FARMERS' UNDERSTANDING, PRACTICE, KNOWLEDGE TRANSFER AND ADJUSTMENT IN FOOD SOVEREIGNTY

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AN ABSTRACT OF THE DISSERTATION OF

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Title: *Farmers' Understanding, Practice, Knowledge Transfer and Adjustment in Food Sovereignty*

Abstract approved: _____

Prof. Tanka Nath Sharma, PhD

Dean and Dissertation Supervisor

The study explored and described the farmers' understanding, practices, the way of knowledge transfer and the techniques they adopted to make adjustment in reference to food sovereignty. Farmers as the producers of food need to be free in determining the quality, the quantity and the method they apply for the production of the crops of their choice. Despite the articulation of food sovereignty in the Interim Constitution-2007 and ratification of global movement of La Via Campesina, there exists indifference for the implementation of this concern. Three research questions manifesting to understanding, practice, knowledge transfer and adjustment were designed to lead this study.

The study employed qualitative research methodology and adopted the narrative mode of inquiry where I generated four stories from the participants. The study was conducted applying rigorous field visit and prolonged interactions with the farmers of Kushadevi VDC of Kavrepalanchowk district. Four participants who contributed to unpacking the concern of this study were selected using purposive sampling paying attention to rich information case and the access I could get. I

conducted in-depth interviews with my participants and verified their sayings as member check and then developed stories of their narratives. I maintained the quality standards throughout my study by practicing substantial description, trustworthiness and consistency in information. I obtained consent from the participants before collecting information and maintained a right to withdrawal as they wish.

There emerged seven diverse themes to answer the first research question. Likewise, I generated two themes to explicate the answer to the second research question. Similarly, five different themes were generated to answer the third research question.

The study found out that the participants were aware of their rights and food sovereignty. At the same time, they were also found to be practicing these to some extent. In terms of knowledge transfer, the study found both positive and negative effects. The positive effects were: growing networks, formation of local groups, increased awareness, and practiced beneficial agricultural methods. Similarly, the negative effects were: excessive use of chemical fertilizers, and hybrid seeds. As a result, I found that farmers were adjusted to those new dynamics by network building, trying out commercial vegetable farming, selling their products in the local markets and awareness building towards production of quality food by narrowing relation between food producers and consumers.

Thus, this study brought forward the issues about farmers' understanding, practice and their adjustment in food sovereignty in the Nepalese context.

The study implied that there is the urgency for the farmers to apply ecological farming to sustain their endeavors. At the same time, it is also important to transfer an appropriate technology to the local for agricultural sustainability. For the policy makers, this study indicates the need for designing and implementing policies that

reach to the grassroots levels. Besides, there requires proper micro-level studies to explore the complex issue of food sovereignty so as to advocate the good practices about ecological farming in the country.

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Hari Krishna Mushyan

Degree Candidate

DEDICATION

This dissertation is dedicated to the farmers of Kushadevi VDC and to my parents.

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DECLARATION

I hereby declare that this dissertation has not been submitted for candidature for any other degree.

_____

Hari Krishna Mushyan 28 October, 2013

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A dissertation of Master of Philosophy in Education has been presented by Hari Krishna Mushyan on 28 October, 2013.

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I understand that my dissertation will become part of permanent collection of the library of Kathmandu University. My signature below authorizes the release of my dissertation to any reader upon request for scholarly purposes.

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Hari Krishna Mushyan 28 October, 2013

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ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
ADS	Agriculture Development Strategy
AFSA	Australian Food Sovereignty Alliance
AoA	Agreement on Agriculture
CAP	Common Agriculture Policy
CBS	Central Bureau of Statistic
CSO	Community Social Organization
DAO	District Agriculture Office
EU	European Union
FAO	Food & Agriculture Organization
GMS	Genetically Modified Seeds
GoN	Government of Nepal
HS	Hybrid Seed
ICSECR	International Covenant of Social, Economical and Cultural Rights
IDB	Inter-American Development Bank
IFIs	International Financial Institutions
IPC	International Planning Committee
IPCFS	International Planning Committee for Food Sovereignty
IPM	Integrated Pest Management
IPR	Intellectual Property Right
IRs	International Relationships
JTA	Junior Technical Assistant
JWP	Joint Working Party on Agriculture and environment
LDCs	Least Developed Countries

LFS	Local Food System
LSP	Local Service Providers
NGOs	Non-Government Organizations
P	Principle
PDDP	Participatory District Development Program
TNC	Transnational Corporate
TV	Training & Visit
TRIPs	Trade Related Aspects of Intellectual Property Rights
UNEP	United Nations Environment Program
UPP	Useful Plant Project
USA	United State of America
USEPA	United State Environment Protection Agency
VDC	Village Development Committee
WTO	World Trade Organization

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CHAPTER I

INTRODUCTION

The earth has enough for everyone's needs, but not for some people's greed.

- Mohandas K. Gandhi

The right of each nation to maintain and develop its own capacity to produce the staple foods of its peoples, respecting their productive and cultural diversity.

- Menezes (2001, as cited in Ming Mak, 2012)

Chapter Overview

I articulate my research agenda in this chapter clarifying my inspiration for the research. Similarly, I tried to conceptualize the term food sovereignty. Along similar lines, I highlighted the origin of food sovereignty movement in the global and food sovereignty in the Nepali context. Then, I constructed statement of problems with the purpose of the study along the research questions. Finally, I discussed the significance and delimitations of the study, operational definition, organization of the thesis and chapter summary.

My Inspiration for Research

I was born in the Newar community at Lokanthali. It lies in Madhyapur Thimi Municipality of Bhaktapur district. Agriculture was the main occupation of the community. Being a member of the community my parents used to work on their limited plots of land. Although having a limited land, they were able to feed their entire family throughout the year due to higher land fertility. The agricultural land of the community is situated in the belt of Manohara River. It is a highly fertile land and

is suitable to grow vegetables in all seasons. People do not keep their lands bare even a single day. They grow vegetables one after another without taking time from the same plot. They go to work in the early morning and remain at their work till it gets dark. Due to their hard work they are able to produce green vegetables throughout the year. So that Thimi is synonymously known as the "Green Vegetable Garden of Kathmandu Valley (Mushyan, 2006).

I was the first child of my parents. My childhood began working at farm with my parents and doing household chores including looking after my juniors at home. My parents had hardly any spare time to look after me and other children at home. They had to work hard to feed the growing family members. I used to help my parents in agricultural activities and household chores during out-of-school hours in the mornings and evenings. After my SLC, I was interested in studying agriculture at Rampur Campus in Chitwan but my father was not supportive. Therefore, I completed Intermediate and Bachelor levels without attending a single class in the campus. Those were my dark years of my educational career. During those years I was primarily involved in agricultural tasks and household chores with my parents. I hold my further education for few years because of family obligations and then resumed enrolling in the master's degree in Rural Development in Tribhuvan University. After completing the master's degree, I got opportunities to visit and work in rural communities particularly in Kalikot, Jumla, Rolpa and Baglung districts for agricultural promotion. I also got an opportunity to participate in the forums of food security and food sovereignty organized by Unity Service Cooperation (USC) Nepal (a national NGO).

I have been involved in agriculture since my childhood and thus have experienced a sequence of changes like; land use pattern (without and with paying

cash to land owner), pattern of using natural resource (water for irrigation), use of farm inputs (tools, fertilizers, seeds, insecticides, etc.), culture of labor (Parma to be paid), harvesting and marketing and so on. On the other hand, I have gained knowledge from the communities and programs on how agricultural practices are deteriorating day by day and farmers are becoming vulnerable. Being a member of an urban peasant community, I have witnessed how people are transforming from ecological self sustaining farming culture to toxic and imported farm inputs both for weakening the land fertility and leading to health hazards of the people.

Nowadays, people of my community are enjoying the use of hybrid seeds, chemical fertilizers and pesticides which are easily available at the local market. They have almost forgotten about their traditional farming, seeds and seed preservation techniques. However, a few selective youngsters at the local level have initiated organic farming as a profession but they are not successful yet due to contamination of soil and water as well as non-available organic seeds. Furthermore, the fertile land has been gradually encroached by constructing buildings and establishing industries. In this regard, farmers of this locality are vulnerable to continue agricultural profession and it will threaten its fame of green vegetable garden very soon.

Having lived experiences of paradigm shift in agricultural practices, gaining knowledge from communities and involvement in an organization, various questions were born in my mind relating to food producer and sustainability of food production. To a greater extent, I was lured towards the topic when I got opportunities to write reports on the program of South-Asia regional workshop on the “governance and food sovereignty” in 2011 and the international interface on climate change both held in Kathmandu in 2012. Similarly, as an MPhil student of development studies in Kathmandu University, I have selected this topic thinking that would be compatible

with development and education. So, that will help me to better understand how Nepali farmers have understood and are currently coping with food sovereignty in the rural context.

To generate more valuable information unlike my experiences, I was looking for a distinct peasant community having rural characteristic. For that I have selected Kushadevi Village Development Committee (VDC) of Kavrepalanchowk district as a research site, inhabited by Brahmin and Chettri, where maize, potato and paddy were the major crops unlike in my community.

Conceptualizing Food Sovereignty

Before proceeding, however, I would like to make a concept of food sovereignty based on my understanding. In arguing that food sovereignty is transforming access to and control over farm inputs, agricultural production and markets by the farmers instead of current food system (involvement in entire food system from production to trading) by the external multinational companies. Here, I am not arguing that it is the only way of dealing with food sovereignty. I know that food sovereignty has been discussed from different perspectives by different scholars with their respective expertise. In fact, I suppose that there are many scholars who have justified in so believing. In this respect, if I do not intend to switch such a person and organization working to food sovereignty, what do I seek to accomplish in this work?

In the beginning, I would like to follow People's Food Sovereignty Network in order to provide a successful conceptual frame that is capable to switch my understanding of food sovereignty. To be more precise, People's Food Sovereignty Network (2002) defines a successful philosophical argument in the following way;

> *Food Sovereignty is the right of peoples to define their own food and agriculture; to protect and regulate domestic agricultural production and trade in order to achieve sustainable development objectives; to determine the extent to which they want to be self reliant; to restrict the dumping of products in their markets; and to provide local fisheries-based communities the priority in managing the use of and the rights to aquatic resources. Food Sovereignty does not negate trade, but rather it promotes the formulation of trade policies and practices that serve the rights of peoples to food and to safe, healthy and ecologically sustainable production*. (Windfuhr & Jonsen, 2005, p. xi)

From the definition, we can draw the concept of right of the food producers for their own practice of agriculture. It emphasizes on the self reliant of the farmers in order to achieve sustainability of agriculture and development. At the same time it has also put vacuum for policy reform on dumping of food by the developed countries to the market in least developed countries. Similarly, it advocates for access to resources and promotion and formulation of appropriate trade policies and practices to protect rights of the food producers for ecological sustainable production and rights of consumers for getting safe and healthy food to consume. I believe that my understanding and argumentation in this work is a success if the argument presented by the People's Food Sovereignty Network in a form of definition is successful to make convinces the people from non-agricultural background.

To broaden my understanding, I have followed Pimbert (2007) who says local communities; especially the farmers will regain the right to define their own agriculture, food and land policies to suit their own ecological, social, economic and cultural circumstances. I know, he emphasizes that agriculture and food be culturally appropriate and to shift towards locally ecological practices. Food sovereignty

emphasizes the rights of food producers and which is a pre-condition to secure right to food in a state. Fundamentally, I do understand that food sovereignty is for the food security and realization of rights to food producers; equitable access to resources; shift from present neo-liberal food regime; localized food system and environmentally sustainable agriculture.

In the context of Nepalese society, we are witness how farmers were practiced ecological farming at their farm. As we know, they plant several other crops along maize in the farm. Not only that they maintain crop store and seed protection at home for security purpose. But gradually ecological farming is shifted; protection of seeds and storage of food at home becomes vulnerable. That is because transfer of knowledge towards sustainable agriculture through localized food system is very urgent.

Origin of Food Sovereignty Movement

If the aim of my argument is to convince non-agricultural audience in such as idealized debate, I must note it down about origin of food sovereignty in a global context. Without any doubt, the literatures reveal that food sovereignty is a form of a new battle for an alternative to the global food system (Wittman, Desmarais, & Wiebe, 2011).

To be more precisely, I have to say that in order to note a history on origin of food sovereignty, I should relay on more literatures. Without literatures I could not be able to assure authenticity of information I have presented. The first concept of food sovereignty come to exist in 1992 with an initiation by La Via Campesina to address the issues related to farmers (as mentioned above) and to bring agrarian movement (Windfuhr & Jonsen, 2005). However, the organization first coined the term as “Food Sovereignty” was founded in 1993 in Mons, Belgium (Aerni, 2011). Food sovereignty

was brought to the public debate during the World Food Summit in 1996 through the manifesto of 'Food Sovereignty: A Future Without Hunger' and the framework has continued to develop and intensify largely through the work, discussions and debates of peasant organizations and their supporters in academia and civil society (Via Campesina, 2011). La Via Campesina has presented at each meeting of the WTO-including Geneva, Paris, Seattle, Washington, Quebec City, Rome Bangalore, Porto Alegre, Cancun, and Hong Kong – declaring that agriculture be removed from its mission (ibid). In a response to neo-liberalization of trade and agricultural policy (against Agreement of Agriculture (AoA) of WTO), farmers and peasants from the Global North and the Global South joined in solidarity to directly oppose trade liberalization and to actively promote an alternative framework and consists of 148 organizations from 69 countries (Beauregard & Gottlied, 2009). Peoples' forum of Via Campesina has demanded producers' rights which have been occupied by the WTO food system.

Here, we can believe Aerni (2011) that the Via Campesina formed in order to alternative policy discussion with WTO for the common objectives of an explicit rejection of the neo-liberal model of development, refusal to be excluded from agricultural policy development and determination to work together to empower a peasant voice. Based on the discussion, we can say that La Via Campesina supports the peasant lifestyle and rural communities that have been largely pushed out of resent trade and development paradigms of world hegemonies policy.

The discussion about a global convention on food security was revitalized in Havana in September 2001, where food security was discussed under the food sovereignty and World Forum on Food Sovereignty (WFFS) was formed (Windfuhr & Jonsen, 2005). Since 2001, a number of important events have been taken place on

the food sovereignty. Similarly, Asian Regional Consultation on food sovereignty was held in 2002 in Bangkok, Thailand, it developed a statement of "End Hunger! Fight for Right to Live!" Parallel, in Rome 2002, the first international conference was held with coordination by International NGO/CSO Planning Committee (IPC) (ibid). There were a series of movements/campaigns have been organized by different organizations in different forums globally. The second international conference of food sovereignty was held in Selingue, Mali in 2007(Beauregard & Gottlied, 2009). The conference came out with a "Nyeleni Declaration" consisting of six principles of food sovereignty; focusing on food for people, values food produces, localizes food system, makes decisions locally, builds knowledge and skills and works with nature (ibid). The declaration of Nyeleni is considered an important document for government and groups while they develop policy and programs.

Food Sovereignty in Nepal

Nepal is taking part in the global forum of food sovereignty movement through peasants' and peoples' association since the inception of La Via Campesina. Due to Nepal's continuous involvement, in November 2001 Nepal has got an opportunity to produce core document on food sovereignty entitled *"End World Hunger-Commit to Food Sovereignty"* initiated by La Via Campesina (Windfuhr & Jonsen, 2005, p. 48). In 2004, Asian NGOs, CSOs and social movements institutions organized the *"People's Caravan for Food Sovereignty"* that travelled through 13 countries across South Asia, South-East Asia, East Asia and three countries in Europe and concluded in a week of events in Nepal with inaugurating the final event by the Prime Minister of Nepal, Mr. Sher Bahadur Deuba (ibid).

In 2007, we witnessed that Nepal included food sovereignty in its interim constitution 2007 (Article 18 & 33), Article 18 that states: "every citizen shall have

the right to food sovereignty according to the provision made by the law" (Nepal Interim Constitution, 2007). Similarly, Nepal has developed strategy movement on food sovereignty through "All Nepal Peasants Association" (now federation) and nationwide campaign to incorporate food sovereignty as a fundamental right of the Nepali people (Beauregard & Gottlied, 2009). As we know, Nepal is in political transition and currently Constituent Assembly is dissolved without drafting a new constitution. Nepal lacks the legislation and strategies to implement global food sovereignty principles. Moreover, I am sure that current government does not pose the capacity to implement such principles in the country.

Problem Statement

Nepal is an agricultural country where the majority of population includes small scale farmers, producing subsistence level for their own consumption. We also witness that the sources of income to purchase food for the poor farmers include off-farm work, sale of natural resource and remittance. Moreover, in a number of ways their livelihood is affected day by day. More specifically, climate change has adversely affected on the life of rural farmers because of their high dependence on natural resources for their agricultural practices and livelihood as well as their limited capacity to adapt to a changing climate (ADB, 2009). FAO (1994) reported that there is good reason to believe that Nepal can eventually increase food availability to a level compatible with national food security through production from its own resources by the end of 2014/15 by bringing the Terai region under intensive cultivation through "Green Revolution" (as cited in Seddon & Adhikari, 2003). FAO report (as cited in Seddon & Adhikari, 2003) has suggested that there is no physical limitation to Nepal's ability to feed itself. But I do not agree with the FAO report because it has emphasized deforestation for huge land availability and adaptation of

Green Revolution as a strategy for mass production. Not only that, it was also claimed that Green Revolution was only confined heavily with economic growth through the development of commercial agriculture in the Terai. Due to this, the Terai region of the country will be affected soon by the extensive use of chemicals in crops.

I would like to discuss a problem associated with WTO membership. We understood from above discussion that with an establishment of World Trade Organization (WTO), sovereignty of the nations' food production and food system, respect of traditional knowledge and skills, preservation of indigenous farm inputs, and ensuring peoples' healthier life are threatened. Even though, green revolution has increased food yielding and Agreement of Agriculture (AoA) widened market of the products through trade liberalization (Ming Mak, 2012) to ensure the alleviate peasants' poverty in the South by exploring foreign agri-markets for more income, trade liberalization compelled (including developing countries) every nation to open domestic markets to foreign competitors who became a member of the WTO. Nepal too, being a member obligated to follow rule game imposed by WTO. Due to this fact, trade liberalization has put peasants' livelihood in danger, leading severe North-South trade imbalance (Kodamaya, 2011). The developed world especially USA and European countries provide substantial subsidies for their local agribusinesses, which encourage over production to be dumped into poor countries (Ming Mak, 2012). As a result, poor countries like Nepal suffers increasing production costs and collapsing of commodity prices by globalization of non-sustainable industrial agriculture and vanishing the incomes of Third World farmers.

Another problem, I want to raise is about global patent rights in indigenous seeds. Under the WTO framework of TRIPS, transnational corporate (TNCs) use patents and intellectual property rights to make legitimate claims to their exclusive

creations of indigenous crops (Ming Mak, 2012). We know patented, or indeed pirated, seeds are protected by international law and then genetically modified them to sell to the farmers at higher cost. The poor farmers are pushed into deeper poverty by making them pay for what was theirs. The system does not allow farmers to grow their own crops so that it is not possible for them to have income and get rid of poverty, which means they are ruined to suffer from hunger. If the system of globally enforced patent right could continue, it will exploit local knowledge and technology with no licensing fees or technology transfer. So, the developed countries are enjoying export subsidies plus patent laws that provides favorable conditions for expansion of the food empire, which makes them more powerful forever.

Coming to the national problem, Nepal has potential threat from two giant neighboring countries India and China. Due to open border, they are dominating at the local market too. People have easy access to TNCs agricultural inputs such as hybrid seed, chemical fertilizer, insecticide and pesticide (USC Nepal, 2007). Increased use of those inputs might adversely affect on the farm lands, driving out traditional farm inputs and causing health problem.

Another problem, I would like to discuss on higher rate of urbanization which destroys agricultural lands. Fertile agricultural lands are converted into big apartments and industries. Due to the fact that family- labor farms are continually replaced through industrialization (Gimenez, 2009). Similarly, artificial shortage of farm inputs and food stuff by the traders is asserting the importance of a real scarcity (Sen, 1995) which is yet another problem in the Nepalese community is wrestling with.

In this context, how are the farmers ensuring food security within their community? How are the farmers maintaining traditional knowledge and skill and indigenous seed? What are the factors that change the livelihood of the farmers? Is the

food sovereignty movement necessary in the context of Nepali society? What are the impacts of agri-trade liberalization in Nepali society? What are the understanding of farmers on food sovereignty and trade liberalization? What are the farmers' perceptions on localized and globalized food system? How the farmers are transferring knowledge on food sovereignty? How they are adjusting in changing context? These are some crucial issues that I want to derive to understand global movement through local perspective.

Research Purpose

The purpose of this narrative study was to understand the perceptions and understanding of farmers on food sovereignty and explore the ways of knowledge transfer regarding food sovereignty in their context at Kushadevi VDC of Kavrepalanchowk District. At the stage in the research, farmers' experiences on food sovereignty and education regarding food sovereignty by them was viewed through the central concept generated by the global movement of La Via Campesina.

Research Questions

I have designed and administered a number of research questions to suit for the study during my research process as of emerging situation. However, my central research question was "How did the farmers perceive and practice food sovereignty as well as the way of transferring knowledge regarding food sovereignty?" Further I have developed following sub-questions to address the purpose and the central question of the study;

- How do the farmers understand and practice food sovereignty?
- How is knowledge transferring about food sovereignty among the farmers?
- How do the farmers adjust food sovereignty in the changing context?

Significance of the Research

Nepal is a WTO member and thus it is participating global social movement of food sovereignty coordinated by La Via Campesina. At first, being a member of WTO, it has an obligation to implement the rules of WTO in agriculture. On the other hand, Nepal has to take responsibility towards its people for ensuring the concept advocated by La Via Cmpesina. In this respect, I hope that the research could help to formulate to some extent an appropriate policy on food security and food sovereignty in future national food policy so that the right of the peasant will be secured with considering the rule of WTO.

Policy Significance

Nepal included food sovereignty in its Interim Constitution 2007, but has not formulated effective policy and implementing strategy/modality yet. I hoped that the research finding could contribute for revisiting current food policy and for designing an appropriate implementation strategy of food sovereignty in the country.

Research Significance

The problem/issue of the people can be derived by visiting them at their locality. The problem/issue may not be respected unless and until reflect in the constitution of the country. It is an appropriate time for study on problems/issues of people to include them in upcoming new constitution of Nepal which is yet to come out.

Personal/Professional Significance

Indeed, being a member of a peasant community, a student of development studies and a development activist, the research must be significant for my future professional career. The research provided me with an ample opportunity to narrate with knowledgeable peasant on existing problems/issues faced by them. It also helped

me to understand how and why people are shifting their priority of mode of agricultural production. There is no doubt, it empowered me a lot and I am sure that it will help in my personal life and my professional career.

Delimiting My Research

The scope of the study was to understand perceptions of farmers on food sovereignty and the way of their education. Food sovereignty is a wide concept; it includes a wider range from food producer to ultimate food consumers. However, it was analyzed on the basis of the context of the particular community. For that purpose, Kushadevi VDC of Kavrepalanchowk district was selected for the study. The study may not be able to address the whole idea of food sovereignty. Moreover, the study was limited to knowledge/perception and understanding of food sovereignty, way of getting information by the farmers and their adjustment in changing context. The informants of the study were farmers who were working in the farm, farm service providers and leaders of the farmers (Aguwa Kisan) of the community.

I have delimited my study on major agricultural products as identified by the farmers themselves in the study area. Maize is the major crop in Kushadevi VDC because of its hilly topography. The second major production is potato. Paddy is produced in a nominal amount compared to maize and potato. Potato is the major cash crop but vegetable farming is another activity of this community for income generation.

The research was only concentrated on the crop and vegetable farming. It did not count other types of farming like livestock, fishery, poultry and so on, however, I have included information related to other than my concentration of farming like honey-bee raring provided by the participants.

Further, I have derived the themes for data analysis of food sovereignty matching with an aspiration of Six Principles of Nyeleni Declaration 2007, in the local context. The principles are; focus on food for people, value food providers, localize food systems, make decisions locally, build knowledge and skills and work with nature.

Operational Definitions

Followings are the definitions of the terms used in the dissertation;

Traditional Farming: typically low-productivity farming practiced on small plots. Presently people prefer to say organic farming instead of traditional farming

Ecological/Sustainable Farming: ensures healthy farming and healthy food for today and tomorrow. It protects soil, water and climate, promotes biodiversity. It does not contaminate the environment with chemical inputs or genetic engineering.

Conventional Farming: extensive use of chemical fertilizers, herbicides, pesticides, fuel, water and requires continuous investment in advanced seed varieties and machinery. In literatures we can find intensive farming and also modern farming

Commercial Farming: farming for sale in order to earning instead of home consumption

Organization of the Dissertation

I have divided this research study into seven chapters. The first chapter deals with the introductory part of the dissertation and the review of literature is presented in the second chapter. Similarly, the third chapter describes the methodology that I administered during the whole process of my research. Chapter four, five and six form

the heart of this research; these chapters include information/data analysis, interpretation and presentation. Summarization of findings, drawing of conclusions and implications are included in chapter seven. The final part of this dissertation includes the references cited in this study. The flow chart of the dissertation can be presented as follows;

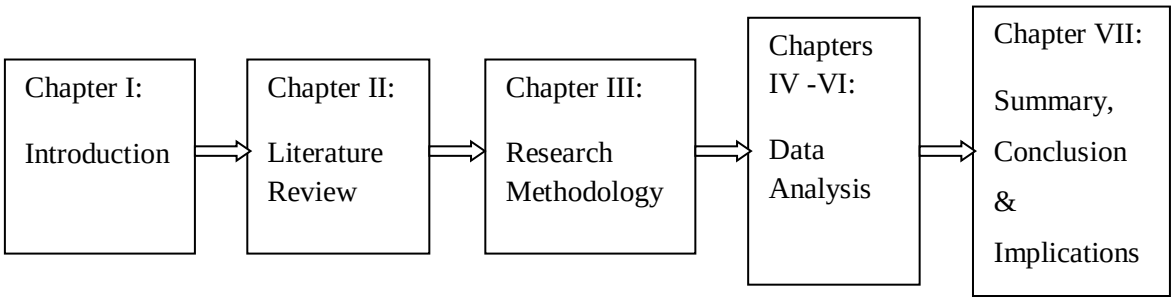

Figure 1. Organization of the dissertation.

Chapter Summary

This is an introductory chapter, in which I tried to justify the significance of this study in the Nepali context and clarified my enthusiasm on the topic. I tried to conceptualize the terms 'food sovereignty' in a broader perspective by using definition from Peoples' Food Sovereignty Network. I incorporated global origin of food sovereignty movement and also Nepal's participation to some extent. The statement of problem was constructed to prove on the inevitability of the research. To support the problem, I have presented the purpose of the study along with appropriate research questions. In addition, I also discussed the significance and delimitations of the study. Finally, the chapter concluded with the organization of the compete dissertation. The next chapter is the review of literature.

CHAPTER II

LITERATURE REVIEW

Literature review should be used to display your scholarly skills and credentials. In this sense, you should use it "to demonstrate skills in library searching; to show command of the subject area and understanding of problem; to justify the research topic, design and methodology." (Hart, 1998, as cited in Silverman & Marvasti, 2008, p. 366)

Chapter Overview

In the first chapter, I discussed and constructed research problems of my research agenda which were followed by purpose and considerable research questions. Similarly, I articulated concept of food sovereignty and also highlighted the origin of food sovereignty movement as well as food sovereignty in Nepal. Finally, I discussed the significance and delimitations of the study, organization of the dissertation and the chapter summary.

In the second chapter, I discussed some previous literatures related to my research issue. I start this chapter by elaborating the term sovereignty and follows by clarification of the concept of food security, food sovereignty and right to food. Similarly, I brought approaches and objectives of food sovereignty as well as discuss rhetoric of food sovereignty. I also brought Nyeleni Declaration of Food Sovereignty 2007 and understanding of local knowledge. I discussed the necessity of knowledge transformation on food sovereignty and Giddens perspective of knowledge production for better understanding. Similarly, I came with the framing for knowledge

enhancement and two theories; theory of justice and theory of transfer of knowledge upon which my study is based. I designed my conceptual framework of the study and finally, I concluded this chapter positioning the chapter summary.

Emergence of the Term "Sovereignty"

The general concept of sovereignty is associated with a monopoly of power for the highest authority. The highest authority has been given to the state or nation in Article 2.1 of the UN Charter, which has defined sovereignty as the capacity to make authoritative decisions with regard to the people and resources within the territory of the state (International Development Research Centre, 2001, p. 12). With the help of above definition, we can say that sovereignty holds a power to govern over resources in a given area. Similarly, it is more likely to say combination of power to govern, to execute and or apply law into the society.

However, sovereignty as the highest authority of the nation-state began with the Treaty of Westphalia in1648 A.D. (Peace Treaty between the Holy Roman Emperor and the Kings of France and Their respective allies) (Jackson, 2003. p. 784). Jackson says when one reads the 128 clauses of that document can get dozen of provisions dealing with minute details of ending the Thirty Years' War, restoring properties to various feudal entities within their territories. The treaty of Westphalia was not a true origin of international legal sovereignty, it was however, examine into the Peace of Westphalia's religious provisions (Straumann, 2008, p. 175), and only yield for a view of sovereignty in the Holy Roman Empire. Due to religious motivation of the treaty, Jackon (2003) further says that there is no clear general principle of sovereignty, but there is a well written provision of passing of some power from the emperor to many kings and lords, who then treasured their own local predominance. But as time passed, this developed into notions of the absolute right of

the sovereign, and what we call "Westphalia Sovereignty" (ibid). We can imagine that true sovereignty was practiced after treaty of Westphalia by the kings and lords in France. At the same time, one can find sovereignty was ensured through political arrangement as delegated power to the use of resources and later it was regulated within a state by institutional power sharing arrangements.

However, state sovereignty was not realized until the French and North American Revolution (William, 2000, p. 559). It was the revolution that raised nationalism and possession of sovereign statehood. Traditional state sovereignty was bound up with achieving good political and social arrangement and also expression of standard of civilization. The revolution has focused more on the succession of international agreements on the abolition of the slave trade, the contemporary discourse on human rights, the promotion of democracy, and the promotion of political and civil liberties (ibid).

But in modern states, the possession of sovereign statehood became intimately linked to the pursuit of material well- being and the economic development (William, 2000). Being the government of a sovereign modern state we can find the state is bound up with a duty to provide for the material well-being of its citizens. Deng (1995) has put his view on the concept of sovereignty that it is becoming understood more in terms of conferring responsibilities on governments to assist and protect persons residing in their territories so that if governments fail to meet their obligations they risk undermining their legitimacy. With this aspiration, we can understand that developed countries and donors have felt increasingly able to intervene in the internal affairs of many developing countries in the name of improving economic well-being, human rights, political liberties and many other programs. William (2000) says International Financial Institutions (IFIs) have become central players in the attempt

to fulfill the purposes of state sovereignty in many developing countries, and while doing so they have become the organizational embodiment of that set of ideals which has, always potentially threatened state sovereignty.

However, the older concept of sovereignty is still valid and continuing contribution toward international discourse, stability and peace. But sovereignty cannot be defined in a narrow term of politics, it has many different aspects and none of these aspects is stable. As we have noticed that the content of the notion of the sovereignty is continuously changing, especially in recent years. William (2000, p. 562) says contemporary debate on sovereignty evolved around into two sets of concern. First, concern of state sovereignty is economic interdependence, technological changes, regional integration and the proliferation of non-state. The second is concerned with historicizing of the concept of state sovereignty, analyzing its place as an organizing and constitutive principle of the modern state system, and detailing the norms, rules and practices for sustainability. Based on William, one can imagine that state sovereignty is concerned within International Relationships (IRs), and they become institutionalized in practices and organizations. So, the ideas, norms and rules are constitutive and expressed through practices and organizations in international life because International Relations (IR) deals such practices so often. Furthermore, the contemporary practices of diplomacy and international development are constituted by norms such as sovereignty and the pursuit of economic development. Cruise (1991) says the sovereignty of many developing countries survives as anything more than a show, as anything more than a political drama with an audience more or less willing to suspend its disbelief. Cruise thinks sovereignty is not more than a showcase and cherished by the political agenda. As of Cruise, we can also find similar view presented by William (2000). Connecting with the role of the

donors, William says that the activities of the donors in their relations with many developing countries certainly suggest that the substance of state sovereignty does not amount to very much more than a show. Internationally, we can assume that donors are prepared to intervene in almost all aspects of economic, political, social, cultural, religious life in developing countries. So they are able to control over the national economic projects and programs of developing countries.

Sovereignty in more details contenting five elements; recognition, state, authority, coercion and territory has been elaborated by Thomson in 1995. According to Thomson (1995, p. 216), sovereign is recognized only through an inter-subjective consensus because recognition encompasses the notion of legal sovereignty. Thomson interprets recognition in terms of two questions: who has the power to recognize, and what must an entity do to be recognized as sovereign? We understand that the state is become a highest authority but not direct concern of the element of the sovereignty; however, the state has autonomy, legitimacy and control over decision and resources. Authority and coercion are major elements of sovereignty because they allow exercising true sovereignty. Similarly, territory is counted as a modern notion of sovereignty by Thomson. Although territory need not be associated with sovereignty because, it encompasses with the dimensions of control and autonomy.

In a nutshell, sovereignty is more related to power, access and control over people or resources by the highest authority. Sovereignty can be practiced through arrangement of constitutional law enforcement with political commitment.

Distinctions among Food Security, Food Sovereignty and Right to Food

Throughout my research, I have used the terms; food security, food sovereignty and right to food. Therefore, I would like to clarify those terms based on the definitions provided by different organizations.

Food Security

Basically the concept of food security for me is directly linked with access of enough food to all people in nation at all times to live. While gone through a definition by FAO 1996 (as cited in Andersen, 2009, p. 5), I found that:

> *Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food to meet their dietary needs and food preference for a healthy and active life.*

From the above definition, we learned that food security is physically sufficient availability of food to the people. Not only that, food is to be available in marketable price to the people ensuring with adequate nutrition and fresh healthy to meet the people's active life. Therefore, I understood that a secure food system can be achieved through a stable production, support for food products, open markets, strong trade rules and global cooperation.

Food Sovereignty

Food sovereignty is against vulnerable food security, citizen-consumers seek to reclaim control over their food system with "food sovereignty" (Windfuhr & Jonsen, 2005, p. 11). Food sovereignty is simply about the unconditional human right to food. It believes that when production of food concentrate in a few major countries, to ensure absolute food security for all may bring serious problem (ibid). More specifically, we can say that food sovereignty is directly associated with the local communities, especially the farmers for regain the right to define their own agriculture, food and land policies to suit their own ecological, social, economic and culture.

The Nepalese farmers particularly in the hills are in little contact with chemical fertilizers and pesticide (Sharma, 1997, p. 53), they still use crop residues

and livestock manure as fertilizer in farm. They prepare fertilizer by regular adding of crop residues, livestock manures and other organic materials. Similarly, they use locally preserved seeds. This is probably an example of ecological farming and address a norm of food sovereignty.

For more clarification on food security and food sovereignty, I brought Lee (2007, p. 12) who has brought the main elements of food security and food sovereignty together as below;

Table 1

Comparison between Food Security and Food Sovereignty

	Food Security	**Food Sovereignty**
Model of Agricultural Production	Productivist/Industrial	Agro-ecological
Model of Agricultural Trade	Liberalized	Protectionist
Lead Organizations	WTO/FAO	Via Campesina
Instruments	AoA, TRIPS, SPS	IPC
Approach to Plant Genetic Resources	Private Property Rights	Anti-Patent, Communal
Environmental Discourse	Economic Rationalism	Green Rationalism

(Source: Lee, 2007, p, 12)

Lee has distinguished food security and food sovereignty clearly by deploying important indicators for easy understanding to all. However, food security and food sovereignty can't be separated. People's food security can be improved or obtained an adequate quality of food to meet their ongoing needs by improving ability to support food producers. In addition to providing food for home consumption for all people,

family farming has to allow excess production, sold, thereby providing necessary fund arrangement and also increasing the family's purchasing power of the more inputs (Dubbeling & Santandreu, 2003, p. 2).

Similarly, the International Planning Committee for Food Sovereignty (IPCFS) (2006, cited in Lee, 2007, p 8) has outlined four priority areas of food sovereignty; the right to food, access to productive resources, mainstreaming of agro ecological production and trade and local market.

Right to Food

Regarding the right to food, article 11 of International Covenant of Social, Economic and Cultural Rights (ICSECR) says "Recognizes the right of everyone to an adequate standard of living…including adequate food" and "the fundamental right of everyone to be free from hunger*"* (Beauregard & Gottlied, 2009, p. 14). For a country that has ratified the ICSECR, right to food is legally binding. A country is obligated to work towards implementing right to food for its people. Right to food holds the power on the international law for the countries that have signed on the ICSECR.

There is no doubt, right to food is legal framework rather than economic and it has not a specific framework to implement the right to food. It focuses mainly on achieving food security for a nation through the accountable and participation of the individuals in the political process. So that I understood that right to food is towards state's obligation. Where, food sovereignty proposes economic and political framework. Food sovereignty is based on both the right to food model and the right to small scale producers. I knew food sovereignty moreover focuses on agriculture and food to be culturally appropriate and to shift towards locally ecological practices. It emphasizes the rights of food producers and which is a pre-condition to secure right to

food in a state. Fundamentally, food sovereignty believes that food security and realization of right to food necessitate the rights to food producers; equitable access to resources; shift from present neo-liberal food regime; localized food system and environmentally sustainable agriculture (Windfuhr & Jonsen, 2005, p. 16).

Approaches of Food Sovereignty

Food Sovereignty is a new concept developed and discussed as a counter proposal to the mainstream development paradigm of neo-liberal approach that believes that international trade (formulated with an initiation by WTO) will solve the world's food problem (Bartelson, 2006). Similarly, Gopalan (2001, p. 1209) argues food sovereignty as a sustainable alternative stands against liberalized global agricultural trade, trade-based food security, dumping food in developing countries, industrialized agriculture and food production by affluent producers and involvement of transnational corporate in food chains.

Food sovereignty has become a new policy framework, championed by social movement and coordinated by La Via Campesina for challenging current trends in rural development and food and agricultural policies (Windfuhr & Jonsen, 2005). The current food system does not respect or support the interests and needs of actual food producers, local consumers and environment. In order to achieve sovereignty over food by the real producers, La Via Campesina (Windfuhr & Jonsen, 2005, p. 17) has proposed following seven approaches of food sovereignty;

Table 2

Approaches of Food Sovereignty

Summary of Via Campesina's 'Seven Approaches to Achieve Food Sovereignty'
1. **Food: A Basic Human Right** – Everyone must have access to safe, nutritious and culturally appropriate food in sufficient quantity and quality to sustain a healthy life with full human dignity. Each nation should declare that access to food is a constitutional right and guarantee the development of the primary sector to ensure the concrete realization of this fundamental right.
2. **Agrarian Reform** – A genuine agrarian reform is necessary which gives landless and farming people – especially women – ownership and control of the land they work and returns territories to indigenous peoples. The right to land must be free of discrimination on the basis of gender, religion, race, social class or ideology; the land belongs to those who work it.
3. **Protecting Natural Resources** – Food Sovereignty entails the sustainable care and use of natural resources, especially land, water, and seeds and livestock breeds. The people who work the land must have the right to practice sustainable management of natural resources and to conserve biodiversity free of restrictive intellectual property rights. This can only be done from a sound economic basis with security of tenure, healthy soils and reduced use of agro-chemicals.
4. **Reorganizing Food Trade** – Food is first and foremost a source of nutrition and only secondarily an item of trade. National agricultural policies must prioritize production for domestic consumption and food self-sufficiency. Food imports must not displace local production nor depress prices.
5. **Ending the Globalization of Hunger** – Food Sovereignty is undermined by multilateral institutions and by speculative capital. The growing control of multinational corporations over agricultural policies has been facilitated by the economic policies of multilateral organizations such as the WTO, World Bank and the IMF. Regulation and taxation of speculative capital and a strictly enforced Code of Conduct for TNCs is therefore needed.
6. **Social Peace** – Everyone has the right to be free from violence. Food must not be used as a weapon. Increasing levels of poverty and marginalization in the countryside, along with the growing oppression of ethnic minorities and indigenous populations, aggravate situations of injustice and hopelessness. The ongoing displacement, forced urbanization, repression and increasing incidence of racism of smallholder farmers cannot be tolerated.
7. **Democratic control** – Smallholder farmers must have direct input into formulating agricultural policies at all levels. The United Nations and related organizations will have to undergo a process of democratization to enable this to become a reality. Everyone has the right to honest, accurate information and open and democratic decision-making. These rights form the basis of good governance, accountability and equal participation in economic, political and social life, free from all forms of discrimination. Rural women, in particular, must be granted direct and active decision-making on food and rural issues.

(Source: Windfuhr & Jonsen, 2005, p. 17)

Objectives of Food Sovereignty

We understand that food sovereignty is a political and economic framework proposed in opposition to the neoliberals. It has no standardized policy agenda to implement homogeneously throughout the global. Rather, one can witness that policies revolve around the unique culture and atmosphere of the location in which they are implemented. However, the concept of food sovereignty is adopted throughout the world for general understanding is defined by Via Campesina. Policy documents developed by the People's Food Sovereignty Coalition stated that "Our World is Not for Sale: Priority to Peoples' Food Sovereignty, WTO out of Food and Agriculture" (Windfuhr & Jonsen, 2005). The document concludes that governments should adopt and implement policies that promote sustainable, family-based production rather than industry-led, high-input and export oriented production. For food sovereignty, Beauregard (2009, p. 25) has proposed that governments should have the following objectives and adoptive measures:

Table 3

Objectives of Food Sovereignty

• **Market policies:** that ensures fair prices for farmers; prioritize domestic markets and local food systems; regulate production to prevent surplus; abolish export subsidies; and shift from subsidies that support unsustainable and inequitable agriculture to supporting agrarian reform and sustainable production.
• **Food Safety, Quality, and the Environment**: that establish mechanisms and criteria that controls the safety and quality of food, respects the needs of the people, and considers environmental, social, and health standards.
• **Access to Productive Resources**: that acknowledges and protects peoples' rights to access productive resources: land, seeds, water, and credit. This also applies to local, traditional resources. Reject privatization of these resources and allow common property rights for communities that depend on "aquatic reserves." Prohibit patenting and intellectual property rights around knowledge, seeds, and plant genetic resources.

• **Production and Consumption**: that support "local food economies" through local production, processing, and distribution • **Genetically Modified Organisms (GMOs)**: that ban GMOs in: seeds, crops, food, and animal feed; food aid; and agribusiness (specifically Monsanto, Syngenta, Aventis/Bayer and DuPont bringing GMOs into countries and local food systems). Promote alternative, organic, sustainable agriculture based in local knowledge. • **Transparency of Information and Corporate Accountability**: that label for origin and content; require companies to ensure transparency/accountability to human rights and environmental standards and establish anti-trust laws against industrial monopolies.

(Source: Beauregard 2009, p. 25)

Rhetoric of Food Sovereignty

We understand that a major agenda of food sovereignty movement is with the realization of lack of opportunity for participation in decision making and recognition of farmers and rural needs. Further, from the above discussion, we knew food sovereignty is a global movement initiated by peasants' and people independent organizations lead by La Via Campesina. Similarly, food sovereignty movement promotes a wide range of local initiatives in developed and developing countries that aim to bring like-minded producers and consumers close together in effort to regain power over the control of food system. It advocates against the current food regime that is food control by multinational companies.

But Aerni (2011) doubts on the sustainability of the movement, about which he says that the most of these projects rely either on the state subsidies or have a generous private sponsors. Further he says if farmers aim to sell their products for a prime-price outside their community, they depend heavily on the good will of those who certify, pack and market their products. Food and Agriculture Organization (FAO) report *World Agriculture Towards 2015/2030* has reported that food sovereignty has little chance of prospering in the 21st century (Suppan, 2008, p. 112).

The report argues that net cereal export by developing countries will almost triple over the next 30 years while net meat imports might even increase by a factor of almost five by developing countries. In this respect, the greater import dependency does not promise well for food sovereignty, which advances food security through local knowledge, resources, and producers rather than reliance on international trade. Further, Suppan (2008) argues that the FAO, the World Bank, the Bill and Melinda Gates Foundation, the Rockefeller Foundation, transnational agribusiness firms, and a host of other powerful organizations are all launching initiatives for a second Green Revolution. I believe in reality presented as a form of an example below by Suppan that;

> Indo-U.S. Knowledge Initiative in Agricultural Research and Education, whose corporate partners are Wal-Mart, Archer Daniels Midland, and Monsanto, will send 500 Indian students to the U.S. for doctoral and post-doctoral studies in food marketing, food safety, risk management in the futures and options markets, agri-processing, and agricultural biotechnologies. India will pay the costs of their studies, but any patents on their research will belong to the universities at which they study. In exchange for accepting the U.S. agricultural agenda, the U.S. "conceded" to sell India nuclear energy technology that is unable to sell in the U.S. market. The Initiative will ensure U.S. agribusiness access to India's rich agro-biodiversity resources, while products developed from those resources will be subject to patent protections and monopoly marketing privileges similar to those in the U.S. (pp.115-116).

Again, Aerni (2011, p. 24) explains that all the techniques and means to produce, process and preserve food are already in the hands of multinational community. As we have already noticed that the world food system granted through

Agreement on Agriculture (AoA) of the World Trade Organization (WTO) to the developed countries (ibid). We know that membership of WTO has been taken by the government of respective countries so that only governments not NGOs, private and independent organization can initiate the WTO trade disagreement-settlement system to seek redress for this unfair and destabilizing business practices (Suppon, 2008, p. 114).

When we ponder on the above discussion, we can't imagine food sovereignty simply as vision by the food sovereignty movement because the global food system is highly favorable to the developed countries. But for the movement to succeed I think a strong commitment of a nation and continuous effort by the local community based organizations is required.

Declaration of the Forum for Food Sovereignty

Besides, La Via Campesina, a new forum for food sovereignty was declared in 27th February, 2007. It was known as "Nyeleni Declaration of Food Sovereignty" (Beauregard, 2009, p. 7). Beauregard notices more than 500 representatives from 80 countries that includes organizations of peasants/family farmers, artisanal fisher folk, indigenous peoples, landless peoples, rural workers, migrants, pastoralists, forest communities, women, youth, consumers and environmental and urban movements have gathered together in the village of Nyeleni in Selingue, Mali to strengthen a global movement for food sovereignty. The forum gave the collective endeavor the name 'Nyeleni' as a tribute to and inspiration from a legendary Thirteen century Malian peasant woman who farmed and fed her peoples well (Patel, 2007, p. 664). One particular statement made by the declaration was that any struggle for food sovereignty in any part of the world is our struggle (Beauregard, 2009, p. 15). The Nyeleni forum for food sovereignty-2007 has recognized the importance of solidarity

and the ambitious goals to achieve support each other's struggles. For instance, we learned that the food sovereignty movement is to take a stand against the World Trade Organization (WTO) and its commoditization of agriculture, and also movement against bilateral free trade agreements which pose the same threats. Similarly, the forum also spells out that the movement is to reject factory farming, the planting of transgenic crops, and the patenting of life forms, then it must lend its solidarity and assistance to communities who are struggling directly against these and any other forms of corporate domination (Windfuhr & Jonsen, 2005, p. 15). There was a common understanding that the planting of transgenic seeds or use of chemicals in one village has impact far beyond where those seeds have been planted.

Another output of Nyeleni was the development of six guiding principles of food sovereignty:

Table 4

Six Principles of Food Sovereignty

Selingue Mali, 2007 Nyeleni Forum on Food Sovereignty Declaration of Nyeleni
1. Focuses on Food for People: Food sovereignty puts the right to sufficient, healthy and culturally appropriate food for all individuals, peoples and communities, including those who are hungry, under occupation, in conflict zones and marginalized, at the centre of food, agriculture, livestock and fisheries policies;
2. Values Food Providers: Food sovereignty values and supports the contributions, and respects the rights, of women and men, peasants and small scale family farmers, pastoralists, artisanal fisherfolk, forest dwellers, indigenous peoples and agricultural and fisheries workers, including migrants, who cultivate, grow, harvest and process food;
3. Localizes Food Systems: Food sovereignty brings food providers and consumers closer together; puts providers and consumers at the centre of decision-making on food issues; protects food providers from the dumping of food and food aid in local markets; protects consumers from poor quality and unhealthy food, inappropriate food aid and food tainted with genetically modified organisms;
4. Makes Decisions Locally: Food sovereignty places control over territory, land, grazing,

water, seeds, livestock and fish populations on local food providers and respects their rights. They can use and share them in socially and environmentally sustainable ways which conserve diversity; it recognizes that local territories often cross geopolitical borders and ensures the right of local communities to inhabit and use their territories; it promotes positive interaction between food providers in different regions and territories and from different sectors that helps resolve internal conflicts or conflicts with local and national authorities;

5. Builds Knowledge and Skills Food sovereignty builds on the skills and local knowledge of food providers and their local organizations that conserve, develop and manage localized food production and harvesting systems, developing appropriate research systems to support this and passing on this wisdom to future generations;

6. Works with Nature: Food sovereignty uses the contributions of nature in diverse, low external input agro ecological production and harvesting methods that maximize the contribution of ecosystems and improve resilience and adaptation, especially in the face of climate change; it seeks to ―*heal the planet so that the planet may heal us*.

(Source: Nyeleni Forum for Food Sovereignty- 2007, as cited in Mulvany & Moreira, 2008, p. 12)

These guiding principles, along with the declaration and other outputs of Nyeleni, provided necessary cohesion for the food sovereignty movement, while leaving ample room for interpretation and local adaptation. One point that was reinforced throughout the forum is that while it is critical to have a common framework, there is no single path or prescription for achieving food sovereignty (Mulvany & Moreira, 2008, p. 2). So, it is the task of individual regions, nations, and communities to determine what food sovereignty means to them based on their own unique set of circumstances. However, there still lacks universally applicable definition of food sovereignty while it is important to define food sovereignty in a way that is understandable to all public throughout the world. The most powerful way of communicating the message of food sovereignty is by doing and by engaging

citizens more specifically the food producers directly in food system transformation (Windfuhr & Jonsen, 2005, p. 31).

Understanding of Local Knowledge

As we already noticed the conceptualization of food sovereignty is the right of each nation to maintain and develop its own capacity to produce its basic foods respecting cultural and productive diversity. In which, people of the country should propose their own food policies that prioritize local sustainable production of culturally appropriate and nutritional food rather than allowing an outside entity to decide a nation's food policy. In this regards, many developing countries in the world have initiated to reform their food regime in order to justice farmers' right and sustainable agriculture with emphasis of indigenous knowledge.

Kenya

Kenya has desired to establish a seed bank when it was losing indigenous plants species since 1990s due to defrostration, forest excisions, over grazing, agricultural expansion, drought, erosion, climate change and poor implementation plant conservation policies among other factors (Plant Resources of Tropical Africa [PROTA], 2011). But in 2007, National Museums of Kenya has initiated the Useful Plant Project (UPP) to document information on local plant uses and to undertake seed storage of these plants species in the seed banks. Simultaneously Seed for Life Project (SLP) was also launched as a plant conservation project targeting conservation of Kenya's dry land plant taxes on farm, in-situ and ex-situ (ibid). However, the ultimate goals of both projects were to the welfare of the poor communities and safeguard from extinction useful Kenyan plant species.

Bangladesh

Mazhar et al. (2007) illustrated that agricultural inputs and related knowledge, including seed, soil amendments and agricultural implements are generated locally and vigorously defended in Bangladesh because they help ensure the capacity of the communities to initiate production cycles independently. “Sisters, keep seed in your hands”- is the call of the Nayakrishi farmer women to Bangladesh sisters. It is believed that Nayakrishi movement brought tremendous changes in the framers communities in the Bangladesh. Bangladesh is now able to conserve its disappearing plant spices especially rich varieties in their gen banks (Mazhar et al., 2007).

Brazil

When in Brazil, mechanization and chemical inputs were introduced during 1960s and 1970s, rural Brazilians were increasingly found unemployed or underemployed while land ownership was continued to concentrate in the hands of the few (Anton, 2009). Anton writes, since the 1980s, the Landless Rural Workers Movement or Landless Movement (MST) in Brazil has pressured the Brazilian state to act on its own constitution to redistribute illegal landholdings or large landholdings by the few that do not entirely meet their social function. The MST continues the struggle to advance agrarian reform and also argues that agribusiness now occupies the political positions held by the landed elites, continuing to perpetuate social injustices and social inequalities throughout the Brazil (ibid). The MST wants a “model change” towards a food sovereignty regime and suggests that smallholder farmers, rather than commodity-producing large-scale farmers, are the key to attaining both food security and food sovereignty in Brazil (Rosset, 2006, as cited in Anton, 2009).

With continuous pressures by the MST and favorable research results have compelled Brazilian government to formulate a new policy in 2003 that would strengthen rural economies by creating employment and encouraging local, decentralized food-supply system (ibid). To establish local food system, the government developed the 'Food Acquisition Program (PAP)' to stimulate local food production by local smallholder farmers and create new linkages within and between communities as a component of 'Zero Hunger Program' (ibid). Not only that, Rosset more specifically says that the ministers and government officials of Brazil have increasingly utilized the terminology "Food Sovereignty" in their own discourses and also in many forums. The Brazilian government has also corresponded the food policy and PAP goals with La Via Campesina's framework (Rosset, 2011).

Honduras

The worldwide campaign for food sovereignty by Via Campesina including agrarian reform will not take root in Honduras unless the political transformation that the resistance movement seeks happens first (Boyer, 2010). Boyer refers to the discussion about the current ineffectiveness of a renewed food sovereignty and agrarian reform campaign by Rafael Alegria (one of the founder of the world's largest coalition for the rural poor in Honduras) that none of the campaign and movements could be resolved until Honduras can decide who will govern and how.

> It is vital for peasants, rural workers and indigenous communities to organize and strengthen their representative institutions so than can shape and secure their future survival in a world increasingly driven by global forces. While major agrarian reforms especially of a collectivist kind are unlikely to recur, it is certainly premature to argue that current land policies and neoliberal measures are heralding the demise of the agrarian question in Latin America.

> Any resolution will require changes in the unequal and exclusionary land tenure system. (Kay, 2002, as cited in Boyer, 2010, p. 13)

National Coordinating Council of Peasant Union (COCOCH) of Honduras has played an important role in the establishment and continuing leadership in anti-transnational movement of Via Campesina, and from 1996 to 2004, Via Campesina has maintained its world headquarters with COCOCH in Tegucigalpa (Edelman, 2008, as cited in Boyer, 2010).

We noticed that Kenya has secured seed security through initiating different projects to safeguard from extinction of very important Kenyan plant species. Similarly, in Bangladesh, with an initiation of Nayakrishi movement has able to conserve disappearing plant spices within their gen bank. A case of Brazil is quite different than previous two countries. In Brazil, landless rural workers have initiated landless movement (MST) against large illegal landholdings by few people. Finally, movement was able to bring new land reform policy to establish local food system. Honduras becomes the pioneer of the global agrarian reform movement. The global campaign for food sovereignty by La Via Campesina was product of the Honduras initiation.

Necessity of Knowledge Transformation of Food Sovereignty

Knowledge is an important source of dignified life of human and sustainability of environment surrounding them. Knowledge plays a significant role in any sort of development because it shapes society through technology, value, assumption and cohesion that also motivates human beings and inform for decant life (Parent, Roy & St-Jacques, 2007). There is a need to actively construct knowledge for diversity; decentralization and dynamic adaptation. So, transformation of knowledge is needed in several areas. The knowledge of food system based on ecological developed by

indigenous people is radically different knowledge. So, it is important to link local and global knowledge respectfully and build mutual understanding, solidarity and peace to address social, cultural, political, economic and ecological challenges of new era. In the face of global trends of knowledge transfer, the concepts of food sovereignty and ecologically based production system have gained much attention in the last two decades (Altieri, 2009). Food sovereignty movement is increasingly challenged to actively develop more autonomous and participatory ways of producing knowledge that are ecologically literate, socially just and relevant to context (Pimbert, 2007). Pimbert further says it is a reason that radical shift from the existing top-down and increasingly corporate controlled research system to an approach that transfers more responsible and decision making power to farmers, indigenous people, food workers, consumers and citizens for the production of social and ecological knowledge.

Despite that, feeding the world population is a huge challenge. Because of rapid population growth mostly in developing countries, more and more people are getting hunger and less and less land is available to produce food. We have learnt that present food systems in the world are unsustainable and the environmental challenges add even more complexity in the situation. With a realization of the fact, the concept of food sovereignty was conceived by the very victims of the present situation to change the food paradigm at a global level. MIJARC, Europe (Council of Europe, 2010) has presented a report entitled “A Sustainable Agriculture for Food Sovereignty?” which states that;

> There is enough food produced on this planet to feed the global/entire population but there is a lack of political initiative to organize the food sector in such a way that everyone can exercise their right and access to food. But on

> the international level, the Structural Adjustment Policies implemented by the World Bank, the IMF and the Agreement on Agriculture in WTO, bilateral free trade agreements like EU's Economic Partnership agreements and EFTAS Free Trade Agreements, produce/engender detrimental effects on farmers' ability to feed their own people. This contrasts with the European level, where the CAP (Common Agricultural Policy) does not prioritize enough sustainable agriculture at all levels. This has led to large scale commercial and environmentally hostile farming whereby consumers have become detached from producers and the (agricultural) food processes. Intellectual property rights (IPR) (like patents), seed breeders rights and other national and international efforts to control seeds also undermines farmers autonomy and young peoples' possibilities. (MIJARC, Europe, 2010, p. 9)

From the above statement, we can find that food decisions are taken by non-democratic and non-transparent international corporate. Multinationals have increased too much power over food system. Not only that the multinationals only represent a commercial interest of a small amount of people. They have taken control over farmers and customers. They are offering food to consumers and tell them what to eat. The World Trade Organization controls global food policies without respecting local, regional and national sovereignty. Moreover, we have already noticed that there are no sufficient opportunities for civil society and people to participate in all aspects of agricultural issues across the globe.

The report (A Sustainable Agriculture for Food Sovereignty) has identified the uncertainty of future of youth in agriculture, stating that there is a lack of recognition of traditional farmer knowledge concerning ecologically-sound and sustainable farming methods. It claimed not offering enough opportunities to get in touch with

nature and environment to learn. The knowledge transformation of the concept of food sovereignty is crucial in this regard. Consistent with the transformation of food sovereignty movement, Pimbert (2007) has recommended two distinct ways of knowing; democratization of science and technology research for liberating modern science; and technology and de-institutionalizing research for autonomous learning and action more specifically for the development of innovative farmer-centered for learning and action. Indeed, transferring knowledge or way of knowing is an integral part of a much deeper process of systematic change. This systematic change depends on several interrelated mutually reinforcing processes of transformation.

Systematic change for sustainable agriculture includes significant structural changes, in addition to appropriate technological innovation, famer-to-farmer-network, farmer-to-consumer-solidarity, and well-mannered access in resources by the farmers. In this regard, Altieri (2009) says:

> The required change is impossible without social movements that create political will among decision-makers to dismantle and transform the institutions and regulations that presently hold back sustainable agricultural development. A more radical transformation of agriculture is needed, one guided by the notion that ecological change in agriculture cannot be promoted without comparable changes in the social, political, cultural, and economic arenas that conform and determine agriculture. (p. 106)

With the spirit of urgency of social movement for the sake of farmers, internationally, the organized peasant and indigenous based agrarian movement such as La Via Campesina and Brazil's Landless Peasant Movement (MST) have argued on the need of farm land for farmers to produce food for their own communities and for their country (Altieri, 2009). The movement activities have advocated for genuine

agrarian reforms to access and control land, water and bio-diversity that are the prime importance for community in order to meet growing food demands.

People should have knowledge and therefore should understand food sovereignty besides believing just in access to resources by the farmers (food producers) but concerning on availability of healthy food for all and environmental sustainability. It is therefore, necessary to transfer knowledge of food sovereignty to the people, more specifically to the food producers.

Giddens' Perspective of Knowledge Production

The social agent is knowledgeable with knowledge of most of the actions he or she undertakes (Giddens, 1982, as cited in Sampson, 2000, p. 35). This wealth of knowledge is expressed primarily the practical understanding by Giddens as farmers are usually involved in agriculture in their entire life. They do not need to explain the underlying physical, technical, environmental, seed or crops and process of farming involved. The vast majority of their day to day activities are much routine. They approached in their farm-field along with the rise of sun and remain till darkness prevails. The activities which they perform have nearly ritual character for them. Giddens emphasizes that they have great knowledge about these actions, but this knowledge is seldom formulated explicitly in their regular dialogues. It is a tacit knowledge which entails that they know how to act efficiently. The farmers often overlook the practical knowledge and understanding that comprises most of their activities.

Giddens argued that the agent's practical understanding or consciousness in an unknown area for most of sociology and social science and therefore required a discursive mainstreaming. A discursive mainstreaming emphasizes on explicitly expressed activities at several stages. According to Giddens, farmers should express

why and how they perform agricultural activities. Farmers are capable to express their way of work. They can explain with logic about their farming methods. Sampson (2000) says Giddens emphasized that systems and structures do not act behind the back of the actor due to knowledge-ability. Due to the fact, discursive reflexivity around the action enables farmers to provide explanations and suggests the possibility of changing their patterns of actions. So, discursive mainstreaming of agent refers to the understanding or knowledge which they achieve by reflecting upon their actions. Further, understanding is the internal realization of persons which makes someone to think about something that is there for them and appears to them. Understanding is something more than mental representation of individual and the representation of lively experiences of life influence their understanding accordingly.

For the research purpose, I have mostly focused on practical understanding of farmers rather than discursive because practical understanding appears to be most critical in order to understand farmers' life in their social context. Not only that, practical understanding is tactical knowledge, which consists of large amount of implicit knowledge that is important for re-establishing or reproducing social life of farmers in advance.

Framing Theory for Knowledge Enhancement

Framing theory provides an ample platform for public debate to win support, function to organize experiences and guide action individually or collectively (Johnson & Noakes, 2005). According to Mann (2009, p. 3), social movement organizations attempt to bring their frame for;

Diagnosis: identification of problem and attribution of blame or causality.

Prognosis: suggests solutions to the problems and how to achieve them – strategies, tactics, and targets.

Resonance: the mobilizing potential of frames; the extent to which frames are congruent with the observations, experience and cultural understandings of target publics.

As we have noticed that the agencies or the members of social movement develop networks to practice public relationship in bringing issues to the public agenda through framing. In which organizations create a frame to develop the relationship between organizations' work and their ability to influence broader public understandings. Framing is an essential strategy and also component of the political networking. Goffman (1974) says framing organizes more than meaning, it organizes involvement which is essential to networking among the organizations. Framing is a process by which various communication sources including news organizations, public relation professionals and politicians are also come into consideration.

Mann (2009) explains media framing and how media influences on the social movement. Mann also explains counter framing for social space, which creates circular, reflexive discourse and principal field of argument.

We can say that organized framing culture in the community will enhance the capacity of networking in social movement of food sovereignty. However, for the sustainability of the movement an appropriate framing from all stakeholders could be considered. There is no doubt that farmers will have access to the sources of knowledge on food security and food sovereignty through the culture of framing the issues for better understanding to adjust in changing context of agricultural practices or food regime.

Research Gap

I have found some setbacks in agriculture sector of Nepal while reviewing literatures on food sovereignty along with an adaptation of food sovereignty policy by the country. The setbacks are as follows;

- Nepal has integrated food sovereignty policy in its constitution but how is it implementing towards welfare of food producers?
- Whether government has properly analyzed its existing agricultural scenario before adopting the policy?
- Is government's new agricultural policies and programs match with the food sovereignty policy and objectives?

These are some setbacks that encourage me to conduct this study in order to understand & practice, knowledge transfer and adjustment of food sovereignty in farmers community.

Theoretical Review

To shape a guideline for this study, I have based two different theories as referents and for framework which helped me a lot to understand the exact situation of food system. I used those theories more as referents; however, I have tried to frame them in order to delimit my perspective towards the issue of my study.

As I believe theories are developed or established to suggest an application of practical values and way of doing by the people themselves through day to day empirical observation in a natural settings (Creswell, 2007). In fact, theories stand to explain or justify particular phenomena in the nature of the study. In this study, I linked "theory of justice" and "theory of transfer of knowledge" for in-depth understanding of the issues.

The theory of justice suggests that "the basis of practical reasoning must include ways of judging how to reduce injustice and advance justice, rather than aiming only at the characterization of perfectly just societies" (Sen, 2010, p. ix). Sen further argues that the need for a theory of justice relates to the discipline of engagement in reasoning about a subject on which it is based. However, Sen says it is sometimes claimed that justice is not a matter of reasoning at all; it is one of being appropriately sensitive and having the right nose for injustice (p. 4).

Nepali farmers are getting injustice by many ways. The structural agencies such as state, local administration, political agendas, the markets, local actors all are equally responsible for injustice to the farmers. Government policies and programs one after another encouraging external multinational companies to enter and intervene in agricultural system of the country. A newly drafted agricultural strategy "Agricultural Development Strategy -2013" has also vision of higher productivity, profitable commercialization and competitiveness in agriculture (GoN, 2013). Gradually, farmers are lured towards hybrid products in the name of commercialization by massive use of chemicals. The state has developed market mechanism in favor of imported farm inputs rather than encouraging and protecting local inputs. There is no doubt farmers are bearing injustice caused by the state. So as said by Sen, reasoning about the subject is not enough but impartial scrutiny in an issue is very urgent.

Another theory I adopted for my study was "the theory of transfer of knowledge" which deals with transferring one's knowledge and skills from one problem-solving situation to another. This theory is not as established theory as previous theory of justice. It is about transfer of learning in order to help increase the transfer of learning who are suppose to need. The generic act of reiterating knowledge

and transmitting it in a targeted manner for human consumption is what we will refer to as knowledge transfer (Ward, House, & Hamer, 2009). Further they argue that humans are exposed to narratives as a form of knowledge transfer. People always narrate each other as means of transferring knowledge within a society from generation to generation. The traditions of narration are often found to be oral storytelling and that have been recognized as core to the transfer of knowledge within the society.

In relation to knowledge transfer, Nokes (2003) has described three different mechanism of knowledge transfer. The first mechanism is "analogical transfer" in which he proposes three sub-process; retrieving a prior knowledge structure, creating a map between it and current problem or situation, and then using that map to generate new knowledge structure relevant to the application context. The second mechanism is "knowledge compilation", where declarative knowledge is brought to bear on problem solving. For this, it can be viewed as a translation device that translates or interprets declarative knowledge into a set of procedures and actions that can be used to solve the problem. The third mechanism is "error correction". This mechanism proposes that the role of declarative knowledge is primarily to help a learner identify and correct his or her own error. During the process of transfer, knowledge can generate undesirable outcomes, so that these are to be recognized and revised accordingly.

Nepalese are transferring knowledge and skills in similar manner from one generation to another orally. More specifically, in agriculture, people have obtained knowledge and skills that are compatible with environment and sustainability. The theory of transfer of knowledge is very much relevant in the Nepali society, particularly in farmers' education. It helps to understand how Nepali farmers are

receiving knowledge and skills for better productivity and to hold sovereignty over resources and the products.

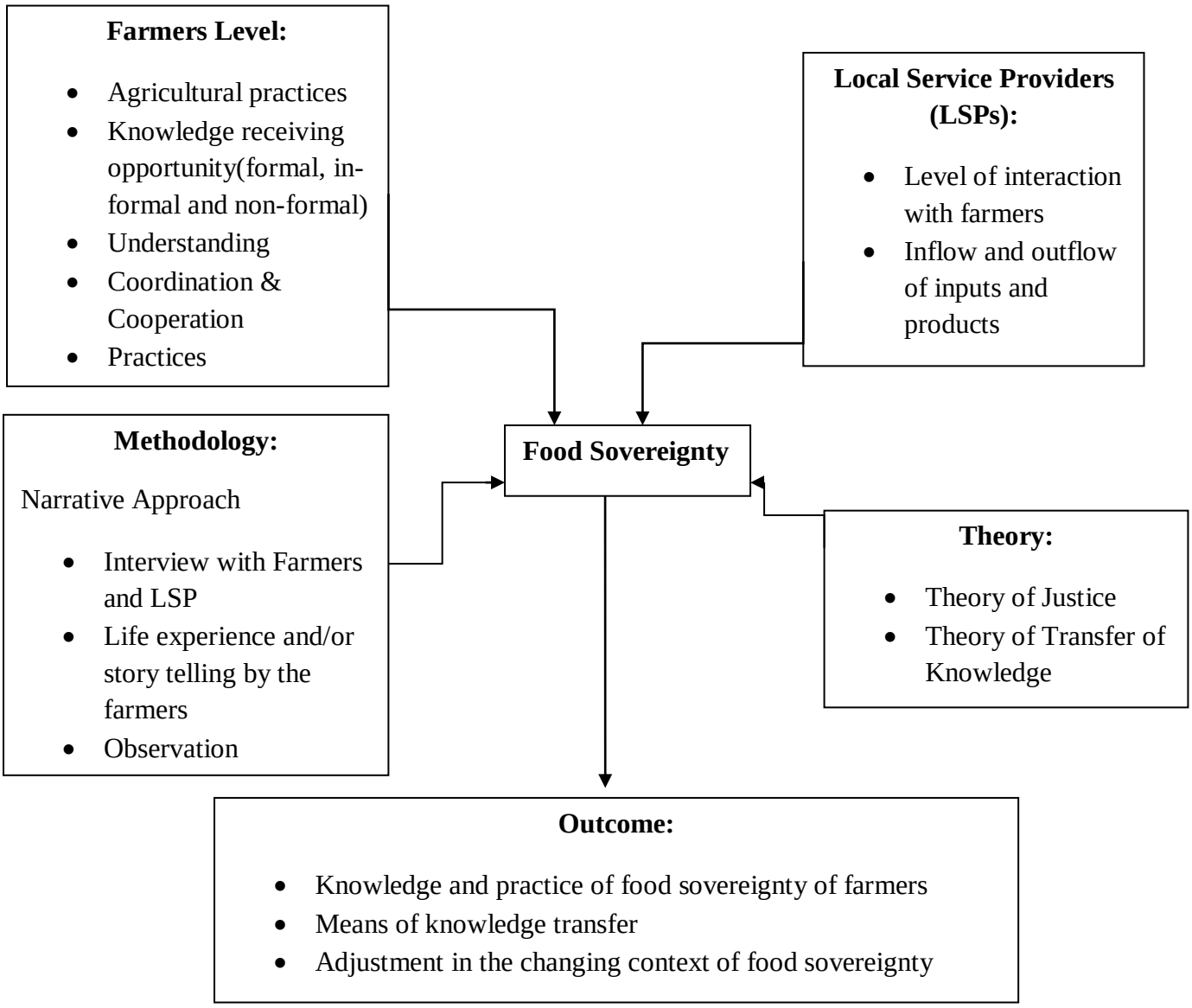

Figure 2. Conceptual framework for the study

Chapter Summary

The chapter II was about previous literatures related to my research issue. I began this chapter with the emergence of the term sovereignty in which I discussed the treaty of Westphalia, French and North American revolution and environmental concerned of sovereignty. Secondly, I clarified the three different concepts; food

security, food sovereignty and right to food. Likewise, I have attempted to describe approaches and objectives of food sovereignty based on the Via Campesina and Nyeleni forum. I have discussed rhetoric of food sovereignty movement from policy perspective in the global food system. I have also brought Nyeleni Declaration of Food Sovereignty 2007, in which I highlighted the six principles developed by the declaration. I have illustrated some examples of local initiation for practice of preservation of local knowledge and resources. Similarly, I have discussed the necessity of knowledge transformation on food sovereignty more specifically for environmental protection. Further, Giddens perspective of knowledge production was discussed in relation to farmers' understanding of agricultural practices. Similarly, I have brought the framing theory for knowledge enhancement to the farmers. I have reviewed two different theories; theory of justice and theory of transfer of knowledge in which my study was based. Finally I have designed the conceptual framework separately to guide and better understand my study.

In chapter III, I will discuss the research methodologies in which I was based for my entire research.

CHAPTER III

RESEARCH METHODOLOGY

> *Grand strategy should guide tactical decisions. Within a grand strategy all manner of tactical errors may be made, and indeed, are inevitable, but can be corrected as long as the strategic vision remains true and focused. At least that's the theory. In practice . . . ? Try it and see.* (Halcolm, as cited in Patton, 2002, p. 37)

Chapter Overview

In chapter II, I discussed previous literatures related to my research issues. Similarly, I also discussed two different theories to support my research. I have also designed a conceptual framework for my study.

In chapter III, I described entire research methodology followed by philosophical assumptions. For that I portrayed ontological, epistemological, axiological, rhetorical and methodological considerations. In addition, I constructed my study on two paradigms/worldviews; constructivism and advocacy/participatory. Further, I dealt with my research approach i.e. narrative. Similarly, in this chapter I constructed my research design by research site, participants of the study, data generation approach, entry into the field, data recording and data analysis. Finally, I discussed the quality standards and ethical issues that I considered during my study.

Philosophical Assumptions

I chose qualitative method for my research. I believed that normally qualitative research begins with philosophical assumptions because each individual

researcher posses his/her own understanding or a set of beliefs in a particular issue. This understanding further influences while generating data/information and is also reflected explicitly in the writing of the study. However, I know that the quality of qualitative data depends to a great extent on the methodological skill, sensitivity and integrity of research and experiences (Patton, 2002, p. 5). Further, Creswell (2007) explicitly stressed on the importance of five philosophical assumptions that lead to an individual‘s choice of qualitative research; ontology, epistemology, axiology, rhetorical and methodological assumptions.

Ontological Assumption

Ontology relates to the nature of the reality and its characteristics (Creswell, 2007). During my research, I embraced multiple realities on the perception of the participants. I did my best to interpret what my participants in the community interpreted based on their socially constructed meaning on their food system. So I collected multiple realities including multiple beliefs based on the actual words of different individuals and interpreted the evidence or object presenting different perspectives from individuals (Moustakas, 1994, as cited in Creswell, 2007).

Epistemological Assumption

Creswell (2007) argues that epistemological assumption while conducting qualitative research means that researcher tries to get as close as possible to the participants being studied. Similarly, I also like to code Banathy (1996, as cited in Webster & Mertova, 2007), who says that epistemology deals with general questions such as ‘How do we know whatever we know?’

Being a researcher pertinent to the qualitative approach, I conducted my study in a real field of the community, where my participants lived and worked. I stayed with them in their community to get in-depth information relating to my research

theme for the firsthand information. I tried to minimize the distance between me and my participants during my study in the community (Guba & Lincoln, 2005). Similarly, I have visited houses of the participants to learn how they were preserving their crop seeds and preparing manure from houses waste. I noticed them as clearly as possible going closer to the site.

Axiological Assumption

All researchers bring value in the study, but qualitative researchers like to make more explicit those values (Creswell, 2007). I came with value-laden in my research and actively reported participants' values and their biases regarding to value laden nature of information.

Further, I presented myself my personal stories complemented with my participants' perceptions in the text and represented my presentation as much as the subject of study (Denzin, 1989a, as cited in Creswell, 2007). Being a member of a peasant community, I have self feeling with those of information provided by the participants. That was a plus point for me to interpret in the text of my study.

Rhetorical Assumption

I believe that qualitative researchers tend to embrace rhetorical assumption that the writing needs to be personal and literary in form (Creswell, 2007). So, I have written in a literary, informally using the personal voice of each participant. This was my narrative research paradigm so that I believed every narration starts with a personal storytelling and therefore data/information were highly personalized accounts (Guba & Lincoln, 2005) of the participants for me to understand in the changing context. I used the qualitative terms as well as naturalistic generalizations (Stake, 1995, as cited in Creswell, 2007, p. 18). I included participants' views or perceptions, informal observations and my live experiences in a form of narrative

stories. Therefore, I produced authentic narratives enabling the readers to deeply grasp the experience and interpretation (McIlveen, 2008).

Methodological Assumption

There are various research approaches in qualitative research, among them I chose narrative approach for my study. I know that narrative approach is a collaborative practice, and assumes tellers (participants) and listeners (researcher) interact in particular cultural milieu—historical contexts essential to interpretation (Riessman, 1993). Furthermore, I would like to mention Plummer, who says that "for narratives to flourish, there must be a community to hear; …for communities to hear, there must be stories which weave together their history, their identity, their politics" (Plummer 1995, p. 87).

Narrative approach allowed me to conduct participant observation, formal and informal interview (narration), field observation. Methodologically, narrative approach is a part of qualitative research, so I have got an opportunity to shape my research procedure as inductive and emerging experiences during field work and data analysis (Creswell, 2007). Based on that I have revised my research questions and few questions were developed as I felt necessary during the data collection process in the field but later I merged them. Similarly, I also have revised my research problem when I reviewed the literatures extensively and generated first-hand information from the field. Later on, I also modified participants of my study as well as data collection strategy to some extent.

My Research Paradigms/Worldviews

Above, I shaped my research in philosophical paradigms. Further I elaborate my research agenda by paradigms because paradigm or worldview is "a basic set of belief that guides action" (Guba 1995, as cited in Creswell, 2007). Guba and Lincoln

(1985) have distinguished initially four axiomatic nature of paradigms; positivism, post positivism, critical theory and constructivism. But they updated in 2005 and included a new paradigm which is participatory. However, Creswell (2007) has discussed four worldviews; post-positivism, constructivism, advocacy/participatory and pragmatism especially for qualitative research. The worldviews or paradigms are highly recommendable for qualitative research (ibid), so I tried to shape practice in my research to inform how the practice of my research I made a circle of paradigms with boutiques of non-positivism (constructivism and advocacy/participatory) on a tread of narrative approach. For more specifically, due to the nature of my research, I used non-positivism in a form of multiple paradigms of constructivism and advocacy/participatory for my research design which enable me to understand multifaceted lived experiences arising from the local and natural setting.

Constructivism Worldview

Constructivism is also known as social constructivism and often combined with interpretivism (Mertens, 1998 as cited in Creswell, 2007). I preferred social constructivism because it holds an assumption that researchers seek understanding of the world in which participants of research live and work (Creswell, 2007). Through it I could develop subjective meanings of the experiences, meanings directed toward certain objects or things, which are not simply imprinted on individuals (participants) but are formed through interaction with other social construct and through cultural and historical norms that operates in individuals' lives (Creswell, 2007). The meanings of ideas or views expressed by the participants were varied and multiple to look for the complexity of views for me rather than narrowing meanings into a few categories or idea (Creswell, 2009). Similarly, the goal of my study was to obtain as much as possible the participants' perceptions of the practices and the situation. I have

administered general questions so that participants can easily understand, construct the meanings and tell in a form of story. Due to my open-ended questioning to the participants, I could listen carefully what they said and done in their usual life settings. As said by Creswell (2009) constructivist researchers often address the processes of interaction among individuals focusing on the specific contexts in which people live and work in order to understand the historical and cultural settings of the participants.

> I agree with Crotty (1998, as cited in Creswell, 2009) that
>
> Meanings are constructed by human beings as they engage with the world they are interpreting. Qualitative researchers tend to use open-ended questions so that the participants can share their views. Thus, qualitative researchers seek to understand the context or setting of the participants through visiting this context and gathering information personally. They also interpret what they find, an interpretation shaped by the researchers' own experiences and background. The basic generation of meaning is always social, arising in and out of interaction with a human community. The process of qualitative research is largely inductive, with the inquirer generating meaning from the data collected in the field. (pp. 8-9)

Advocacy/Participatory Worldview

According to Creswell (2009), advocacy/participatory worldview was developed during 1980s and 1990s. It was developed by the individuals who felt that post-positivist assumptions imposed structural laws and theories that did not fit marginalized individuals in the society or issues of social justice that needed to be addressed (ibid). Likewise, the constructivists' paradigm did not go far enough in

advocating for action to help those marginalized (Creswell, 2007). The advocates of this worldview argue that research inquiry needs to be intertwined with politics and a political agenda and agenda for reform that may change the lives of the participants, institutions in which individuals work or live (Creswell, 2009). Based on the assumptions of the advocacy/ participatory worldview, I have highlighted the new issue of food sovereignty in favor of peasant right. The issue addresses peasant empowerment, inequality, oppression, domination, suppression and alienation. My study provides an ample space of the voices of peasant community (participants) by raising their consciousness and improving the lives. The issue I have raised was social and political to some extent. I have collaborated the data with my research participants for raising awareness not to further victimize and able to dialogue/discuss for their right and future secure live. This worldview allowed me to ask participants to help in study by designing appropriate/possible research questions and generating data/information spontaneously as for as they could be.

In this way, the voice and perception of the peasants becomes heard and recorded throughout my research process. My research findings also contain some agenda for reform in the service delivery system at local and policy in centre. I was highly acknowledged that this practice has seen in the advocacy tone of some forms of narrative research (Angrosino, 1994, as cited in Creswell, 2007).

My Research Approach

I chose “Narrative Research Approach” (in which more focus is given in constructivism and advocacy paradigms) for my research as a research method. I claimed that this approach was appropriate for my research and its central focus was recording human experience through the construction and reconstruction of personal stories. It was also well suited to addressing issues of complexity, cultural, human and

also centeredness of farmers because of its capacity to record and retell those events/experiences that have been of most influence on the lives of farmers. Narrative approach brings me an ability to describe phenomenon in greater depth as needed. Narrative allowed me to initiate discourse within the context of mode of inquiry in qualitative research with a specific focus on the stories told by individuals (Chase, 2005, as cited in Creswell, 2007). Moreover, my professional experience as a member of urban peasant community set the background of the study for the narrative approach.

Narrative

I have found that over the past more than two decades interest in narrative as a general component of educational research and, more recently, a method of inquiry has grown significantly among a wide range of disciplines (Riessman, 2002). However, it came to know that the term narrative inquiry was first used by the Canadian searchers Connelly and Clandinin in 1990 to describe an already developing approach to teacher education that focused on personal storytelling (Webster & Mertova, 2007, p. 7). They argue that their work claims that what we know in education comes from telling each other stories of educational experience. So narrative inquiry is concerned with analyzing and criticizing the stories we tell, hear and read in the course of work. It is also concerned with the myths that surround us and are embedded in our social interactions. Similarly, Chase (2005) has outlined different sets of analytic lenses to show the distinctiveness of narrative inquiry how it is different from other forms of qualitative research (p. 656). I believe narrative inquiry in qualitative research honors people's stories as data that can stand on their own as pure description of experience, worthy as narrative documentary as experience or analyzed for connection between the psychological, sociological, cultural, political

and dramatic dimensions of human experience (Bochner, 2001, as cited in Patton, 2002). Patton (2002) argues that narrative inquiry is influenced by hermeneutic and phenomenological studies where, the hermeneutic perspective of narrative inquiry with its emphasis on interpretation and context, informs narrative studies, as do interpretivists in social science, literary nonfiction, and literary criticism. On the other hand as by phenomenology, it emphasizes understanding of the lived experience and perception of experience.

Creswell (2007) has outlined five procedures for conducting narrative research; a) determine if the research problem or question best fits narrative research, b) select one or more individuals who have stories or life experiences to tell and spend considerable time with them gathering their stories through multiple type of information, c) collect information about the context of those stories, d) Analyze the participants' stories and re-story them into a framework that makes sense and e) collaborate with participants by actively involving them in the research.

A Review of Narrative Methodology by Australian Government (Mitchell & Egudo, 2003) describes that

> The narrative approach can be used as an alternative for the study of human action. Narrative is an interpretive approach in the social sciences and involves using storytelling methodology. The story becomes an object of study, focusing on how individuals or groups make sense of events and actions in their lives. Researchers capture the informant's story through ethnographic techniques such as observation and interviews. This method is said to be well suited to study subjectivity and the influence of culture and identity on the human condition. (p. 2)

So, a narrative for me is a story that tells a sequence of events or experiences that is significant for the narrator and audience and interlinks between the individuals and their context. When individuals are telling their stories, they are not isolated and independent of their context. On the contrary, it is important to remember that the individual in question is irreducibly connected to their social, cultural and institutional setting (Wertsch, 1998). Narratives, therefore, I know that capture both the individual and their own context.

Besides, I have also incorporated the challenges that have been shown by Creswell (2007) regarding the use of narrative as a research approach. I was fully aware of the challenges such as requirement of extensive information about my research participants and need to have a clear understanding of the context of the individual's life. Similarly, I collaborated actively with participants and discussed the participant's stories as they told. I have also reflected about their personal and social background along their experiences in the issue of study to enrich the result.

Narrative Framework

I brought narrative framework developed by Webster and Mertove in 2007 to understand narrative structure more clearly. In a framework they have shown two main themes; human centeredness and complexity that govern and justify the methodology, in which methodology contains four parts; process, negotiation, risk and result.

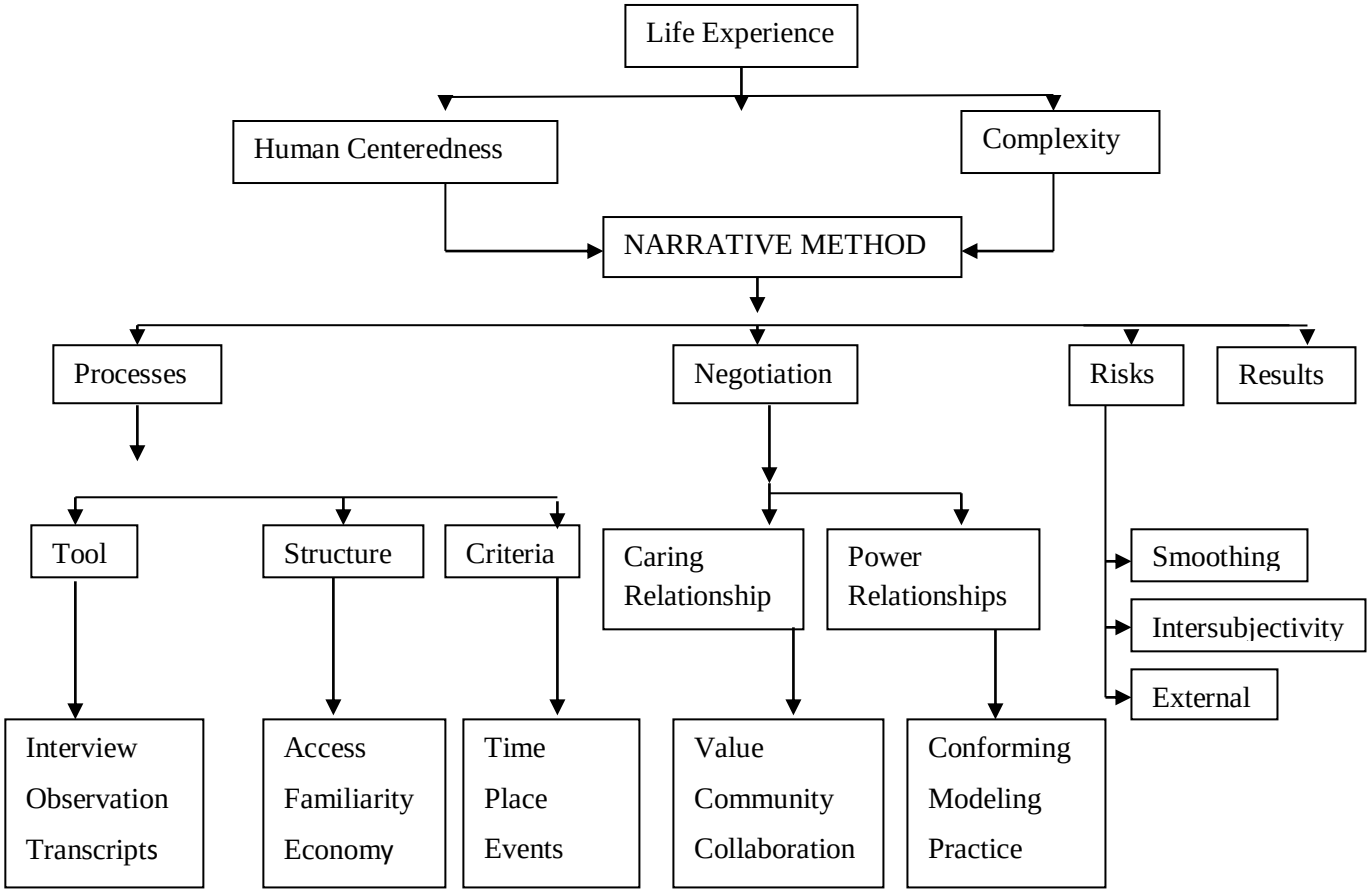

Figure 3. Framework for a narrative inquiry research (Source: Webster & Mertova, 2007, p. 105)

My Research Design

Along with the field visit and dealing with my participants in their natural setting, I have learnt a sequence of unexpected circumstances. That has made me rethink on my entire research process. It was my fortune that I have chosen qualitative research for the study. More specifically, it was a narrative inquiry approach in which I was based for my study lies largely in its ability to explore and communicate internal and external experiences (Webster & Mertova, 2007, p. 10) with capability of crossing the boundaries between research and practice. Further, it has allowed me to encompass factors of time and communication in change dealing with complexity and

human centeredness. Therefore, with due respect of emerging situation in the field, I developed and adopted following methods and procedures in my study.

Research Site

I purposively selected Kushadevi VDC for the research site because I was looking for distinct peasant community having rural characteristic unlike my community. I was aware that narrative approach needs to find one or more individuals to study (Creswell, 2007) who shed light on a specific phenomena or issue being explored. I had previous information of the farmers in Kushadevi who had a good knowledge on agricultural farming and producing a huge amount of products including off-season vegetables as well. I also learnt that they were considered model farmers of the entire DDC of Kavrepalanchowk. On the other hand, I was looking a site characterized by rural setting but having access to market center. In this regard, Kushadevi VDC is situated East-South of Kathmandu. It is about 35 Kilometer away from Kathmandu and only 4 Kilometer distance from Panauti Municipality. The farmers of this VDC, I found were informative and enthusiastic to participate. It has an easy access to market centers of Panauti, Banepa, Dhulikhel, Bhaktapur and Kathmandu.

Participants of the Study

I believe that all people have stories to tell, however, being a narrative researcher for instance I need to focus on the stories related to my research purpose. The primary participant of the study was of course farmers of the community. To approach conveniently, I have selected the farmers purposively who were working in their farm, but to enrich my study and to support the research questions I have also approached an individual who was providing services for farm in the community as well (he was from the same community and also involved in agricultural activity). I

believed that the participants I have selected were ordinary persons and they had provided examples of large populations. While collecting information from the participants, I considered of the inquiry in first order and second order (Elliot, 2005, as cited in Creswell, 2007) as suggests by narrative approach. In a first-order, I collected the stories told by individual farmers about their own experiences. While in second-order, I constructed and presented a collective story about other peoples' experiences to represents the lives of many farmers.

Creswell (2007) suggests one or two participants for narrative research. However, considering on my research questions and issue, I took four participants. They were;

Mr. Bajgain: 56 years old, participated in different agricultural training programs, literate, about 6 to 8 Ropani of land both hill and plain, four family members, from ward no 9 of VDC

Mr. Sapkota: 42 years old, member of IPM, literate, agriculture main occupation, hiring agricultural land, Five family members, from ward no 2

Mr. Humagain: 48 years old, migrated from hill to plain, literate, farm input provider, still works in farm, five family members, from ward no 8

Mr. Bishnu Humagain: 17 years old, college student, works in the farm during leisure time, from ward no 8

Data Generation Approach

A good data can be generated through minutely following a process as suggested by Creswell (2007) for that identifying appropriate site and sampling of participants for study and to gain access or establish rapport with participants are pre-requisite. Besides, I know selection of a good approach is another important task to get the desired data from the participants. Different qualitative research methods have

their own suitable data collection methods; however, Czarniawska (2004, as cited in Creswell, 2007) has proposed three different types to collection for stories in narrative research; recording spontaneous incidents of storytelling, eliciting story through interviews and asking for story through such mediums as the Internet. Based on Czarniawska, I have collected data by recording (use of recorder) for spontaneous incidents of storytelling as well as eliciting story through interviews with participants in their natural setting. For that I developed a flexible informal interview guideline including a number of open-ended questions based on research questions. Further, I also developed an informal observation guideline to observe the practice of food system including seed preservation and local fertilizer preparation of the farmers. Besides, I used informal observation guideline to capture the knowledge and understanding of farmers which were existed in other forms that are non discursive language. For that I took field notes while observing as an outsider and then moving into the setting as insider. In addition, I, as an insider-outsider researcher/participant, used my lived experiences, memories and understandings in the text data.

Entry into the Field and Rapport Building

As the concept "negotiating entry" developed by Marshall and Rossman (1995, as cited in Baker, 1999), I have identified my participants and also clarified how they may be used to the social environment. As suggested by Marshall and Rossman, I have the very energy of interest in the social setting and committed in gaining of access. I personally contacted a person who resides nearby my house having a home in Kushadevi VDC. I talked with him about my interest to visit Kushadevi. He agreed to take me there. Finally both of us in August on Saturday went to Kushadevi early as far as possible. He introduced me to a high school teacher of the community. I told him detail about me and my purpose of the study. I requested him

for help. Immediately, he led us to approach farmer working nearby a farm. I have gained prior information from them and obtained permission to participate in the community for the study. I requested both of them for their telephone/mobile number for further meeting.

Data/Information Recording and Storing Procedure

I used observation and interview for collecting information. I have also jotted down field-notes for recording information. The primary purpose of jotting down field notes is to arouse my memory later when I was writing more detail notes (Baker, 1999). Similarly, I used sound recorder to record information while interviewing participants and then transcribed (write-up). I have taken prior permission from participants to use sound recorder.

Data Analysis Technique

I have generated voluminous of data in a form of stories. I have found no way of myself confronted with when data collection has ended. Sitting down to make sense out of transcribed pages of interviews, whole files of field notes (Patton. 2002) and image data as in photography can be overwhelming. For me at the beginning, organizing and analyzing a mountain of narrative data can seem like an impossible task. However, transcriptions of interviews provided me with an opportunity to get immersed in data and experience that usually generates emergent insights. Typing and organizing handwritten field notes offered another opportunity to immerse myself in data.

After completing transcription and organization of the data, I managed to retell the stories based on appropriate themes to support my research questions.

Quality Standards

I know qualitative researchers strive for understanding that deep structure of knowledge that comes from visiting personally with participants, spending extensive time in the field, and probing to obtain detailed meaning (Creswell, 2007). For stance, narrative inquiry or storytelling for me seeks to elaborate and investigate individual interpretations and worldviews of complex and human centered events. I appreciate Webster and Mertova (2007) that narrative is more concerned with individual truths than identifying generalize and repeatable events.

More concisely on validity and reliability of narrative, Polkinghorne (1995) argues that the validity of narrative is more closely associated with meaningful analysis than with consequences where maintains that reliability is not stability of measurement, but rather trustworthiness of the notes or transcripts. In a line of Polkinghorne, I believe that we need to re-orientate our measures in using narratives. So I am not happy to apply the previous criteria of more traditional approaches but we need to claim new measures such as access, honesty, verisimilitude, authenticity, familiarity, transferability and economy (Huberman, 1995, as cited in Webster & Mertova , 2007). Likewise, Lincoln and Guba (1986, as cited in Patton, 2002) proposed credibility in social constructivists inquiry as credibility as an analog to internal validity, transferability as an analog to external validity, dependability as an analog of reliability and conformability as an analog of objectivity. I have been proposing that quality standards of participants' knowledge and experiences are not a mechanical process but are an argumentative practice. My purpose of the quality standard process is to convince readers of the possibility and the support for the claim on a basis for understanding of and action in the human realm. As the nature of my

research issues claims the meaning life events hold for people, so, it makes claims about how people understand situations, others, and themselves.

Trustworthiness/Validity

"By validity, I mean truth: interpreted as the extent to which an account accurately represents the social phenomena to which it refers" (Hammersley, 1990, as cited in Silverman & Marvasti, 2008, p. 258). Validity for me in my study was more concerned with well grounded and supportable data in relation to the reality of the participants' experiences. I can't claim that my research results are true as an exact correspondence to reality. Karl Popper (1945) pointed out that a scientific hypothesis must be testable and therefore open to falsification. So, we cannot demonstrate the 'truth' of statements, we can at best demonstrate their falsity. Denzin (1989b, as cited in Creswell, 2007) was more concerned on criteria of interpretation of data in narrative for validation. So that I have tried multiple interpretations of data for validation and I believe that the real test of validity of my research results ultimately relied on those who read it and they should be the ones to decide on whether the result is trustful or not.

Consistency/Reliability

"Reliability refers to the degree of consistency with which instances are assigned to the same category by different observers or by the same observe on different occasions" (Hammersley, 1992, as cited in Silverman and Marvasti 2008, p 258). Reliability in narrative research is achieved not by the stability of measurement but rather the 'trustworthiness' of the notes or transcripts (Polkinghorne, 1995). However, I neither expected nor assumed that the outcomes from one narrative or a collection of stories will consistently return the same views or outcomes. As I emphasized individual human experience of reality and the impact of critical events

on my understanding, the differences between individuals are to be expected and indeed valued (Webster & Mertova, 2007). I believed reliability of results in narrative is closely related with persuasiveness and coherence of the data. Agar and Hobbs (1982, as cited in Webster & Mertova, 2007) propose three kinds of narrative coherence: global, local and themal. So I tried my best to maintain coherence as suggested by Agar and Hobbs for reliability of my research findings.

Ethical Considerations

Ethical issues in social-science research are concerned to ensure that the interests of participants in the research are safeguarded (British Psychological Society, 1996, p. 1, as cited in Hollway & Jefferson, 2000). So I respected dignity of all participants in my study. I was aware that the people in study may not be used merely as a means to achieve research objectives. I also shared knowledge gained during data collection from the participants. I considered fully on the four core principles; respect for persons, beneficence, justice and respect for community originally articulated by The Belmont Repot 1979 (as cited in Nkwi, Nyamongo and Ryan, 2001). Further, I maintained the following ethics in my study;

Informed consent: I took verbal consent of the participants in the research area. It was important because I wished no participants would be hurt and humiliated by any sort of activities and intentions.

No deception: I shared knowledge whatever I gained from the field interacting with participants. I have also shown photography when they request.

Confidentiality: I hope that I have maintained the confidentiality regarding any information which was not supposed to disclose. I hope that this confidentiality led towards the ethics of care and compassion.

Moreover, I established non-manipulative informal relationships through rapport with farmers in the community that enabled them to disclose sensitive thoughts and feelings leading to powerful and complex knowledge and experiences.

Chapter Summary

The chapter III began with the philosophical assumptions in which I relied on the nature of reality and characteristics of participants; epistemologically, I went closer to participants to know the truth. I believed value laden in research; rhetorically I understood information were highly personalized accounts so I used first person in linguistic presentation and methodologically, I presented rationale of narrative approach for this study. Similarly, I relied on three paradigms/worldviews for my study; constructivism, to seek understanding of the world in which participants of research live and work. The second paradigm was advocacy/participatory which was fit to address issues regarding the marginalized individuals in the society. Further, I portrayed my research approach i.e. narrative approach. Similarly, in the research design, I included site, participants, data generation approach, how I entered into the field, data recording and data analysis technique. I discussed on quality standards of my study via validity and reliability. Finally, I considered the four core principles; respect for persons, beneficence, justice and respect for community originally articulated by The Belmont Repot including informed consent, no deception and confidentiality as ethical considerations of my study.

CHAPTER IV

FOOD SOVEREIGNTY: UNDERSTANDING AND PRACTICES

"Food sovereignty and environmental stability are underpinned by agro-ecological production of food and the use of ecologically sensitive artisanal fisheries practices. But this form of production can only continue if society values and supports it and buys local foods whilst at the same time removing privileges and subsidies from industrial production systems that benefit transnational corporations." (Nyeleni, 2007, as cited in Suppan, 2008)

Chapter Overview

In chapter III, I have discussed the entire research methodology I based my research upon. I discussed philosophical assumptions including my research paradigms/worldviews. Further, I portrayed my research approach and research design. I also included research logics and genres. Similarly, I discussed the quality standards and ethics of my study.

This chapter more specifically concerns on the first research question; *"How do the farmers understand and practice food sovereignty?"* However, chapter begins with preliminaries, how I presented interviews, used quotations and developed themes. Similarly, I separated this chapter into; traditional farming, modern farming, use of chemicals and consequences, relation between agriculture and environment, local knowledge and technology, access and control over resources and production models as themes to support food sovereignty. Finally I concluded this chapter by summarizing the chapter.

Preliminaries

The results in this chapter are based on four transcribed interviews. The extracts of knowledge and information provided by the participants that are chosen for analysis are either quoted concisely or in a form of summarized portions of dialogue. I have presented narratives of my participants as significant statements (Creswell, 2007) to represent the meaning that I generated. I believed that these extracts represent the perceptions of the participants and subjective experiences. I also believed that the concise quotations allow for voices to be heard and also provided the readers the opportunity to add their own interpretations. I have not presented the extracts in a same order in different sections nor is each section representative of all the interviews. The rationale behind doing this was in attempt to present each section as a story. It is my personal intention to give meaning to themes that have built up over time as the interviews were assimilated.

I have attempted to cluster all transcribed interviews into three major research questions by providing various themes compatible with research questions. However, I took help of the six principles of Nyeleni declaration 2007 of food sovereignty to develop themes for analysis. But I was not relying on the principles for themes. I have only taken aspiration from principles which are suppose to be related with food sovereignty.

With extensive review of literature along with understanding the aspiration of the principles of Nyeleni declaration including consultation with agriculture experts, I came to know that I need array of themes to address particular research question. Based on my understanding and suggestion given by the expert, I explored understanding and practice of food sovereignty of farmers in following themes;

Traditional Farming: I found this theme is a foundation to address food sovereignty because the characteristics and objectives of food sovereignty rest on this theme.

Modern Agriculture: The second theme rest for understanding of two different agriculture either traditional or commercial and check to the current agricultural practice.

Use of Chemical and Consequence: This theme examines discourses of chemicals in agriculture and impact in society.

Relation between Agriculture and Environment: This theme calculates relationship and builds understanding of environmental degradation.

Local Seeds: This theme becomes a foundation of food sovereignty and is highly cherished by food sovereignty advocates.

Access and Control over Resources: This theme shows problems associated with farmers which are main issue in food sovereignty movement.

Production Model: This is a last theme for the chapter IV. This theme explains the production modality for sustainable agriculture.

Traditional Farming

I believe there need to be a number of themes in order to understand food sovereignty, and the knowledge of traditional farming is one of them. In order to make my argument clear, however, I must first clearly state what actually traditional farming is. Traditional farming is one which makes the best use of natural goods and services without damaging ecological, social and human assets (Pretty et al., 2003, as cited in Killebrew, Cullen, & Anderson, 2009). Similarly, in practice, it is commonly considered to use less external off-farm inputs, employ less improved management techniques and use locally available (natural) resources and purchased inputs in

efficient complementary manner (Lee, 2007). Currently people use a term "organic farming" instead of traditional farming. My first task is necessary to understand the elements related to traditional farming. For this, I need to give an account based on above scholars' statements that comprises natural goods and services and local resources/efficient inputs. Then I hope we will be able to understand what the traditional framing in a common sense is.

At the first, we should specify what the natural goods are. In other words, what are the possible elements of natural goods and services? This is probably the most difficult question to answer in a simple manner. Nonetheless, I think a helpful guideline to be explored; for instance, attempt to provide an account of the natural goods. Shepherd et al. (2003) for instance, claim natural goods as biodiversity and they have divided it into three components; diversity between and within ecosystems and habitats; diversity of species and genetic variation within individual species. Further, they have claimed that maintaining and enhancing biodiversity is central to developing sustainable farming system. More specifically, they have added that increased biodiversity plays a functional role by improving nutrient cycling, pest control and disease control in the production system. Following the line of Shepherd et al. (2003), I would like to argue that the way of farming is ecological farming with high care of available natural goods in the place of farming. I have got to some extent a similar view by Bajgain. He said;

> *As our tradition, traditional farming means just obtain production by throwing seeds over the bare surface of land without caring so much. Or simply get output of the input (crops from the seeds).*

Bajgain has viewed the traditional farming near with the view of Shepherd et al. (2003), that there are no other external harmful inputs included by him. But one

can speculate the view of Bajgain on the typical tradition of farming would be best known as slash and burn farming which is a form of shifting agriculture where the natural vegetation is cut down and burned as a method of clearing the land for cultivation and then when patch of land becomes infertile (Pradhan & Pradhan, 2006), the farmer moves to a new fresh plot and does the same again. This process is repeated over and over. He might be right because people at that time have no option to use of any inputs (fertilizers and pesticides) rather than natural goods and seeds and other few resources such as ass and animal residues as of manure in order to better production. This practice preserves and increases biodiversity and ultimately supports for sustainable agriculture. But Bishnu viewed quite practically in relation to farming practices in the past and in the present that;

> *In the past people thought that let us eat less and preserve for future generation but today people don't think like that way, they think let us eat immediately and die immediately (Chadai Khau Jaldi Mruu[1])*

According to Bishnu, we can find that in the past people were highly sensitive towards environment as well as their future generations. But in contrast, today people look only short time and try to accommodate as much as possible in a short period of time. Due to the nature of lack of vision, we are practicing environmentally harmful agriculture throughout the world. To prove the understanding of traditional farming practiced by them, Bishnu further said;

> *We are following same cultivation methods which were used by our forefathers. We use human labor almost all phases from preparing land*

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[1] An old Nepali proverb

(plough and tilling) and provide nutrient to soil by use of animal manures. I can still recall the use of oxen for plough in these lands before 7 or 8 year ago, so this is a traditional farming method for me.

Bishnu claimed that the farming methods practiced by them have several similarities with traditional farming. He has an understanding of traditional farming by use of local skills and technologies and also knew the importance of soil and its preparation methods as to be protected and nurtured for its long term productivity and stability. Undoubtedly, Bishnu understood the traditional farming. But I doubt on his views on use of human labor at almost all phases of cultivation and use of animal manures in the field because he himself stated the use of oxen before 7 or 8 years and they are using probably another means for ploughing the field. They are not only using animal manures but also some external farm inputs (imported) because of easy road connection with major cities.

Secondly, I would like to note about the use of locally available resources as of efficient inputs for the traditional agriculture. As we have noticed that traditional agriculture bases on the natural goods with local knowledge and methods. People use their own traditional knowledge and skill in farming practice in traditional agriculture. As evidenced, people in the traditional agriculture preserve seeds of their own, prepare fertilizer by themselves by the use of available local materials/particles, manage pest and insect by applying their own knowledge and retain soil fertility by their local methods. The preparation of compost manure by the traditional farmers has been very much appreciated even by modern agriculturists (Sharma, 1997). As another key feature of traditional farming, I came to know that the soil fertility has been maintained with crop residues, compost manure, and disposable organic materials. In traditional regular addition of crop residues, manures and other organic

materials to the soil is another feature of traditional farming, which is being applied by the farmers for a long time in Nepal. In support of the use of locally available resources for traditional farming method, Humagai said;

> *Traditional for me is use of locally available manures fertilizer in field to ensure the soil fertility and quality.*

I agree with the view of Humagai. In the past people have no option rather than use of available manures fertilizer either animal manures or prepared by vegetations. They have to depend upon the nature for agriculture. While view on economically, traditional farming is best known as subsistence or low-productivity farming on small plot. United Nation Environment Program (UNEP) (2011) has pointed out that traditional agriculture is low-value-added per worker and primarily reliant on extracting soil nutrients with insufficient replenishment by either organic or in-organic fertilizer and also susceptible to yield losses due to erratic rainfall, pest and weed infestation and other production related risk caused by poor management. Considering the above statement presented by UNEP, particularly on extracting soil nutrients through local inputs, I disagree because people have a long experience on how to retain soil nutrients by the use of available resources, their own methods and skills. I have heard from my parent that my grand-fathers, who used different materials and practice soil preservation techniques in order to maintain soil nutrients throughout the year for varieties of crops and vegetables. I agree with low value-added on worker and lower productivity due to inconsistency in the rainfall. In the past, people lacked improved irrigation facility but it does not mean that all traditional agriculture lacked irrigation facility because I myself witness that we had traditional people managed water-supply mechanism from local Manohara river to all farm field. Similarly, I discard on argument on poor management in traditional agricultural

method because traditional agriculture is done in small-plots by engaging almost all family members more specifically for self consumption. Sapkota has presented similar view on low productivity in traditional agriculture but he used the external farm. He said;

> *The farming without containing external medicines and chemical fertilizers is traditional where productivity is comparatively lower than the total land used for the cultivation.*

The text, presented by Sapkota depicts the reality of traditional farming practices without using modern and imported medicines and chemical fertilizers. It has to be clear by his view that what we mean when we say that traditional agriculture? By his code of not inclusive of external medicines and chemical fertilizers in agriculture is to be known as the traditional farming. While examining his second statement, there would be some debate over what exactly constitutes the essential claims of comparatively lower productivity. However, I can simply say that traditional farming method yields comparatively lower productivity which is expected to be more as it occupied the land for cultivation. But they practice crop rotation/single cropping at a season (plant one crop at a time in a year) and multi/integrated-cropping (two or more crops simultaneously grown in a single season) throughout the year based on the seasons so that they get all varieties of crop and vegetables for consumption. For the sake of this statement prove, I would like to present here an experience of Sapkota. Sapkota has said that;

> *In my understanding, traditional can be frequency of plantation of paddy, millet, maize and other crops throughout the year. It means if the crops are planted at a time in a year is also traditional farming. Not only that I am still*

practicing multi-cropping at my field especially at the time of Maize crop. So this is traditional for me.

According to him, he used to plant cucumber, bean, pumpkin and other vegetable plants along the Maize crop. The reason for this is to get required vegetables for household consumption. The cultivation practice of him shows the characteristic of the traditional agriculture to some extent but when one explore in use of inputs for that we will get unlike that traditional. However, due to the use of locally available resources and the use of local knowledge and methods in traditional agriculture, people get lower production in comparison to their labor. But it is sustainable and cares all organisms within. To maintain the essence of the traditional knowledge and methods, Ellen and Harris (2000) have characterized i) localness, ii) oral transmission, iii) origin in practical experience, iv) emphasize on empirical rather than theoretical, v) repetitiveness, vi) changeability, vii) being widely shared, viii) fragmentary distribution, ix) orientation to practical performance and x) holism. While considering on the characteristics, it is obvious that traditional knowledge and methods are sustainable and eco-friendly. It neither harms into the environment nor harm to human health and other inhabitants. As being a member of peasant family, I learned that traditional farming is synonymously known as the ecological farming in a general term. While talking about traditional farming, it constitutes peasants and small scale family farmers and contributes agro ecological production.

Understanding the traditional agriculture, I have tried to link agricultural practice with the "Theory of Justice" by Sen (2010). Sen argues that maximization process in economics is seen mainly as the result of conscious choice and the exercise of rational choice is typically interpreted as the deliberate maximization of what a person has the best reason to promote (p. 175). Relating with Sen, I would like to say

that traditionally people were not motivated by the economic benefits and by their occupations. It is seen that people in the past have consciously and rationally chose sustainable practice in agriculture. They had the best reason to promote sustainable agriculture to ensure the better future of the earth and environment. Similarly, the nature of what would be reasonable for people in the past to maximize must therefore, occupy a central position into the nature of rational choice (no more options) and the determination of actual choice (go with whatever they have).

In relation to the farmers' choice in agricultural methods either traditional or modern is determined by the identification of two different issues namely rational choice (inability to be sufficient focused) and actual choice (expected or demanded). The problem is on belief of implicit rather than explicit reasoning in favor of the maximization of what farmers want to advance at present. Now it is a major question whether rational choice in fact is a good judgment of what is actually chosen. Sen also argues on something to discuss and scrutinize about the two different issues profoundly for goodness of human beings.

Modern Agriculture

Previously, I have discussed the traditional farming to understand food sovereignty as practiced by the farmers. But, in this section, I will argue on modern agriculture unlike the previous discussion to understand food sovereignty to a greater extent.

In order to become more near on food sovereignty, we have to understand the components and inherent faculties of modern agriculture as well. Before proceeding however, I would like to make one more note about my aim in this theme. In arguing that modern agriculture is the best account of realizing the food sovereignty, I am arguing that it provides the suitable position to hold in order to understand underlying

aspects which are the foundation for this chapter. Because the underlying literatures safely argue that food sovereignty rejects those policies, actions and programs that undervalue peasants and small scale family farmers, threaten their livelihood and eliminate them. The arguments also talk about low external farm input for ecological production while improving resilience and adaptation in the face of climate change. I believe that given this particular epistemic position will help to rationally justify in believing there are tremendous differences between traditional and modern agriculture.

In fact, modern farming/agriculture is known as industrial agriculture, conventional and commercial farming which is energy and input intensive (Pradhan & Pradhan, 2006). My aim is to provide a successful argument so that one is capable to understand an ideal meaning of modern agriculture. To be more precise, I follow United Nation Environment Program (UNEP) (2011) report, which defines a successful philosophical argument in the following way;

> *Conventional or industrial agriculture correlated with increased used of non-renewable resource inputs, and have often entailed significant environmental costs due to their over used, it has encouraged by subsidizing inorganic fertilizers, fuel and electric power used in farms. In addition, bio-diversity losses have resulted from production subsidies targeted at a limited number of crops and also shrinking agricultural labor force dramatically by subsidies for farm mechanization.*

Over this statement, we can imagine an ideal debate between two opponents one is traditional which is previously discussed and next is modern agriculture. The present argument is successful among those people who are in favor of commercialized agriculture. However, each opponent possesses the highest degree of

philosophical and logical wisdom. But my task is not to argue either sides and seek to convince people of both opponents, indeed I have to examine the arguments of food sovereignty that have been discussed in literature in the local context. I must be able to tell whether farmers are aware of the established arguments of food sovereignty and are they able to practice them or not?

Nonetheless, my aim is to provide strong evidences of both agricultural practices and demonstrate that for those in participants' epistemic positions so that the evidence points towards food sovereignty. Following UNEP above, we can accurately illustrate high-tech input (machines, energy, chemicals) uses, cost of environment, loss of biodiversity, less use of agricultural labor and more energy consumption in modern agricultural production. The characteristic of the conventional farming is extensive use of chemical fertilizers, herbicides, pesticides, insecticides, fuel, water, massive land and continuous new investment such as improved seed varieties and machineries.

Having knowledge on modern agriculture, I have got similar type of responses, although participants have added their own understanding regarding modern agriculture. In which Sapkota said;

> *Farming with well management by using chemical fertilizers including use of required technologies/medicines is modern farming in which one can produces higher amount of crops and vegetables from the same area of land (huge quantity from less land).*

On his view, we can find similar argument such as the use of chemical fertilizer and pesticides but he adds about huge production by less land in modern farming. He also talks about well management in this farming. For his views on well management, we can speculate managerial skills through training or any other

capacity building programs for better use of improved facilities and techniques in this farming. Not only that, he also expects increase productivity opposite to traditional agriculture.

UNEP (2011) reports that conventional/industrial agriculture has gained impressive productivity in the last few decades mainly in much-publicized Green Revolution. It has figured out productivity increases of the Green Revolution relied primarily on the development of higher-yield varieties of major cereal crops (wheat, rice and cone/maize) by the increased use of irrigation, chemical fertilizers, pesticide/insecticide and fossil-fuel based farm machineries. It has not excluded its report to explain on negative consequences by the activities of modern agriculture. However, I was wonder when Bajgain put his view on modern farming. He has perceived the modern farming quite differently:

> *Modern farming for me is selection of improved seeds and farming activities should be done in more advances. Modern faming means not only depend on external fertilizers but also concern on how to improve locally available manures (Gothe Mal[2]).*

Bajgain emphasizes the local resources in modern agriculture by improving their quality and promoting managerial (skills to retain quality) capacity. He highlights to retain available elements in it and how to use it managerially without loss of all elements in the production. Furthermore, he simply argues on selection of appropriate variety of seed for a particular soil for more production. When we look deeply enough into his view, we can notice that farmers are aware of their problems

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[2] Manure fertilizer prepared at shed

but they lack capacity to mobilize available local resources in a proper manner due to unavailability of appropriate technology. In this case, we can say that particularly in Nepali society; we do not need to import high-tech technologies and external farm inputs to farming for so-called modern agriculture. Once farmers are able to enhance quality in their resources through any source, they will definitely increase in production. Further, the aforementioned text data let me realize that the seasonal cropping with using chemical fertilizers or depending on the locally available compost manures is also a way of modern agricultural practice. Bishnu explained how their few farmers are able to practice more advanced technique than other farmers in their locality more specifically in tomato farming. He said:

> *Few farmers of this locality have been initiated commercial farming (by use of chemicals, use more land for cultivation for more production) specifically in tomato production. In which they used quite different techniques unlike our traditional methods (only use of manure for fertilizer and use of small plot of land,) while producing tomatoes.*

According to him, farmers produce tomatoes more in quantity by applying improved methods in order to sale them. So that, he coins for it commercial farming. Use of different technique like; occupy more land for plantation, maintaining proper size of plantation, designing contour for a whole plot of land, use of polythene tunnel to protect possible harm, applying drip irrigation technique etc. He also adds use of huge amount of chemicals and pesticides for more production by them in their tomato. When we explore on his description, we can find that farmers are initiated to adopt new techniques for more production in their limited land by use of extra external farm inputs (fertilizers and pesticides). But we can notice, farmers use both kinds of fertilizers (local manures and chemicals) in their crops while exercising local level

commercial farming. Not only in commercial farming but farmers also use chemicals in their all crops, special in potato. But, they use negligible amount of English compared to commercial one. Bishnu does not accept the peoples' new farming activity as a modern agriculture any more.

According to him, people used chemicals with their local resources in order to bring about higher productivity for commercial purpose, but they are not able to cultivate under huge areas and also not able to bring high-tech technologies that are considered to be the key elements of the modern agriculture. Despite the fact I know that Nepali farmers have access in improved variety of crop and vegetable seeds.

> *I think this is some-how practice of commercial farming here in our locality but using small scale of chemicals in small plots of land by farmers is not modern farming. It requires huge amount of land so that production can be higher for more profit. Advanced and Genetically Modified Seeds (GMS), massive chemical fertilizers and pesticides, advanced machineries and irrigations facilities are used in modern farming. Said by Bishnu*

Along with the use of improved seeds in their land, I can understand, they are also suggested to the use of external fertilizers simultaneously. They have been using them since more than decade, now I think there is no room to escape, if they don't use chemicals there will almost no production. However, an amount of chemical use depends upon the types of seeds they planted. Further, Humagai has viewed modern farming as in change in the pattern of plantation of seeds variety. He specially

emphasized how local farmers have changed plantation of improved variety instead of local seeds of maize namely Ganga-Jamuna[3]. He said;

> *In the past farmers had their own local seeds of maize (Ganga-Jamuna) it was yellow in color. We planted in it their steep hilly. Now this maize seed is almost disappeared. Now we use imported maize seed which plant found to be in a shorted in size compare to other varieties of maize seeds. I think the use of new variety of maize seeds for steep hilly areas including required other necessary ingredients for that seed-plant is modern farming.*

While considering Humagai's statement, we can find the use of GMS popularly known as hybrid seeds by farmers which are access in Nepali market due to open border with India and China. As of him, the maize seeds which are planted by farmers in the hilly areas are not other than hybrid. If what I argued so far is true, although there is not enough evidence to believe. If we explore the last statement of Humagai, he implicitly explains how farmers use other necessary ingredients along the new variety of maize seeds when they plant. The other ingredient in my view is chemicals that must be prescribed by the experts either local or other to whom they contacted. On the other hand, besides hybrid seeds, farmers are encouraged to use improved seeds in their soil for more production. Due to encouragement by the authority, farmers are continually using them. As we know that improved seeds are not local and locally tested seeds. They are produced and developed at different areas. So that is not suitable at all agricultural zone even within a single region any more.

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[3] Local name of maize seeds

As a reason, farmers have to use chemicals in increasing amount to protect and for more production year after year.

Here we have two different views in respect to modern farming; a view by Bishnu, where he does not believe it is a practice of modern agriculture on present farming practice by the farmers using chemicals and improved seeds. Whereas Humagai believes, once farmers have changed agricultural methods either using improved seeds or chemicals is modern farming. Similarly, Bajgain argues improvement in the quality of local farm resources is a practice of modern farming. Whatsoever in the views of them, they are somehow trying to indicate the elements of modern agriculture in some or other ways.

While discussing the traditional and modern agriculture in the context of Nepali peasant society, I am in favor of Bajgain's argument in which he emphasizes farmers' empowerment and improvement or innovation of appropriate technologies which are affordable to famers. His argument is in favor of people's knowledge and highlights sustainable agriculture. In fact sustainable agriculture is prime importance to protect environment and human health. But this can be achieved only through considering on less use of chemicals and focus on local farm inputs in agriculture.

I tried my best to build relationship between the above argumentation of Bajgain with that of Sen's "Theory of Justice" on how power and its obligations go together in order to social justice. There are a number of reasons one may have to think that relationship by their own positioning. Sen gives an example of philosophy by Lord Gautam Buddha that we, human being have responsibility towards animals precisely because of the asymmetry between us, not because of any symmetry that takes us to the need for cooperation (p. 205). But my concern in relation to Sen's idea of power and its obligations is that the country or people who has capacity to innovate

new technologies for agriculture, must think on the existing problems of the farmers and introduce the things accordingly. So that, farmer will able to nurture and the room to integrate new innovation and his knowledge are opened up at the same time. The reason behind my argument is that developed countries are more powerful than developing countries and developed countries have prime responsibility towards developing countries just because of vulnerable of power relation between them.

To make clearer, I would like to link the agricultural innovations (that are applicable in agriculture) that can be freely undertaken in open to the farmers; I mean there is not any pressure to be created to the farmers. If farmers evaluate that the new innovation will create or make difference from present state of living, and then state has to formulate conducive atmosphere for continuing application in agriculture. A farmer has to consider by himself seriously what he should do with the new technologies or new technique of farming. Therefore, ultimate decision should be granted within the choice of the farmers themselves.

Use of Chemicals and Consequences

In the previous two themes, I have discussed some underling characteristics of traditional farming and modern agriculture. I feel those arguments to be the center of the food sovereignty. Furthermore, in order to understand food sovereignty, I think it is necessary to understand consequences by the use of chemicals in the agriculture. However, the effects of chemical fertilizers and other pesticides are not still widely spoken separately so far. This is partially because the effects are not scientifically tested yet largely in a global setting (Pradhan & Pradhan, 2006). But a case of environmental degradation and contribution in climate change by the agricultural activities has been seen globally. But reports of climate change have shown that there is highly risk of groundwater contamination, environmental problem and depletion of

agro-biodiversity but we are still not accurately sure how about in human health (United Nations Environment Program, 2011). However, agriculture and food research and consumers' experiences have claimed that agricultural products by intensive use of chemicals affect adversely in human health. There is certainly a room to discuss this issue; here I would like to address the effect of chemicals discovered by University of Wisconsin. Williams (2000) describes that the University of Wisconsin, Madison has discovered that the effects of chemical fertilizers are compounded when mixed with a single pesticide. They discovered altered immune, endocrine and nervous system functions in mice, as well as influence on children's and fetus's developing neurological, endocrine and immune systems. These influences threaten change in ability to learn and in patterns of aggression. According to Williams, one popular fertilizer, "Urea" produces ammonia emanation, contributes to acid rain, groundwater contamination and ozone depletion due to release of nitrous oxide by denitrification process. Experts have predicted that with its increased use in agriculture will create more problems several fold in the coming decades.

There is no doubt, presently Nepali farmers use Urea in their almost all crops and vegetables. By the way Nepal itself does not produce Urea in its land. The state imports and distributes to the farmers. Nepal has learned the lesson to use chemicals from India when India has economically succeeded the Green Revolution (Fujita, 2011) mainly in wheat, paddy and maize crops. Nepal was found so hastening to replicate the techniques in its soil. It has distributed chemical fertilizers (in 1970s, Bajgain said in informal conversation) for free to the farmers but farmers were afraid and reluctant to use that. This state of affairs is similar to the perception of Humagai. Although, I think that it is rare for many people to have contradictory perceptions of this event. Humagai perceived that;

> *At that time people were not aware about the use of chemicals in their farm-field. There were debate on who should use and in which land should be tasted chemical fertilizer at first. People were reluctant to use chemicals over their crops. However, after a long debate and discussion among the farmers with active participants of the external experts from government side were agreed to pilot a small plots within a locality.*

From the above argument, we are clear that how farmers are made attractive to the use of chemical fertilizer by the state. Before introduction of chemicals, farmers had no knowledge of chemicals and were practicing traditional farming by caring soil, environment and biodiversity. Farmers were very much aware to organize the production of crops, livestock and management of farm resources in such a way that it harmonizes rather than conflicts (informal conversation with Bajgain). Farmers with their traditional know-how and capacity had detent the soil fertility. But, with an introduction of imported chemical fertilizers they made dependent. Not only that as we have already noticed that availability of hybrid and improved varieties of seeds in local market is also contributed continuous and increased use of chemicals in the agriculture. I personally noticed that hybrid and improved seeds require more chemicals than local seeds. But farmers have not obtained formal training on how to use and how much to be use in their crops. They simply follow the direction told by local agro-vet. So that, this practice simply washes away environmental friendly organisms and damage soil and environment. Bajgain claims that due to the kind of weakness, we do kill about 15 different elements while try to kill a single pest at a time. Bajgain has his personal experience on how use of chemical effect in his bee-keeping. He said;

I have lost one bee-cube within an hour just because of chemical sprayed by Bhimsen uncle in his mustard field in 2062 BS, even located far from my house.

Indeed, the very fact that chemicals use in a place affects at other place as well, no matter how far the chemical is used. According to Bajgain, he had 10 bee-cubes at that time. When he examined about 10 o'clock in the morning, he learned all is right but an hour later he noticed something was wrong in a one cube. Finally when he went and examined about the cube and found all bees were died. When inquired at the concerned office, he was informed that it was caused by chemicals. The truth of this claim is absolute because there is not a proper and specific area for bees to go for colleting honey. Each bee-cube may have different area or route for it. This is one case we can visualize the death of bees but there are so many other cases that destroy which we can't easily account. In this connection Sapkota has substantiated on a view of Bajgain that honey-bee can be contacted with chemicals through air easily. However, Bajgain seems not against using chemicals in crops because each has to protect his/her crops. But his concern is that they should spray chemicals in the evening or if it is urgent to use in a day or morning they should provide pre-information to those who are keeping bees in order to arrange their bees at home. We have preventive measurement and technique being spoilt but due to lack of awareness and knowledge we are inviting undesired accidents.

Many agricultural reports have shown that having connection by road people have access in market and come to contact with various agricultural individuals. People are advised and encouraged testing a new variety of crops for higher productivity. When they once start to plant a new variety it means they start to use chemicals in agriculture. They may not get sufficient knowledge on how and when to

use. Without prior knowledge while using poison, farmers themselves get in problem and it also invites consumers in problem. And there is no doubt how other organism in soil, water and air severely affect. In respect to the use of pesticide, Shepherd et al. (2003) argue the most significant impacts on wild flora and fauna. According to them, the potential effects of pesticide use may be; broad-leaved weeds in cropped areas are desirable because the seeds of some are important food source for some farmland bird species. Similarly, pesticide also accidental poisoning to non-targeted animals, risk to beneficial insects and negative effects on soil organism as well.

Besides the effects on the farmland bird, animals, beneficial insects and soil, chemical also effects on human health. Sapkota has reported on human health problem by the chemicals. He said;

> *I heard that the people mostly women in Panchkhal[4] and Nala of Karvepalanchowk are affected by cancer because of massive use of chemicals in the farm. Where women are found to be more involve in farm activities compare to men partners.*

Notably, agriculture in Nepal is dominated by women workers (Government of Nepal, 2013). They are the first contactors with chemicals. But interesting case is that male partners bring the chemicals from the market place and give it to women for use in farm (informal conversation with participants). They get almost no information on their use and without any safety and following methods they just spray as they wish throughout the farmland. Mostly in green vegetables, they spray in a day and bring home to consume in evening from the same plot of land or sprayed vegetable

[4] A place of Kaverpalanchowk district

has been consumed and sold in the following day. This practice is common in Nepali society. Even though, cancer found in the respective areas may not be case of consumption of chemicals contamination foods but it is truth. Bishnu also presents similar view and says if we see the trend of agricultural practice, poison-free food is not possible. According to him we have contaminated chemicals/poison in environment, water, soil and other natural vegetations as well. So that to get health food for consumption focus should be given in integrity in production methods emphasizing on ecological farming by use of organic inputs, he added. Water, soil, air and the diversity of living systems has to be protected, if human health is to be protected (Gopalan, 2001). The focus therefore is to holistically examine the impacts/assess - the damage caused by current practices of food production and consumption practices before moving towards looking at what can be done to make the process sustainable.

On the other hand, I can also note here that over use of chemical fertilizers and pesticide have brought new disease in crops and vegetables. I am trying to give an account of my personal experience of negative impact by use of chemicals in my own locality in vegetable farming. For this reason, I am concerned with disease that actually exists rather than hypothetical disease that could be created in order to fit in notion. For example, in vegetables such as in turnip, radish and spinach are found diseases. In the roots of vegetable plants have small oval-shaped roots, locally people used to say *Ganthe Rog*[5]. I asked farmers and experts about it, but they were unable to say what it was in actually. So far I noticed it is still not properly identified disease

[5] A round shaped disease in vegetables

and not prescribed the way of prevention. I found similar views with the participants except Bishnu and they were told and made alert by concerned body to bringing the seeds from Bhaktapur and Thimi.

Even so, it is not quite clear what is the actual cause of the particular disease in vegetables either by the seed itself or by damage of the soil. It is necessary first to clarify to allow possible intervention to cure the disease in vegetable. But it is of prime importance to consider on what will happen if we continue consume those diseases proven food in our daily diets. There is no room to discuss the effects by the use of chemical fertilizers and pesticides in agriculture. Perhaps the most problematic aspect of chemical is directly concerned with soil, water and environment. Due to the fact that there are many unidentified consequences yet to be found, there is common consciousness on relationship between agriculture and environment. Agriculture affects environment and vice versa. In this connection, I have prepared next theme to scrutinize the relation between agriculture and environment.

Relation between Agriculture and Environment

In the previous theme I have explored issue relating to consequences by the use of chemicals in agriculture. My aim in this theme is to present the argument on environmental risk in general and relation between agriculture and environment in particular. In so far as the environmental issue is concerned, it is relatively new to most farmers. Ikerd (1999) claims that few people had even heard the word Environment" before Rachel Carson's book "Silent Spring" hit the best seller list in early 1960s. According to Ikerd, farming especially by the use of chemicals and pesticides was the primary focus of Carson's warning of a coming spring when no birds would sing. Carson in his book (Ikerd, 1999) has visualized on environmental problem by use of chemicals in the agriculture and he found farmers interact more

closely with the natural environment than almost any occupational group. In fact we know that farmers are among the primary harvesters of the ecological payment of the land by the nature's yielding human needs and wants. Further, they are also among the first to feel the impacts of the environmental problem and sensitive on nature's fighting back to protect itself from harm. As we know that with every attempt of human intervention more on nature, there is subsequence environmental risk. The book of Carson has created an awareness of the negative consequences of the use of chemicals in agriculture and the sparked the first environmental movement in United States (Areni, 2011).

Today, health risk has been widely reported from food, drinking water contamination, breathing polluted air, association with animal hormones and genetically manipulated organisms in the day-to-day life of farm families and farm workers more specifically (Pradhan & Pradhan, 2006). Not only that risks resulting from damage done in ecosystem; such as pollution of water and air with chemicals, deposit, and poisonous odors affect farmers which affects mostly those settlements or living downstream/downwind from the farm (ibid). Associated environmental risks are known to farmers - their less ability to farm and choose appropriate method of farming. In relation to choosing of the farm inputs, Sapkota said that;

> *While farming, obviously we use chemicals either to prevent from disease or to yield more for profit. By doing this, we destroy environmental friendly pest, insects and other inhabitants in order to abolish diseases inborn by unnecessary pest and insects.*

In the past, farmers used environment friendly agricultural method by use of locally available materials to protect and preserve the crops. Presently they have been using chemicals one after another to protect their crops from diseases. According to

Sapkota, they are aware on environmental problem caused by the use of chemicals in their farm. He says it contributes to increase heat in climate and helps to destroy natural vegetation and other species which are the part of the ecosystem. He also says that we are unknowingly taking poison through our regular food; when an individual crosses 50 years or will unable to digest the propensity of poison then diseases like; diabetes, blood pressure, cancer and other health problems will fine. Giving examples he concludes that there is mutual relationship between agriculture and environment.

Increasing food demand including with policies encouraging higher production and technological and economic changes have often led to intensification of agriculture and farming on environmentally sensitive land, which in some cases has led to environmental harm (Joint Working Party on Agriculture and Environment, JWP, 2003). Chiefly these harmful environments include water and air pollution, but also the loss of wildlife, habitats and landscape features. Soil degradation and water depletion are also serious concerns in some areas while at other places and times, transforming the farming method that is traditional into modern is a challenge. With the new agricultural practice and land use pattern have changed the scenario of relationship between agriculture and environment. Bajgain has noticed that;

> *Degradation of soil fertility due to soil sealing and erosion by continuing contamination from pesticides and insecticides, use of chemical fertilizers, acidification, and salinisation.*

The productivity of soil depends upon content of mineral nutrients, organic carbon and soil structure (Khatri-Chhetri, 1991). Erosion affects all these soil properties. We noticed from the above discussion that unsustainable agriculture practice loses organic matters of soil, soil biodiversity and deteriorates soil fertility. Bajgain has found a problem in modernized farming method that they do less frequent

- tillage or treatment of soil. We know, without tillage sufficiently as required to plant one crop to another means reduces soil fertility and stability. Besides, due to loss of soil capacity, it further hampers to remove contamination from the environment by filtration and adsorption (Khatri-Chhetri, 1991). It causes water contamination and finally affects in human health. Not only that, due to unsustainable agriculture practices in modern farming, Bajgain noticed many varieties of naturally available vegetations and other eco-friendly organism are depleting day by day.

As we have witnessed that along with the extensive use of land and water resources for cultivation through commercial farming purposes, there is significant cause of loss of biodiversity both in land and water. Current practice of farming has led to changes in habitats in a number of areas. Valuable species are predominately associated with natural areas including grasslands, wetlands, native forest, natural vegetations, bushes and virgin areas. So pressures on land use and over use of water due to adaptation of intensive farming practices especially in developed world have led to concerns relating to the preservation of landscapes and protection of source of water associated with traditional agriculture practice. Agricultural Policy in developed countries (UNEP, 2011) has reported that European countries, Japan, North America, New Zealand, Korea, and Australia have a general consideration on preservation of rural landscapes as a priority of government.

Currently, scholars are willing to call most environmental risks actually as uncertainties rather than risks in agriculture (Ikerd, 1999). For example, many risks in farming are associated with the risk of rain in traditional farming. According to Ikerd, a farmer remembers or collects information concerning the conditions under which bad things occurred to him like; crop failures, animal health problems, low prices, inability to get credit, and shortage of fertilizers have happened in the past. Further, a

farmer thinks that the future is never like the past, but past patterns may have an observable tendency to be repeated in the future. So farmers can calculate risk of a crop failure based on past history with similar pattern of risks. Risk estimates may change the uncertainties of the particular crop. For me, the actual yield is never known until the crop is harvested but the risk/uncertainty or chance of a poor yield can be calculated at any point along the way. That is a case that there is negligible recognition of the need to improve environmental information in agriculture to enhance benefit and reduce harm so that environmental effects may ensure the sustainability of resources use. Bishnu has noticed a complex relationship with natural environment with agriculture where identification of environmental effects to agriculture is difficult and not fully understood by the common people. Bishnu said that;

> *Agriculture requires land and water resources which are naturally available and it also generates waste and pollution but also recycles natural resources, changes landscapes and habitats for wildlife. As a major user of natural resources, agriculture has a significant impact both harmful and beneficial on the environment by changing the quality and quality of soil, water, atmosphere, biodiversity and landscapes.*

While considering on the understanding of Bishnu, we can notice that most farmers fully understand how to manage the soil, water and biological resources at their disposal in order to maximize commodity output, at least in the short term. But I think that they were found to be unaware of the long-term consequences of current farming practices on these resources, or availability of alternatives. For that building on farmers' interest in environmental relationship with agriculture by making sound advice and information available can help to overcome resistance to necessary

changes and ultimately minimize the need for more costly agri-environmental policy measures (JWP, 2003). A further benefit of providing information to the farmers are assisted in identifying emerging trends in consumer concerns relating to the environment and thus encouraged to develop new market opportunities. Similar concern has been found with Humagai, he demands indicators to measure the environmental impacts on agriculture and vice versa so that safety measurement can be applied for the mitigation of degrading environmental issues. Humagai said that;

> *There is no doubt in the relationship between agriculture and environment but measurement of relationship between agriculture and environment is not an easy task. However, there is urgent need to develop common understanding and methodologies to measure impact of performances through construction of agriculture-environment indicators. Those indicators will helpful to measure agricultural impact on environment and environmental impact on agriculture.*

In his perception, currently agriculture is adversely affected due to climate change. Farmers have almost no ideas about climate change and its impact on their crops instead they have been using chemicals extensively in order to produce more. We understand that sustainable agriculture is important to feed increasing human population globally. But it does not mean for extensive farming practices (commercial agriculture) that has to cause environmental degradation, global warming and climate change. Again climate change and global warming has been creating new risks to the farmers (Ikerd, 1999) and they are unable to produce more as they expected. As we know farming in developing countries are mostly depend on external environment. If climate is favorable they get better yield if not they get loss. But it is reported that along with climate change in global, farming activities in developing countries have

been adversely affected. So, the role of agriculture in meeting the challenges can sometimes be overlooked. We cannot truly discuss the preserving environment, bio-diversity and natural resources simply taking consideration of agriculture. Where half of the habitable arable land on the earth is covered by agriculture, we must address importance of eco-friendly agriculture and its improvement in order to better preserve environment (soil, water, air and bio-diversity) (Windfuhr & Jonsen, 2005). Therefore the relationship between agriculture and environment is interdependent.

Despite the fact, we have grown our appetites for things that are either pulled from or are dumped into the natural environment. Our extractive technologies to satisfy our greed have become more effective and thus more destructive on the other hand .Yet, as we witness that we are degrading and destroying our natural environment and the ecosystem of which we ourselves are a part, environmental risks are common to individuals, farmers and to the whole of human society. Our collective awareness of environmental risks, protection measurements are equally important and not to neglect for sake of human dignity. Furthermore, we need to more focus on the use of local environment friendly knowledge such as preservation of local seeds, use of locally prepared fertilizer in crops and also preference to the use of local appropriate technologies which does no harm to the environment.

Sen (2010) argues that lack of reasoned engagement and action by the people, natural environment is deteriorating day by day. He says because of our action today to hurt yet to be born or about the future generations' interest (p. 48). We are not preventing justice to them and adequate care of the environment around us and the sustainability of the requirement of good life.

Local Seeds

In the previous theme, I have discussed various possible responses to the issues of ecological and conventional agriculture to support relation between agriculture and environment. But under this theme, I will discuss the importance of local seeds in order to have food sovereignty.

To be more specific, we know local knowledge and technology are the peoples' own innovations. This amount of knowledge has been transmitted from one generation to another and between community members from one generation to the next. But, I believe that the introduction of new technologies into the community can alter the knowledge of the community members acquired about their technologies/surrounding environment. Further, the new knowledge and technology creates a distance or diminishing exposure between community people and their existing environment. Bone et al. (2011) have stated that each individual in community possess the ability to observe the current state of the environment at time and compare it to the average state of the environment from the past.

Food sovereignty emphasizes using farmers' knowledge and technology to develop indigenous seeds and livestock varieties. Nyeleni forum has explained that "The majority of world's food is still being produced or harvested at relatively small scales by local communities, based on the local knowledge, using local based technologies and locally available resources" (Suppan, 2008, p. 117).

Based on the literatures we can find that many scholars in the world including La Via Campesina have noted that vast plantings of patented and genetically modified seeds have been threatening the local seeds and technologies of agriculture. Local knowledge represents a cumulative body of knowledge, practices and beliefs of human and environment relationships exist within a community. This knowledge are

constructed within a community and transformed between generations. Agricultural practice based on local knowledge and technology promotes sustainable agriculture. According to Fernandez (2001), there are initially defined five dimensions of sustainable agriculture; ecological soundness, economic viability, social justice, humanness and equitability and cultural appropriateness, but two more components are added which are: appropriate technology and full development of the human potentiality.

Seed is one of the main issues that are held in high regard by the world food movement in food sovereignty. The movement advocates that seeds are to be grown and preserved in community by the local people. According to the movement, farmers should have sovereignty over the seeds so that they have to choose what they want to grow in the farm by themselves. It has claimed that presently people are mainly based on chemical inputs, mono-cropping system, and duplicate and hybrid varieties of seeds. We know these varieties have been developed abroad and are limited in genetic diversity. Moreover, these modern varieties have been selected in fact for maximum yield providing optimum chemicals and extensive external farm inputs. But on the other hand, locally produced seeds have contained all quality/features and they are also known as the sustainable seeds. As we know that local varieties of seeds have no longer limitation regarding their utilities as planting materials, perhaps local seeds have a representation of the essence of organic agriculture (Fernandez, 2001). Moreover, the seed is not just one that has been produced, grown or managed using locally available inputs and practices, but one that encourages organic farming through the movement's accepted principles.

As per my field experience, the people including my research participants have been using local varieties of seeds. The study area, Kushadevi constitutes three

major crops; Maize, Potato and Paddy. According to my participants, they are producing all three types of seeds at their locale and they are also contributing to District Agriculture Office (DAO) by producing Maize seeds to distribute throughout the country. Besides, Maize, Potato and Paddy; they also grow a variety of vegetables but they bring seeds from different markets. But Sapkota was not satisfied with the technique of maize seed production by the farmers in his community, he said that;

> *A technology of seed production we are applying locally is not appropriate. Agriculture Research Office of DAO provides its special maize seed (Mul Biu[6]) to the farmers to produce more seeds so that it should be distributed throughout the country. But what is happening in practice is that office provides seeds but does not monitor what has happened with the seeds.*

According to Sapkota, it is a duty of the concerned office to monitor properly from the beginning how about the maize plant, how to mulch, at what distance it should be planted, amount of fertilizer needed, which ears of corn (Makai ko khoya) and kernels on the cobs is suitable and how about the seeds in the husk. But he claims that due to weakness of the office, farmers harvest all categories of maize and sell them to office and at the end, the office distributes/sells them to other farmers in the name of good maize seeds. He suggests for strict monitoring and evaluation by the concerned authorities and if farmers produce/sell the seeds through inappropriate measures, they should be punished. On the other hand if farmers produce by applying good method then they should be appreciated. Further, he perceives that if the state

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[6] A mother seed

has such policies, the real hardworking farmers will produce good seeds and that will also be beneficial for other farmers who use them.

Not unexpectedly, through the view of Sapkota, we can reckon the necessity to build capacity among the farmers in order to produce improved seeds locally. It is also a fact that traditional methods of producing and preserving seeds are not appropriate (said by Sapkota in an informal conversation). Fernandez (2001) suggests developing local varieties of seeds as organic seeds for ecological crop production. He believes that organic, local seeds production should follow the principles of ecological farming such as biodiversity, living soil, recycling, natural resource conservation, appropriate pest management and appropriate genetic resources and varieties. Similarly, management of manures and rotations are encouraged. Guilaran (2001, as cited in Fernandez, 2001, p. 9) has outlined some criteria for traditional and improved local seeds varieties;

Table 5

Characteristics of Traditional and Improved Seeds

Criteria	**Traditional Varieties/Seeds**	**Improved Local Varieties/Seeds**
Genetic/varietal Diversity	Parents diverse, seed-lot composed of multi-lines, field adapted to multiline planting	Does not promote mono-cropping
Adaptation	Locally adapted	Locally adapted or location-specific
Resistances	Horizontal resistance	Relies more on horizontal rather than vertical resistance
Production & quality	Seeds can be grown locally, of high quality (e.g.,, viable)	Comparable to or much better than HYVS
Response to organic System	Grows well under organic Production	Good to excellent when produced Organically
Breeding,	With desirable traits for local	Improved or bred by farmers

improvement of seed Performance	breeding, done by farmers	themselves, improved thru use of local varieties & natural process of hybridization, not genetically tampered with (no GMO contamination, not developed thru genetic engineering), varieties are stable & reusable, not for monocropping but for diversification etc, done by farmers
Reasons for use	Mainly for food, medicine etc to meet local needs	Mainly for food, medicine; to meet local needs; not commercialized, affordable
Yield, income	Provide decent yield and Income	Provide decent yield and income
Market	Marketable, meets consumer needs & taste	Marketable, meets consumer needs & Taste
Availability and Distribution	Not for commercial sale but can be available thru seed exchange or barter	Available in greater quantities for adequate adaptability trials
Intellectual Property Rights	Not patented in any way	Not patented in any way

(Source: Guilaran, 2001, as cited in Fernandez, 2001, p. 9)

Based on the above criteria, we can justify the views of Sapkota that we should start training our farmers to produce seeds at the local level by giving due consideration to preservation of the traditional varieties of seeds. In response, Bajgain was already involved in the training program provided by the DAO due to fact that he was able to assess the mistake done by the farmers while producing maize seeds at the community. Bajgain explained his experience learned in the training as;

I myself was involved in seed production. I can say we did a mistake in maize seed production. We did not follow the methods we were taught in training. As

I can recall that there must be 5 'Ma' (Upayukta Mato, Ghoya ko Majha, Bali ko Majha[7], and .....) while selecting Maize seed, which we did not care about.

According to Bajgain, DAO has provided them with a good opportunity and trusted them to produce good seeds but due to selfishness they did not follow the methods which were supposed to be followed while producing a good maize seed. But his concern was that DAO should monitor properly and prescribe only good seeds and discard the bad ones. He also emphasizes to manage tag system so that one can easily recognize a good seed at any place. In relation to necessity of improved technology, Bajgain profoundly says that time has changed so that solely depending on traditional seeds yields less and on the other hand depending on hybrid seed is also not favorable to the farmers. In that situation according to him needs improved varieties of seeds developed at locally either by farmers or DAO. Further, he perceives that it is better if state provides opportunity to learn for producing improved seeds locally by the farmers themselves which will definitely increase the quality of the seeds. It will also abolish dual problems of seed scarcity and dependency forever. Being a participant in the training, he has good knowledge and understanding how and what the method to produce the maize seed is. Due to the fact, he himself blamed for cheating while producing and selling seeds.

But Bishnu has almost no idea on maize seed production by the farmers at the local level, but he was aware of seeds like maize, paddy and potato produced at the community. But, Bajgain said that it should be noted that the seeds of maize, paddy and potato are not originally produced by the local people. Today farmers are using

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[7] Characteristics of seeds

seeds produced by Agriculture Research Centers. Regarding the paddy seeds in Kushadevi, initially farmers brought improved seeds developed by National Agriculture Research Center (NARC) (locally people likely to say Khumaltar) but now they produced seeds by themselves applying local techniques for further plantation. Currently, they are using Kumalcha 4 and 10 widely. Similarly, I have learned that the local potato seed is also replaced by the improved seed. Regarding a preparation of potato seed, Bishnu said;

> *We separate potatoes for seed at the time of harvest which we are of good quality. And then we send them to cold-store nearby or somewhere coding our identity outside the sack. It remains in cold-store about 4 to 5 months and we bring them back at the time of plantation paying required charge and a cost of transportation.*

According to Bishnu, normally, they grow potatoes twice a year; immediately after harvesting paddy, it may be in *Asoj*[8] and next is in *Falgun*[9]. The best season for potato is Falgun rather than Asoj. They plant potatoes in Asoj only to use land from being fallow and get less yield as compared to Falgun because of cold and frost *(Tusaro)*. Presently they grow British (longer in shape), red oval-shaped *(Jhapre*[10]*)*, white potato (*Janakdev)* and the like varieties of potatoes. In addition to Bishnu, Humagai has explained about the maize seed production and preservation by the local people at Kushadevi. Humagai argues the techniques used by the local people as tradition that has been passed through generation to generation and it has undergone

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[8] 6th month of Nepali calendar

[9] 10th month of Nepali Calendar

[10] Local name of the type of potato

the rigors of their environment and culture (Fernandez, 2001). Humagai has the experience of producing and preserving maize seeds due to his house atop the hill. He said;

> *Normally, farmers separate seed of maize during the time of harvest and keep them at home separately as done by their forefathers. At the top hill, farmers do not use any anti-insect medicines due to favorable weather. They put them in a mud made vessel. When I have a chance to interact with farmers from the top of the hill, I highly recommend protecting traditional seeds.*

Humagai explains how people in community preserve and protect maize seeds by applying local knowledge at their own houses. But he seems to be worried about traditional seeds, knowledge and technology being disappeared. Obviously peoples' properties are supposed to be preserved. In order to preserve peoples' seeds, Fernandez (2001) says a critical element relevant to consumer readiness for organic farming is basic education. Further he says current approaches to teaching are highly short on appropriate pedagogical techniques to make students learn how to learn, to be critical, integrative and be one with nature. He is in favor of organic seed for organic agriculture for the preservation of the traditional seeds.

Agricultural seeds are the products of farmers. They have been producing seeds till now locally. The seed production by the use of inorganic fertilizer has shown the seed deteriorating. More specifically, initiation of seed production by the multinational corporate houses through modifying genetically has put seed in danger (Nyeleni, 2013). In the past, seed has passed through the hands of local people and it has undergone the rigors of their environment and culture (Fernandez, 2001). Not only that Fernandez also emphasized that seed must have passed certain test to ensure

sustainability which in many cases are conducted by the women. Furthermore, maintenance and safekeeping of the seed also falls under the hands of women.

Access and Control over Resources

In the previous theme, I have pointed out the importance of local seeds and urgency to protect locally to secure sovereignty over seeds by the farmers. In this theme, I argue about access and control over resources specifically by the smallholder farmers.

However, many papers written about the food sovereignty have particularly highlighted issues such as access to land, water, agricultural bio-diversity, traditional technologies, farm input, market of local production, training, post-harvesting technology, transport, financial credits, gender equality under the law and so on (Windfuhr & Jonsen, 2005). Within many of these sects, extensively the poor smallholder farmers live and work on marginal land. Majority of them live in remote areas and suffer because of less developmental interventions such as market facilities to sale their products, agricultural research, good irrigation facility (ibid). Further they work extremely poor conditions; lack of capital and any other support service from the centre. Rosset (2011) says in country after country, the proportion of food coming from the small farm sector is far greater than (typically more than double) the proportion of land that is actually in the hands of small-scale farmers. Further he says in order to provide a life with dignity for farming people, protect rural environment and correct the structural causes of food crisis need to restore public sector rural budgets that were cut under neo-liberal policies, restore minimum price guarantee, credit and other forms of support and carry out redistributive agrarian reform.

In relation to access in land, Sapkota himself is a victim. He has not enough agricultural land to depend on agriculture throughout the year. He has mortgaged land

for agriculture. He demands affirmative evaluation of their hard-work in land by the state policy of "Land to the real farmers" (*Jasko Jot Usko Pot*[11]). He believes that they do not need to import skills in agriculture because it is already with the people at the community. He said;

> *A farmer is able to innovate new technology suitable to local context but due to lack of capital he/she is unable to materialize it. So farmers should have easy access to credit.*

Sapkota knows farmers get access to credit/loan in banks only when they have appropriate properties for security. But due to lack of that they were deprived of loan from banks. Without adequate capital, one cannot get involved in a new innovation as of Sapkota. He also talks about the scarcity of agricultural land to the real farmers. He perceives difficulties due to lack of sufficient agricultural land to get involved throughout the year in agriculture. At the same time, he also talks about problem of capital to invest extensively for agricultural productivity. I should also note here the statement of Suppan (2008), according to him access to resources is not only a matter of social justice but of economic efficacy, without distributional equity of resources for the more than 70 percent of economically active women who work in agriculture in LDCs, it may become impossible for them to continue to provide household and national food security. In a matter of social justice in access to public resource, Sapkota has experienced how they were deprived of getting resource from Village Development Committee. According to him, two year early a group of farmers went to VDC office in order to discuss the fund for compost (Gothe Mal) fertilizer

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[11] A kind of land reform policy cherished by the farmers

improvement plan, irrigation and plastic tunnel. They interacted with VDC secretary and convinced him to release 15% budget of VDC for agriculture including Rs. 1000/- (one thousand) per person who claim for plastic tunnel. After short period of time they were informed that VDC office was unable to release budget for them due to participating in IPM. Finally, they discovered that little fund was spent and rest got frozen. By this experience how an individual farmer will get a healthy treatment by the state even though a local VDC office knows each farmer individually. Having this practice at the local level, Sapkota said;

> *Hard working farmers should get the help and if they misuse the fund, they should be punished. Even I must be ready to pay penalty if I do wrong with the public fund.*

Sapkota seems upset and says if there is not interactive participation of farmers in policy formation and implementation at VDC (local level), then there will not be encouragement among the farmers. He also recalls on the absence of a formal organization among them to work in favor of farmers' right. But when project comes, the project forms temporary farmers' groups and it dies along the project completion. He feels the necessity of a formal organization in the community for the welfare of the farmers.

While looking closely at the issue of not getting fund by the farmers in the above case, there exist technical hindrances created by inter and intra governmental structure in budget disbursement. If there is the peoples' representatives in the VDC (local level), it will be easier for them to receive the fund. Bajgain believes lack of people's representative in local bodies made VDC budget freeze. One could also point out the problem of political transition in which absent of people's representatives a VDC secretary alone can do nothing. In the past when there were elected people's

representatives, they poised political power and can take decision instantly in favor of the people. Clearly, according to Bajgain, lack of peoples' representative, a VDC secretary does not take a risk, and he said;

> *Now VDC secretary does not want to take a risk personally and he does accordingly what the representatives of the major political parties want. Another weakness we have is lack of farmers' organization.*

Organizing means power to lead and helping hand to each other. Suppan emphasizes favorable external institutions for peoples' benefits and welfare. Suppan (2008) says that if intergovernmental organizations and international institutions have to invest in securing access to indigenous resources rather than in promoting technical fixes that are directly or indirectly imported, female farmers who are vulnerable enough will get with little access to resources, who barely manage to provide food, fiber, and medicine for their household, could likely do a great deal more.

I can also note here that smallholder farmers work hard day and night. Due to their hand work they are able to produce higher in compare to large holders from their small plots of land. Rosset (2011) has reported that small farms almost always produce far more agricultural output per unit area than large farms more efficiently. Rosset calculates inverse relationship between farm size and output, according to him the relationship between farm size and total output for 15 countries in the Third World (his own experience and experimentation), in all cases, relatively smaller farm sizes were much more productive per unit area two to ten times more productive than larger ones (Rosset,1999, p. 26). I agree with Rosset but the problem of smallholder is that they heavily depend on the nature for their farming. If something wrong during their crop plantation, they will get lower production. This view matches with Bishnu, who seems highly optimistic in production if farm inputs available in time and favor

by the climate. He talks about potato. Normally they cultivate potato twice in a year but they produce tentatively lower potato in winter as compared to summer just because of unfavorable climate in winter. Bishnu further said that;

> *We have irrigation cannel but we are not able to supply water at a time when needed. We have to wait for our turn but it takes time so it affects on productivity.*

Not only Bishnu, but Nepali farmers throughout the country have found irregularities in accessing the farm inputs. If they are denial to get resources in time then how we can presume a good harvest. Kushadevi poses two medium sizes of rivers namely *Lilabati* and *Roshi*. Besides that it has various water sources (springs) because of its hilly geographical location. Proper management of water will permanently solve to supply water in the farm. Available natural resource such as water can be managed locally. Rosset argued for land reform from below, carried out by new generation of sophisticated social development around the world. However, for sustainable management of the resources of the country, it is under the state responsibility of handling natural resources to overcome future dispute. In relation to availability of per capita land resource to farmers in Kushadevi is as similar as other parts of the country i.e. decreasing year after year. Even though the farmers are small holding, they are able to produce more due to adoptability of appropriate technologies compared to the past. Humagai presented his view similar to Rosset on more production by farmers even having fragmented plots of land. Humagai said;

> *The new farming method comprises seasonal and off seasonal vegetable farming. The method increases income of the farmers but at the same time I also noticed losing their control over traditional resources.*

Here, from the above statement, we can find a clear picture of how farmers are losing their control over their traditional resources due to their attraction to short term benefit. It is a case that the benefits of small-farm economies will extend the farmers beyond the economic sphere. Rosset (2011) says a large commercial farming method imposes a scorched-earth mentality on resource management (no trees, no wildlife, and endless monocultures) whereas small farmers can be very effective stewards of natural resources and the soil. But very recently small farmers are attracted towards chemical farming for more benefits. If they continue to depend on the chemical farming then there will be serious problem on sustainability of farming and earning by the farmers. It has to be measured with small farmers' utilization of a broad array of resources and possession of a vested interest in their sustainability. It is beneficial to continue their diverse farming systems, incorporating and preserving significant functional biodiversity within the farm. Small farming practice continues preservation of biodiversity, open space and tree, reduce land degradation and provide valuable ecosystem services to the larger society.

Access and control over resources more specifically can be achieved by the redistribution of fertile lands to the farmers. The effort can fulfill a number of functions in more sustainable models of social development such as; poverty reduction, economic development, sustainable food production, environmental sustainability and social harmony. Land is a major resource for agriculture. Scientific land reform or land redistribution will bring many positive changes and impacts into the society. The food sovereignty movement specially advocates access and control over agricultural resources by the real producers.

Obviously, resources should be given to them who can use them properly. Sen's theory of justice in regard to resources is as similar as his equality of capability

approach. He says since resources are merely useful and for the sake of something else and the case for equality of resources rests ultimately on that something else why not put equality of resources in its place as a way of getting to equality of the capability to achieve (p. 265). Considering Sen's statement, it is clear that resources should be given to those who are supposed to utilize them properly. In this respect, farmers are only the best option who can utilize the agricultural land to the benefit of the rest of the society. Along with agricultural land, farmers should have access and control over resources which are necessary for agricultural activity. Having access and control over agricultural resources can guarantee sovereignty over food by the farmers.

Production Model

The previous theme was about access and control over resources by the farmers in which I have claimed necessity of access and control in resources by the farmers to materialize food sovereignty. In the same way, let us examine for a moment production model followed by the farmers in this theme.

Traditionally, we understood that farmers produce goods based on environment-friendly conditions. Presently, environment friendly agriculture is precisely known as agro-ecology. Agro-ecology is largely organic agricultural production that relies on local knowledge, technology, and farm inputs. On the other hand, industrial agriculture practices monoculture by the use of heavy machines and chemical for agricultural productions. Gopalan (2001) views above stated two different practices of agriculture in two stages; pre-green revolution and post-green revolution. According to him, until the green revolution, food production was based on traditional practices of small farms, labor-intensive and practices such as manuring, limited tillage, ridging, terracing, composting organic matter, and recycling

plant products into the productive process, that enhance soil conservation and fertility. But with an advent of the western model of large scale, mechanized, high yielding, corporate agriculture and its promotion as being the only effective solution to feed the world's population, the green revolution emerged as the only strategy. I think two different production models can be seen two different ways of benefits perspectives. Agro-ecological production model promotes environmental sustainability and provides direct benefit to the farmers and justifies social justice and harmony. Whereas industrial production model provides benefit opportunity to the corporate who are involved in agriculture. Suppan (2008) derives a note from Nyeleni Forum in which he says ecological production can only continue if society values and supports it and buys local foods at the same time removing privileges and subsidies from industrial production systems that benefit transnational corporations.

Developed countries like USA and EU have been emphasizing industrial production and provide substantial subsidies for their producers in agribusinesses, which encourage overproductions and export subsidy, make them able to dump food into the poor countries (Suppan, 2008). But, on other hand, we know that in the developing countries, agriculture is taxed and support services are poorly equipped. Not only have that farmers held insecure land titles, problem of access to resources such as capital or credit and lack of technical and economic support. The state seldom pays enough attention to this section of farmers and agricultural research and extension is directed mainly towards commercial farming.

But people are gradually aware that the causes of threats in environment and agricultural production come from the industrialization of production. Sapkota claims that commercial farming is threatened in the life of small scale farmers. He also blames that state has undermined the farmers inviting commercial farming. He

emphasizes a sustainable agriculture with a good plan which is only possible by state intervention. Further he said;

> *The most importantly, state has to take initiation and find which crop is suitable in which soil for more production so that farmer can plant them accordingly in minimizing risk.*

Sapkota demands state intervention for effective research on agricultural land to end the scanty production in a given area. He thinks farmers in a certain area should produce homogenously as higher as possible like in commercial agriculture for access in market. While saying that he maintains that one cannot back purely traditional agriculture but somehow they must adopt available new technology and inputs which is affordable. But immediately he corrects not to solely depend on hybrid and external inputs for farming. Similarly, Humagai also views pre-requisite on homogenous production for farmers' prosperity. For that he argues state should come up with uniform agricultural production strategy and a certain area should be identified where a specific crop can be cultivated so that it makes easier to market collectively. He has also visited to DAO to get information regarding to quality and types of soil of Kushadevi in order to cultivate specific crops for more yield. He is aware on climatic differences throughout the region and he said that;

> *People should have knowledge on climatic variation even within a district. Not only that even in this Kushadevi, we can find variety in climate top to bottom. In these climatic variations same crop cannot suitable at all. On the other hand global warming and climate change also threatening productivity in agriculture. Who will do the research? Who will make aware to farmers?*

Most farmers in Nepali society lack literacy on appropriate farming practice and they are economically very poor so they have little contact with appropriate new

innovations. Primary agricultural service from the government is urgent to the farmers in order to progress more on practice of ecological farming or environmentally sustainable farming. Sharma (1997) says that the different ecological belts with distinct topography, climatic variations, vegetal patterns and soil types in Nepal can be a healthy ground for eco-farming practice. Besides, more intensified orientation towards local techniques for pest management and fertilizer use in order to protect their crops from the pests and diseases to substitute imported chemicals.

But scholars have argued that solely depending upon natural process, one cannot produce more. They suggest for integrated traditional conservation oriented agricultural practice with the new innovative appropriate technologies, so as to make farming more sustainable and conducive to environment. Bajgain presents a very relevant example of topography of Kushadevi where different kinds of crops and plants are dually cultivated by the farmers according to climate and topography in which they live. He also expects further research by the state for proper identification climate, soil and crops. In relation to their plantation by the variation of topography, he said that;

> *Here in Kushadevi, hill-land which is South-faced is very good for cultivation of orange. Having that experience we also planted orange at North-faced but we were failed. But we are successes to cultivate Haluwabed, which is not in South.*

According to him, people in opposite belt were very disappointed due to their failure to cultivate orange because people from South-face were enjoying by selling orange. But all of a sudden, people from Japan came to them and they taught and

suggested about cultivating 'Persimmon' (*Haluwabed*[12]) in North-face hill-land. Previously according to Sapkota, they did not test and planted as more as they could but now they thought that was good suggestion, and they are enjoying by product of *Haluwabed*. Similarly, Bajgain seems optimistic by the activities they are performing in the community and said that;

> *We can produce varieties of herbs and fruits in different climatic areas and that will further help to establish small scale agro-business. This practice increases employment opportunity locally and youth can work within their locality.*

Based on the knowledge of Bajgain, we can say that Nepal has diverse types of climate throughout the country. Within these climates we can grow varieties of herbs, vegetation, fruits and other commercial products which may not be available in the global market. This practice is highly concerned with employment generation within a community. Besides, Sharma (1997) says it is a sustainable perspective as it conserves, cares the soil, it is less capital intensive and promotes more labor intensive. He says sustainability has different meaning in agriculture; it should be taken as ecological phenomena with a concern on maintaining an average level of output over infinitely long period without depleting the renewable resources on which it stands. For sustainable agriculture and sustainability in employment in the community, Ming Mak (2012) suggests localized production particularly in developing countries where agricultural sector employs the majority of people.

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[12] A kind of fruit with sweet test

Bishnu found to be in favor of Ming Mak, and says locally growing food prevents the collapse of small-sized farms and food processing-chains, ensuring long term employment opportunity to the locals. We have noticed from the above discussion that globally raising non-sustainable industrialized agriculture is vanishing income of the developing countries' farmers, encroachment of arable fertile land resources, overuse of water resources, causes of depletion of natural organisms and environmental degradation and contamination, human health problem and so on (Ming Mak, 2012).

Traditionally, farmers in developing countries are involved in subsistence farming of diversified crops or multi-cropping (a combination of production) in a same plot. In the literatures we can find communal and kipat model of production in Nepalese society. The practice allows protecting natural vegetations. But now production paradigm is shifted towards industrialized agriculture in which overuses of water resources, extensively uses chemical fertilizers and pesticides, uses heavy machines and equipments that resulted the loss of soil fertility, loss of bio-diversity, destruction of agro-ecosystem, depletion of natural organism, contamination in water, environment and human food and health hazards. However, even today rural farmers particularly in the hills in Nepali society have less access to modern technologies and thus are practicing eco-farming. Besides that while discussing about the production model, we can find various model in Nepalese society; communal to individual model, individual to commercial model, modernized to cooperative modernized.

Indeed, production model in agriculture can be linked with Sen's opportunities and processes freedom for justice. As of Sen, if more freedom gives farmers more opportunities to pursue what they think to produce more what they value, it is farmers' ability to decide how much they would like to produce and to promote the

ends that they may want to advance. Sen assumes that this aspect of freedom is concerned with their ability to achieve what they value, no matter what the process is through which that achievement comes about. Secondly, based on Sen, farmers may attach importance to the process of choice themselves. They may want to make sure that they are not being forced into some state because of constraints imposed by others. So the production model solely depends upon distinction between the opportunity aspect and the process aspect of freedom. For the production of agriculture, the Theory of Justice relies on opportunity imposed to farmers and the process they choice.

Chapter Summary

In this chapter, I explored the comments, experiences, feelings and perceptions from my participants about agricultural practices. Mainly, I discussed the traditional and modern farming practices which are key factors of promoting food sovereignty. I also discussed several kinds of techniques and methods of addressing individual differences of farming methods and use of chemicals from participants' point of view. Analyzing my participants' voice, I tried to share my own reflection based on my previous experience about agricultural practices and their challenges. I have precisely divided sub-headings in order to justify underlying arguments of food sovereignty.

After analyzing my participants' perceptions, I concluded that farmers have sufficient practical and theoretical knowledge about agriculture and its relation with environment. They were worried about depletion of traditional knowledge and skill particularly in agriculture. They emphasized on integration of traditional and new technology to cope with food insecurity in the nation and fulfill increasing demand of foods. They were found to be against commercializing agriculture. I will address the second research question in chapter V.

CHAPTER V

KNOWLEDGE TRANSFER OF FOOD SOVEREIGNTY

Chapter Overview

In chapter IV, I have discussed potential themes of food sovereignty relating to the first research question. But in this chapter, I discuss the means of knowledge transfer of food sovereignty among the farmers. For the discussion of knowledge transfer, I have developed two themes based on the data, derived from the field. The reason behind development of two themes is to explore influences and change in sovereignty of farmers over their knowledge and agricultural practices. Development of two themes came in my mind when I was transcribing and analyzing the data. The themes are as follows;

Green Revolution and Government Policy: This theme describes how peoples' traditional agricultural practice and sovereignty over seed and fertilizer is affected with an introduction of green revolution strategy and implementation of government policy of agriculture.

Role of Narratives and Institutions: In contrary to the previous theme, this theme explores Giddens perspectives of knowledge production and organic approach to knowledge transfer in food sovereignty.

More specifically, the meaning of knowledge in the context of food sovereignty to the farmers is with the expertise comes the ability to apply in their agricultural activities. So when farmers learn knowledge they acquire the information

and apply them in agriculture. Once they learn a piece of knowledge they could readily apply that knowledge to the task for more productivity.

Today's ICT (Information Communication and Technologies) are driving more opportunities on the other hand, creating tremendous problems as well. However, some of the expected benefits from successful knowledge sharing would be increase in performance/productivity, adaptation of appropriate technology and methods, collaboration with different institutions and capacity to innovate new technology methods for local needs. However transfer of knowledge among the farmers' community can be seen both negative and positive in the context of food sovereignty.

Green Revolution and Government Policy

For the sake of this theme, I need to discuss agricultural policies adopted in Nepal. Agricultural development has emerged as a major subject of development discourse in livelihood improvement of rural people of Nepal. It was in 1937, the development agency was constituted first time in Nepal called *Udyog Parishad* (Development Board) with the major purpose to promote the growth and extension of agriculture, industrial and commercial activities in the country (Raut, Sitauala, & Bajracharya, 2010). Further the development board has formed Agricultural Council with the objectives of improving farming techniques, irrigation and implementing plans necessary for agricultural development (ibid). However, a systematic initiation towards agriculture development in Nepal was found to be after incorporation of the agriculture as the main agenda for the poverty reduction in the Fifth and Sixth Five Years Plan (ibid). I believe that the agenda of agricultural development in Nepal was highly influenced by the initiation of Green Revolution in India in mid 1960s. Fujita (2011) says India has faced serious economic and political crises in the mid 1960s,

which triggered the big conversion of agricultural policy of the government which emphasized technological innovation and started to introduce new agricultural technologies and other farm inputs from abroad. Fujita thinks that India has to pay huge cost for the sake of the negligence of agriculture, which is considered to be a typical case of the "Ricardian Trap" in economic development (Hayami, 1997, as cited in Fujita, 2011).

In Nepal, I think we can see a similar case. Nepal has been promoting hybrid crops, chemical fertilizers and pesticides along with an initiation of the agenda of agricultural development in Fifth and Sixth Five Year Plan. Not only that since then, synthetic products have been promoted and distributed in Nepal in almost all parts of the country where roads were connected. We have witnessed that as soon as connectivity of the road people started using chemicals in their crops with a view to produce more. About a half of century of the first wave of green revolution and second green revolution in 1980s in India (Fujita, 2011), Nepal has yet to practice green revolution along the new road connection in the rural parts of the country.

I was interested to know the impact of Green Revolution in my study area which is situated nearby the town and easily connected by the road. To a larger extent, we can say that green revolution of India has influenced in Nepali farmers in agricultural activity. The components of the green revolution consists of three major crops; Maize, Wheat and Paddy. Moreover, the practice of extensive application of chemicals in crops, use of underground water by digging dip-well, uses of heavy machines are also prevailing. Based on these criteria I would like to oversee an influence in Kushadevi. I presume that Kushadevi may not be influenced by the green revolution due to in-appropriate hilly-geographical location. I have verified influence of green revolution in the site with Sapkota. Sapkota recalls an incident of agricultural

practices in the community and has not found any specific activities related to green revolution. He said that;

> *I think use of chemicals in agriculture is only influence of green revolution in our community because of hilly-typography people were not allowed to commercialize in agriculture, but learnt to use improved seeds probably due to road connection.*

Sapkota perceives that people of his community have learned the use of chemicals and improved varieties of seeds by two different reasons; influence of green revolution and connectivity of roads in Kushadevi. However, farmers have adopted agricultural intensification process by using high doses of chemical fertilizers and pesticides in order to produce more. Along with chemical, they have invited problems in both agriculture and environment. Due to lack of knowledge and proper understanding of intensification in agriculture, farmers were in dilemma to produce more to feed growing population from their small plots of land. But he also notes that due to hilly typography and lack of good land has protected commercialization of agriculture in Kushadevi. However, Humagai has blamed that farmers have learned the use of chemicals and improved seeds due to agricultural leaders in community and training programs provided by the public and private institutions. He further said;

> *The agricultural leaders have visited and participated many sites and programs. They brought new farming techniques and practiced in their farms. At the same time they encouraged farmers to adopt chemical farming methods and use improved seeds in order to produce more.*

Unlike the perception of Sapkota, Humagai has felt it was the community agriculture leaders who were responsible in changing traditional agricultural knowledge and methods. According to Humagai, ignorant farmers have no idea on the

use of chemicals and its consequence. Gradually farmers were made dependent on the external farm inputs for more production within a limited plot of land they have. Besides, training programs conducted by different institutions also encouraged farmers to the use of chemicals and improved seeds (said by Humagai). These programs helped uplift farmers from wrong practice of agriculture. Farmers were used to practice intensification by use of high yielding seeds, intercropping, terracing and other activities. These are supposed to consist of intensification in agriculture. But application of wrong methods including the use of chemicals by the farmers created a problem. Not only that farmer's personal characteristics, feelings and ambition significantly persuade on the adoption of new technologies and methods of production (Poudel & Thapa, 2004). We know, the productivity depends on types of technology used and types of cropping method applied. Thus, the magnitude of intensification primarily depends on the peoples' choice on techniques in agriculture. In the same way, those farmers who are illiterate and have less exposure to society, information and technology may not easily consider management practices compared with literate farmers. Regarding the environmental degradation by agricultural practice, it depends on the farmers' household size and types of agriculture method they adopted. If the household of farmer is based on agriculture for their major source of income, then they may not prefer to consider environmental degradation due to intensification. But people whose main income source is not agriculture are less concerned about land conservation issues compared to those whose livelihood primarily based on agriculture (Poudel & Thapa, 2004). Bajgain seemed in favor of agricultural intensification because of less availability of land resource. According to him in the past his parents had more land for agriculture but now land has been divided among

his four brothers and he occupied only about five ropanies of land in total. Those lands according to him are not all in arable and fertile. Further he said that;

> *Agricultural intensification for us is to use high yielding seeds and chemicals along locally prepared manure in farm for more productivity to generate more income.*

Considering Bajgain and his statement, we can figure out the national scenario of Nepali agriculture which consists of small family farms and is mainly subsistence oriented also not yet capable of supporting the adequately their family. On the other hand, due to fragmentation of agricultural land, it has become a major challenge to the development of the Nepali agriculture. Other several constrain impedes growth in Nepali agriculture. However, Bajgain likes to more production through high yielding seeds for more income. But he has also given consideration on the use of local fertilizer along the high yielding seeds. Bishnu has noted that Nepali agriculture is heavily dependent on the rainfall for irrigation and has adverse effects on the consistency of production. Similarly, unavailability of fertilizers on time creates shortage which has forced farmers to rely on black markets for fertilizers with high prices and inferior quality. Further he said;

> *We need to pay about double price for subsidized chemical fertilizer during a season with less quantity in a sack*

The government's policy of subsidizing fertilizers used in agriculture has resulted in heavy dependency over chemical fertilizer for agriculture. Not only that government's further agricultural extension service delivery system in Nepal such as; traditional JTA facility, the training and visit extension system (T and V) in 1975, the block production program (1982), the Tuki extension system (1977), farming system research and extension approach, integrated rural development projects, agricultural

perspective plan (1995-2015), national agricultural policy (2004), Nepal agricultural extension strategy (2007) (Raut, Sitauala, & Bajracharya, 2010). Similarly, extension support services such as; production inputs, agricultural credit, agricultural marketing, rural infrastructure including agriculture and livestock education and training, agriculture information and communication (FAO, 2010) are responsible for transferring knowledge on traditional agriculture to farmers. Besides that, presently Government of Nepal has drafted "Agricultural Development Strategy (ADS)" and its action plan and road map for commercialization and development of Nepali agricultural sector in 2013 (GoN, 2013). In order to accelerate agricultural sector growth, ADS has versioned four strategic components related to governance, higher productivity, profitable commercialization and competitiveness. Along with implementation of these ambitious programs by the government, we need to measure magnitude of agricultural development and loss of agricultural prosperity, cost of environment and loss of bio-diversity.

Above explanation shows that how people's traditional agricultural knowledge has been destroyed by the modern form of agriculture especially by the implementation of green revolution in India. Besides, national agricultural programs were also found to be hindering in strengthening food sovereignty in the community to some extent. However, knowledge transfer occurs within and beyond people or community in every moment by different means. In the case of agriculture in this theme, it is occurred in negatively opposite of eco-friendly agriculture which hiders to ensures food sovereignty in the community.

Role of Narratives and Institutions

In the previous theme 'green revolution and government policy' I have discussed how traditional knowledge and practices of farmers were gradually

influenced by the intervention of agricultural policies of the government and green revolution. But in this theme, I attempt to discuss the role of narratives and institutions in knowledge transfer in agricultural practices. As we know, narration between or among people is a form of communication as methods of transferring knowledge within a society and its generations from long ago. The traditions of oral storytelling that have evolved into our contemporary modes of narrative have been recognized as core to the knowledge transfer within society (Campbell, 1993).

In the past, people transfer their knowledge through orally one generation to other. They have no means of recoding and documentation of their knowledge. More practically, in a case of farmers, the activities which they do in their farm seems to be ritual and they have great knowledge about these actions (Giddens 1982 as cited in Sampson, 2000) but their knowledge is not be recorded and explicitly discuss in regularly. Farmers transfer their knowledge in the field of application by demonstration. It is therefore difficult to account exactly the human quality of knowledge, such as experience, perception, intuition, and beliefs are not only valuable but also most difficult to manage. For the sake of more clarity, I would like to link here organic approach to knowledge transfer in community by the Japanese scholars in Kushadevi. Japanese had taught to community people particularly Sought-faced hills to cultivate *Haluwabed* (Persimmon) for commercial purpose. The farmers of this particular community are continuously producing *Haluwabed* but other is not able to produce.

Knowledge transfer can be understood quite broadly connecting with organizational model as discussed by Parent, Roy, and St-Jacques (2007). According to them, knowledge as an object could be passed on mechanically from the creators to a translator who would adopt it in order to transmit the information to the user. In this

view, within the process, the user is as a passive recipient of knowledge and implies a top-down relationship between knowledge generator and the user. Further, this model can be generalized by social construction view of reality developed by Berger and Luckmann in 1966 (as cited in Parent, Roy, & St-Jacques, 2007)

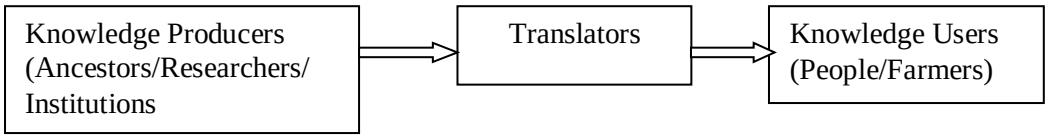

Figure 4. Knowledge transfer mechanism (Source: Luckmann 1966)

I would instead like to define knowledge transfer in a very general and hopefully uncontroversial and neutral way. Let us then understand knowledge transfer based on the model developed by Berger and Luckmann, that reality is reproduced by people acting on their interpretation and their knowledge of it. For more clarity, knowledge is developed, transmitted and maintained in social situations. Sapkota was found to be talking within this structure of knowledge transfer in the community. He said;

> *Knowledge and skills of agriculture were developed in the past by the people based on the geographical location and climate of their area. Currently we are using somehow same knowledge and methods of agriculture.*

He was aware of that the knowledge and skills of agriculture developed in the past was based on the day to day empirical study with the nature. Therefore, they did not skip the knowledge and they are practicing in current agricultural activity. Definitely, if people try to abandon their traditional knowledge and identity then there are high chances of danger their entire life. The reason for my neutrality in discussion of knowledge transfer is based on that, knowledge is a dynamic construct that evolves from various interpretations, used and reused. It is a product of constant everyday life interaction between human and the social system within which they engaged. On the

other hand, Baskerville and Dulipovici (2006) have said that knowledge reuse is theoretically linked to knowledge objects and repositories. According to them, reuse through repositories may involve knowledge and sharing between knowledge producers, reuse through shared work practices, reuse by expertise seeking beginners and reuse by secondary knowledge miners. In this view, every other use or reuse of knowledge is simply in its means to achieve valuable insight for betterment of human life. It is compatible with the practice of farmers in Kushadevi, since it is possible that there is an alternative knowledge due to transfer of knowledge. Bajgain has experienced the problem of seeds in order to cultivate in the past. But now due to transfer of knowledge for producing improved varieties of seeds in region has made possible of alternatives seeds. Bajgain said:

> *In the past there is no price of our products so that we need to sale in cheap price but now we can produce more and also sale in good price in any market place. Not only are that today we towards improved in farmers' rights as well.*

The account presented by Bajgain is neutral because people are empowered and equipped due to frequent interaction with different other people by the construction of road network or transportation facilities. Although, there are many other factors that influences the life of people for changing in all forms of living. The factors that influences life can be linked with a new model of knowledge transfer (the dynamic knowledge transfer capacity model) developed by Parent, Roy, and St-Jacques in 2007. The model indentifies the components required for social system to generate, disseminate and use of new knowledge to meet peoples' needs. Such a model is useful when applying a holistic, system-thinking focused on knowledge transfer and linking to relationship between and within system including system of need, goal and process. In the dynamic knowledge transfer capacity model, problem

solving in its broadest sense is considered the primary reason for transferring knowledge within and between social systems, and the greater the magnitude of the need, the more energy the actors will be willing to invest in the knowledge transfer process (Parent, Roy, and St-Jacques, 2007). But in contrast to capacity model, when we ponder on the traditional model of transfer of knowledge, we can find knowledge transfer as a process. At any particular time, however, it is mistaken to call the model correct or true because knowledge transfer makes many differences in many situations. Transfer of knowledge can be seen capacity model in Kushadevi when I interacted with Humagai. Humagai has found knowledge transfer in agricultural practice within their community because of the greater magnitude of the need and changing peoples' habits. He said that;

> *Now farmers hardly prepare seeds at home because they many alternatives at markets which are more superior to their traditional one. Farmers can't depend on their seeds for more production. They must depend on improved seeds and technology to support their family.*

Since we have learned that more production from given plots of land determines to a larger extent the type of new knowledge to be transferred. But it does not mean that farmer should encourage using more chemicals in their agriculture. However, we can understand the real meaning of the dynamic knowledge transfer capacity model by the following figure.

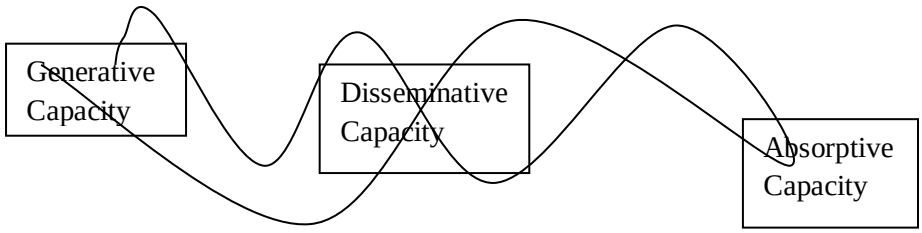

Figure 5. Knowledge transfer capacity model (Source: Parent, Roy, & St-Jacques, 2007).

This model is highly compatible with the farmers and their agricultural knowledge transfer. Rather, I have articulated, it would be more appropriate to link the model with; generative capacity for farmers refers to the ability to discover or improve knowledge and the processes, technologies, products and services of the agriculture. It is ultimately based on the system of the existing socio-culture and economic in the community. Similarly, disseminative capacity denotes the ability of farmers to contextualize, format, adapt, translate and diffuse knowledge active coordinating with network or farmers institutions. Whereas, absorptive capacity can be defined here as the ability to recognize by the farmers of value of new external knowledge, assimilate them and apply them to address relevant issues and as need in the local context through a system. For me, the model suggests the need for constant attention and adaptation of new knowledge in order to cope with the rapidly changing economy of the world. Similarly, the model links the ability to integrate, build and reconfigure internal and external competency of knowledge receivers to address changing environment enhancing organizational ability to achieve competitive advantages. The farmers of the Kushadevi have posed generative capacity in farming knowledge. They have been improving knowledge in farming activities to a large extent. According to participants, they use less-chemicals in the crops when they learnt that using huge chemicals damage both in human health and environment including fertility of soil. While in absorptive capacity of the farmers, we can speculate through the statement of Bishnu. According to Bishnu for using fertilizer in the crop, they use both types of fertilizers chemicals and compost manure prepared at home. Further he said that;

> *We know we neither completely depends on traditional farming methods nor good to solely depend on chemical farming methods. Due to fact, we are*

decreasing use of chemicals in our crops, almost half in percentage. We have not serious problems by the use of chemicals any more.

As a whole it is difficult to say that either a capacity model or traditional is applicable in transfer of knowledge in a given situation and area. In the case of Kushadevi, farmers have already got the knowledge on negative consequences of chemicals so that they are decreasing use of chemicals from a decade ago. But they are also aware of difficulties of agriculture completely depending on traditional and chemical methods. Ultimately, for the sake of model of knowledge transfer, however, since both models would be incorrect to label the transfer of knowledge as a whole either true or false. It would be more appropriate to think of knowledge transfer as providing just as a scientific theory.

While considering the role of narratives, community led groups and formal or non formal institutions in the community, transfer of knowledge can be seen positively. Narrative provided people with sensitization and consciousness on the environmental issues by the agricultural activities. Furthermore, formation of groups in the community by the people and implementation of awareness campaigns/ programs by the external institutions have given further space to people learn more environment, biodiversity and their surroundings.

Chapter Summary

In this chapter, I have drawn a brief history of agricultural development in Nepal. I brought that influence of green revolution in India has impacted on the agricultural practice in Nepal with evidences made by the participants. However, interestingly, I have noticed that green revolution of India has not adversely affected in Nepal particularly in my research site. But it was because of road network and transportation facility that made change in the practice of agriculture in Nepal. More

specifically, in use of fertilizer, farmers are found to use chemical fertilizers instead of locally available manure. I further noticed that some of the interventions by the external agencies have turned farmers' knowledge in agriculture. They are aware of side-effects of the use of chemicals in the crops and emphasized to explore local resources for sustainable agriculture.

Similarly, I also appealed a role of narrative and interventions of the external institutions have changed the farmers' knowledge to practice of agriculture. To make a concept clearer, I have borrowed knowledge transfer model by Parent, Roy, and St-Jacques. Furthermore, I have shown an adoptive and responsive capacity model of knowledge transfer particularly for the farmers' community.

CHAPTER VI

ADJUSTMENT OF FOOD SOVEREIGNTY IN THE CHANGING CONTEXT

Chapter Overview

In the previous chapter, I have attempted to discuss the knowledge transfer particularly in agricultural practices in the community. But I try to portray this chapter into two distinct presentations for the adjustment of food sovereignty by the farmers in the changing context.

In the first part, I arranged adjustment of food sovereignty by the farmers compatible with awareness among the consumers about their food in the changing context of global food system. In this part, I developed two themes. Those themes were not only adjusted the farmers but also equally justified the environment and consumers. Therefore, I claimed that following two themes will equally justify among the rest themes in this chapter for the adjustment of food sovereignty in the changing context by the farmers.

Healthy Food for All: Along with the increasing awareness among the consumers and food producers about current food system in the global have created a new thought of requirement of new adjustment in food system. The new thought has challenged current food system and cherished for healthy food grown locally.

Role of Food Producers and Consumers in Decision-Making: At the same time, increasing awareness among consumers and food producers has emphasized adjustment in decision-making role by themselves in the changing context of food sovereignty.

In the second part, I developed three themes which were directly associated with adjustment of food sovereignty in the changing context by the farmers.

Involvement in Vegetable Farming: In the changing context of food sovereignty, farmers are adjusting by themselves towards more profitable agricultural activity.

Stimulate on Genetically Modified Seeds: Changes in food sovereignty has brought a new form of agriculture with imported genetically modified seeds instead of local seeds. Farmers are adjusting GM seeds in order to produce more from very limited plots of land they have.

Activity in Group: Farmers have learned to work in group to get necessary help and support in the changing context of food sovereignty.

Healthy Food for All

This is the first theme of the first part. I will discuss the importance of healthy food for good health in this theme.

We all need food to survive. But we know the question will arise that who grew the food that we put into our mouth and how was it grown? Similarly, what agricultural processes were used and what conditions of landscape was there where it was grown? Further, how was it transported before it reached us and who ate it? This is exactly where all the questions begin when it comes to creating a vision of our food that provides everyone in the country access to fresh, affordable, nutritious and locally grown healthy food.

An extensive question would be required to understand the food and its process of growth and dissemination. For that we should ask what was used to grow this food. How sustainable were the practices and what fertilizers or chemicals were applied to it? Now globally people thought a new vision and new food system for

healthy food with regenerative and holistic agricultural practices based on locally produced food. So that we are sure food which we are eating are healthy because it is grown in the local community and are seasonal. Due to the fact, now is the time to repurpose and refocus on community for healthy food. To make it clearer, I have borrowed a statement made by Australian Food Sovereignty Alliance (AFSA) (2012), it has pointed out that healthy food systems are needed;

> *To feed all people well, look after all food producers and nurture the land, water and ecosystem from which food is produced require a good food plan locally, nationally and internationally.* (p. 4)

There is no doubt, healthy food comes only when we respect the food producers and give good treatment to the land, water and ecosystem. Similarly, Sapkota feels on need to support farmers for environmental sustainability caring for soils and landscape. He therefore claims that there is no possibility of the agriculture without healthy land and good source of water. He says successful rural communities and viable family farms are basic to a healthy food system. Further he said that;

> *Agricultural land is the basis of our future, but we have less access in lands due to land fragmentation. Fertile and adequate agricultural land is very important to produce healthy food and sustainability of agriculture.*

A statement made by Sapkota can be seen as the problem associated with the entire nation. Land and water resources are basic requirements for agriculture. Lands are distributed in unproductive hands. From his statement, we can say that land should be distributed to them who are supposed to utilize agricultural land properly. As we know agricultural land can be utilized only by the farmers ensuring healthy food for consumers. Further, farmers' entitlement in agricultural lands can guarantee consumers and environmental sustainability. Without adequate agricultural land,

farmers are not likely to engage full time by giving consideration to the health of consumers and environment. Furthermore, I can also note here ecological farming is cherished by the consumers across the globe. But it is not possible before ensuring adequate and fertile agricultural land with food producers. Ecological farming can be best known by the definition given by Tirado (2009);

> *Ecological Farming ensures healthy farming and healthy food for today and tomorrow, by protecting soil, water and climate, promotes biodiversity, and does not contaminate the environment with chemical inputs or genetic engineering.* (p. 2)

Besides the above definition, Tirado has also outlined the following benefits of the ecological farming instead of conventional model of destructive, polluting, expensive non-renewal, toxic chemicals and genetically engineered varieties agriculture;

- Ecological farming provides the ability of communities to feed themselves and ensures a future of healthy farming and healthy food to all people.
- Ecological farming protects soils from erosion and degradation, increases soil fertility, conserves water and natural habitats and reduces emission of greenhouse gases.
- Ecological farming is a mix of different crops and varieties in one field is a proven and highly reliable farming method to increase resilience to erratic weather changes.
- Ecological farming protects nature by taking advantage of natural goods and services such as biodiversity, nutrient cycling, soil regeneration and natural enemies of pests and integrating these natural goods into agro-ecological systems that ensure healthy food for all.

Now it is globally considered that time has come to plant and nurture the seeds of change by applying ecological farming practice through courage and strength from the community level. People have learned that a sustainable ecological farming is urgent before getting late because it is low-input farms and key to permanent and secure source to feed the growing population. Not only that, ecological farming can manage pests without chemicals and pesticide by making croplands more resilient to pests. Bajgain has knowledge and understanding of pest management without use of chemicals. According to Bajgain, they have long-term solutions to pest problem by designing diverse crop fields and using locally available technologies. Further he said that;

> *Traditional pest management technique is based on enhancing the immunity of the agro-ecosystem and promoting healthy soils and plants.*

Here, I would like to note that people have knowledge and techniques to cope with the nature surrounded by them. They have been practicing their entire life based on the knowledge transmitted through their ancestors. In relation to knowledge and understanding regarding the pest management by the farmers, Kekeunou, Weise, Messi, and Tamo (2006) have reported that farmers' perceptions have contributed to the understanding of the pest status of grasshopper in the humid forest zone of Southern Cameroon. Further they said farmers charge grasshopper as an important pest on food crops that warrants urgent management or control enemy pest in the crops. Finally, they have concluded that it is necessary to consider grasshoppers among the major pests in the national strategies of plant protection. Similarly, they have noticed that Integrated Pest Management (IPM) strategy is a comprehensive approach that combines all rational strategies to reduce pest densities to tolerable levels while maintaining a safe quality environment.

At this point, I would like to connect ecological farming with the traditional method of farming. A rationale behind of this is that ecological farming characterized by traditional way of farming by giving more emphasis on local knowledge and environmental sustainability. For more, we can use an argument of Tirado (2009) and can calculate the degree to which his statement probably holds true. According to him, ecological farming with practices based on biodiversity and without use of chemical fertilizers or pesticides, can produce more food per hectare than the conventional system and even increase yields especially in developing countries. As we know, farmers know the importance of soil, so previously, they have protected and nurtured for long term productivity and stability. For that, farmers grow legumes or add compost, animal dung or green manures in such a way that increase organic matter and fertility of the soil. Humagai has recalled natural nutrient recycling and nitrogen fixation by the farmers providing organic matters in the soil without chemical fertilizers in the past. He said that;

> *The use of organic fertilizer in crops is cheaper and locally available. It makes farming more secure and less vulnerable at the same time reduces farmers' expense on artificial inputs. Organic method provides a healthier soil, rich in organic matter and better able to hold water and finally produces healthier food to consume.*

Based on the above argument, we can say that ecological farming by the use of organic matters makes the best possible use of local inputs with aim to build up natural soil fertility and improve efficiency. In order to measure the true likeness of the organic method of farming, we can derive following statement made on the UNEP (2011) report which mentioned that;

> *Agriculture that is based on a green-economy vision integrates location-specific organic resource inputs and natural biological processes to restore and improve soil fertility; achieve more efficient water use; increase crop and livestock diversity; support integrated pest and weed management and promotes employment and smallholder and family farms.* (p. 41)

When we look after the statement, one would have to calculate ecological farming or green agriculture practice is ideally suit to poor and smallholder farmers. It requires minimal or no external inputs can use local and naturally available materials to produce high quality products. UNEP report also mentions in its conclusion that agricultural transformation should particularly focus on improving farm productivity of smallholder and family farms in regions where increasing population and food insecurity conditions are most severe. Due to this fact, Nepal has to formulate a new agricultural policy to transform its agricultural practice as suggested by UNEP because Nepal poses all characteristics which are mentioned by the report. Moreover, rural farmers of Nepal have been practicing mixed farming by giving more emphasis on ecological consideration. A farming method explained by Bishnu can be justified that they are practicing mixed farming by using both chemicals and organic matters in their crops. He said;

> *We apply both fertilizers; Urea (chemical) and Gothe Mal (compost) at the time of Potato plantation. We also apply extra Urea and pesticides when necessary to protect crop.*

The farmers in Kushadevi have been practicing mixed farming method. They use both types of fertilizers in their crops. But they have a good understanding of the amount and timing of the use of fertilizers. However, in discussion we can find that the imported chemical fertilizers are difficult to get in time and are costly. Farmers

use it at a very low level in comparison to compost manure, not only that lack of technical know-how to the use of chemical is also causing low level of use (Sharma, 1997).

The influence of chemicals is more often just because of road connectivity among the farmers. Certainly people have claimed that introducing ecological farming, farmers can gain more profit, produce healthy food and support to environmental sustainability. In this connection, I would like to point out simply that farmers should be guided by the good practice of land use, techniques to produce improved seeds and high fertile organic matters, modern soil conservation methods and techniques to balance the environmental capability. Here, I like to connect healthy food system in Kushadevi. Kushadevi has still existed a community where they share their products to the neighbors. It is an example of healthy food for all. This kind of practice can find still in remote areas of the country.

In connection to the health of the people, Sen (2010) has specially found the problem relying on the patient's own perception either medical matters lies in the fact that people of the community may have seriously limited knowledge and social experience due to lack of outside world (p. 285). Despite the fact that people reared in a community with a great many disease and few medical facilities may be hampered to diagnosis. Not only that according to Sen, if people in community have information, it can be deeply deficient in other outsiders. Simply, it can be said that food is produced by the farmers. However, nobody knows what types of seeds or fertilizers they have used and which farming method was used while producing the food? So, farmers should possess information whether the food is healthier or not. Farmers should produce healthy food focusing on people. To make it clearer, Sen says that there is a strong need for socially situating the statistics of self-perception of

illness, taking notes of levels of education and public information on illness and remedy.

Role of Food Producers and Consumers in Decision Making

This is the second theme of the first part. In this theme, I will argue on the role of food producers and consumers in decision-making. One can explicitly see that ultimate decision should be made by the food producers to produce the type of food they wish. Similarly, consumers have the right to decide the type of food they desire to consume. From the consumer's perspective, it can be said that in an era where consumers' health is globally undermined by malnourishment and obesity, they have to provide an opportunity to guide and influence food consumption into a greater balance with sustainably produced and more nutritious foods (UNEP, 2011) whereas farmers are supposed to produce healthy food to consumers by applying sustainable methods. They should have an access to the basic requirements for agriculture, so that they can produce food without any pressures for betterment of human health and environmental sustainability.

Furthermore, the role of consumers is apparent not only in producing the type of food by the farmers but also in conserving the environment. Tirado (2009) has figured out that if we stop feeding cereals (food grain) to animals, we can feed more than 3.5 billion people a year. Not only that poultry and pigs are raised in the industrialized animal-production system but they are fed by other regions. This practice, according to Tirado, not only creates pollution problem but also a huge energy loss. Similarly, animal husbandry for meat have been linked with deforestation and other environmental impacts because it is estimated that a cattle takes 13,500 liters of water to produce 1 kg of meat and requires a lot of feeding for a kg of meat (ibid). So it is highly connected with the consumers' food habits for types of food to

be produced by the farmers. Connecting with the discussion, Sapkota emphasizes farm-based food for better human health. He further said that;

> *People should eat food produced from farm by applying ecological methods for better health. This activity of consumer will help their good health and support to farmers and farm workers.*

The above statement of Sapkota stresses that consumers can help the farmers by purchasing their farm products. More specifically, I like to connect a support in access to market information through information and technology in order to enhance their knowledge of real market prices so that they can better negotiate the sale of their products to distributors and the end consumers. However, on the other hand, market alone cannot always provide the best solutions. To justify the food system, we can say that products of the farmers must be provided at prices above their minimum cost or level of production and also consumption may be below the social optimum. Besides roles of producers and consumer in decision making in food chain, we can also identify a number of other institutions and structures in food chain.

Technical Centre for Agriculture and Rural Development (CTA) (2004) has said identification of public service delivery is responsible especially for rural development policy, is increasingly influenced by the extent of political and administrative decentralization, in which the transfer of authority and responsibility from central to intermediate and local government. Considering this statement, the role of the producers in decision making would be secured by empowering local institutions to mobilize local resources as much as possible. Bajgain argues in favor of empowering farmers that farmer should be enabled to develop their requirements locally so that they will be able to decide the type of seed they want to use and how much area they want to cover for cultivation. He further said that;

> *Farmers must be promoted and supported by information outreach and training programs along with their food chain partners. It is now time to participatory learning and work together (farmers, consumers and professionals) to determine how best through integration of traditional practice and new agro-ecological discoveries for sustainable agriculture.*

Participatory approaches specially bottom-up in agriculture provide farmers a chance to experiment and adopt various practices at their own locality and can modify techniques according to their changing conditions and requirements. Shiferaw et al. (2009, as cited in Killebrew, Cullen, & Anderson, 2009) note the importance of involving farmers in the selection and adaptation of relevant techniques. They say that the ability of ecological farming to overcome local constrains lies on the availability of education and training about selecting and implementing sustainable practices. Thus, we have a strong evidence to support the role of producers and consumers in decision-making' which is the best theme to justify adjustment of food sovereignty in the changing context.

Now let us examine for a moment the global food system. We know food is essential to life so that food system must be life enhancing and life-sustaining. But unfortunately, global food system has become life-decreasing and life-threatening. As I have already mentioned that forest has been cleared for extensive agriculture every year and at the same time rural communities are displaced by this activity. Commercial farming across the globe has been increasing and the corporate big houses in agriculture are benefiting while human well-being, ecosystem and access to local-fresh, safe and nutritious food are badly affected. Along similar line, further argument is made by Humagai, in favor of ecological farming to have an effective role in decision making by the farmers. He said;

> *Ecological farming involves systems and techniques developed by the people themselves. These are all for reduction and elimination of chemicals and pesticides. Ecological methods are based on naturally processes and locally available resources.*

The above statement emphasizes that ecological farming will promote the role of farmers in decision making in the production and environmental sustainability because farming mainly involves knowledge, skills, methods and techniques developed by the farmers. But in practice, as stated by Tirado (2009), the world's commercial seed (genetically modified) supply is increasingly in the hands of a few corporations that have taken control over farmers and public-sector plant breeders. Currently he estimated that, the top 10 seed companies together account for 67 percent of the worldwide proprietary seed market in which the top 3 (Monsanto, DuPont, & Syngenta) account for close to 50 percent in 67 percent of the world proprietary seed market. Due to the fact, he blames these corporate are the main responsible agencies for destructive agriculture. Not only that the goal of profit maximization from sale of pesticides, chemical fertilizers, genetically engineering seeds are making the world to produce less healthy food to consumers. UNEP (2011) has reported that genetically engineered seed is an unnecessary outdated technology that threatens crop biodiversity and poses potential risks to human health and the environment. It has also found that genetically engineered seed is not a relevant technology to solving the world's food crisis.

Upon speaking with the next participant Bishnu, he was a +2 student and has no detailed idea on the role of farmers and consumers in decision-making, however, he has speculated that farmer should give freedom to choose what they wish to grow

in their farm and on the other hand, consumers should have right to choose types of food they wish to consume locally produced fresh food for their good health.

Not unexpectedly, the rural labors are critical resources for sustainable food chain in the regions. However, the seasonal variability of crop-specific farming tasks in rural sector affects temporary labor shortage and surpluses that must be managed throughout the year by minimizing distance between producers and consumers. Distance can be minimized by the practice of crop/livestock diversification, emphasizing the local production and making labor-intensive farm operations in the community. Further, direct agricultural market on face to face ties between producers and consumers are often seen as central components of local food system. People have assumed that trust and social connection characterize direct agricultural market distinguishing local food systems from global food system (Hinrichs, 2000).

The role of food producers and consumers in decision-making can be linked with the well-being and freedom of Sen's theory of justice. According to Sen, a person's capability can be characterized in two ways; as well-being freedom, in which includes reflecting the freedom to advance one's own well-being and secondly, agency freedom, in which concerns with the freedom to advance whatever goals and values a person has reason to advance. Similarly in case of farmers and consumers, magnitude of both well-being freedom and agency freedom determine the levels of role in decision-making.

The above two theme formed the first part of the discussion. But the following themes I have designed fall into the second part.

Involvement in Vegetable Farming

This is the first theme of the second part of chapter VI. In this theme, I will discuss farmers' involvement in a new agricultural activity i.e. consumption to earning along with the changing context of food sovereignty.

I would like to start this with the help of an idea of Bone and his co-writers. Community perceptions are constructed by the relationship that individuals share with their environment, the nature in which the communities are structured and the rate at which awareness changes over time (Bone et al., 2011). I believe that perceptions of the people play a crucial role in the ability of a community to adopt a new way of life. Furthermore, the relationship between perceptions and difficulties in life together is particularly important to adopt a new practice unlike their one. I believe the new practice will help to uplift the living standard of people. Similarly, the change in practice may provide greater convenience to a community and potentially increase their income but it also fosters environmental risk.

In order to make my argument clear, I would like to note that agricultural practice in general and adjustment of producers in changing context in particular. We have also shown that agriculture is a dynamic socio-cultural phenomenon of the people. However, farmers can alter their way of agriculture depending upon the market opportunity. Through marketing opportunity, farmers can receive a larger proportion of earning by their crops (Welsh, 1997, as cited in Hinrichs, 2000). But interests of farmers, consumers and localities together drive the recovery in direct agricultural marketing. Consumers obtain fresh, high-quality farm products at reasonable prices, as well as unusual local specialty products. Understanding the truth of agricultural practice in this way has certain trust between producers and consumers. Thus, the farmers of Kushadevi are more likely to involve from self-consumption to

commercialized (only for commercial point of view without use of hi-tech machines and energy) vegetable farming to generate more earning. With the changing time and context, they have learned vegetable farming and now they are enjoying by a greater earning. Before proceeding, I would like to present a note made by Sapkota about change in their farming practices. He said that;

> *In the past we brought vegetables from the market but now we are able to produce ourselves and also sale them nearby markets in a good price. Vegetable farming has changed the life style of this community.*

From the above presentation, we understood how vegetable farming has brought changes in the community. According to Sapkota, most of the people in Kushadevi had difficulty in joining hand to mouth some decades ago. They were depended upon subsistence farming and took loans to purchase foods and other necessary items at the time of celebrations (informal conversation with Sapkota). He recalls the factors that played a key role in changing their fate were; agricultural extension services of the government, field based famers' empowerment programs by various institutions and more specifically electrification in the village. Indeed, I suspect that there are many people who are justified in so believing that electrification in the communities have changed the life of people. It is obvious that with electricity in the community people could take advantage of irrigation facilities to irrigate the agricultural land. As a result, most of the barren lands in the community could be converted into agricultural land. But after electrification in the village, according to Sapkota, everything has changed. People started using water pumps to extract water and irrigate their lands. Gradually, they shifted their focus to vegetable farming which was proved to be an advantage for the community. In order to become clearer about the change occurred in the community due to vegetable farming, Bajgain has

accounted that in the past people of this community took loans by money lenders mostly in raining season (Asad and Shrawan months), because they had not enough food to eat throughout the year from their lands. Not only that these people did not receive money through remittances sent by family members working abroad. But it was a new farming technique of commercial vegetable farming that has changed life style of the people. He further said;

> *Now even those farmers growing vegetables on a small-plot of land earn enough income throughout a year, which is enough to feed a family for a year. They now have been sending their children to private schools.*

Since vegetables are grown here throughout the year, wholesalers from different market places visit this village to purchase the products. Currently, the village grows and exports up to 5-10 tons of vegetables per week said Bajgain. According to Bajgain, previously people used to visit this village to purchase potato, now come here to buy vegetables. These vegetables according to him are ranging from bitter gourd, mustard leaf, bean, pumpkin and pumpkin shoot, bottle gourd, cauliflower, cabbage, tomatoes, cucumber, broad leaf mustard and spinach, among others. Surely, one may calculate vegetable production mean unit price (rupees per kilogram). Vegetable is also high value crop and one can generate income instantly after selling them. Due to the higher potentiality of market people in Kusahdevi are interested in involving in vegetable farming commercially. But according to Government of Nepal (2010) report on Nepal Vegetable Crops Survey 2009-2010, only those family or farmers who sale more than 50 percent of their products are assumed to be commercial vegetable farmers. Indeed Humagai believes in a local community, people sale more than 50 percent of their products either in local market or wholesalers in collection centers. Humagai does not produce vegetables and used

to buy vegetables either from the local market or directly from the vegetable farm. But he said that;

> *People of this community are found to be very happy with vegetable farming. They sale their products either directly to the local market or nearby cities by themselves or approach the collection centers.*

We have noticed that people of this community are enjoying the commercial vegetable farming. They have huge market opportunities, local market at the community level and cities like Panauti, Banepa, Dhulikhel and even Bhaktapur and Kathmandu. Not only that they have collection centre facility where they sale their products to the wholesalers.

National data show that for the families with commercial vegetable farming, on an average five months' household expenditure could be maintained by the income from vegetables alone (GoN, 2010). The contribution of the vegetable income to the household expenditure in Kushadevi VDC is found to be higher (now they don't need to borrow in Asad and Shrawan). Due to enhancement of earning capacity by the commercial vegetables, people are willing to send their children to privately owned schools for better education. Humagai says that this trend has adversely affected the public and community schools and will need to be shut down due to lack of students. But he is not against schooling their children in private schools. His concern is that poor and weak section of the community will not be able to afford to send their children to private schools and their children will be deprived of education if people will gradually stop sending their children to public schools. On the other hand, Bishnu was found to be worried about schooling of the children in the community. According to him, people are sending their children to private schools by taking loans to compete

with neighbors. People with lower income sources are imitating and Bishnu thinks that they are sinking gradually in debt.

If what I have argued so far is true, there is enough evidence to believe it. In the changing context, farmers are likely to be involved in commercial vegetable farming for more income (farmers are no need to borrow money from money-lenders). As I have already noted that vegetable is cash crop and counted in per kg of unit. Farmers can immediately convert their produces into cash selling in the market. By adopting new agricultural practice has changed the living standards of the farmers throughout the country. Particularly, Kushadevi is located near the cities and it has ample market opportunity for their products. The new knowledge in farming has uplifted the lives of the farmers and because of that they are able to send their children to a good school.

Stimulation on Genetically Modified (GM) Seeds

In the first theme of the second part of this chapter, I have discussed the involvement of farmers in vegetable farming along with the changing context of food sovereignty. This is a second theme of the second part. In this theme I will try to figure out how farmers are attract towards genetically modified seeds in the changing context.

Even though genetically modified seed is considered as an outdated technology that threatens crop biodiversity and poses potential risks to human health and the environment. Before going further, however, I would like to clarify about GM. GM is developed and controlled through patent right by big agro-companies to their profit from seeds (Tirado, 2009). GM seeds are developed in the laboratories of big agro- companies in the developed countries (Aerni, 2011). Seed companies control over the seeds and sale them at higher prices to the farmers. Due to this fact,

controls on seeds have led to drastic increase in seed prices, restricted availability and access to non-GM seeds in many developing countries. For example, in the past, Nepal had about 6 hundred varieties of paddy but now it has been reported that Nepal has only about 33 varieties of paddy (USC- Nepal report, 2007).

Turning now to the genetically modified seeds and their uses, more specifically in commercial agriculture, is concerned; people have found strong argumentation on favor of it. There are a number of objections to the description on ecological farming instead of farming by GM for production maximization in order to feed growing population in the world. Here I like to highlight Aerni (2011), who advocates in favor of GM in agriculture for the welfare of the farmers. In order to prove his argument, he has taken a case of India, according to him empirical studies in India have shown that Bt cotton (GM) was widely adopted by small-scale farmers not because they were fooled by seed companies but because they had better yields, needed less chemical input and thus generated more revenues and suffered less from health and environmental problems.

Due to the fact, he says more than 90% of farmers who have adopted GM crops world-wide are small-scale farmers. Aerni blames the social worker of India Ms. Vandana Shiva, who came with a false claim that farmers who have adopted GM Bt cotton in India are more likely to get into debt and eventually commit suicide. According to Aerni, she repeated the message again and again and finally that became a public truth and it was also taught in school as an example of the socio-economic risk of genetically modified (GM) seeds. Here I am not taking a side both of them. But my prime concern is that before say something and takes action of any form one should have clear on the particular problem or program. So that result of the action should be beneficial to all. However, I agree with Aerni for this point that GM seeds

of non consumable are good to uplift living standards of the poor because that yields more than locally produced. But I do not agree to the use of more chemicals that involves risk in the environmental and socio-economy by GM. In regard to risk involvement in GM agriculture, a number of researches have been conducted (Ghenai, 2012) and concluded that biotechnology in general and GM in particular are not more risky than conventional plant breeding technologies. According to Ghenai, modern biotechnology will help address the main sustainability challenges of the future.

For the sake of more clarity on GM seeds and their utilization in the community, I have attempted to capture the perceptions of participants. Indeed, at this stage, view of Sapkota would be appropriate. Sapkota says he has no idea of GM but aware of Hybrid Seeds (HS). According to Sapkota they have been using HS for more production but they can't breed additional seeds from hybrid seeds. Further he said;

> *Hybrid seeds are not good to cultivate in marginal agricultural lands and consumer also complained about the lack of test compared to traditional seeds.*

If we consider the view of Sapkota, we can say that hybrid seeds are not appropriate to cultivate in marginal lands of rural hilly regions. If we go through the history of development of seeds varieties, it reveals that the reason for development of high yielding variety or HS is to support developing countries to become more food secure (anonymous). But in practice, we can find that HS has been displacing traditional knowledge, skills and methods of agriculture. Not only that people have also complained for less nutritious. Indeed, it is a difficult situation for us in agriculture. People involving in agriculture are found to be attracted towards hybrid seeds for easy access and on the other hand consumers are criticizing on the product.

In order to address this problem, I think a view of mixed method in agriculture by Bajgain would be appropriate. He said;

> *We have less availability of local seeds of the crops but we use both types of fertilizers in our crops and using technologies in land preparation, irrigation and also in harvesting for some crops.*

Based on the above view of Bajgain, I would like to make a note about my aim in this theme. In arguing that, moderate agricultural practice is the best account for both more yield and environmental risk management. I am not arguing that it is the only rational position to hold. The position of an argument may be varying in requirement. It may be that some are rationally justified as similar as Aerni in believing that their own argument is true in relation to agriculture. Indeed, I suspect that there are many people who have justified in their beliefs. Both arguments in favor and against agriculture have their own logic so far to convince people. But while talking about the current global agricultural practices and food system, it is not introduced at the meantime. It has taken a hundred of years to come in present pave of development. So that current global food system cannot be avoided instantly and it takes time to change. Aerni (2011), who is in favor of GM technology in agriculture, has said that "The current world food system has grown over centuries and is not the product of a deliberately enforced global ideology that aims at enriching the power and exploiting the poor" (p. 28).

The literature of the practice of modern agriculture in Europe reveals that modern agriculture was started in 19th century along with industrial revolution. At the time population growth and increasing affluence families would cause demand in food stuffs and thus resulted peaking food price. This made risk to the working class people at the same time of political instability (Aerni, 2011). At the end, the only

option was to increase food production either based on cheap labor or slavery through labor-intensive or through new technology. Certainly, it was technological intervention that made it possible to make food available for all. The agricultural activity at a time in Europe has proven that technology is the most important factor to change in production (ibid). There is no doubt that people everywhere uses, in one or another way, some kind of technology to make easier their life. Humagai has said that if there is no technology or improved seed we cannot cultivate maize crops in hilly areas. According to him, previously they had their own traditional maize seeds to plant in hilly areas, which were suitable for the area. But now they lost them and depending on improved maize seed which is only option for them. He further said that;

> *Improved seeds like maize are found to be good because these are developed within our country. Like maize seed, if Nepal is able to develop improved seeds in vegetables and other required farm inputs, we do not need to depend.*

It is clear from the above statements that locally developed technology or, let's say, improved seeds are good for higher production. Based on this version, we can say that technology should be transferred into the local community so that they can develop locally adoptable seeds and other farm inputs. I believe this activity gradually leads to the localizing food system (LFS). LFS for me is that foods are grown locally in very few miles periphery in order to feed adjoining city people. It prevents cost of food transportation and less use of energy. Although there are a number of issues associated with LFS like; consumer perceptions, food seasonality, high food prices and urbanization pressures (Mink Mak, 2012). LFS is a one of the issues of food sovereignty movement. It is, however, one or another way a sustainable food system for ever. LFS strengthens producers' role in decision making with respect to

consumers' test. On the other hand, consumers can enjoy by fresh locally produced food in all seasons. Similarly, farmers are encouraged to develop new varieties of food based on local demand. Bishnu has an encouragement to produce potato two times a year. He knows that their potatoes are highly saleable nearby the cities. But he was not aware of the seeds of potatoes either local or improved.

It has to be clear from above that I have been favoring and for the most part defending for GM seed. It appears to me to capture the clearest intuitions involved in the discussions. As we have seen that some have shown, there are some shortcomings in GM agriculture whereas some others have shown some problems associated with localized agriculture. Here my proposal is that both arguments are equally valid based on the context. However to conclude, I need to borrow an idea of Bishnu, according to him, people can't go back entirely traditional agriculture and agriculture depending upon agro-biochemical is highly risky and threatening, and only option is the mixed method with locally improved technology. But at the same time, one needs to keep in mind that the entire agricultural activities should ensure sustainability of ecosystem.

The issue of genetically modified seeds, I have raised in the course of discussion above can be handled through the Sen's theory of justice. For that he has presented two different ways of effectiveness of preference. At first, he argues a person can bring about the chosen result through his/her own actions, yielding the particular outcomes for this he called direct control. The second is the broader consideration of whether a person's preferences can be effective-whether through direct control or through the help of others (pp. 301-302). In order to shed some light on the above statements, he has given an example of a doctor and an unconscious person. According him, a wounded and unconscious victim of an accident may not take the decisions about what is to be done to him, but in so far as the doctor chooses

a course which the doctor knows the patient would have preferred had he been conscious. For this particular case, Sen argues there is no violation of the patient's freedom, saying that the doctor's choice is guided by what the patient would have wanted. In the case of our discussion, similar argument is applied. Particularly in developing counties, farmers are like unconscious persons. They have no idea whether the use of GM seed is right or wrong. It is an obligation of the state or leaders of society in choosing a good agricultural method so that farmers can learn for the benefits of the people and environment.

Activity in Group

Previous theme is about farmers' stimulation towards genetically modifies seeds for agriculture in the changing context of food sovereignty. This is a third and last theme of the part second of the chapter VI. In this theme, I will argue on the adjustment of the farmers conducting activity in a group in the changing context of food sovereignty.

In course of time, we have witnessed that people are adjusting themselves forming groups to satisfy their needs. Several formal and non-formal organizations have been established by the farmers throughout the country. We can imagine that group formation at the local level was due to the initiation made by the local government authorities, they have developed approaches to service provision and effective local interaction with farmers. The provision made by the local government has created a favorable environment for the private sector, non-governmental organizations and other civil-society organizations to expand their roles in the agricultural innovation and extension. Similarly, many NGOs are involved in farmer empowerment, group formation, adult education and technology transfer in Tanzania (Lema & Kapanga, 2006). According to Lema and Kapanga, some area-based

development programs, as well as NGO-supported projects, have experimented with improving access to technology for poorer smallholders through farmer empowerment and through carefully targeted investments aiming to deliver public goods and rectify market failures, especially in drought-prone and risky areas.

Similar to Tanzania, Nepal has a rich diversity of farmers' groups with many purposes, which have been in existence for many years. Many agricultural development projects we have identified have facilitated group formation and worked with farmers' groups in various ways, often building on indigenous, mostly informal stakeholders' groups. We also noticed that not all of the groups are authentic but most of them exist only for a particular project and they end along with the completion of the projects.

Let me examine for a moment what the participants tell us about their adjustment in the changing context on personal experience. Sapkota was one of the participants; according to him, some groups are legally registered with strong binding governing constitutions like; sustainable soil (land) management groups, participatory district development programs (PDDP), Integrated Pest Management (IPM) groups. Further he said that;

> *Currently we have 10 cooperative, including multi-purpose, saving &credit and women. Similarly, we have separate 2 multi-purpose agricultural cooperative, which are working for welfare of the farmers in the community.*

The cooperatives mentioned by Sapkota are legally registered under the Cooperative Act. However, there are a number of other informal groups which are available based on programs/projects. But such groups although exist and active, informal groups have neither a legal status nor written constitution; they are formed on need basis and continued till the life of the projects. District Agricultural Office

(DAO) has extended its policy and practice to work with farmers' groups in which sustainable soil management is one of them. The practice is to achieve improved coverage and a farmer focused research system. According to Bajgain, sustainable soil management group was formed to implement monitor and evaluate the on-farm research activities more effectively. It has developed a mechanism that creates a platform to provide feedback from farmers to researchers and other stakeholders. Similarly, the community has Participatory District Development Program (PDDP). There were initially associated 56 groups with PDDP but now there are about 30 groups, said Bajgain. PDDP is implementing under the local development fund of the government. Further Bajgain said;

> *PDDP is a government program and it includes three basis activities; organizing groups, encourage saving and skill development to the members in a group.*

PDDP emphasizes people to work in group in order to access these groups in weak resource base and their poor access to rural finance. Not only that, PDDP has also built capacity to the needy people so that they can earn for living. People in the changing context have been benefited by the skill enhancement by such program. In practice, it has been seen that individuals in groups have taken many benefits and they are able to decide locally according to their requirements. Besides, local authority initiated groups there are a number of other groups in Kushadevi. There are ad hoc types of farmers' groups which are especially based on the types of crops and vegetables they produce, said Bajgain. These farmers' groups are seen to be active in producing their respective crops and vegetables. On the other hand, Kusahdevi has fruits and vegetable production farmers' groups. This group has extensive members compared to previous type of farmers' groups. Humagai says establishment of

farmers' group has been particularly strong in this community with a large concentration of external funded projects/programs or external initiatives. It is no doubt that the primary focus of group formation by these external initiatives are as a vehicle for reaching many people in a cost effective manner. However, their major agenda behind formation of group is to serve members' interest and enable them to make decision by themselves locally. But Humagai suspects to the external initiators working with different sections of the community people and said that;

> *I have noticed that the external driven organization or group has often led to un-balance farmers' groups and organizations that are dependent, unstable (ends along with the project) and have few resources.*

There are a number of reasons one may have thought that outsiders should have their one agendum in order to help to the helpless in the community. In the same way, then one might argue that we have reason to believe that external agencies working in the community by their different interest and benefits. It is therefore that when organizations are formed under resource support by external forces, they lose their sustainability once that external support is phased out. Humangai is in favor of formation of groups by the people initiation according to their need and interest instead of external agencies. Therefore small-holder farmers must organize themselves to improve their access to farm inputs, technology they need, and good price for their produce through representative organizations either local, regional or national (farmers' unions), legally registered cooperatives, saving and credit unions and other user' groups and special-interest farmers' groups (formed to receive advice and facilitate the processing/marketing of produce) (Lemo & Kapanga, 2006). Bishnu, on the other hand, supports groups to develop individuals in the changing context. He said that;

A person in group can get many kinds of help and support. Due to the fact every individual is somehow associated with a group in this community.

Based on the view of Bishnu, we can easily figure out that a person in group is one of the stages of success in life. Therefore people in Kushadevi are associated in groups in order to conduct activities for earning.

For a moment, let's peep into the history of group in Nepal. Among the groups in Nepal, *Guthi*[13] in Newar community and *Dhikur*[14] in Gurung and Thakali communities are still exist and popular. *Dhukuti*[15] in *Dhikur* is the way of saving and investing the money accumulated by a group of people in the community (Sherpa, 2005). In this tradition, according to Sherpa, people form a group and collect the same amount of money from each member every week/month. Collected money will be given to the members who are in need. This tradition makes it easier to access in financial resource and allows people opportunity for income generation. Similarly, people in the different communities have learned this method and are practicing either formally registered cooperative of various types or through forming non-formal self-help groups.

Along with practicing a new farming method in order to adjust in the changing context, farmers are associated with groups to fulfill their requirements and necessary help to make income generation easier. A farmer in the group can feel safe and receive necessary support for profit maximization through adopting new agricultural methods. A farmer will have an opportunity to participate and learn in group. The new

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[13] An institution of Newar community

[14] An institution of Gurung community

[15] Informal institution for economic activity

learning environment will enhance knowledge and skill in the farmer and it can be used in the agriculture for better production. In the perspective of the service providers, it will be easier to share knowledge and skills in groups which are already formed by the farmers in their respective concerns. Understanding the truth and appropriateness of the theory of knowledge transfer in the changing context of the agricultural practice by the farmers, I would further without any doubt like to say that theory of justice stresses on making decisions locally in the community.

Chapter Summary

I have separated this chapter into two parts in order to understand adjustment of food sovereignty in the changing context by the farmers. In the first past, I have developed two themes; “healthy food for all” in which I made an attempt to understand the food and its process of growth. I specially highlighted statement made by Australian Food Sovereignty Alliance (AFSA) that to feed all people well; we need to look after all food producers and nurture the land, water and ecosystem from which food is produced. I also talked about the requirements of a good food plan locally, nationally and internationally. For that I have highlighted the ecological farming.

The second theme of the first part was “role of food producers and consumers in decision-making”. Under this theme, I brought calculation made by Tirado, how perceptions of consumer changes in the course of food production globally. Further I argued participatory approaches specially bottom-up in agriculture provide farmers a chance to experiment and adopt various practices at their own locality. Along, I emphasized modification of the techniques according to their changing conditions and requirements. Similarly, I emphasize that ecological farming will promote a role of farmers in decision making in the production and environmental sustainability.

In the second part, I have brought three themes among which “involvement in vegetable farming” was the first one. For that my appeal was that a new practice will help to uplift the living standards of people. I have highlighted a new practice of the farmers that was commercial vegetable farming instead of subsistence farming. I agreed on Welsh, he said that through vegetable farming farmers will have marketing opportunity; farmers can receive a larger proportion of income generated by their crops, even out their cash flows, and control over their production decisions. I have noticed that electrification was a major factor that helped farmers to adjust by a new vegetable farming in the changing context.

Stimulation on genetically modified (GM) seeds was the second theme for part second. In this theme, I brought response of Philipp Aerni, who advocates in favor of GM in agriculture for the welfare of the farmers. I have presented an idea of Aerni in the context base for this; GM seeds of non consumable are good to uplift living standard of poor farmers because that yields more than locals. But I also demanded about the environmental and socio-economic risk involved in GM agricultural practice which requires more chemical fertilizers compared to the local seeds. My thesis at the last was that we need to keep in mind the entire agricultural activities should ensure agricultural sustainability and sustainability of ecosystem.

The final theme was ‘activity in group’. In this theme, I have discussed how local government authorities have provided a space to various non-government organizations and other institutions to carry out their activities in the community with an example of Tanzania. In order to support my theme, I have brought evidences from my participants. They have justified how people in the community are associated in groups either formal or non-formal for their secure livelihood.

CHAPTER VII

MY FINAL REFLECTIONS, CONCLUSION AND IMPLICATIONS

Chapter Overview

The previous chapters (Chapter IV, V and VI) involved analysis and interpretation of the data taken from the participants in the study site. In this final chapter, I present my reflections based on the analysis and interpretation of information gathered in the previous chapters. Further, I conclude entire research explorations based on my intuition. Finally, this chapter ends by providing some future implications.

My Final Reflections

During my study, I have frequently visited the field and played with the text data and information basing on the following emergent research questions;

R.Q. 1 How do the farmers understand and practice food sovereignty?

R.Q. 2 How is knowledge transferring about food sovereignty among the farmers?

R.Q. 3 How do the farmers adjust food sovereignty in the changing context?

However, my central research question was “how do the farmers understand and practice food sovereignty as well as the way of transferring knowledge regarding food sovereignty?”

In response to the research questions, I have dealt them in the earlier chapters. For more clarity, I have presented them by separating three research questions into three chapters. While doing so, in Chapter IV, I discussed the first research question; how did farmers understand and practice food sovereignty by developing different

themes. The second research question was dealt in Chapter V, in which I have tried to analyze and interpret how participants had achieved agricultural knowledge and how the farming practice of them had been shifting. Finally, in Chapter VI, I attempted to deal with my third research question on adjustment by the participants in changing context of food sovereignty.

In each of these chapters, I have presented the lived stories of participants with the help of text data generated from informal in-depth interviews, informal conversations and informal observations. The stories were further enriched by my lived experiences in agriculture. I managed those stories with the help of field notes, field journal and transcription of recorded data. I attempted to maintain expression and stories for generating meaning in various themes. Furthermore, I have attempted to view the phenomenon of the farmers' understanding and practice of food sovereignty as well as the way of transferring knowledge regarding food sovereignty from the theories and different perspectives. However, I have drawn the following reflections.

R.Q. 1 How do the farmers understand and practice food sovereignty?

Food Sovereignty: Understanding and Practices by the Participants

Food sovereignty closely relates with the traditional way of agriculture. It advocates empowerment and delegation of food system rights to the food producers unlike current global food system by the transnational corporate. Due to this fact, I was interested in knowing participants' understanding of traditional farming. In regard to traditional farming, four participants have given different perspectives; however, I found a common essence of the use of locally available resources. Use of manure and cattle dung as fertilizer, locally produced and preserved seeds and local knowledge and methods in agriculture are some of the components in traditional

farming. Similarly, crop rotation and multi-cropping are other features of traditional agriculture. Participants are still practicing these kinds of farming more specifically to get varieties of food for home consumption. Particularly at a time of maize crop, they practice intercropping by showing different varieties of vegetables along maize in the same plot.

Secondly, I have gone through the modern agriculture. They viewed modern agriculture means use of extensive external farm inputs; chemical fertilizers, pesticides, high yielding seeds and improved farm management system for profit maximization. However, I have learnt two perspectives in practice of modern agriculture; in the first place, the practice of current farming cannot be considered as modern agriculture while they used chemicals and other external farm inputs because participants used them in a very nominal rate only for good production. But secondly, once farmers have changed their farming methods using chemicals and improved seeds is modern agriculture. These perspectives of the participants have shown their understanding of modern agriculture to some extent.

Thirdly, in use of chemicals and consequence, participants were found to be aware. They have reported cases of Panchkhal and Nala of Kavreplanchowk, where mostly women were affected by cancer due to frequent contact with the chemicals. Not only that, participants also reported diseases in vegetables and other crops by using chemicals.

Relation between agriculture and environment is the fourth theme, in which participants have shown a good relation between agriculture and environment. They said that extensive use of land and water resources for cultivation through commercial farming purposes, there is significant cause of loss of biodiversity both in land and water. They were a witness to the current farming practice by using chemicals which

has led to changes in habitats in a number of areas. Pressure on land and over use of water for intensive farming has been creating various problems so they were in favor of concerning the preservation of landscapes and protection of the sources of water. However, participants were not fully aware on climate change.

In relation to local seeds use in farm by the participants, they have reported three varieties of seeds they produce locally; Maize, Paddy and Potato. More specifically, they have been helping District Office by producing maize seeds to distribute throughout the country. But they were not found to be satisfied with their work of producing maize seeds. They were blaming themselves of cheating the office by producing the seeds of less quality. Instead, the seeds of potato and paddy used by them were not local, these were improved varieties developed and distributed by the agricultural office. So, they have been reported that they were shifting their practices from their traditional one.

My sixth theme was control and access over resources. Participants have reported similar problems faced by the entire farmers throughout the country. According to them, specifically access to credit and VDC fund in agriculture were reported profoundly. Getting loan from a bank is very difficult to them because they had no appropriate properties for security in bank. Similarly, participants were not able to get VDC fund due to lack of their influence. Inadequate land for agriculture was another issue raised by them. They have demanded effective land policy so that land should be in the hands of real farmers.

Production model was the last theme I discussed in chapter IV. Participants viewed that the state is responsible to come up with uniform agricultural production system. A certain area should be identified by the state where a specific crop can be cultivated and farmers can be encouraged to produce accordingly. They were also

aware of the climatic variation within a region so that a single variety of crop may not be good for all climatic conditions. Based on this understanding, they said that within these climates they can grow varieties of high value herbs, vegetation, fruits and other commercial products which may not be available in the global market. More specifically, they believed in localization of production, by locally growing food prevents the collapse of small-sized farms and food processing-chains, ensuring long term employment opportunity to the locals.

R.Q. 2 How is knowledge transferring about food sovereignty among the farmers?

Knowledge Transfer on Food Sovereignty

I tried to explore some key factors of knowledge transfer associated with food sovereignty within the farmers' community. While exploring, I have got both negative and positive responses of the knowledge transfer among the participants. I noticed food sovereignty has been transferring in Nepal along with the practice of the green revolution movement in India. It was further fueled by the state's policies and plans of commercializing in agricultural sector in the country. Not only that, peoples' connectivity by the expansion of road in district headquarters also allowed change in the traditional food sovereignty among the people. However, in case of Kushadevi, it was reported that green revolution and road connection have less affected because of hilly typography. But farmers have learned to use chemicals in their crops due to access in improved varieties of seeds. Participants have also pointed out that change in agricultural practice in the community was associated with the behaviors and encouragement by the agricultural leaders in the community.

More practically, farmers were taught to use chemicals and improved seeds in their farm by the training programs of different institutions. Farmers were taught to

practice intensification in agriculture by using improved seeds, intercropping, terracing and other activities along chemicals.

The role of narratives and institutions was the second theme to discuss on knowledge transfer in which I have got positive responses for necessity of food sovereignty in agriculture in order to sustainable agriculture itself and environmental protection. Participants were aware of knowledge and skills of agriculture, developed in the past based on the day to day empirical study with the nature. Therefore, they did not like to skip them. Participants were empowered and equipped due to frequent interaction with different other people by the construction of road network and transportation facilities. Besides, there were many other factors including education that influence the lives of the participants for changing in all forms of living and agriculture. Groups in community, educated individuals and formal institutions in the community have played positive roles in transferring knowledge about food sovereignty. Narrations among community people have provided sensitization and consciousness on environmental issues by the agricultural activities. Furthermore, training programs, implementation of awareness campaigns/programs by different institutions have given further space to people to learn more on environment, biodiversity and their surroundings.

R.Q. 3 How do the farmers adjust food sovereignty in the changing context?

Adjustment in the Changing Context

I explored how participants were adjusting in the changing context of food sovereignty in different perspectives; healthy food for all, role of food producers and consumers in decision making, involvement in vegetable farming, stimulation on GMS and activity in group.

I have noticed that without adequate agricultural land, participants are not likely to get engaged full time by giving due consideration to the health of consumers and environment. Therefore availability of land as well as quality of farm inputs used by the farmers determines the quality of food. In the changing context, I have found that ecological farming by the use of organic matters is only the best possible option that uses local inputs with aim to build up natural soil fertility and improve in food quality.

Participants have claimed for minimizing distance between producers and consumers by the practice of crop/livestock diversification, emphasizes local production of natural fertilizer and making labor-intensive farm operations in the community.

I have noticed that participants are adjusting by profitable vegetable farming in the changing context. They have noted that the factors that played a key role in changing their fate were; agricultural extension services of the government, field based famers' empowerment programs by various institutions and more specifically electrification in the village. Vegetable farming has uplifted the living standards of the participants because it could be grown throughout the year. Currently they were able to sale various types of vegetables about 5-10 tons a week. Reason behind involvement in vegetable farming was that vegetable is cash crop and one can immediately convert into money according to per kg of unit. Further, prosperity of vegetable farming in Kushadevi can be acknowledged because of huge market opportunity. Farmers with adequate agricultural lands have been benefiting much better than farmers having less lands. Having more income from the sale of vegetables they were able to send their children to a good private school.

Participants were likely to say hybrid seeds (HS) instead of GM seeds which were imported. They have been using HS for more production but one can't use it for breeding like traditional seeds. Not only that they have reported that it requires more chemicals and pesticides at the same time complained for less nutrition and lacking test of hybrid production. But, I noticed that participants are looking for more production in order to generate more income from their limited agricultural land. Participants therefore, have asserted that more production can be achieved through technology enhancement not depending upon traditional methods of agriculture. But participants have reported that they were neither prefer to depend on GM seeds nor able to preserve the traditional one. For a solution they have demanded technology transfer in the local community so that they could able to produce improved variety by themselves suitable to the local climate.

In order to adjust in the changing context, I have found participants were forming groups either by themselves or by external institutions. Participants perceived that association in group will help to fulfill their requirements and necessary help to make easier for income generating activities. Not only that, a farmer in a group feels safe and receives necessary support to practice a new agriculture. Currently a community posed 10 cooperatives including women cooperative, multi-purpose and saving and credit. Similarly, it has 2 agricultural multi-purpose cooperatives, milk cooperatives groups, farmers groups, sustainable soil management groups, fruits and vegetable production farmers groups. Further, 33 groups under the participatory district development programs (PDDP), funded by local development fund were working for saving, skill development and organizing campaigns.

Finally, based on the information provided by the participants, I came to know that their understanding, practice, way of knowledge transfer and adjustment in food

sovereignty. Understanding on relationship between agriculture and environment and consequences of the agricultural activities towards human health and environment reveals they were sensible. That sensitivity further reflected in their practice. As we have noticed in several places in above discussion that they were decreasing the use of chemicals in their farm.

Similarly, I examined the evidence of positive way of knowledge transfer among farmers community. In which I noticed three ways in transferring knowledge; farmers self experience working in the farm compel to adopt new knowledge; secondly, transport on knowledge through exposure visit in different places by the knowledgeable members of the community and thirdly, impact of formal education, training and capacity building program.

Nonetheless, the evidence of adjustment in agriculture shows both negative and positive picture from food sovereignty perspective. Harmonization in different cooperative groups and enhancement in earning by the farmers is positive picture. But on the other hand, attraction towards GMS for profit maximization is serious problem for food sovereignty.

Conclusion

Given the arguments in the discussion section and in reflection, it is clear that food sovereignty can be understood by discussing the various underlying issues. Currently food sovereignty is a vibrant and growing movement globally to reclaim and rebuild local food system. Through this study, I have tried my best to understand food sovereignty in the local context with emphasis on participants' understanding connecting with the objectives, approaches and principles of the movement. Here, I would like to clear that, it is not my intention with this discussion to summarize the knowledge, stories and beliefs of those data I have collected through formal and

informal interviews. But rather I am trying to bring to attention a few key elements about the Kushadevi community and their means of knowledge transfer and adjustment in the changing context which emerged from the study.

I felt that Kushadevi community has cohesive, community-driven progress and aware on environmental issues. Participants are preferred to adopt mix agriculture for earning and sustainability. However, majority of farmers were found to be involved in commercial agriculture for more earning without giving consideration on environment and human health. But in the community, it has found that knowledge accumulated among the people has created responsibility and interdependent relationships between people and natural environment. The way of knowledge transfer in the community helped farmers to adjust in the changing context addressing the food sovereignty Due to the fact, participants were cherished for ecological agriculture through local food system. In the perspective of food sovereignty, ecological farming is an important element because it creates resilient communities and helps to take back sovereign power by the food producers. Localization of food system makes possible to regain power and decision making what a movement has advocated. However, agricultural practices in the community are influenced by the external farm inputs such as chemical fertilizer and imported seeds to some extent. But I think it was good news that participants have demanded a technology transfer for improved seeds and produce quality fertilizer by the use of local resources at the local level. Not only that, I am not surprised to share that all members of the community are working together organizing either formal or informal groups. There is no doubt that diversity of knowledge and skills in community help to sustainable agriculture, environmental protection and also for generating more earnings. I have found that members of the

community were engaging with the opportunities in the changing context to create healthy and interdependent relationship with the nature and human beings.

While considering on the Kushadevi community, I found they have possessed all forms of knowledge on agricultural methods at the same time aware on the consequences of agricultural activities. Besides, I guess, the agriculture they have been practicing is very close with an agenda of the food sovereignty movement. Base on the reflection, finally, I would like to conclude that prior farming knowledge along the current educating method (training, capacity building and orientation programs) is creating better opportunities to the farmers of Kushadevi.

Implications

I have drawn the following implications (I have divided implications into policy and future study) on the basis of the above discussion;

Implications for Policy

- Healthy food to the consumers and environmental sustainability along with agricultural sustainability can be possible through ecological farming in the community. So that farmers should be encouraged for ecological/sustainable farming including a subsidy provision for development, promotion and implementation of ecological farming.
- Farmers in the community found to be aware of technologies. They have been practicing varieties of technologies and farm inputs in their farm without adequate knowledge. This practice may cause serious problem in the future. The state has to transfer appropriate technologies with required know-how of production of improved seeds, quality fertilizer and other activities to the local community.

- Nepal has already integrated food sovereignty policy in its Interim Constitution 2007 but it is less effective in implementation. Currently, constituent members have been elected to draft a new constitution for the country. Therefore, upcoming constitution has to incorporate and design strong policy of food sovereignty suitable to the Nepalese society and also design better implementation strategy to gain sovereignty over agriculture and agriculture related activities.
- Access in credit/loan is very difficult mostly in remote parts of the country. Farmers who reside in such parts of the country are denied to access not only in credit but also in government fund. Among farmers, peasants are far more vulnerable in this matter. Therefore, it is important to formulate necessary policy to get access in credits/loans with nominal interest rate without the provision of collateral. It is also necessary to arrange special agricultural fund for peasants at the local level.

Implications for Future Study

- Women are the main contributors to the Nepalese agrarian society. They are involved in the entire cycle of agricultural activities. But they get less opportunity to participate in capacity building and other formal and non formal programs. Therefore, special program to the women should be identified so that Nepalese agriculture sector can be enhanced.
- Literatures and participants of this study have noted that Nepal lacks extensive agricultural research for development and promotion of diversified agriculture so that people in community can be benefitted and future generation will easily be attracted towards this sector. For better development in agricultural sector, area specific research and development is the pre-requisite.

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