter-in-law. The daughter-in-law picked up the money quickly and put it into her pocket, she was clearly delighted. The household head was staring at us after

the money was taken, and after a while the daughter-in-law left the room. When I was alone with the household head he told me “*yesto paisa ta malai po dinu parchha, ke ko buharilai diyeko?*” (You should have given the money to me, why did you give it to her?) Immediately I apologised for not giving him the money. The head of the household added ‘*Kasto kaliyog aayo ba thulo ko kunai mulya nai chhaina*’ (What a modern era? There is no value for the senior). This sentence clearly shows that head of the house has the majority of decision-making power in money/income matters.

From my observations, household members jointly discuss agricultural activities and decisions are made finally by men, women rarely get the chance to take responsibilities for the income in Brahman family households. In the case study of Brahman family, the household head seemed unhappy when the money was taken by his daughter-in-law.

Case 3: A Kami (Dalit) family

The Kami family has a 12 family members, the household head (male, 68), his wife, their three sons, two daughters-in-law and five grandchildren. He has 13 *ropani* of land including *khet*, *bari* and *pakho bari*. The food he grows from his land is barely enough for four months. Therefore his family has to do labor work. His two sons are out of home for labor, one in Saudi Arabia and the other in Pokhara. Besides being a farmer, the head of the household also works as a carpenter.

He has planted tea, coffee and seasonal vegetables in the home garden. He has planted tea in a half *ropani* land, this was his oldest son’s idea. The decision-making in agriculture is done by head of the household. When I went to his house during the day time, he used to decide everything, his oldest son and two daughters-in-law used to go for labor work in the village. His wife used to be busy with household work and caring for the grandchildren. The head of the household was busy all the time with his agricultural work. On the first day of my visit, he was weeding the tea plants, and his wife brought out afternoon snacks. When they had their snacks together, he let his wife know that he would be leaving the house for some days because he had to go to his relative’s house, in another village. He told his wife to weed their vegetables when she was free from household work. He also said that his oldest son would go to one of the Gurung houses to work the

following day. His wife agreed with his decision and went back to the house. When I asked the household head the question; “why do you decide”, he said that he has to work more in the fields than his wife. He added that “*I am the boss of the house, I have the responsibility of everything so I decide and arrange everything regarding agricultural activities and income*” (the household head, male, 68, Lawang).

On my second visit to the house, the household head’s wife and a daughter-in-law were weeding vegetables in the home garden. They were talking about training for sewing. The daughter-in-law wanted to take the training so that she could earn some money. At that time her mother-in-law suggested that it would be good to get permission from her father-in-law first. The daughter-in-law agreed with her and waited until the arrival of the household head. They believe that asking the household head is a sign of respect towards him. Interestingly, the vegetables including cauliflower, cabbage, onion and beans that were growing in the home garden were the daughter-in-law’s idea, however the decision to actually grow these crops was made by head of the household.

To understand the decision-making process of agriculture and income in individual households, the above three case studies have been presented. From the above studies it can be said that in the Gurung households women mostly make the decisions in agriculture. It is shown that not only in out-migrated Gurung households do woman decide, but also when the male is at home. Brahman households discuss agricultural matters with other family members but the male finally makes most of the decisions. However, it was clear that in Brahman households, the men and women discuss how to spend income and manage money before decisions are made. The observations made during my stay in the Brahman house gave a different experience regarding the decisions on income. The male head of the household tends to make decisions on income. In the Dalit family most of the decisions in agricultural activities and income are taken by the male head of the household. These case studies show that men have decision-making power on income and women are rarely given the chance to take decisions in Brahman and Dalit households, while in Gurung families’ women decide most things and the males support them. Thus the roles of men and women in the decision-making process regarding agriculture and income differ depending on caste.

DISCUSSIONS AND CONCLUSIONS

In this section, the findings of this study are discussed with other findings. The existing agriculture, motivation of farmers and gender roles particularly labor division and decision-making in agricultural activities are evaluated and conclusion of this study is made.

Discussions

In the study area, agriculture has gradually shifted from subsistence cereal production to commercial cash crop production. Cash crop contributes a large portion of the income of rural farmers and has become a good employment opportunity for rural people. The changes in agriculture occurred mainly due to the encouragement and support of various institutions in the study area. Prior to the 1990s, farmers were only concerned with cereal crop production mostly for self-consumption, but now they are mostly concentrated on commercial oriented, high value crops such as cardamom, *amriso*, cucumber seeds, tea and seasonal vegetables. Lawangghalel was almost completely isolated from national and international connections in terms of physical access and market. Now, the development of a road through the area has facilitated connections regionally, nationally and internationally. Commercial agriculture however, is not yet large scale as the adoption of new technologies is lacking. The traditional agriculture system and uncertain seasonality are the barriers to agricultural development in the study area.

Traditional management practice of labor exchange *huri* system is replaced by *parma* system with the establishment of cash crops agriculture. The majority of farmers have small landholdings less than 1 ha. The share-cropping system is common in cereal crop subsistence agriculture due to lack of household labor. Hired wage labor is widely used in cash crop agriculture. Livestock is an integral part of the farming system in the study area. Farmers emphasize the importance of organic production. Manure is in the first priority for the majority of farmers. Most of the farmers have reared buffalo, cow, ox and goat for assistance in performing organic agriculture. They rear livestock for various purposes, but mainly for land preparation, manure and indigenous pesticides such as cow milk.

Several scholars have discussed the transformation of subsistence agriculture into commercial market oriented agriculture in developing countries. The market was the most important factor that encouraged farmers to change land use from subsistence to commercial agriculture in developing countries such as Nepal, which was the main concept of Von Thunen (see Peet, 2010; Sinclair, 1967). However, other factors such as population pressure (Boserup, 1965), road connectivity (Adhikari & Bohle, 1999), technology (Salehi-Isfahani, 1988) and agricultural dynamics and innovation process (Chhetri, 2011) have encouraged farmers to enhance agricultural change by shifting from subsistence to commercial-oriented cash crops. The transformation from subsistence to commercial agriculture is due to a combination of institutional support, networks, transport, technologies and innovation process (Brown & Kennedy, 2005; Chapagain, 2009; Gautam 2011; Lele & Stone, 1989). Similarly, agricultural dynamics and innovation processes gradually change the farming practice from a subsistence production system to a more market oriented commodity production system (Joshi, 2012). In addition, the market and adaptation of agricultural innovation and techniques have significantly motivated farmers to increase productivity which ultimately change the farming practice to commercialization (ibid). However, in the study area agricultural change has largely been driven by institutional support for farmers.

The roles of institutions are recognized as most important motivating factor for farmers. Farmers are highly encouraged by the institutions which are actively engaged with the rural communities for the development of agriculture. The establishment of the ACAP in the Lawang village, play an important role for the development of agriculture in the study area. The institution has contributed by motivating farmers to adapt new crops through providing various types of assistance such as training, offering agricultural tours to commercially developed agricultural places and assisting in facilitating contact between farmers and agricultural experts. This seems to have provided good guidelines for the individual farmers to change their crops in a way that is suitable to their land and environment and can provide livelihood security.

An informant told me, *“ACAP is like our parents, the office takes care of us like our parents. We were given the idea about cash crops, at the beginning. We got various kinds of support from this office such as economic, social and physical whenever we need. So*

we can never forget the contribution of the office during our whole life'' (a farmer, 43, Koleli).

Besides institutions, labor shortage due to out-migration has motivated farmers to shift to new, less labour intensive crops. Therefore farmers have largely replaced cereal crops by high value, market oriented crops. In addition, farmers have realised that the value of new crops in the market is high which had further motivated farmers in moving towards commercial crop production.

Two important factors; the differences in the types of agriculture system and the differences in the pattern of social hierarchy establish sex differentiation in work (Boserup in Deere, 1982) and this is seen in the study area too. There is a specific division of work between males and females in agricultural activities. The degree of involvement of male and female farmers in agricultural activities varies depending on the type of agriculture. The study found that in cash crop agricultural activities, male and female farmers work much together and perform similar roles compared to in cereal crop subsistence farming. Therefore, cash crop farming has not only increased socio-economic conditions, but has also helped to empower both males and females to work together in agricultural activities and lowered the gender divide in some ways. Most of the farmers realised that it was awareness and knowledge of market oriented agriculture that has brought men and women to work together.

Variation in wages exists largely throughout Nepal. It differs according in different places, but sometimes even within a village. Several factors such as social, cultural, access to roads and market affect in the wage variation. Large wage variation is found between the villages of the Kailali District (Bhusal, 2007). He observed that connectivity of road to market, ethnic group and gender are found to be the main factors influencing wage variation. For example, *Tharu* ethnic people are paid a lower wage, less than half of the national average wage (ibid). The majority of wage variation is due to different types of work (ibid). In the current study area, gender variation in wage is mainly due to that fact the women perform different types of work. However in some cases when a man and woman performs that same task, the men are paid more. When talking to informants about their knowledge of the different types of lentil, there was a difference evident between the adult and young generations, and no difference between genders. This

finding is in accordance with Natarajan & Govind, (2009) who reported that there was no significant difference between genders in the knowledge level of agricultural practice of tapioca cultivation.

Social norms originally confined women within households, and restricted their mobility and outdoor participation, but the participation of women in recent decades in decision-making has increased (Dahal, *et al.*, 2009). In Nigeria, female farmers were found to be heavily involved in agriculture, however, their participation in decision-making was quite low, which is affected by age, education and the wealth status of women in Nigeria (Damisa & Yohanna, 2007). The study found that financially strong women are more involved in the decision-making processes, whereas landless women do not take significant participation (*ibid*). In the study area, decision-making in agriculture found different then the findings of Damisa and Yohanna (2007). The data of the current study shows that decision-making in agriculture is largely differentiated according to caste. Training regarding cash crop agriculture has led to a process of change in household level decision making regarding choosing different types of crops and when they should be processed. It has also increased the involvement of both males and females working together in agricultural activities, rather than sticking to traditional roles. The extent of female participation in farm decision-making processes depends on a number of factors such as the presence of commercial cash crops, migration, education and training, however there is also a difference found between castes.

Addressing the theoretical view of Jiggins (1998) and Miller's (1990) on decision-making processes in agriculture, both views are true in the case of Nepal, however their views do not support the cases of all castes. Decision-making and access to resources for women is affected by socio-cultural norms and caste (Dahal, *et al.*, 2009). Generally different castes have different perceptions of gender roles. Gender is more flexible among Buddhists and more agricultural tasks can be taken over by women, while men tend to do business outside the village (Aase, *et al.*, 2013). The findings in the current study is consistent with the opinion of Aase, *et al.* (2013), since most of the Gurung people are Buddhists and the data from field work confirms that the majority of Gurung men have migrated from the Lawanghalel region. Rural women become empowered in the absence of men and so are responsible for managing their household's decisions. Therefore, the majority of Gurung women are solely responsible for decision-making. In

China rural women have increased their power to decide about household income and agricultural production as the majority of men involved in other professions (Zhang, 2002). This study also shows that Gurung women manage and make decisions in agricultural chores and most men are migrated to other places for services and other professions. Both Jiggins (1998) and Miller's (1990) views are not in accordance with the findings in the Gurung caste of the study area.

In the Dalit caste, most of the decisions are made by the male head of the household. This empirical finding is more similar with Jiggins (1998) who observed that decision-making in agriculture is male dominant in Asian countries. The household head is often a male who makes all decisions, and other family members obey and respect his choices (ibid). Jiggins also felt that even though women engaged in agricultural activities, the women were controlled by males in economic activities and decision-making processes (ibid). Independent decision of Dalit women was negligible in the agricultural activities of the study area which is supported by the finding of Kishor et al (1999, in Subhadra *et al.*, 2009). He reported that men made decisions alone in most agricultural activities such as land preparation, sowing, water and fertilizer management and harvesting.

In the Brahman caste however, decision-making is more equal between the sexes compared to the Dalit and the Gurung people. Decision-making in some agricultural activities is done by males alone, however the majority of decisions are made by both the men and women together. The Brahman household head (often male) discusses with his family before decisions are implemented, however, ultimately the decision are made mostly by men. This finding supports the theoretical view of Miller (1990) who pointed out that household head males brought open discussion (meetings) among family members especially at meal times and takes *sabaiko sallah* (everyone's advice) into account. However, he agreed that decision-making is male dominant. It can be concluded that market oriented cash crops have had a positive impact on increasing the involvement of men and women working together in different agricultural activities, however, it has had minimal effect on the decision-making process. The same conclusion cannot be made in my study area, as the decision-making process varies significantly among the different castes.

Conclusions

This study was conducted based on three main objectives; the present farming system of the Lawangghalel area, the existing market oriented cash crops and gender roles in agriculture. The farming system of the study area has been classified based on Turner and Brush's classification. The factors that led farmers in a transformation of the farming system for the past two decades have been mapped out. Gender roles in agriculture, primarily the specific work division and the decision-making process in agricultural activities have been discussed. The differences in decision-making processes according to caste of the farmers have also been discussed.

The Farming System of Lawangghalel

The farming system of Lawangghalel is based on traditional skills and largely depends on rainfall. The different units of farming system have identified. The household, land, water, livestock and forest are the main units of the farming system. The agricultural process is entirely done by human and ox labours since modern tools are not appropriate for use on the steep terrain. Farmers mainly use three types of land for agriculture; *khet*, *bari* and *pakho bari* for both subsistence and commercial purposes. Thus the farming system of the study area is mixed cropping patterns. Cereal crops such as paddy, maize and millet are largely produced for self-consumption. Cash crops such as tea, cardamom, *amriso*, cucumber and seasonal vegetables are largely produced for commercial purposes. The adaptation of agricultural innovations such as improved seeds, drop irrigation technology and greenhouse farming are now being market oriented farming agriculture. Previously farmers largely dependent on subsistence agriculture but this has gradually changed on market oriented agriculture in recent decades.

Traditionally, the labour supply for agriculture was via the *huri* system, however since the introduction of commercial oriented agriculture this has now been replaced by the *parma* system. Wage labor is increasing in commercial agricultural production system to solve labor shortages. It was interesting to find that even though farmers are primarily involved in market oriented production, their way of farming is primarily organic, using compost and livestock manure to aid growth rather than chemicals even though they are available. This is because farmers have faced a problem in tea export due to excessive use of chemical fertilizer on the tea plants. Therefore, manure is considered for more important to farmers than chemical fertilizer, even though farmers use a little on rice

paddy fields. They also use livestock's urine and cow milk as indigenous pesticides and vitamins for their crops. Thus livestock is an integral part of farming system of the study area. The forest has also become increasingly important to farmers as dry leaves especially from the *utis* tree are used to fertilise crops.

Motivational Factors

Several factors have found for the development and adaptation of cash crops. Several institutions, mainly the ACAP, played a crucial role in bringing new ideas to the farmers in the beginning. They helped people to improve their farms by empowering them with appropriate skills, knowledge and technical support. The regular contact with experienced farmers helped many farmers to move from subsistence to commercial farming. A labour shortage due to out-migration of male villagers has motivated the remaining farmers to adapt less labor intensive cash crops. The income generated by cash crop production has improved the livelihood of farmers significantly in the study area. The high value of cash crop farming has a substantial impact on individuals, their families and the community. The income from cash crops has allowed farmers to improve their livelihood security. The role of institutions stands as the most important factor for farmers.

Gender Roles

Adaptation of new crops has changed the specific work division of men and women. Traditionally female dominated work and male dominated work changed to some extent after the transformation of subsistence farming into high value market oriented agriculture. This study shows that farmers largely shared agricultural activities together in cash crop agriculture. Although both male and female farmers were involved together in most activities in cash crop agriculture, the decision-making processes in agriculture have not changed significantly yet. Even though all castes have involved in cash crop farming, the decision making-process was differentiated according to caste. The study looked at three major castes; Brahman, Gurung and Dalit. It seems that decision-making process is like a kind of social and cultural development.

Agriculture has become women's task but the decision-making in agriculture has continued to be the domain of males which was observed by Jiggins (1998). Her theoretical view is not associated with all castes but rather it is largely associated with the Dalit people of Lawanghalel. Most of the Dalit males take decision in agricultural

activities and take financial responsibilities. According to Miller (1990), everyone's advice is needed to retain the role of decision-making in agriculture and finally males take the decision. His theoretical view is also not associated with all castes but rather concentrated to the Brahman caste. The present has also study found that Brahman males discuss with their family members for agricultural activities, however finally males take decisions. And most Gurung males are out-migrated and females take most decision decisions in agricultural activities, thus the views of Jiggins and Millers are inadequate and less significant to address Gurung people. It can be concluded from the study that gendered decision-making process in agriculture is differentiated according to caste.

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Annex I

Priority of respondents on variables to increase crops production (N=50)

Priority\Rank	1	2	3	4	5	6
Water	15	11	13	5	5	1
Labor	11	17	11	10	1	0
Manure	21	16	11	0	2	0
Chemical Fertilizer	0	0	0	4	19	27
Better seeds	2	4	11	23	7	3
Better extension service	1	2	4	8	16	19

Annex II

Proposed Questionnaire for Household survey

The information will be used for academic purposes and will be kept confidential

Date: House no.

Respondent:

Settlement;

Caste:

VDC:

Wealth ranking of household Wealthy

Middle

Poor

1. **Family Map:** gender, age, education, occupation, income

2. **Types of land:**

How much khet owned? Ropani.....

How much khet cultivated? Ropani.....

How much bari owned? Ropani.....

How much bari cultivated? Ropani.....

How much pakho bari owned? Ropani.....

How much pakho bari cultivated? Ropani.....

Crop composition

Subsistence agriculture (twenty years)	Commercial agriculture (now)

Annual income

Types of crops	amount

6. *What is needed in order to produce more crops on the land you cultivate?*

<i>More water</i>	
<i>More labor</i>	
<i>More manure</i>	
<i>More chemical fertilizer</i>	
<i>Better seeds</i>	
<i>Better extension service</i>	

7. Gender decision

Types of activities	M	F	B
What to plant			
When to plant			
Land preparation			
Time of Sowing/planting			
Weeding			
Manure management			
Harvesting			
Sale of crops			

Who decide how to spend household income? M F B

8. Have you got any training about agriculture? Yes No

9. Is there any wage difference between male and female in agricultural activities?

Yes No

Open comments