

ORGANIC TEA FARMING IN ILAM

**A Thesis Submitted to
Faculty of Humanities and Social Sciences
Central Department of Rural Development
Tribhuvan University
In Partial Fulfillment of the Requirement for
Degree of Master of Arts in
Rural Development**

**Submitted by
SHUBHAKALA RAI
TU Regd. 6-2-537-122-2010
Exam Roll No. 000364**

**University Campus
Central Department of Rural Development
Tribhuvan University, Kathmandu
March, 2019**

DECLARATION

I hereby declare that this research entitled **Organic Tea Farming in Ilam** has been prepared by me under the close guidance and supervision of Asst. Professor **Dr. Ratna Mani Nepal** in the partial fulfillment of the requirements for the degree of Master in Rural Development at University Campus, Central Department of Rural Development, Tribhuvan University, Kathmandu, Nepal. The findings of this thesis have not been presented or submitted anywhere else for the award of any degree or any other purpose. I assure that no part of the content of this thesis has been published in any form before.

.....

Shubha Kala Rai

Date: 2075/11/19

(2019/03/03)

RECOMMENDATION LETTER

This thesis entitled **Organic Tea Farming in Ilam** has been prepared by Mrs. Shubha Kala Rai under my guidance and supervision in partial fulfillment of the requirements for the Degree of Master of Arts in Rural Development. Therefore, this thesis is for the final evaluation and approval to the evaluation committee.

Dr. Ratna Mani Nepal

Supervisor

Date: 2075/11/19

(2019/03/03)

APPROVAL SHEET

This thesis entitled **Organic Tea Farming in Ilam** submitted by Mrs. Shubha Kala Rai has been evaluated and accepted in partial fulfillment of the requirements for the Degree of Master of Arts in Rural Development.

Evaluation Committee

.....

Prof. Dr. Pushpa Kamal Subedi

(Head of the Department)

.....

Bishnu Bahadur K.C.

(External Examiner)

.....

Dr. Ratna Mani Nepal

Supervisor

Date: 2075/11/26

(2019/03/10)

ACKNOWLEDGMENTS

First and foremost, I would like to extend deep sense of profound gratitude to my supervisor, Dr. Ratna Mani Nepal, lecturer of Department of Rural Development for constant supervision and guiding me with regular inspiration, encouragement and insightful as well as valuable suggestions throughout the study.

Similarly, I would like to express my sincere gratitude to Prof. Dr. Pushpa Kamal Subedi, Head of the Department of Rural Development, University Campus, Kathmandu for his inspiration and valuable suggestions to bring this research in this form. I also express my heartily thanks to the respected teachers and staffs along with the research committee of the Central Department of Rural Development for their kind help and support.

I am very grateful to Sudung 9 farmers who assisted me to collect the data during my field study. This study would never have been completed without their support and help. I am thankful to my colleagues Rajkumar Baniya, Lal Bdr. Rawal, Mahesh Tharu who provided technical support and suggestions during the study. Similarly, I am very much grateful to my mother Kamala Rai and my brothers Sujan who helped me to different work during the study.

I would like to express my sincere gratitude to all of who belong to the entire members of my study area. Then I would like to express my sincere thank and gratitude to (Manager of Gorkha Tea Estate Pvt. Ltd) Mr. Buddhi Bal Tamang who helped me to collect the information about organic tea, about organic tea farming areas and about its international market. I am also thankful to Madhav Niroula (Tea Technician, Chairperson of Tea Cooperative) and also I would like to thank to Mr. Dinesh Rasaily (Factory Manager of Himalaya Sangrilla Tea Producer Pvt. Ltd) who helped me to know about organic tea farming and its processing method in factory very clearly. Similarly, I am very thankful to Mr. Dobin Gurung (Manager of Nepal Green Tea Speciality Tea Pvt. Ltd) who supported me to collect the information about tea and its current price rate) and I would like to thank to Dipesh Rai (Tea Farmer). I would like to thank the Librarians of TU, Librarian of CDRD, for their kind cooperation in providing all sorts of information that this study incorporated and all those who directly and indirectly supported this work are heartily thanked.

ABSTRACT

Tea is the most popular beverage consumed all over the world because of its refreshing effects and known benefits to human health due to its potential pharmacological properties such as antioxidative, antitumor and anticarcinogenic activities. Tea is a high profitable crop that provides a benefit to hillside farmers in terms of financial support which helps to balance the economy. Nepal is one of the good tea producing and exporting country, Nepal has a century old history in tea farming initiated with the establishment of Ilam Tea Estate in the hills of Ilam district in 1863 (1920 B.S) during the reign of Jung Bahadur Rana. Tea is taken as self-dependent cash crop in agro forestry practice.

This study is based on organic tea farming in Ilam, a district in the Eastern Development Region. The objectives of the study were to identify the issues of organic tea farming, differentiate between organic tea farming and non-organic tea farming and analyze the status of tea cultivation in the study area. According to National Population Census and Household Census (2011) there are 962 households in ward no: 9 of the Suryodaya Municipality. Among them 74 households were involved in organic tea farming and 560 households were involved in non-organic tea farming. Among them, 20 households were selected for the study of organic tea farming. Similarly, 30 households of non-organic tea farming were selected for the study. For this study convenience sampling method was applied (non-probability sampling).

Two types of data were collected; primary and secondary data. Primary data were collected through field survey by applying Interview and KII methods. Interview was applied to find out the status of tea farming cultivation and to analyze the differences between organic tea and non-organic tea farming and KII was applied to analyze existing issues in organic tea farming in the study area. This study is based more on qualitative data than quantitative data and nature.

Janajati were the majority group of both organic and non-organic tea farming, literacy rate was quite satisfying with around 97% in both farming system and occupation status was also more or less similar; above 70% people were involving in

agriculture sector. Tea cultivation practice included; preparation of land, nursery, plantation, mulching, decentering, debudding, pruning, tipping and finally plucking round. Organic tea farming is newly growing farming system in Ilam, it has some criteria to be different from non-organic tea. Organic tea farming and non-organic tea farming is different farming practice. Such as differences in selection of site firstly, difference in manuring system, likewise difference in plucking system, quality and price rate is also different, other difference between two farming are organic tea farming has recording system, inspection system, must be a member of organic certified cooperatives and reward and punishment system but these things are not applied in non-organic. Despite the huge possibilities of tea in terms of financial support some issues were found there such as shortage of labor and organic pest, heavy tax on tea, no tea oxoncentre, small market size, shortage of labors, lack of organic pest.

TABLE OF CONTENTS

DECLARATION	i
RECOMMENDATION LETTER	ii
APPROVAL SHEET	iii
ACKNOWLEDGMENTS	iv
ABSTRACT	v
TABLE OF CONTENTS	vii
LIST OF TABLES	x
ACRONYMS AND ABBREVIATIONS	xi
CHAPTER -ONE: INTRODUCTION	1
1.1 Background of the Study	1
1.2 Statement of the Problem	3
1.3 Objectives of the Study	4
1.4 Significance of the Study	4
1.5 Limitations of the Study	4
1.6 Organization of the Study	5
CHAPTER- TWO: LITERATURE REVIEW	6
2.1 Theoretical Review	6
2.1.1 Tea	6
2.1.2 History of tea farming in Nepal	7
2.1.3 Major tea cultivated districts in Nepal	8
2.1.5 Organic Tea Farming	12
2.1.5 Organic Tea Farming in Nepalese Context	13
2.2 Empirical Study	15
2.3 Gap of the Study	20
CHAPTER - THREE: RESEARCH METHODOLOGY	21
3.1 Research Design	21
3.2 Rational for the Selection of the Study Area	21
3.3 Nature and Sources of Data	22
3.4 Study Population, Sample and Sampling Procedure	22

3.5 Methods of Data Collection	23
3.5.1 Interview	23
3.5.2 Key Informant Interview	23
3.6 Methods of Data Analysis	24
CHAPTER- FOUR: DATA PRESENTATION AND ANALYSIS	26
4.1 Introduction of Study Area	26
4.2 Profile of the Households of Tea Farming	27
4.2.1 Population Composition by Caste and Sex	27
4.2.2 Population Composition by Age Group	28
4.2.3 Population Composition by Occupational Structure	28
4.2.4 Population Composition by Literacy Status	29
4.4 Structure of Organic Tea Cultivation	30
4.4.1 Preparation of Land	31
4.4.2 Weather	31
4.4.3 Nutrients for growth of tea plant	31
4.5 Tea Plantation	31
4.5.1 Differences between Seeds stock and Clone	32
4.6 Nursery	32
4.7 Plantation	33
4.7.1 Selection of Plant	33
4.7.2 Tea Plantation Practice	33
4.7.3 Mulching	34
4.7.4 Decentering	34
4.7.5 Debudding	34
4.7.6 Bending and Pegging	34
4.8 Pruning	35
4.8.1 Collar Pruning:	35
4.8.2 Medium Pruning	35
4.8.3 Light Pruning	36
4.8.4 Deep Skiff	36
4.8.5 Medium Skiff	36
4.9 Effect of Pruning in Production	37
4.10 Tipping	37

4.11	Plucking	38
4.11.1	Plucking Round	39
4.11.2	Plucking System	40
4.11.3	Plucking Season	40
4.11.4	Plucking Under Various Condition	40
4.12	Differences between Organic Tea and Non-Organic Tea Farming	42
4.12.1	Definition	42
4.12.2	Differences in Selection of Site Plantation	43
4.12.3	Differences in Manuring System	44
4.12.4	Differences in Plucking System	45
4.12.5	Differences in Quality and Price Rate of Green Leaf	46
4.12.5	Other Differences between Organic Tea and Non-Organic Tea	46
4.13	Issues in Organic Tea Farming	48
4.13.1	Heavy Tax on Tea	48
4.13.2	Insufficient Organic Compost, Pest	49
4.13.3	Different kind of Diseases/ Insects Attack on Plant	49
4.13.5	Tea Logo	49
4.13.6	Tea Oxon Center	50
4.13.7	Tea Price, Labors and Wages Rate	50
4.13.8	Lack of Certified Lab and Proper Tea Export Plan	51
4.13.9	Market Management and Competition	51
4.13.10	Small Market Size	52
4.14	The Way to Forward	53

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION 54

5.1	Summary of the Findings	54
5.2	Conclusion	56
5.3	Suggestions and Recommendation	56

REFERENCES

APPENDICES

LIST OF TABLES

Table 2.1:	Tea Plantation and Production in Nepal 2072/073 (2015/016)	8
Table 2.2:	Orthodox and CTC Tea Plantation 2072/073 (2015/016)	10
Table 2.3:	Tea Plantation and Production by year	11
Table 2.5:	Characterization of cultivars according to morphological study, yield potential and taster evaluation	14
Table 3.1:	Information of the Selected Key Persons	24
Table 4.1:	Composition of Population by Caste and Sex	27
Table 4.2:	Distribution of Population by Age Group	28
Table 4.3:	Occupational Structure	29
Table 4.4:	Literacy Status	29

ACRONYMS AND ABBREVIATIONS

AGDP	:	Agriculture Gross Domestic Product
AGDP	:	Agriculture Gross Domestic Product
CO ₂	:	Carbon dioxide
CTC	:	Crush-Tear-Curl
CTCF	:	Central Tea Cooperation Federation
DFID	:	Department for International Development
DS	:	Deep Skiff
FGD	:	Focus Group Discussion
GoN	:	Government of Nepal
H	:	Hecters
HHS	:	Household Survey
HOTPA	:	Himalayan Orthodox Tea Producers
JICA	:	Japan International Cooperation Agency
KII	:	Key Informant Interview
LoS	:	Level of Skiff
LP	:	Light Pruning
MoAD	:	Ministry of Agriculture Development
MoC	:	Ministry of Commerce
MP	:	Medium Pruning
MS	:	Medium Skiff
N ₂ O	:	Nitrous Oxide
NARC	:	National Agriculture Research Council
NGO	:	Non Government Organization
NTB	:	National Tea Board
NTCDB	:	National Tea and Coffee Development Board
NTDC	:	National Tea Development Corporation
SAN	:	Sustainable Agriculture Network
SAWTEE	:	South Asia Watch on Trade, Economics and Environment
SNV	:	StichtingNederlandsVrijwilligers
USAID	:	United States Agency for International Development
VDC	:	Village Development Council

CHAPTER -ONE

INTRODUCTION

1.1 Background of the Study

Nepal is an agricultural country having varied agro-climatic and agro-biodiversity which provided tremendous opportunity for agriculture occupation and professionals. About 65% people are involved in agriculture sector at present and its contribution to GDP is about 27.1% from 28.2% recorded in the last fiscal year (Kathmandu post, 2018). There are two types of crops; cereal crops (rice, maize, wheat, millet, etc), cash crops (tea, cardamom, potato, jute, sugarcane, etc). Among them tea is one of the major cash crops with varied advantages in Nepal. Tea is the second most consumed beverage on the planet, right after water. Every culture has its own unique customs involved with tea. Tea is taken as self-dependent cash crop in agro forestry practice and is found as the most important example of the long term sustainable farming. Nepal is an important country for tea production in South Asia. Tea has been growing here since the 1800s but until the mid 1990s all tea was exported to the India for processing (Sarah, 2013). Today tea is being major exportable commodities among other cash crops. Thus, it is the major source of foreign currency which helps to balances the Nepalese economy.

Tea is cultivated in hilly areas and in high altitudes is conducive for the highest quality tea. In Nepal, the Eastern mountainous regions host most of the orthodox (as opposed to crush, tear and curl) tea crops at altitudes approximating 3000–7500 feet above sea level (Batala, 2017).The main tea producing regions in Nepal are Jhapa, Ilam, Panchthar, Dhankuta, Terhathum with newly involved regions being Kaski, Dolakha, Kavre, Sindhupalchok, Bhojpur, Solukhumbu and Nuwakot, with a goal of increasing the total tea production in Nepal. According to (CCD, 2015) the contribution of tea to AGDP and agricultural export is 0.17 and 6.48%. Nepal produces approximately 23187Mt annually with the land of 26165 hectare (MoAD, 2015). It accounts for only 0.4% of the total world tea output.

The Nepal Tea Development Corporation (NTDC, 1966) established by Government of Nepal to aid the development of tea industry. After that (NTCDB, 1992),

Himalayan Orthodox Tea Products Association (HOTPA, 1998) was established. Similarly, Tea Cooperative Associations was established in (2004). However, the main ambition of all those associations is to promote both domestic and international market with enhancing quality tea production (Khanal, 2012). Nepalese tea is characterized in two types; Orthodox and CTC. Hilly Region are producing orthodox tea while CTC tea is grows in the lower-altitude, warm and humid plains of Nepal.

Nepal's teas are mainly exported to India, Pakistan, Australia, Germany, France, Poland the Netherlands, Japan, Belgium and the United States of America. Nepal's teas are characterized by two types of tea: Orthodox tea and CTC. Orthodox tea refers to the process where tea is hand-or machine-rolled. Most of the specialty teas, like green tea, oolong tea, white tea and hand rolled tea come under the category of orthodox tea. In Nepal, orthodox tea is produced and processed in the mountainous regions of Nepal at an altitude ranging from 3,000 – 7,500 feet above the sea level.

Few years back, Nepal has started organic tea farming that can be defined simply as agriculture that uses neither synthetic fertilizer nor pesticides. In the global context, organic farming is gradually replacing conventional farming due to increasing demand for organic food and growing environmental concerns. Organic tea production is different from conventional tea production; its production system helps to sustain the health of soil, ecosystem and people's health. Organic cultivation deals with whole elements of farming i.e. fertilizer, soil management, plant or seeds selection, irrigation, pest and disease management, biological control method (Khanal,2012). Organic tea is grown without the use of chemicals, fertilizers, pesticides, insecticides, fungicides or herbicides. With the varied advantages Nepalese farmers are also interested to produce organic food. In the Eastern part of Nepal, organic tea production system is growing rapidly, especially in Ilam district; tea farmers are changing their farming system now days, organic farming system replacing conventional tea farming.

1.2 Statement of the Problem

Tea is one of the important spices in Nepal and it has long and successful history of tea farming. It has been taken as long term profitable cash crop and has been playing a significant role in the economy and in sustainable development process from the beginning. Tea farming is suitable in both Hilly and Terai region. Tea provides a benefit to hillside farmers in terms of financial support.

Though, history of tea farming in Nepal is very long, Nepal still does not produce higher quality tea as required by the market in big volume. In eastern hilly area climate is suitable for tea production although, both quantity and quality of tea production is not satisfied. Small farmers are not well trained and lack of modern technology leaves to produce low quality tea green leaves and decrease the quantity as well.

In the world market, the international demand for organic orthodox tea is very high and expected to increase than non-organic tea. So, the emerging spatial aspects of both organic and non-organic tea cultivation, its practices trend explained to analyze the factors that differentiate between organic and non-organic tea farming system.

Though, organic tea farming as known as greener and more efficient agricultural model and greater than non-organic tea in terms of quality, demands and price rate mainly, the organic tea farmers are dropping out their farming system and they have started to their old farming system (non-organic). Therefore, it is essential to study the issues of organic tea farming so that the farmers would be aware and take appropriate plan and strategy of action. So, this research aims to find the answers of questions:

1. What is the practice of organic tea farming in study area?
2. What are the difference between organic tea and non- organic tea farming?
3. What are the issues of organic tea farming?

1.3 Objectives of the Study

The general objective of this study is to analyze the organic tea cultivation practice in study area. The specific objectives are;

1. To analyze the organic tea cultivation practice in study area,
2. To distinguish between organic tea and non-organic tea farming,
3. To analyze the issues in organic tea farming,

1.4 Significance of the Study

Tea is known as profitable and long term cash crop that brings healthy socio-economic situation. Many rural people are engage in tea farming; they have got employment opportunities in local area with familiar environment. The Tea industry provides employment to the major fraction of the rural population that would be one of the better ways to control external migration. It provides small volume of business opportunities to another people. Its development would help in correcting trade imbalances of our country.

Therefore, this study helps to policy makers for formulating plans and projects for further development of tea industry. It can be helpful to that people/students/researcher who wants to study about tea in upcoming days. Likewise, it provides an idea about improving productivity and quality, genetic improvement, plant protection and efficient marketing of tea. This study helps to know about the advantages of organic tea and it is also helpful to suggest all the farmers by showing its positives aspects that would be greater way to promoting organic tea farming system as demand of orthodox tea is rising in rapid mode in the global market.

1.5 Limitations of the Study

There are very few studies have been done regarding organic tea farming. This study concentrated to analyze the organic tea farming practice in Suryodaya Municipality Ward no: Nine of Ilam. Because of the limited time available, logistic support, information available the research has certain limitations; the research works have been done in certain area in specific title so it cannot be generalized to other places, this study was based on the sample data collection in Suryodaya Municipality Ward

no: 9 sudung of Ilam districtso the result is applicable only for the study area. The study was conducted 50 various occupational individual persons who are involving in tea farming and industrial sector hence, the results of the research cannot be generalized for others and to other places. The findings of the study is based on the reliability of the primary data and secondary data and it is more based on field survey data that collected through questionnaire and from information that given by the selected respondents. The study is concerned about the subject matter of organic tea farming too, for this five persons were selected as a KII to take the information about organic tea farming issues in the study area. Similarly, this study may have other limitations about respondent selection, time, resources and money.

1.6 Organization of the Study

This whole report has been organized into five chapters. The first chapter is introductory part, which includes general background of the study, statement of the problems, objectives of the study, significance of the study, limitation of the study and the organization of the study. The second chapter focused on literature review related to tea farming including theoretical review and empirical review. The third chapter explains the research methodology of the study. The fourth chapter is about data analysis and interpretation taken from the study area. The fifth chapter includes summary of the findings, conclusion, recommendation and finally references and appendices also adjoined.

CHAPTER- TWO

LITERATURE REVIEW

This chapter has been done under two categories; theoretical review and empirical review. Review of the related literature is an integral part of the entire research process. It is a foundation to the study and it helps to gather information and develop new knowledge, investigate idea and results. Related books, journals, articles, previous research work, published and unpublished documents are reviewed. It provides the background information about the research topic.

2.1 Theoretical Review

2.1.1 Tea

Tea is the most popular beverage consumed all over the world because of its refreshing effects and known benefits to human health due to its potential pharmacological properties such as antioxidative, antitumor and anticarcinogenic activities. Tea is also a rich source of dietary metals such as manganese, zinc, iron, copper etc. In recent years its consumption is much higher due to its preventive effects against certain human diseases. Tea and its polyphenols have evidence based role in number of diseases (Dalluge & Nelson, 2000).

According to Chinese legend, tea was discovered in 2700 B.C. by an Emperor ShenNong when some tea leaves blew in kettle of boiling water. It is an ancient cultivate plant and it was confined largely to South East Asia until the late sixteenth century and later on, European explorers established its trading trends. Tea has different name in different country such as India- "Chha", China-"Cha", Russia-"Chai", Africa-"Itye", Italy -"Te", England-"Tea plant" United States-"Tea" (Mahmood, Akhtar & Khan, 2010).

Different grades of tea are obtained at varying altitudes, e.g., the low grade 'Low Crown Tea' from tea grown below 610 meters; the intermediate grade 'Medium Crown Tea' from altitudes of 610-1,200 meters, while the best quality 'High Crown Tea' comes from estates located at 1,220 meters and above. Tea grows in highland and on hill slopes where the natural drainages are good because tea cannot tolerate stagnant water and waterlogged lowlands. In general the most suitable soils for tea are slightly acidic and low amount of calcium but high quantities of potassium and

silicon. Tea grows well on high land well drained soils having a good depth, acidic pH in the range 4.5 to 5.5 and more than 2% organic matter. The depth of ground water table should not be less than 90 cm for good growth of tea. The temperature may vary from 16 to 32°C and annual rainfall should be 125 to 150 cm, which is well distributed over 8-9 months in a year. The atmospheric humidity should be always around 80% during most of the time. Very dry atmosphere is not congenial for tea(www.tocklai.org).

Talking about global context, majority of tea producer countries are located in Asia where China, India and Sri Lanka are the lead countries for tea farming. African tea growing countries are located mostly around the tropical regions where Kenya, Malawi, Rwanda, Tanzania and Uganda are major producers. Apart from these regions, some quantities of tea are also being produced in South America (Argentina, Brazil and others), the near East (Iran and Turkey) and the common wealth of independent states (Russia and Georgia). Globally, tea is cultivated in 36,91,938 H with an annual production of 406659 thousand kg. Over the years, both area and production have increased substantially along with the global trade. In terms of area under tea plantation on an average during the last two decade (1991-2010), China lead (45%) the world followed by India (21%), Sri Lanka (7%), Kenya (5%), Vietnam (3%) and other countries (Das, p. 2).

2.1.2 History of Tea Farming in Nepal

Nepal has a long history of tea cultivation, initiated with the establishment of Ilam Tea Estate in the Hills of Ilam District in 1920 B.S (1863 A.D) during the reign of Jung Bahadur Rana. In the history of Nepalese tea farming; Gajaraj Singh Thapa son in law of Prime Minister of Jung Bahadur Rana is a remarkable name, who brought seeds of tea from China as a gift and he decided to cultivate the tea plants in the city of Ilam District (Batala, 2017). According to Batala, Ilam Tea Estate was set up at an altitude 4000-5000 feet above the sea level in Ilam district. Two years later second tea plantation Saktim Tea Estate was established in Jhapa district. In the initial period Nepalese tea leaves were sold in Darjeeling.

2.1.3 Major Tea Cultivated Districts in Nepal

In 1985, the king Birendra Bir Bikram Shah Dev declared five districts of Eastern Nepal; Jhapa, Ilam, Panchthar, Dhankuta, Terathum with the exception of Jhapa, all these districts are located in hilly regions. The climatic condition of the hills are perfectly suitable to produce Orthodox tea, while the Terai produces only CTC (Crush-Tear-Curl). And, newly involved regions are Kaski, Dolakha, Kavre, Sindhupalchowk, Bhojpur, Solukhumbu and Nuwakot (Acharya, 2017). Among them Ilam district is a major hub and famous for orthodox tea and Jhapa is producing CTC tea.

Table 2.1: Tea Plantation and Production in Nepal 2072/073 (2015/016)

S.N	Districts	Garden		Small Farmers			Total	
		Plantation Area- ha	Production in Kg	No. of small farmers	Plantation Area- ha	Production in Kg	Plantation Area- ha	Production in Kg
1	Jhapa	7725	11735551	2962	3718	6726881	11443	18462432
2	Ilam	2845	2158574	6995	5120	2704678	7965	4863252
3	Panchthar	619	283570	1140	720	212000	1339	495570
4	Dhankuta	478	80436	491	474	99456	952	179892
5	Terathum	95	21341	665	360	57521	455	78862
6	Others	2970	102536	2787	2564	81200	5534	183736
	Total	14732	14382008	15040	12956	9881736	27688	24263744

Source: National Tea and Coffee Development Board, 2017

According to this data Jhapa district is major area for tea cultivation with higher production followed by Ilam district. Only CTC tea is produced in Jhapa district while Ilam is famous for orthodox tea. Tea is major commercial crop it plays not only in the agrarian and industrial development of the country but also contributes a significant amount to the national exchequer of country's export and import substitution. The contribution of tea to AGDP and agriculture export is 0.17 and 6.48% respectively (CCD, 2015). Tea plantation covers 26165 hectare of land with the annual production of 23187 Mt (MoAD, 2015).

Yadav, Subedi&Shrestha (2017) reported that India, Sri Lanka, Bangladesh and Nepal are major tea producing countries in South Asia. Nepal is also good player for tea production and export. Talking about Nepal, there are major Five districts that are producing tea, exception of Jhapa district other districts are orthodox tea producers. Jhapa and Ilam alone contribute nearly 83% and 97% of national tea area and production. According to them, an estimated 95 % of orthodox tea is being exported from Nepal. Orthodox tea is recognized worldwide for its aroma, appearance, bright liquor and flavor.

On the basis of processing method and location of cultivation, Two types of tea are produce in Nepal i.e. CTC (Crush, Tear and Curl) and Orthodox. CTC tea which is grows in the lower-altitude, warm and humid plain of Nepal primarily in Jhapa district. CTC tea is produced in lower cost as compared to the orthodox tea, orthodox tea is profitable and unique to hillside which provides a benefit to farmers in terms of financial support. (Mohan, 2013) said that more than Ten I/NGOs are involving in tea development sector; DFID, GTZ, JICA, USAID, UNNATI, SNV, etc. to build up co-operatives, provide trainings and support factories and support to Nepalese tea at international tea fairs. The Government and development agencies are seeking to make an impact in Nepalese tea worldwide.

2.1.4 Tea Data

Tea is a major exportable crop with higher potentiality in international market which possesses bright future of supporting livelihood of the people. It plays vital role in agro-based trade balance, it provides employment opportunity, income, fosters agro-based industrial development, aesthetic agro-tourism value. GoN (2010/2016) has prioritized tea as one of the major export potential agricultural commodity of the country having greater prospects in contribution to national economy.

Table 2.2: Orthodox and CTC Tea Plantation 2072/073 (2015/016)

S.N	Type	Orthodox		CTC		Total	
		Plantation Area-ha	Production in Kg	Plantation Area-ha	Production in Kg	Plantation Area-ha	Production in Kg
1	Garden	7007	2646457	7725	11735551	14732	14382008
2	Small Farmers	9238	3154855	3718	6726881	12956	9881736
	Total	16245	5801312	11443	18462432	27688	24263744

Source: National Tea and Coffee Development Board, 2017

This report shows that, CTC tea production is higher than orthodox tea. Even though area of orthodox tea farming is higher than CTC tea but production of CTC tea is higher than orthodox tea. 3154855 kg orthodox tea produced in 9238 hectare while 6726881 kg CTC tea produced in only 3718 hectare. Therefore, the production rate of CTC tea is higher from orthodox tea. Garden area for CTC is big with 7725 while orthodox tea garden area is about 7007 hectare.

Jhapa and Ilam district shares highest area and production of Orthodox and CTC tea in Nepal. Jhapa and Ilam alone contribute nearly 83% and 97% of national tea area and production. Orthodox tea is recognizes worldwide for its aroma, appearance, bright liquor and flavor. Orthodox tea is significant source of foreign exchange earnings. Tea is an aromatic beverage commonly prepared by pouring hot water over cured leaves of the camellia sinensis. Having tea is beneficial for health because it helps to reduce the bad cholesterol and tumor growth, lessening the risk of heart attack, preventing cancer, having antioxidants and complementing diabetes treatment are some of the amazing profits taken from tea as a beverage.

Table 2.3: Tea Plantation and Production by year

Fiscal Year		Plantation (ha)	Production in (kg)
BS	AD		
2051/052	1994/95	2432	1946403
2052/053	1995/96	3071	2737329
2053/54	1996/97	3501.8	2905942
2054/055	1997/98	4515	3018571
2055/56	1998/99	10249.6	4492980
2056/057	1999/00	10,249	5,085,237
2057/058	2000/01	11,997	6,638,082
2058/059	2001/02	12,346	7,518,575
2059/060	2002/03	12,643	8,198,000
2060/061	2003/04	15,012	11,651,204
2061/062	2004/05	15,900	12,606,081
2062/063	2005/06	16,012	13,688,237
2063/064	2006/07	16,420	15,167,743
2064/065	2007/08	16,594	16,127,490
2065/066	2008/09	16,718	16208127
2066/067	2009/10	17,127	16607555
2067/068	2010/11	17,451	17437933
2068/069	2011/12	18,149	18309824
2069/070	2012/13	19,036	20588145
2070/071	2013/14	20120	21076366
2071/072	2014/15	26165	23186726
2072/073	2015/16	27688	24263744

Source: National Tea and Coffee Development Board, 2017

This data show that tea plantation area is expanded year by year likewise production of tea is also expand. The National Tea Policy 2000 had targeted to cover 40875 ha in five years, total production of 46,111 tons in 10 years and of which 65% of national production to be orthodox (MoAD, 2013). But, after 15 years, tea plantation covers only 26,165 ha with annual production and productivity of 23,187 tons and 887kg/ ha, respectively (GoN, 2016). Particularly, the orthodox tea covers only 14,742 ha of land

with the annual production of 4,923 tons, i.e. less than 40% of total tea production from more than 55% of tea plantation area with the productivity of meager 334 kg/ha.

Nepal's tea market is very small compared to the world market. Exported quantity of tea is around 0.56 percent and production is 0.48 percent out of the total global production (Sapkota, 2017). No market information system, changes in consumption habit, lack of warehouse/blending facility, difficulties in build up brand images, lack of quality testing laboratories these are the major problems facing by Nepalese tea farmers and tea industries. There are many firms in the global tea market which can affect the tea market situation, such as demand pattern, prices, production and consuming habits.

2.1.5 Organic Tea Farming

Organic tea production is different from conventional tea production; its production system helps to sustain the health of soil, ecosystem and people. Organic cultivation deals with whole elements of farming i.e. fertilizer, soil management, plant or seeds selection, irrigation, pest and disease management, biological control method (Khanal, 2012). Organic movement aims to get back to traditional, all natural farming methods and it attempt to produce food that are healthier for people and the environment. Modern technology encourages the farmers to use of the chemicals, pesticides, fungicides, herbicides and chemical fertilizers for higher production which creates unhealthy environment and ecosystem by which whole ecology becomes chemicalized but organic farming system that uses neither synthetic fertilizer nor pesticides. Therefore, organic farming system is gradually replacing conventional farming system all over the world.

Organic agriculture is practiced in almost all countries of the world is increasing at a very faster pace and market with organic products is also growing at a fast rate not only in Europe, Japan and North America (which are the major markets) but also in many developing countries. Lack of state regulations for organic agriculture makes it difficult in many countries to distinguish organic from low-chemical or even non-organic products (Seyis, Yurteri, Ozcan & Savsatli, 2018). Most of the developed and developing countries are struggling to reduce pesticides, chemicals in the field. It is one remarkable farming system with huge benefits. It is one of the best practices in

agriculture because it concentrates about natural environment and people health along with producing maximum healthy food. (Khanal, 2012) stated that organic farming is an integrated farming system that strives for sustainability, conserves soil health and biological diversity whilst, prohibiting synthetic pesticides, antibiotics, synthetic fertilizers.

Similarly, organic tea is grown without the use of chemicals, fertilizers, pesticides, insecticides, fungicides or herbicides. Organic tea is plantation and growing method is like plantation and microorganism based natural fertilizer and pest deterrents which is safer for the environment, for soil and also for the farmers. Today, the relationship between tea and human health has become a subject of intensive studies throughout the world. (Bagchi, Ghosh, Swain & Bera, 2015) made a comparison that, in organic tea, the quality is generally considered with respect to minimum or zero chemical residues (heavy metal and pesticides) in final product, high level of secondary metabolites including polyphenols. Therefore, organic tea farmers need to manage crops with organic plant and animal materials that don't contaminate the soil. They must study and apply sustainable tea farming practices for what's allowed and what's prohibited. They must also produce records that document seed sources, pest control measures, harvesting methods and storage strategies.

2.1.6 Organic Tea Farming in Nepalese Context

Organic farming can be defined as using techniques to produce healthy food without harming the natural environment and people. Simply, we can say that organic farming is a kind of technique that involves cultivation of plants and rearing of animals in natural ways that involves the use of biological materials, avoiding the use of chemical, fertilizer to maintain soil fertility and conserve biodiversity.

Nepal is struggling to produce quality organic tea and export in international market as required by buyers. Organic products grown in Nepal and available in the market are tea, coffee, large cardamom, ginger, fresh-vegetables, honey and herbal products. However, data related to area coverage, production, certification procedures and market situation of the commodities are extremely limited (Pokhrel & Pant, 2009). Organic tea producing is a difficult task because it takes longer time as compare to non-organic tea farming. Shortage of labor, organic fertilities, costly

organic farm certification process and limited market are the major problems facing by organic tea farmers but the demand of organic tea in international market is raising not only tea but demand of organic food is raising in the global market.

Table 2.5: Characterization of Cultivars According to Morphological Study, Yield Potential and Taster Evaluation

Cultivars	Origin	Flavor Potential
Takdah	Assam hybrid	Average
Bannockburn 668	Assam hybrid	Very good
Bannockburn 777	China hybrid	Average
Kopati 1/ 1	Assam hybrid	Very good
Phoobsering 312	China hybrid	Good
Phoobsering 1404	Assam hybrid	Average
Phoobsering 1258	China hybrid	Good
Tukdah 78	China hybrid	Good
Tokdah 383	China hybrid	Very good
Tukdah 246	Clonal cultivar	Average
Tukdah 135	Assam hybrid	Good
Bannockburn 157	Cambod hybrid	Good
RR 17/144	China hybrid	Good
AV2	China hybrid	Very good
TV1	China hybrid	Average
TV14	Assam hybrid	Good
TV19	Comboid hybrid	Good

Source: New Sagarmatha Roasted Green Tea Industry, Suryodaya Municipality, 2018

In Nepal, there is 18 types of tea plant species are available which are mention in tabulation. From them, Bannockburn 668, Kopati 1/1, Tokdah 78 and AV2 teas are very good in terms of flavor, quality and price rate. Others are good and average in quality and flavor.

Khanal, (2012) has defined that, the Government has been providing basic incentives for organic farmers who are involved in cooperatives but these cooperatives must be obtain the organic certification. There is a great demand for Nepalese organic tea in

Japan, Germany, USA, and other Overseas Countries. ADB, Tea sect, NTDC, HOTPA of Nepal has also been playing a significant role for organic tea farming development in Nepal. According to him, the common practices adopted by the organic growers are crop rotation, natural pest management and using bio- fertilizer and organic manures mainly farmyard manure, vermin-compost and green manure in soil fertility management.

2.2 Empirical Study

Yadav et al., (2004) have written that tea is most consumed drink in the world it is the oldest nonalcoholic beverages. It cannot take it as only income generating source rather it is the viable labor intensive agribusiness that provides 2.43 per day per ha employment opportunities year round.

According to SAWTEE, Tea is a major cash crop with highly international demand and has a large number of potential to lift out of poverty and stagnation for rural population. Now days, small farmers have been attracted to growing organic tea farming instead of traditional farming because of the higher price than conventional tea. After adopted liberalization policies in early 1990s the land used for tea farming has increased by five times and production has increase by more than 500% compared to the pre- liberalization period due to increased in participation of small farmers in tea producing. Small farmers used land for tea farming more than doubled in ten years (from 20% in 1994 to 41% in 2003/04). Similarly, tea production also highly increased (from 5% in 1994/95 to 33% in 2003/04).

Tiwari, Adhikari&Dhungana (2018)said thatorthodox tea production is one of the profitable enterprises and contribution of orthodox green leaf to the economy of rural people is also very significant through creating the selfemployment to large rural masses in our country. The marginal sloppy hilly areas of eastern part of Nepal are suitable for growing high quality orthodox tea. Orthodox tea production could emerge as a better tool to reduce poverty in eastern mid hills of Nepal and would recognize the country in the international arena by exporting orthodox tea with its brand name or logo.

Khanal (2012) has concluded that organic tea farming is playing one remarkable role for the development of rural people, a huge number of manpower are involved in tea farming which can help to improve the living standard of rural people along with national development. According to him, organic farming helps to maintain environment, bio diversity, maintain human health, natural resources, etc. Tea cultivation plays a vital role to check soil erosion and also provides the valued greenery.

Acharya (2012) studied that organic farming is one of several approaches to sustainable agriculture development practice that is ecologically sound, economically viable and socially justified.

Data on organic agriculture are available from 162 countries (up from 160 in 2010). There are 37.2 million hectares of organic agricultural land (including in-conversion areas). The largest areas of organic agricultural land are Oceania (12.2 million hectares, 33 percent of the world's organic agricultural land) and Europe (10.6 million hectares, 29 percent). Latin America has 6.9 million hectares (18.4 percent) followed by Asia (3.7 million hectares, 10 percent), North America (2.8 million hectares, 7.5 percent) and Africa (1.1 million hectares, 3 percent). There has been an increase of the organic agricultural land in Asia, Europe, North America and Oceania. For Asia, after a major drop of organic land in 2010, 0.9 million more hectares were reported. There was also strong growth in Europe, where the area increased by 0.6 million hectares (6 percent). In Latin America the organic land decreased, mainly due to a decrease of organic grazing areas in Argentina. (Willer, Lernoud & Home, 2013, p.26).

Shrestha (2014) reported that Nepalese tea has the huge potential and competitive advantages in both domestic and international market but it is needed to identify the major bottlenecks of the sustainable supply chain and also the need of maintain the sustainability in Nepalese tea industry. He said that domestic developing organization, international donor agencies and NGOs also have a significant role in the progress of establishing and maintaining sustainability in the tea supply chain.

According to (NTIS, 2016) Tea, Coffee, Ginger, Cardamom, Jute, Lentils, Medicinal and Aromatic plants as the major exportable agricultural commodities among them,

tea (*Camellia sinensis*), a perennial sciophyte, is valued as the high value, low volume agricultural commodity for Nepal. Even though, Nepal has a greater possibilities to enhance economic status through agricultural development Nepal has been facing difficulties in addressing key transportation and energy infrastructure constraints. Limitations in supportive physical infrastructure trigger a negative impact on export sectors as they erode price competitiveness. The absence of an integrated multi-modal transport plan often leads to uncoordinated attempts at fixing current weaknesses rather than efficiently addressing the issues. Nepal needs to continue to modernize and reform in a number of trade facilitation areas, including the modernization of customs operations.

Acharya (2017) He found that tea cultivation and production is increasing every year, almost the area of Eastern part of Nepal are tea planted areas, Nepalese tea receiving good market in international level. Jhapa District is in highest position in tea production and tea cultivation area and Ilam District is in highest position in cultivation area to small farmers sector. Many problems are exist in tea farming facing by farmers, tea industry, because of the unscientific, unorganized and limited.

Khanh, Thuong&Heo (2018) explained that commercialization of agriculture through conventional means maximum use of chemicals, fertilizers, new technology for higher production but decreasing soil fertility, environment degradation, and bad effects on human health due to use of agro-chemical fertilizers leaves farmers to move into organic movement in Nepal. From the environmental perspective organic farming can save energy, preserve bio-diversity, mitigate climate change and sustain the environment in long term through providing better environment for farmers without having agro-chemical. The support from Government further materialized in its Tenth Five Year Plan (2002-2007). That focused on minimizing the use of chemicals pesticides, promoting the method of Integrated Pest Management (IPM), and promoted organic farming method based on the use of organic manure.

Report of the Working Group on Organic Tea (2014) concluded that, organic farming can be a part of solution of green house gases. Intensive farming is a major responsible factor for emission of large amount of green house gases which contributes 10-15% total green house gases mitigation mainly (N₂O and CO₂). Organic farming is the key factor of pest and disease control and also for conserve

soil fertility management in long run. A systematic comparison between organic and conventional tea production has been conducted. Soil pH, total organic carbon and nitrogen contents were higher in organic fields. The organic carbon content in organic fields was 7.2 percent higher than conventional ones. The carbon sequestered in the organic soil is one percent more annually than its conventional counterpart. In addition, the biomass carbon, ninhydrin-nitrogen, and ratios of biomass carbon to total organic carbon, biomass ninhydrin-nitrogen to total nitrogen were significantly higher in organic fields. The nitrous oxide (N₂O) emission was lower in organic tea soils.

Rahmann & Aksoy (2014) mentioned that high value plantation commodities like tea and coffee, there is good scope for switching over to organic farming. Many of the plantation commodities are exported and therefore, it is possible to realize higher returns from unit quantity exported when produced by organic means. Secondly, as these crops are generally grown in ecologically fragile hilly tracts, adopting organic farming methods would entail the protection of the environment and also in the prevention of contamination of streams and rivers that originate from these hills. For the production of organic tea a high level of technology is not required, but a commitment to improve the cultivation and the physical ability to implement the system is necessary. In organic tea estates, agronomic practices like soil conservation, composting, manual weeding, recycling of organic wastes, shade regulation etc., form the essential requirements which require more labor. As the need for animal manure is high appropriate measures like maintenance of pastures and sufficient livestock are essential which again demand large workforce. Thus labor is an important investment in organic tea farming. It is also mandatory to provide appropriate housing, education, health facilities, etc., to these workers.

(Das & Pathak) highlighted that organic farming avoids or excludes the use of synthetically compounded fertilizers and pesticides. It is traditional farming system so it avoids chemicals pesticides; herbicides which is used in modern agriculture for the maximum production that can contribute to affect soil fertility and in human health. Exposing yourself to chemicals will cause you many diseases in a long run, such as kidney failure, cancer, respiratory problems, impotence and infertility. The number of organic tea producers and the volume of organic tea traded in the world market have increased substantially over the year. Tea tourism is another aspect of tea, it is

not only commercial crop, rather it has tourism concept. Tea tourism is a wonderful recreational experience to the tourists. Tea tourism is already popular in China, Sri Lanka and in Kenya, now it catching up in India. The tea gardens, the cultural festivals of the tea tribes, process of plucking system and luxurious tea bungalows provide unique tour experience.

Seyis, Yurteri , Ozcan, Savsatli (2018) studied about Turkish tea, they concluded that healthy tea consumers are increased in Europe and in Turkish for this reason all necessary efforts to produce organic tea should be initiated in the tea garden of Turkish as soon as possible. According to this journal organic tea meeting the high price in the market will eliminate the problem of completion about Turkish tea due to high costs. Likewise, CAYKUR is planning to switch to organic tea production in all tea plantations in Rize in 2018. But the farmer has to be educated about structure of organic tea production and uses of organic fertilizers and have to be highlighted about future plans of CAYKUR and the Ministry of Agriculture, Food and Livestock).

Tea is a major cash crop of Eastern part of Nepal with the higher potential in international market. Tea farming is major occupation of Eastern region of Nepal and has been playing remarkable role in livelihood of rural people. Ilam District is famous for tea farming among other districts. Tea farming in Ilam is not only related to livelihood of farmers rather it is playing important role in tourism as well, many people comes to Ilam to see the tea garden(Kanyam and Ilam tea garden) it is playing very crucial role directly and indirectly. Jhapa, Ilam, Dhankuta, Panchthar and Terhathum are the major hubs for tea farming. According to MoAD (2015) Jhapa and Ilam alone contributes nearly 83% and 97% of national tea area and production with the yield of 1294kg /ha. Around 18000 households are involving in orthodox tea farming in hilly area and around 1,00,000 female are involve in tea leaf plucking, 10000 male are involve in tea processing work. Likewise, 22000 female are busy in hand made teas processing and around 15000 people are involve in its marketing.

2.3 Gap of the Study

However, many studies have been done on the title of 'Tea'. They have looked at the tea culture, about supply chain approach, its role in poverty reduction in different countries and so on. But there are very few attempts have been made into specific 'Organic Tea'. Many Nepalese researchers have explored that tea as a profitable crop and have focused its relationship with national economy. Among them, little attention has been given to the status of organic tea in Nepalese context. As a result, no clear knowledge about organic tea farming has been laid out.

Khanal (2012) and Acharya (2017) indicated the organic tea production practices and its role in environment while studies by Rahman and Aksoy (2014) talked about the choices of organic food by people worldwide. Likewise, Seyis, et, al (2018) concerned about organic tea production, challenges and possibilities in Turkey. Tiwari, et, al (2018) focused on orthodox tea production and relate with local economy. Although, much work has explored the relationship between tea and economy, more studies are needed to smooth development of tea sector.

Apart from Khanal(2012) & Acharya (2017), there is a general lack of research in issues of organic tea in Ilam, lack of examining existing issues which contributes in economic growth negatively. Despite this, no studies/ data have found at differences between organic tea farming and non-organic tea farming system. However, no previous study has focused solely on organic tea farming issues and why organic tea is different from non-organic tea? What are the major factors that apart organic tea from conventional tea? The purpose of this study is to find the answer of these questions.

The researcher of the proposed study after reviewing the selected literature found the following untouched aspects so far as the organic tea cultivation in Ilam is concerned:

- a. Major issues in organic tea farming in Ilam,
- b. Profile of both organic and non-organic tea farmers and their cultivation practice,
- c. Major factors that differentiate organic and non-organic tea farming system,

CHAPTER - THREE

RESEARCH METHODOLOGY

In this chapter research design, methods of data collection, selection of the sample, research process and data analysis methods are included.

3.1 Research Design

The study is related to specifically organic tea farming system and the study was conducted in Suryodaya Municipality Ward no 9 in Ilam district. The history of tea farming in Nepal is very long but organic tea farming system is in initial phase till now. Though, organic tea farming is much better than non-organic tea, demand of organic tea also higher than non-organic tea but why still organic tea farming trend in small volume? Farmers are changing their organic farming system, why? These are the question raised in this study. Three objectives of the study are; analyze the tea cultivation practice, distinguish between organic and non-organic tea farming system and identify the issues in organic tea farming in the study area.

By applying quota cum convenience sampling method 20 organic tea farming household and 30 non-organic tea farming household were selected for the study. Both primary and secondary data were used in research. KII and Interview techniques were applied to collect the primary data where as various books, journals, articles, newspaper were studied for secondary data collection. The nature of data is more qualitative than quantitative data and information. The information taken from field survey was interpreted in descriptive and explanatory ways. Quantitative data were taken by applying Interview and analyzed in simple statistical method such as table, graphs, etc where as qualitative information was analyzed in descriptive way. The findings of the study agglomerated in report form.

3.2 Rational for the Selection of the Study Area

Suryodaya Municipality is located in centre part of Ilam district. It has total fourteen wards included. Geographically, it lies in the hilly region which is known as Mahabharat. After, the constitution of Nepal promulgated in 2015, more VDC had been merged now its size being 252.52sq.km.

This study is based on Suryodaya Municipality ward no: ninethe name of the villages is Sudung. This area is very famous for tea farming from the begging of tea cultivation. Tea farming is major income source of Suryodaya Municipality it has huge potential to earn foreign currency by exporting tea but some farmers dropping organic tea farming. At present the number of organic tea farmers is going down, they return back into their old farming system.

More familiar about ecology, knowledge about this field is another rational for the selecting this area. Research findings may helpful to know about major exporting crop (tea) who wants to study in this topic and also helpful to agricultural development policy, program makers and for rural development policy makers to make better policy for more and quality tea production. Therefore, this study is rational in its own arena.

3.3 Nature and Sources of Data

The nature of data is both qualitative and quantitative. The information collected from KII is qualitative. KII check list was developed to examine the issues in organic tea farming. Interview questionnaire was made up to take the information about respondent's household profile, analyze the organic tea cultivation practice and differentiate between organic tea and non-organic tea farming system that data is both qualitative and quantitative in nature.

The source of data includes both primary and secondary. Primary data were collected through filed study, where as secondary data were collected from various articles, annual, reports, published and unpublished sources, journals, books, booklet, report, handouts, newspaper and previously done thesis, etc.

3.4 Study Population, Sample and Sampling Procedure

There are all together fourteen wards in Suryodaya Municipality. Among them Ward no nine was selected for the study because the ward produces organic tea in big area as compared to other areas in Suryodaya Municipality. According to National Population Census and Household Census there are 962 household in ward no: 9 among them 74 household are involved in organic tea farming and 560 households are

actual non-organic tea farmers. Among them 20 household were selected for the study. This is about 27.02% of the total organic tea farming households. Similarly, 30 households of non-organic tea farmers were selected and this is about 5.35% of the total non-organic tea grower households. By applying quota cum convenience sampling method households were selected.

3.5 Methods of Data Collection

To generate the primary data the semi structured or unstructured questionnaire and check list were applied to collect the data from the study area.

3.5.1 Interview

The interview was conducted as a technique for which structured questionnaire was developed as a tool. The questionnaire has developed to collect the information related to the respondent's household profile, to examine the status of tea farming in the study area and to differentiate organic tea farming and non-organic tea farming system. The format of interview questionnaire has been attached in annex-I.

3.5.2 Key Informant Interview

The primary data were collected from KII using the semi or unstructured interview method. The interview was taken as cross checking for data obtained from questionnaire. Key person such as manager of tea factory, member of factory, manager of tea cooperatives, chairman of cooperatives, active farmers were selected to collect the information. The guideline of KII has been attached in annex-II.

Table 3.1:Information of the Selected Key Persons

S.N	Name of Respondent	Sex(M/F)	Age in Year	Occupation	Date and Address
1	MadhavNiroula	Male	56	Tea Technician/ Manager of Tea Cooperatives	2018/08/23 (Ilam)
2	Buddhi Bal Tamang	Male	45	Manager of Gorkha Tea Estate Pvt. Ltd.	2018/08/23 (Ilam)
3	Dinesh Rasaili	Male	29	Manager of Himalaya Sangrila Tea Estate Pvt. Ltd.	2018/08/24 (Ilam)
4	DobinGurung	Male	57	Manager of Nepal Green &Speciality Tea, Ilam	2018/08/24 (Ilam)
5	DipeshRai	Male	44	Organic Tea Farmer	2018/08/24 (Ilam)

Source: Field Survey, 2018

Five key persons were selected for the study. They provided the information about organic tea farming in detail because those respondents are well known about organic tea farming and its markets status, problems that are facing by organic tea farmers and facing by organic tea factory in Ilam district. Respondents were selected to fulfill the third objective that is about analyzing the issues in organic tea farming. More or less they talked about same thing, they all focused on same issues according to their long working experience which are included in fourth chapter.

3.6 Methods of Data Analysis

The data were properly edited and coded for future processing. After that, the data were subjected to various applicable statically test. This study has three objectives; to analyze the status of tea cultivation practice for which Interview technique was

applied to collect the relevant information. Interview questionnaire included respondent's profile that is quantitative data in nature and quantitative data were analyzed via simple statistical methods such as table, graphs, etc. The information of Status of tea cultivation is qualitative in nature so it was analyzed in descriptive way.

Second objective is to differentiate organic tea farming and non-organic tea farming system. Interview was applied to gathered related information. The information is qualitative in nature so it was analyzed by descriptive way. Likewise, third objective is to identify issues in organic tea farming in the study area. Key Informant Interview research methodology was applied to collect the reliable information. Five Key persons were selected and the information taken by respondent was qualitative in nature. Depending upon qualitative data gathered in simple explanatory and descriptive ways. After properly interpretation the data and findings was agglomerated in the report form.

CHAPTER- FOUR

DATA PRESENTATION AND ANALYSIS

This chapter focused about the presentation and analysis of collected data from the field survey to get the stated objectives. The data was presented and analyzed using theoretical basis with simple table, graph and verbal expression.

4.1 Introduction of Study Area

Ilam district is located in Eastern part of Nepal. It belongs to Province no. 1. It is around 600km far from Kathmandu. The study has been done in Suryodaya Municipality Ward no. 9 in Ilam. The area of Suryodaya Municipality is about 252.52km² (97.50sqm). According to Population Census (2011) total population is about 56,691 in Suryodaya (www.suryodayamun.gov.np).

It was formed by merging three VDC i.e. Phikkal Bazar, Panchakanya and Kanyam in May 2014. The major occupation of this area is tea farming and major industry is also tea factory. Besides that, agriculture and animal husbandry is another major occupation of this area. Suryodaya Municipality is famous for tea garden especially, there are thousands of internal and external tourists visiting and admiring its beauty every year. This municipality has a comparatively good quality of life than many other area of Ilam district. The status of local facilities like roads, drinking water, school and other utilities is also better.

According to the National Population Census (2011) the total households of this ward is 962 and total population is 4202. Brahmin, Kchetry, Rai, Newar, Limbu, Sunuwar, Gurung, Magar, Sherpa, Dalit caste are living in that area. The main occupation of this area is tea farming, besides that, they are engaging in agriculture and animal husbandry. The major crops of that area are Tea, Milk, Chilli, Maize, Cucumber, Vegetables, etc. and Cow, Pig, Poultry Farm and Goat are the major domestic animals. About 65.90% farmers are involved in tea farming in that area.

4.2 Profile of the Households of Tea Farming

This section is related to the overall structure of tea farming of study area. It presents tea cultivation related information. It shows the age, sex, occupational structure and literacy status of selected households.

4.2.1 Population Composition by Caste and Sex

The population is the major component of the study. Caste is another important indicator of any community. Therefore, caste and sex is important parameter which have been playing a crucial role in every aspect of society. So, the information about population composition presented below in tabulation form:

Table 4.1: Composition of Population by Caste and Sex

S.N.	Caste/ Ethnicity	Population by Sex					
		Male		Female		Total	
		No	%	No	%	No	%
1	Janajati(Rai, Limbu, Sherpa, Sunuwar, Gurung)	27	52.94	28	51.87	55	52.38
2	Chhetry	11	21.56	9	16.66	20	19.06
3	Brahmin	7	13.72	9	16.66	16	15.23
4	Dalit	6	11.78	8	14.81	14	13.33
	Total	51	100	54	100	105	100

Source: Field Survey, 2018

This table also presenting that there is more or less equal distribution of population out of the total 105 respondents 51 (48.57%) were male and rest of the 54 (51.42%) were female. In this study area Janajati is majority for organic tea cultivation with 53% following by Chetry/ Brahmin by 19%/ 16% and Dalits are few in organic tea farming as in non organic tea farming.

Based on the above assumption Janajati group are major organic tea farmers in the study area. Janajati group are occupying agricultural activities especially tea farming. Very few numbers of Dalits are involving in organic tea farming same as in non-

organic tea farming, because of the lack of ownership of land and they have their own occupation from very beginning. Likewise, Brahmin, Chetry are also farming organic tea but majority of Janajati are living in the selective area so table shows majority number of Janajati are involving in tea farming.

4.2.2 Population Composition by Age Group

Active age group determines the economic status of the country. The sample population has distributed by age, where the population distribution of tea farmers households under different age group which present economically active and inactive population in this area:

Table 4.2: Distribution of Population by Age Group

S.N.	Age Group in Year	Number of Population	Percentage
1	Below 15	3	2.87
2	15-59	90	85.71
3	Above 60	12	11.42
	Total	105	100

Source: Field Survey, 2018

Based on the assumption we can conclude that physically active population rate is higher in organic farming. 85.71% population is actively involved in organic tea farming which is very positive sign for it. According to the field report, very few people are unable to working in tea farming in the study area.

Few are physically unable to work in this field but most of the people are actively engaging in organic tea farming which is positive sign for economic development of the rural people and for whole nation development by promoting organic tea cultivation, growth in production and by exporting organic tea to meet the demand of tea with required quality standard in international market and of course in domestic market.

4.2.3 Population Composition by Occupational Structure

Occupation is the main determination of income and prosperity of people. It determines the major income source living standard of people. The information about

occupational structure of non-organic tea farmers has been collected and presented below in tabulated form.

Table 4.3: Occupational Structure

S.N.	Major Occupation	Total Population	Percentage
1	Agriculture	79	75.23
2	Foreign Employment	15	14.28
3	Job Employment	3	2.85
4	Study Only	8	7.64
	Total	105	100

Source: Field Survey, 2018

According to this report more than 75% of people are engaged in agriculture, including tea farming. 14.28% of the population is engaged in foreign employment, and a very small number of people are job holders, and some are students only.

It means tea farming is the major agricultural activity in this area, so most of the people are engaged in tea farming. Besides that, vegetables, milk production, and poultry farming are other working fields of those rural people. Secondly, around 22% of people are abroad, so the profile of this study area is looking good. From this report, we can conclude that there is no other opportunity, as most people have no choices, so they are engaging in agricultural activities and migrating abroad for study and also for better job opportunities.

4.2.4 Population Composition by Literacy Status

Education is the key of knowledge and skill which determines the occupational structures, income level, and awareness level of the people. Therefore, the information about literacy status of organic and non-organic tea farmers is presented below in tabulation form:

Table 4.4: Literacy Status

S.N.	Literacy Status	Total Frequency	Total Literacy %
1	Illiterate	3	2.86
2	Literate Only	6	5.72
3	Primary Level	12	11.43
4	Lower Secondary	30	28.57
5	Secondary	20	19.04
6	Intermediate	13	12.38
7	Bachelors and above	21	20
	Total	105	100

Source: Field Survey, 2018

Literacy status of organic tea farming respondents is also good. Only 2.86% people are illiterate in selected respondents. It is also higher than national average rate. According to this report we can conclude that out of 105 total respondents about 97% peoples are literate in selected study area. Highly educated rate is also satisfactory in this area with 20% of bachelors and above. However, it is quite satisfactory literacy status in comparison of whole Nepalese average literacy rate.

4.4 Structure of Organic Tea Cultivation

As stated by farmers for the production of organic tea a high level of technology is not required, but a commitment to improve the cultivation and the physical ability to implement the system is necessary. In organic tea estates, agronomic practices like soil conservation, composting, manual weeding, recycling of organic wastes, shade regulation etc. According to tea farmers, before planting of tea plant other grass disposable plant should be cut so that land will be clean but single trees should be preserved for tea plant because one tree is need for each 50 tea plants. Before planting tea it is necessary to know about suitable weather, soil and other things. Certain essential components which serve as pre-requisite are to be taken care of when new plantations are established for producing organic tea.

4.4.1 Preparation of Land

According to respondents at first, selection of suitable land for tea cultivation is necessary. Tea is mainly grown in the tropical and subtropical regions of the world. Tea requires strongly acidic soil with pH around 5.0 and depth of 1.5-2.0 meter with good drainage. The selection of cultivars should also be based on the elevation, topography, weather, pattern, pest and disease incidence in the area. Less than 1% mineral in soil is not suitable for tea cultivation. Major elements for tea cultivation are Nitrogen must be 0.1-0.2 %, Phosphorus 1.5 – 3 % kilo per ropani and Potash 6-14 per ropani is suitable for tea cultivation.

4.4.2 Weather

It is said that the tea is a kind of plant that can handle a light frost and even snow but not heavy freezes or prolonged cold winters and unlike some plants, it does not require a period of cold dormancy. It can thus grow from subtropical climates to tropical climates, but generally requires a fair amount of humidity and rainfall during the growing season. Although it can grow in hot tropical climates if they are sufficiently humid, the highest-quality teas mostly come from subtropical climates with some seasonality.

4.4.3 Nutrients for growth of tea plant

The harvestable portion of the tea plant contains a high percentage of nutrients, nitrogen (N) being the most abundant nutrient followed by potassium (K), calcium (Ca), phosphorus (P), sulfur (S), magnesium (Mg), Potash, Oxygen, Hydrogen, Boron, Copper, Iron, Chlorine zinc (Zn), etc. (Sultana, Siddique, Kamaruzzaman, Halim, 2014).

4.5 Tea Plantation

At present there are 43 varieties of tea grown in Nepal, nine from seed stock and others being clones. There are two main types from the same botanical plant species, camellia, saneness which had been developed at the Indian Tea Research station and used extensively in Indian Tea garden which have been introduced to Nepal for planting in the two different growing areas. There are two types of tea growing

practices are exist; seeds and clone. The clone varieties developed from cutting from mother bushes.

4.5.1 Differences between Seeds stock and Clone

Seeds	Clone
<ul style="list-style-type: none"> ➤ May not be same characteristics among tea plants ➤ Lower production capacity ➤ Not affected by diseases, insects ➤ High capacity to fight against disease, insects ➤ Average plant age is more than 200 years ➤ Has main root by growing 	<ul style="list-style-type: none"> ➤ Same characteristics ➤ Higher production capacity ➤ Easily affected by disease and other insects, locust ➤ Less capacity to fight against disease, and other harmful insects ➤ Average plant age is 55-60 years after that its producing capacity will be low. ➤ It has not main root growing by clone

4.6 Nursery

Respondents said that June and July months are appropriate for nursery of tea plant. For this make a tunnel by bamboo and cover it from all sides compulsory. Tea plant can planting in direct ground or in plastic slap. 4 inches round and 7 inch depth is needed for nursery. For tea plant nursery roof is compulsory. If plant is implant ground tea plant should be 45° angle while in plastic slap plant should be straight. It takes 2-4 years for plantation. According to them, in nursery period, different kind of problems can arise like sun-scorch, water stressed and so on. For this, pre-planting soil sterilization, post-planting curative treatmentis necessary. In this period farmers have to be careful in such things;

- Should avoid grass and other things within nursery area and in surrounding area too,
- Irrigation is needed on time,
- Farmers must avoid diseases and insects,
- Farmers should have concentration to make nursery area clean,

Types of Nursery

Farmers said that there are two types of nursery plant exist; Clone nursery and Seed nursery.

Nursery Nurture

In nursery period, plants needs to be protected so that grass must be avoid around plant, irrigation is needed and for controlling disease vitamin must spray on plant.

4.7 Plantation

There are many technical requirements for organic tea production such as selection of organic tea garden, improvement of its environment, soil quality improvement, pest, disease and weed integrated management, leaf plucking and processing technologies and package material improvement, and so on. As they said the most important technical requirements are the soil quality improvement and pest and disease management sine no chemical fertilizers and pesticides allowed to use in the organic tea gardens.

4.7.1 Selection of Plant

As explained by farmersat least 18 months old plant should be selected for plantation, height must be 18 inch, size of plant 1cm. 18inch depth is needed and 1feet circumference. Healthy and matured plant need to be selected with more leaf. Top soil and soft soil must be separated, top soil should be in ground because top soil has nutrients so that it must be conserve and soft soil should in top level for tea plantation. Before 15 days of plantation tea shoots must be plucked.

4.7.2 Tea Plantation Practice

It is said that planting season normally coincides with June - July and September – October. The way to tea plantation and distance between every plant is different according to place and types of tea. If tea plant is big then it needs bigger distance from one another.

- a. Distance of line to line : 3 feet (for big tea plant)
- b. Distance of one plant to another plant : 2.5 feet

- c. Distance of line to line : 2.5 feet (for small size of tea plant)
- d. Distance of one plant to another plant: 2 feet

4.7.3 Mulching

Farmers claimed that immediately after planting, plants are staked to prevent wind damage. At the time of planting, application of compost or vermin-compost 0.05 to 1.0 kg per pit is advocated. Apply 100 gm rock phosphate and 400 gm dolomite per pit at the time of planting for successful establishment. Initially shade trees are planted at 6 x 6 m and later thinned to 12 x 6 m after 8- 10 years of planting and finally into 12x 12 m by 12-1 5 years after planting.

4.7.4 Decentering

By the opinion of respondent, in this stage the leader stem of tea will be cut. After one year of plantation tea plant should be decenterate. For this the stem size should be (5-7mm) or should be a pencil size and need to be (6-7 inch) height from ground level by using pruning knife. Decentering tea plant will be start February in dry place but in cool place it will be start on January when tea root start to consume food and nutrients effectively.

4.7.5 Debudding

Debudding of tea plant is to make the plant healthy and to develop tea bud, if tea plant has not more primaries then it can be done in nursery level too. In this stage tea bud should be pluck in (20inch) from the land surface,after two weeks pluck the tea bud above 8 inch.

4.7.6 Bending and Pegging

To make more primaries bending and pegging is necessary. Farmers told that peg can make by bamboo and tree. For this length of tea plant must be (40-60cm). When the length of tea is (20-26inch) stem of lower surface will be turn into gray.

4.8 Pruning

As believed by farmers, in tea cultivation, pruning of tea plant can play a very significant role in production and in quality. Pruning is necessary for development of plant vegetative. Pruning time is depending on weather, land structure, leaf quality, season, disease. December and January is perfect time for pruning in Nepal and in India. Based on respondents, in hilly area it can be start from November. It can help to make bigger tea bud, weight, more production and helps to minimize banjhi shoots.



Picture: Pruning Operation

To achieve these objectives different kinds of pruning methods are applying;

4.8.1 Collar Pruning:

As specified by farmers this pruning method is used for oldest tea plants which are not able to produce more. In this method above (10-12cm) from land surface will be cut by pruning knife. This method is very sensitive so it is limited only in some places. For this method carbohydrate should be stocked in plant.

4.8.2 Medium Pruning

As said by respondents above (45-60cm) from land surface should be pruned by using pruning knife in this stage. This method is used for control unnecessary height of plant, and cut unnecessary primaries, control the disease and insects and so on.

4.8.3 Light Pruning

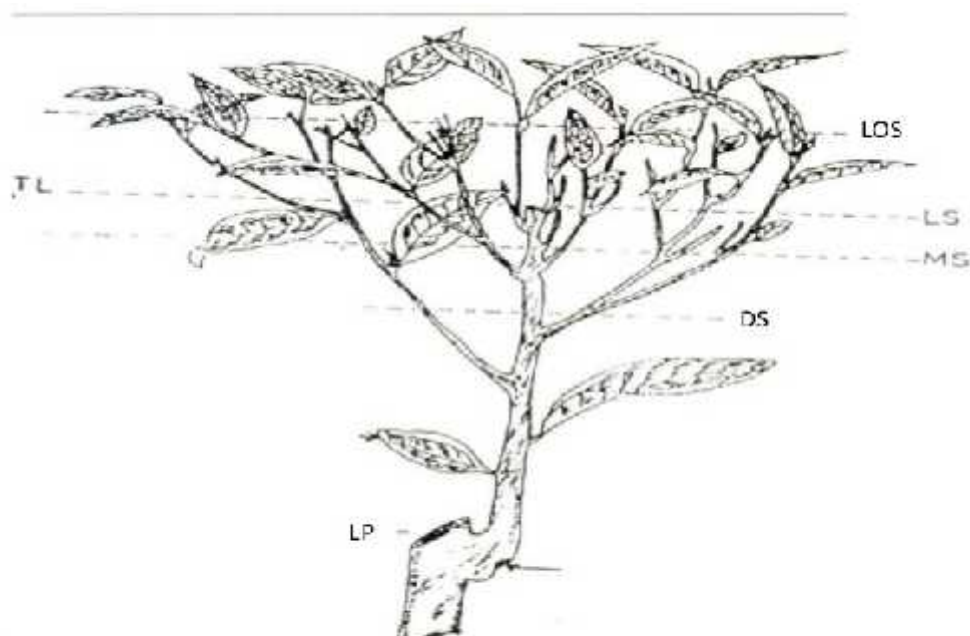
They said that this method is used in the end of pruning cycle. In this method leaving 5cm from before pruning sign then cut above plant. This pruning system is used to make plant younger, to give rejuvenation for plant, to make suitable plant height, growth in production and control harmful insects and diseases.

4.8.4 Deep Skiff

According to respondents this method is applying above (12-15cm) from the sign of LP. Generally, it is in the middle of sign of LP and height of plucking. It is applying for production of same level of leaf, control the excessive creep and minimize the height of plucking table and also for tolerate the effect of dryness.

4.8.5 Medium Skiff

Consistent with farmers plant should be cut above 5 from the level of DS in this method, It is applying to take same level of quality of tea leaves, control the banjhi shoot, and minimize the effects of dryness and also for control the height of plucking surface.



Different forms of pruning: LP- light prune, DS- deep skiff, MS- medium skiff, LS- light skiff, LOS- level of skiff, TL- tipping level

4.9 Effect of Pruning in Production

As mentioned by respondents pruning is essential for quality tea production. To give rejuvenation to plant, for the growth of production and quality pruning is necessary. Generally, it is applying 3-4 years in Terai area and in 5 years gap from first pruning date in Hilly area. But, same pruning cycle may not be useful in all area; it can be different in different place because of different kind of tea plant. If the depth rate of pruning is going to be high the possibility of low production will also be high.

Pruning Methods	Production Crisis in Percentage
Medium Pruning (MP)	60-70%
Light Pruning (LP)	30-35%
Deep Skiff (DS)	10-15%
Medium Skiff (MS)	5-10%

Different kinds of prune and skiff methods and their effects on growth of leaf production in percentage;

Pruning and Skiff Method	Growth Rate of Production in Percent
Deep Skiff (DS)	10-15%
Medium Skiff (MS)	15-20%
Light Skiff (LS)	20-25%
Without Skiff	30-35%

4.10 Tipping

First pluck after pruning is called tipping. As said by respondents, it is important to give enough maintenance leaf and to make bigger plant. It is depend on the frame of deep skiff place and space of plant. When 30% plants are ready to tipping then we should use tipping measure. Immature and green leaf shouldn't be tipping. Production of early season crop will be less if tipping is late. It can be different according to the methods of pruning. Some examples of Assam and Assam Hybrid tea tipping system are mention below;

Pruning Method	Tipping Height in CM	Leaf Number Above Cutting
CP	70-75 CM	6 Leaf
MP	25-35%	6 Leaf
LP	20-26%	5 Leaf
DS	7-10%	2 Leaf
MS	4-5%	1 Leaf
LS	From the place of skiff to Janam leaf	
LOS	In the last plucking place	

From the first some year, very few leaves are available to pluck which is called tipping. It is done in certain height to give enough maintenance leaves, and also for pluck tea leaves easily in future. The height of tipping is depends upon different kinds of pruning methods and generally, in 20cm from the first LP mark.

4.11 Plucking

As determined by farmerstea production growth is depending on the development of shoots. The main objective of plucking is to grow of new shoots by which farmers can gain more income and make their tea garden economically strong. But plucking system should be scientific and manageable. They said that, tea plucking is one major activity in tea farming which takes around 15-20 % economic investment and around 60-70% labors. Plucking gives tea leaves as well as it helps in rate of shoot production. Generally, black plucking helps to grow the number of shoots but size might be;--00000small by this. Therefore, it is necessary to equilibrium between leaf plucking and rate of shoot production for more production with quality results.



Picture: Tea leaf plucking

4.11.1 Plucking Round

Time distance between two plucking of same area is called plucking round. It might be 4-14 days long but quality production generally it is 6-8 days plucking round is appropriate in Eastern India and in Nepal. But it depends upon leaf growth and its quality. Because of the different kinds of weather as well as land structure 3-6 days is needed to be leaf by tea bud and this time is called leaf period. According to Weight (1932), average leaf period is to be 4 days in shoot production season in India. He made one formula for leaf plucking; tea plucking should be done one day before leaf period ($2 \times \text{leaf period} - 1 = 7$ days)

Leaf period is changing according to different temperature. Das (1984) has done one research in Tocklai, he found that, in mid season the temperature is 32°C (minimum 25°) in this period 12 clones leaf period in average is 5.0 ± 0.4 days, which is raised to 8.0 ± 0.8 days in November when the temperature is 27° night temperature is 16° . Therefore, plucking round should determine by tea leaf period. Long days plucking round can grow leaf quantity but leaf quality is less. Similarly, short plucking round can maintain the quality of leaf but quantity is less.

4.11.2 Plucking System

As specified by respondents plucking system is depends on weather and shoot growth rate. Generally, plucking system has two types; Fish Leaf Plucking and Janam Plucking. Fish Leaf Plucking system is used in the place where shoots growth is slow or where tea plucking over year like in South India. In this plucking system, leave the fish leaf above plucking surface. But in Janam plucking, tea leaf is not there above tipping surface. Janam Plucking is appropriate for Eastern India and in Nepal.

4.11.3 Plucking Season

As they said that plucking season can categorized in three steps such as; Spring (March-May), Rain (June-Sept), Autumn (October-November), Black Plucking (earlyspring or late autumn) and in other season Standard Plucking is suitable. But price rate is depends on season i.e. 2ndFloush (Early May) and late autumn crop achieve higher price. For more income generation plucking system should be used according to the need.

4.11.4 Plucking Under Various Condition

- a. **Early Season Plucking:**As they reported that, in first period of the year, pluck tea leaf by leaving the 1+B size shoots which is close to Janam in where pruning is not done. Immature shoots should not be tipping.
- b. **Plucking of Rain Flush Crop:** Said by respondents around 45% production can take from July to September of annual production. In this season, short plucking round should be applied to take more production and should avoid Banjhi shoots creep or fish leaf. In this season, plucking surface should not be grown and step up plucking is not good for this season.
- c. **Plucking Towards End of a Flush:** In this season, hard plucking must be applied. It avoids growingBanjhi buds from plucking surface by which new comer shoots might not be built well and thick.
- d. **Dry Season Plucking:**
- e. **Plucking in Hail Damaged Areas:** As explained by respondents, if hail affects for immature tea plant plucking should be done in upper level. Like 67-70 cm above from land surface by leaving ½ leaves. Step up plucking must be

applied in more damaged area. If it recover soon then LP, DS, MS section stepping up is not necessary.

- f. **Plucking of Water Logged Area:**As they said that,regular water logged area affects tea plant physiology. In water logged land root breathing system is affecting by which sometimes root will be die. In this condition, to avoid Banjhi shoots production black plucking should be applied in short term. Pruning is necessary in water logged area to overcome unnecessary and thick knot.
- g. **Plucking During Blister Blight or Pest Attack:**Respondents reported thatif before tipping, LP/MP done area blister blight and pest attack shows then should leave 3 /4 maintenance leaf. When a suitable time comes and control pest attack then it must be step up of plucking surface. If it is shows in not pruning plant then all immature buds should be cut by black plucking.

During field study, around 75% respondents said that price rate of organic tea is not much satisfied. Because it is more time consuming in terms of growth of plants, plucking system, and green leaf transportation charge from garden to factory also very high. Although, organic factory give higher price than non-organic tea, cost of production in organic tea farming is higher so actual profit from organic tea is not much satisfied. According to them monopoly of factory is another serious problem sometimes, factory gives low price in the name of tea grade. For example, farmers send A quality green leaf but factory take as grade B by which farmers gets lower price for their quality tea.

As reported by farmers June/July/August/September months are best period for tea production in terms of higher production, quality production and price. After that, rate of shoot production will decrease as well as green leaf quality. Green leaf production and its quality are changeable along with season. Tea grading is mostly depend on factory, they only receive best green leaf that should be very fresh, clean and not damaged leaf for grade A otherwise they pay B grade or sometimes grade C level price to the farmers. In the study area, farmers were producing grade A green leaf mostly and grade B level of green leaf. Farmers claimed that they are not able to produce same quality green leaf for a whole year due to season, factory monopoly, not easy access of transportation and insufficient organic pest and fertilizers.

4.12 Differences between Organic Tea and Non-Organic Tea Farming

Tea is a significant source of foreign exchange earning which improve living standard of tea growers and contribute to the national economy. Nepal is producing two types of tea; CTC and Orthodox tea. Hilly area such as Ilam, Panchthar, Dhankuta, Terhathum are the hubs of Orthodox tea and Jhapa is famous for CTC tea. Orthodox tea is recognized worldwide for its aroma, appearance, bright liquor and flavor.

Now, the country is trying to be an organic orthodox tea estate by motivating farmers into organic tea farming. Organic farming is gradually replacing conventional farming due to increasing demand for organic food and growing environmental concerns. Organic tea is different from non-organic tea. Organic tea farming has higher demand than non-organic tea worldwide. It is an integrated farming system that strives for sustainability, conserves soil health and biological diversity whilst, prohibiting synthetic pesticides, antibiotics, synthetic fertilizers. Simply, we can say that organic farming is a kind of technique that involves cultivation of plants and rearing of animals in natural ways that involves the use of biological materials, avoiding the use of chemical, fertilizer to maintain soil fertility and conserve biodiversity.

According to the respondents the information about differences between organic and non-organic tea faming collected thorough field study is mentioned below;

4.12.1 Definition

Non-organic Tea	Organic Tea
Tea is the most popular beverage consumed all over the world because of its refreshing effects and known benefits to human health due to its potential pharmacological properties such as antioxidative, antitumor and anticarcinogenic activities. Tea is also a rich source of dietary metals such as manganese, zinc, iron, copper etc.	Organic tea production is different from conventional tea production; its production system helps to sustain the health of soil, ecosystem and people. Organic cultivation deals with whole elements of farming i.e. fertilizer, soil management, plant or seeds selection, irrigation, pest and disease management, biological control method.

As they said organic tea is different from non-organic tea but not totally different from non-organic tea. Some criteria are made for organic tea production which is not applying in conventional tea farming. Different working strategies should be applied in organic tea farming. According to them, tea farmers should have certain level of knowledge about organic goods and its farming activities and should have record of every working activity too. Nursery, plantation in garden are same to conventional tea farming after that different working strategies should applied to make tea “Organic.”

4.12.2 Differences in Selection of Site Plantation

Organic Tea Farming	Non- Organic Tea Farming
<ul style="list-style-type: none"> ➤ It avoids polluted area such as industrial chemicalized area, plastic, heavy chemical used area, etc. ➤ Use compost, vermi-compost only which should be far away from any kind of chemicals, ➤ Should have permission from certified association/agencies to use organic compost too, 	<ul style="list-style-type: none"> ➤ Clean the area throw stones and cut trees in planting area, ➤ Use rock-fosfute, mineral to raise the rate of phosphorus within plant, ➤ Use different kind of chemicals, fertilizers to avoid different kind of disease and all that,

As reported by respondents, pollution free land is mandatory for organic tea cultivation, farmers should strongly avoid any kind of chemicals, fertilizers on farming land and in surrounding area. Only organic compost and vermi-compost can use to make healthy tea plant and farmers should have permission to use organic compost too.

Unlike, non-organic tea farming is like whole package, farmers can use any kind of chemicals, compost, urea for more production. Farmers use different types of chemicals and compost to avoid different kind of disease and make a plant green and for more production at short period. So, the difference between organic tea and conventional tea in selecting site is chemical free land for organic tea farming, it doesn't take any kind of risk but non organic tea can cultivate in chemicalized area

too because, it doesn't compromise with people's health, land fertility rate and environment its focused on more and fast production only.

4.12.3 Differences in Manuring System

Organic Tea	Non- Organic Tea
<ul style="list-style-type: none"> ➤ Spray vitamin on nursery plant, ➤ Use only organic certified compost in all plants, ➤ If young plant get enough irrigation, use first round compost, ➤ Spray liquid manure in weak plant, it should be continue in plucking season too, ➤ If plant seems weak, liquid manure should spray in leaf, ➤ Never use fertilizer on land, give fertilizer through spray, ➤ Use organic compost in young plant, 	<ul style="list-style-type: none"> ➤ Farmers can use different kind of fertilizers from nursery period, ➤ Farmers can use compost manure, chemicals, fertilizers, pesticides to avoid insects as well as diseases, ➤ In conventional tea farming, farmers use different types of chemicals to avoid insects on plant, using Urea, DAP, and other liquid manure too for fast growth and more production, ➤ For fast growth and more production farmers use huge amount of chemical fertilizers in short period of time which is very harmful for human health and for land too,

Majority of respondents said that major difference between organic tea and non organic tea is in manure system. Organic tea plant totally avoids chemical fertilizers, pesticides, and other harmful things but non-organic tea farmers use more chemical fertilizers, pesticides for more and fast production of tea leaf. Organic tea is more concentrate about human health, environment and land so it is far away from any kind of chemical fertilizers and pest. Organic tea farmers only use organic compost which is organic certified by authorized agencies. But non-organic tea farming is not like same as organic tea farming, it has no restriction to use chemical fertilizers to avoid insects and diseases. Farmers use much chemical fertilizers to control insects and disease on tea plant, they use different kinds of chemical fertilizers, pest in the name of caring plant. They claimed that chemical fertilizer helps to grow fast and helps to

give more tea leaf for short term but it is very harmful for human and environment, it contributes to decrease land fertility rate too. Therefore, organic tea is taking more space in domestic and international market, organic tea has more demand but still Nepalese tea farmers is not able to meet the demand due to various reasons.

4.12.4 Differences in Plucking System

Organic Tea	Non- Organic Tea
<ul style="list-style-type: none"> ➤ Only used hand to pluck tea leaf , ➤ 2 leafs and one bud get higher price so maximum farmers pluck it, ➤ Farmers can pluck three times a month, organic compost helps to grow slowly, ➤ Low quantity but higher quality as compared to the conventional tea, 	<ul style="list-style-type: none"> ➤ Tea pluck machine and hand both are used to pluck tea leaf, ➤ Not only two leaf and one bud is pluck, factory will accept low quality tea leaf too, ➤ Farmers can pluck once a week by using different kind of chemical fertilizers, vitamins and pesticide etc, ➤ High quantity but lower quality as compared to organic tea,

According to the farmers, there is little different in plucking system, factory accept only quality leaf of organic tea because, factory has to be fulfilled quality standard in international market. Organic farmers should be aware not only in plucking rather they must be alert in transaction from garden to factory. Factory gives reasonable price for number one quality leaf only otherwise; farmers get fewer prices so they have to be very careful in green leaf supply.

Unlike, it is not necessary to be careful in green leaf supply in non-organic tea farming. Factory accepts low quality tea leaf also. Farmers take more tea leaf in non organic tea but it has lower quality as compared to the organic tea. In organic tea farming, farmers can't take huge amount of tea leaf as compared to the conventional tea but it has quality leaf so it has more demand in international market.

4.12.5 Differences in Quality and Price Rate of Green Leaf

Organic Tea			Non – Organic Tea		
S.N	Grade	Price rate of green leaf in K.G	S.N	Grade	Price rate of green leaf in K.G
1	One bud one leaf (100%)	Rs. 450	1	Grade – A	Rs. 40
2	Grade – A	Rs. 90	2	Grade – B	Rs. 30
3	Grade – B	Rs. 80			Rs. 30
4	Grade–C	Rs. 70			

As they said that tea has no fix price rate, it will be different season to season, factory to factory and year to year. Some factory will give more prices for quality tea but some factory will not. Its price rate depends upon leaf quality and its demand mainly. Factory will not sale in same price especially in international market. They will sale according to buyer's choice, they will sale same quality tea in different price at the same time it is more or less depends buyer's choice and demand. So, packaging tea has no fix price rate. Non- organic tea has no specific criteria so factory takes all types of leaf but organic tea has its own specific criteria it must be fulfilled organic standard, it doesn't focused on quantity rather it always give priority to maintain its own quality.

Now, farmers are going to organic tea cultivation, the number of organic tea farmers are raising some area but some farmers are dropping due to various reason. Somebody is changing farming pattern, they are changing from non-organic to organic farming but in some areas, farmers changing their farming system they are coming back to conventional farming from organic tea farming. Farmers who have no idea and unknown about advantages of organic tea farming they are dropping now and going to their old farming system in some area.

4.12.5 Other Differences between Organic Tea and Non-Organic Tea

Organic Tea	Non – Organic Tea
<ul style="list-style-type: none"> ➤ Recording System: farmers should record their all activities such as their working hour, weight of product, selling rate, price rate, vitamins, compost and other what they use in garden, 	<ul style="list-style-type: none"> ➤ No recording system applied in non-organic tea farming,
<ul style="list-style-type: none"> ➤ Inspection System: Internal Control System (ICS) and External Inspection System both are applied in organic tea farming. ICS is a prove of organic goods, external organic certified agencies gives authority to related groups/ cooperatives to make annual records of all farmers and their activities to make sure that is organic goods. Export visit farmers house and their garden to check their activities such as farmer’s diary, photos of garden and their brief description, bill, production record and so on. After that external investigator visit factory and garden and check randomly. 	<ul style="list-style-type: none"> ➤ No inspection system is applied in non organic tea farming,
<ul style="list-style-type: none"> ➤ Organic tea farmers should be a member of organic certified cooperatives/groups, after 36 months farmers can be a member of organic tea farmers only after they can sale their tea in organic factory and get higher price, 	
<ul style="list-style-type: none"> ➤ Organic certified logo is needed for branding, it helps to recognized its 	<ul style="list-style-type: none"> ➤ No organic certified logo is needed

own brand worldwide,	
➤ Reward and punished system is applied in organic tea farming, farmers who follow up rules and regulation they will be awarded but who cross rules and use harmful chemicals, fertilizers they will be punished and factory will not receive their tea and also can fire from groups/cooperatives,	➤ No objection to use any kind of chemicals fertilizers

There are other differences between organic and non-organic tea. As reported by farmers, organic tea is taking more space in both domestic and international market. Organic farming is eco-friendly and human centric, it has more advantages so people are choosing organic tea. People who are sensitive about their health they choose organic food/tea. It is of course more expensive but it has more advantages too so organic tea is becoming number one choice of people worldwide. According to the study, certain criteria are made for make tea organic so it can be define as systematic farming for which farmers should follow up these rules otherwise they will get punishment.

4.13 Issues in Organic Tea Farming

During field study, interview and KII was conducted to understand the issues and collect the information. The study area was selected to collect the information of organic tea issues. Five Key persons were selected to collect the information that is related to issues of organic tea farming and its development. The major issues have been explained below:

4.13.1 Heavy Tax on Tea

As Key Persons (MadhavNiroula, Dinesh Rasaili, Buddhi Bal Tamang, 2018/August/24) claimed that, heavy tax on tea by DDC is one major issue, sometimes factory stops receiving green leaf from tea farmers which affects to tea

farmers directly. Factory stops to buying green leaf due to heavy tax on tea in some year. Tea farming was one main attractive sector in past year but it is not same as before, investors are not showing their interest to invest in tea because of factory problems, problems of wage rate of labor and price rate of tea.

4.13.2 Insufficient Organic Compost, Pest

Lack of easy availability of organic inputs like organic fertilizers, pesticides are the another major issue in the study area. In organic tea farming, farmers should strongly avoid chemical fertilizers, pesticides and all that. As Key persons said that organic tea farmers can use only organic certified compost, homemade liquid manure, vermin-compost that should be organic certified. But the problems is organic certified compost, manure are not available on time and not sufficient too that is directly connected to low production, low quality which is directly connect with factory, final product and selling stage.

4.13.3 Different kind of Diseases/ Insects Attack on Plant

Majority of the KII respondents claimed that there is different kinds of disease can see in tea plants, different kinds of insects eats tea bud and shoots that is the serious problem of tea farmers in that area. Red Spider Mite, Sucking Insects, Thrips, etc. that harm tea plant by which tea leaves cannot grow smoothly and its quality is also decrease.

4.13.4 Expensive Organic Pest

As they told that different kinds of diseases and insects attack tea plant, to avoid these insects and disease organic liquid pest are needed which are very expensive. Organic certified pesticides fertilizers are very expensive so it not affordable for all organic tea farmers.

4.13.5 Tea Logo

As determined by Key person their organic tea has no their own logo. They told that Nepalese organic tea demand and exporting rate is also attractive but still Nepalese tea has no its own logo to recognize/ advertise own quality products, Nepalese tea is not able to register their own brand due to various reason such as no understanding

between tea related agencies. Around 95% quality teas are export in international market, organic tea logo helps to recognize/advertise worldwide by branding.

4.13.6 Tea Oxon Center

There is no any Tea Oxon Center. That is also one major issue for not getting much advantage from organic tea farming and tea production in that area. Oxon center can play very crucial role in attracting to third world country's buyers and tea farmers can get reasonable price and helps to improve tea quality because of the raising competition between tea businessmen. Tea Oxon center determine tea price rate, tea will sale by bargain between seller and buyer in Oxon center, it was made for exhibit own identity in international level. It helps to established tea brand and also helps to recognize own product in international market. According to key persons Fiscal Year 2072/73 Tea Oxon Center was established for tea import and export in Jhapa District, but still it is not working properly. For advertising of Nepalese tea brand in international market it is very important thing.

4.13.7 Tea Price, Labors and Wages Rate

As mentioned by majority of key respondents tea price rate will not be same in every places, it will be changing season to season, factory to factory and year to year. Organic tea is sale in cheaper rate in domestic market but same quality tea is get higher price in international market. Tea farmers are not getting reasonable price of their quality green leaf so the GoN should make fix or reasonable price rate annually to motivate organic tea farmers.

Labor shortage is another major issue of organic tea farming in the study area. In organic tea farming more labors are needed as comparison to non-organic tea farming. But maximum youths are choosing abroad so less number of labors is available in the study area. Due to labor shortage tea farmers are not able to do work properly in tea garden which affects in tea production. Due to labor shortage farmers cannot even pluck tea leaf at some season. Some respondents said that there is less availability of skilled manpower and lacks technical things, without technical support and skilled manpower tea plantation, its development process will not be beneficial.

Organic tea plucking rate is very much higher than conventional tea plucking rate. 30/35 per k.g. is the rate of organic tea plucking. Farmers is not satisfied about it, workers will pluck lesser in comparison to non-organic tea and price is also not much satisfied so organic farmers is not satisfied about wage rate and selling price. They said that it should be equilibrium to get reasonable price of organic tea.

Delay to fix of tea price and labor wage rate is also another issue for why organic tea farming is not growing faster. Tea price is not fix in better way, labors movement, do not fix wage rate of labors, exports are not doing their work well and other problems matter in development of tea sector/industry. GoN has fixed the price of tea but factory and industrial person is not giving the rate which is fixed by GoN.

4.13.8 Lack of Certified Lab and Proper Tea Export Plan

Nepal has no international certified lab for tea, which could be capable to conducting tests and analyzing residue level, fungal infestation and heavy metal presence and issuing reports required by the larger section of international trade. International certification is needed to tea export. It is also another major issue in organic tea development sector. As the information given by the key respondents Nepal has no international certified lab and also has no well managed exporting plans for the development of tea sector. Nepal produce two types of tea; CTC and Orthodox, 90% of Orthodox tea are export in international market. CTC is exporting to India, Pakistan, and Bangladesh. Ireland has huge number of tea drinking people in the world so Nepal has greater opportunity to expand Nepalese tea market. GoN has responsibility to make a proper tea exporting plan and make easy way to export final product in international market.

4.13.9 Market Management and Competition

Majority of key respondents specified that the number of businessmen who are involved in tea distribution channel is very low so huge amount of capital investment is itself one challenge which direct affects in price rate of tea so domestic market can't help to tea industry. As a result, factories are unable to compete in international market in comparison to Indian factories because they are heavily subsidized by the Indian Government. Only Orthodox tea producers and exporter are involved in tea

exporting to international market. Most of the respondents said that there are no supports and subsidy from Government side. Therefore, GoN should help to export easily, they should take a responsibility to manage the selling and buying market properly.

4.13.10 Small Market Size

Majority of key respondents talked about Nepalese tea market, which is very small as compared to the world tea market. With the small volume of quantity, entering into the total global market is difficult to build up a brand/ image unless with personal contacts and constant interaction. According to them, Nepalese tea has no its own brand/logo to recognize worldwide and lack of promotional activities too and that is the main reason of small tea market of Nepalese tea in international level. GoN is not supporting in this regard, person or factory take the risk in exporting from factory to buyer's country. It is depending upon buyers and sellers contract.

These are the issues that are collected during field study. Majority of the respondents said that faulty on policy and weakness of Government role is the major problem. Government policy is not tea farmers centric, and the programs which cannot encourage farmers to cultivate and develop tea garden. Government is not giving attention on farmer's problems, Government's programs is not going well and not be much effective to farmers.

As they claimed that subsidy and other support that given by Government/ co-operatives are insufficient and also they are not getting on time. They have received very low amount of subsidy such as drum to make compost, to collect animal's urine, spray tank and bio-gas. They do not receive financial support for organic tea farming till the study period.

Similarly, there are number of challenging bottlenecks in organic tea production which hamper production and expansion of cultivation, commercialization, modernization and industrialization to satisfy the growing worldwide demand. Labor shortage is main problem in organic farming, it is time consuming, low quantity than non-organic tea farming which can contribute in living standard of rural people negatively. For the development it must be overcome that type of problem and focus

on its positive impacts which help to earn more income as well as conserve ecosystem.

National Tea Policy's objectives is about increase tea production with qualitatively with giving priority to private sector to increase participation of private sector in tea farming and tea industry, giving subsidy to farmers regularly, training, skill development program will be launched regularly. Government programs are lunched at sometimes but it is not very useful and farmers are not getting much advantage from these types of programs. Most of the farmers were raised the voice for government policy and its implementing sector.

4.14 The Way to Forward

Tea is one of the major export potential commodities having greater prospects. It can contribute to national economy through exporting it in international market. It provides employment opportunities, it can be a major income source of the people, it provides aesthetic agro-eco- tourism value and it can play vital role in agro based trade balance. It has huge potentials but still Nepal is not able to get those advantages from tea farming development. Due to various problems and challenges tea farmers, workers, industries are not getting more advantages from it.

Trend of organic tea farming is taking 11/12 years in the study area, during this period farmers faced different kinds of problems and challenges as they told. Which is not settled down till now, majority of the respondents said that, no Government support, no attention to the farmer's problems, weak implementing sector, faulty on policy are the main problems/issues facing by organic tea farmers and tea factories.

By analyzing the issues which are found during field study it is recommended that GoN should focuses on tea farming and tea industries as one major economic pillar for the development of the country. Research center and agro enterprises should be established in every tea region for the collective development of the tea sector of the country. Commodity research institution and competitive or open market also should be established within the country. This helps to enhance national tea production and productivity in the global market. Government should focus on eco-friendly technology for integrated management of major tea disease and for enhances soil fertility which is directly related with local production and local market.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary of the Findings

Nepal is an agricultural country having varied agro-climatic and agro-biodiversity which provided tremendous opportunity for agriculture occupation and professionals. It's contribute to GDP is about 33%. Among various agricultural product tea is one of the major commercial crops. Tea is the second most consumed beverage on the planet, right after water. Tea is taken as self-dependent cash crop in agro forestry practice and is found as the most important example of the long term sustainable farming. The main tea producing regions in Nepal are Jhapa, Ilam, Panchthar, Dhankuta, Terhathum with newly involved regions Kaski, Dolakha, Kavre, Sindhupalchowk, Bhojpur, Solukhumbhu and Nuwakot. At present, Nepal produces approximately 16.29 million kilograms of tea per annum on an area of 16,718 hectares this accounts only 0.4% of the total world tea output. Cultivated area of orthodox tea is 9238h and production is 3154855kg and area of CTC tea is 3718h and production is 6726887kg. The production rate of CTC is higher than Orthodox tea.

There is three major caste are occupying tea farming, Janajati (Rai, Limbu, Sherpa, Newar, Magar, Gurung) 73.79% followed by Brahmin/ Chettry 17.24% and Dalit are only about 8.97%. Likewise, in organic tea farming 52.38% (Janajati), 15.25% (Brahmin), 19.06%(Chettry), 13.39% (Dalit). Economically active population is about 65% in non-organic tea farming 85.71% in organic farming. About 69.65% are involved in agriculture followed by remittance 21.37% in non-organic tea farming, likewise 75%, are involved in agriculture sector followed by remittance 14.28% in organic tea farming. Literacy rate is also good only 2.78% are illiterate in non-organic tea farming same as in organic farming too only 2.86% are illiterate.

Structure of tea farming is selection of site at first, preparation of land, nursery (Clone and Seed nursery), after 2/3 year nursery plant will be ready for plantation. Plantation (Selection of plant, Mulching, Decentering, Debudding, Bending and Pegging). After that, tea plant should be prune (Collar Pruning, Medium Pruning, Light Pruning, Deep Skiff and Medium Skiff). Tipping and Plucking is another steps of tea cultivation. Plucking under various conditions is (Early Season Plucking, Plucking of Rain Flush

Crop, Plucking towards End of a Flush, Dry Season Plucking, and Plucking in Hail Damaged areas, Plucking of Water Logged Area, Plucking during Blister or Pest Attack).

There are some differences between organic and non-organic tea farming. Simply we can defined as organic tea farming is an eco-centric farming system, it strongly avoid harmful chemicals fertilizer, pest for healthy health and for conserve bio-diversity. Differences between organic tea farming and non-organic tea farming that collected during study are; differences in selection site/plantation. No chemicals used area is needed for organic tea cultivation; it should be far away from chemicalized land. Manuring system is also different between two farming system; do not allow to use chemicals fertilizers, pest in organic tea farming but in conventional tea farming farmers use different kind of chemicals fertilizers, pest to control diseases on tea plant. Tea grading, and price rate is another differences between organic and conventional tea farming. Organic tea has A, B, C three category and price rate is determined by tea grade. Non organic tea has two grades; A grade tea leaf get higher price. Farmers and factories should have record of every activity in organic tea farming but it is not necessary for conventional farmers. Internal inspection and external inspection are applied in organic tea farming and organic farmers should be a membership of organic certified group/agencies/cooperative but it is not applied in conventional tea farming.

Organic farming is gradually replacing conventional farming due to increasing demand for organic food and growing environmental concerns. Organic tea is different from conventional tea. It is an integrated farming system that strives for sustainability, conserves soil health and biological diversity whilst, prohibiting synthetic pesticides, antibiotics, synthetic fertilizers. We can easily understand the advantages of organic tea and its potentials, it has great demand in international market but still can't able to export sufficiently. Different kind of issues are exit in organic tea farming in the study area such as do not pay attention to the farmer's problems by Government, high tax on tea, insufficient organic pest, labor shortage, wage rate of labors, small market size and no organic logo are the major problems/issues of organic tea farming in the study area.

5.2 Conclusion

According to the findings of the study it can conclude that Janajati group is the majority of tea cultivars around 52% of Janajati are involved in organic tea farming. 75% people are involving in agriculture sector. Literacy rate is also pretty satisfied and around 85% populations are economically active in the study area.

Organic tea farming system is different from non-organic tea farming system. Some criteria must be applied in organic tea farming. Organic tea farming is an eco-centric that strongly avoids harmful chemicals, fertilizers, pest for healthy health and for conserve bio-diversity. Organic tea farmers should have knowledge about organic concern. Plantation area should be far away polluted land/chemicalized area at first, and all kinds of pest, chemical fertilizers are avoided in organic tea farming which are not applied in non-organic tea farming.

Despite many advantages and opportunities of organic tea farming there are many problems are exist such as lack of organic pest, fertilizers, labor shortages, heavy tax on tea, small market size, different kinds of insects and disease on tea plant are the major issues in the study area.

5.3 Suggestions and Recommendation

A big number of problems were exist in the study area. As we know that organic tea is greater than non-organic tea in terms of quality, health, demand, price, etc. But still organic tea farmers and factories are facing different kinds of problems and challenges in the study area. Therefore it is recommended to policy makers, farmers, and involving agencies:

1. Foremost, GoN should be positive to the organic tea farmers and need to give attention to their problems to motivate farmers for the development of organic tea farming and for the development of tea industries,
2. Effective programs must be conducted by Government in local level and need to make skilled manpower in tea sector,
3. Policy makers should make agricultural development centric policy and programs and appropriate program need to be launched for the betterment of tea farmers and factories,

4. Availability of organic pest and fertilizers on time is responsibility of Government so it must be provide sufficiently on time,
5. Appropriate training, skill development programs must be launch in tea region to make skilled manpower,
6. Tea research centre and lab are need to be established in every tea region,
7. GoN should pay attention about local product and its branding, logo to advertise local product worldwide,
8. Government should make effective policy regarding to tea market and its export plan,
9. Government need to give subsidy to motivate tea farmers that also helps to control external migration which is directly related with labor shortage,
10. Establishment of Tea Oxon Centre in tea region by the Government/ Private sector by which tea farmers can sale their product easily and also able to get reasonable price,
11. Technical support such as tea plucking machine, appropriate pruning weapons, and other support should provide by Government to the organic tea farmers,
12. Financial support, subsidy are need to encourage organic farmers, it can motivates towards organic farming,
13. Commodity research institution and competitive or open market also should be established within the country. This helps to enhance national tea production and productivity in the global market.

REFERENCES

- Acharya, I.R. (2017). *A study of organic tea cultivation: A case study of Sakhejung VDC*, Master's Thesis in Rural Development, Tribhuwan University, Kathmandu, Nepal.
- Bagchi, A., Ghosh, B.C., Swain, D.K. & Bera, N. (2015). *Organic farming practice for quality improvement of tea and its anti parkinsonism effect on health defense*. Agricultural and Food Engineering Department, Indian Institute of Technology Kharagpur, India.
- Batala, L.K. (2017). *Brief highlights of Nepalese tea culture and finding the new dimension of agronomy*. University of science and technology, M.B.A, research PDF, Hefei, China.
- CCD.(2015).*Annual Report (2014/15)*. Commercial Crop Division, Nepal Agricultural Research Council, Khumaltar, Lalitpur Nepal. 24p.
- Dalluge, J.J & Nelson, B.C. (2000).*Determination of Tea Catechins.J.Chromatogr.*National institute of standards and technology, chemical science and technology laboratory, analytical chemistry division, Gaithersburg, MD 20899-0001, USA Anal., 881: 411-424.
- Das, A.K., & Pathak, B.C. (n.d.).*Organic tea cultivation in Assam and its impact in tourism development :department of commerce, dibrugarh, Assam, Golaghat commerce college, Golaghat*. Retrieved from https://www.academia.edu/16538336/Organic_Tea_Cultivation_in_Assam_and_its_Impact_in_Tourism_Development_A_Special_Reference_to_Hathikuli_tea_Estate
- GoN/ MoC (2016). *National Trade Integration Strategy:Executive summary and action matrix*. Kathmandu: Government of Nepal, Ministry of Commerce.65p.
- Khanal, R.K. (2012).*A study of organic tea cultivation: A case study of Tinjure*.Master's Thesis in Rural Development, Tribhuwan University, Ilam, Nepal.
- Khanh, N., Thuong, N., & Heo, Y. (2018).*Impact of conversion to organic tea cultivation on household income in the mountainous areas of Northern Vietnam*. Retrieve from

https://www.researchgate.net/publication/329254046_Impact_of_Conversion_to_Organic_Tea_Cultivation_on_Household_Income_in_the_Mountainous_Areas_of_Northern_Vietnam

MoAD(2015).*Statistical Information on Nepalese Agriculture (2014/15)*. Ministry of Agriculture Development, Government of Nepal, Singha Durbar, Kathmandu, Nepal. 244p.

MoAD(2013).*A compilation of policies related to agriculture(in Nepali :KrishiSambandhiNitiHarukoSangalo 2070)*. Planning Division, Ministry of Agricultural Development, Government of Nepal. 32p.

Mohan, S. (2013).*Institutions and livelihood in Nepal's tea value chain, International Development Research Centre, Ottawa, Canada*. Retrieved from https://www.researchgate.net/publication/305676795_Institutions_and_Livelihoods_in_Nepal's_Tea_Value_Chain_A_Policy_Paper

Mohmood, T., Khan, B., &Naveed, A. (2010, October).*The morphology, characteristics, and medicinal properties of Camellia sinensis' tea*. Available athttps://www.researchgate.net/publication/260230725_The_morphology_characteristics_and_medicinal_properties_of_Camellia_sinensis'_tea

MoAD(2016). *Tea Statistics. National Tea and Coffee Development Board*, Ministry of Agricultural Development, Government of Nepal.

GoN(2016).*Executive summary and action matrix*.Kathmandu: Government of Nepal Ministry of Commerce.

Pokhrel , D.M. & Pant, K.P. (2009). *Perspectives of organic agriculture and policy concerns in Nepal*. Retrieved from <file:///C:/Users/win%2010/Downloads/2135-Article%20Text-7451-1-10-20090810.pdf>

Rahmann, G &Aksoy, U. (2014, October 13-15). *Strengthening the bridge between consumers and their organic food choices*. Retrieved from http://orgprints.org/23324/1/23324_MM.pdf

Report of the working group on organic tea [PDF file]. (2014, May 5-6). Rome, Italy. Retrieved from http://www.fao.org/fileadmin/templates/est/meetings/tea_may14/ISM-14-6-Organic_Tea.pdf

- Sapkota, K.B.(2017). *Major problems in tea sectors and their implications on policies in Nepal*.Ph.d.1. Chiya Coffee Smarika.Ministry of Agriculture Development, Kathmandu, Nepal.
- Seyis, F., Yurteri, E., Ozcan, A., &Savsatli, Y. (2018, January 29). *Organic tea production and tea breeding in Turkey: challenges and possibilities*.Ekin J. 4(1):60-69, 2018. Retrieved from <http://www.ekinjournal.com/images/bisab/seventh/7.pdf>
- Shrestha, B. (2014). *A supply chain approach to study efficiency and sustainability in the Nepalese tea industry*, Bachelor's Thesis in International Bussiness, Turku University, Finland.
- South asia watch on trade, economics and environment* [PDF file]. (n.d.). Retrieved from <http://www.sawtee.org/>
- Sultana, J., Siddique, M.N.A., Kamaruzzaman, M., Halim, M.A., 2014.*Conventional to ecological: Tea plantation soil management in Panchagarh District of Bangladesh*. J. Sci. Technol. Environ. Inform. 1: 27-35.
- Tea cultivation* [PDF file].(n.d.).Available at <https://www.tocklai.org/activities/tea-cultivation/>
- Tiwari, A., Adhikari, K.B., &Dhungana, S.M. (2018).*Economics of orthodox tea production: a case of Ilam, Nepal*. Available at <https://www.nepjol.info/index.php/AEJ/article/view/19884>
- Willer, H., Lernoud, J., & Home, R. (2013). *The world of organic agriculture 2013: Summary*. Retrieved from<https://www.organic-world.net/fileadmin/documents/yearbook/2013/web-fibl-ifoam-2013-2a5-34.pdf>
- Yadav, P.K., Adhikari, R,c., Giri, Y.P., &Shreshtha, C.B. (2004). *Role of tea in poverty reduction in eastern region of Nepal*, Government of Nepal, March 2-4, 2004.

Annex-I

Questionnaire for Interview (Organic Tea)

1) Introduction:

a. Name of Respondent:

b. Sex: Male Female Others

c. Age:

d. Address: Zone..... District.....Municipality/ Rural
Municipality.....Ward No.....

e. Nationality.....

f. Caste.....

- I. Brahmin
- II. Janajati (Rai/ Limbu/ Gurung/ Sunuwar/ Newar/ Magar
- III. Dalit

2) Family Detail:

S.N	Name of Family Member	Sex M/F	Age in Year	Occupation	Literacy Status	Remarks
1						
2						
3						
4						
5						
6						
7						

(indicate 1 for 0-15 years, 2 for 16-30years, 3 for 31-45 years, 4 for 46-60 years, 5 for above 60 years/ indicate 1 for agriculture, 2 for business, 3for job employment, 4 for politicians, 5 for foreign employment, 6 for only study/** indicate 1 for illiterate, 2 for literate only, 3 for primary level, 4 for lower secondary level, 5 for secondary level, 6 for intermediate level, 7for bachelor level, 8 for above bachelor).*

3) How long have you been working in tea cultivation?

Year.....

4) Why did you choose this type of farming?

.....

5) How many times you can cull tea leaves a month?

a. 2-3 times b. 3-4 times

6) From where you take tea seeds?

.....

7) Could you tell me about tea farming in detail?

- a) Land
- b) Seedling
- c) Plantation
- d) Nurturing
- e) Harvesting
- f) Processing

8) Do you use chemical fertilizer in garden for more production? If yes, what kind of chemicals pesticides do you use for it and from where you take this?

.....

9) Detail about development of tea farming:

S.N.	Particular	Yes	No	Reason/ Responsible/ By
1	Tea Factory			
2	Irrigation Facility			
3	Financial Support			
4	Technical Support			
5	Training/Skill Development Program			
6	Labor Shortage			

10) Are you satisfied with your occupation?

a) Yes b) No

11) Are you getting reasonable price for your product?

.....

12) Is price rate being constant for a year or it fluctuating? What are the major factors for it?

.....

13) Does the season influence for tea production and its quality?

.....

14) What are the responsible factors for tea grading and the price rate for it?

Which grade of tea you are producing most?

.....

15) Suggestion from facilitator if any?

.....

.....

Facilitate By:

Date:

Annex- II

Questionnaire for Interview (Non-Organic Tea)

1) Introduction:

g. Name of Respondent:

h. Sex: Male Female Others

i. Age:

j. Address: Zone..... District.....Municipality/ Rural
Municipality.....Ward No.....

k. Nationality.....

l. Caste.....

I. Brahmin

II. Janajati (Rai/ Limbu/ Gurung/ Sunuwar/ Newar/ Magar

III. Dalit

2) How long have you been working in tea cultivation?

Year

3) Why did you choose this type of farming system?

.....

4) How many times you can cull tea leaves a month?

.....

5) From where you take tea seeds?

.....

6) Could you tell me about tea farming in detail?

a) Land

b) Seedling

c) Plantation

d) Nurturing

e) Harvesting

f) Processing method (transporting, selling, etc.)

7) Do you use chemical fertilizers for more production? If yes, what kind of chemical pesticides do you use for it and from where you take this?

.....

8) Detail about development of tea farming:

S.N.	Particular	Yes	No	Reason/ Responsible/ By
1	Tea Factory			
2	Irrigation Facility			
3	Financial Support			
4	Technical Support			
5	Training/Skill Development Program			
6	Labor Shortage			

9) Are you satisfied with your occupation?

a) Yes

b) No

10) Are you getting reasonable price for your product?

.....

11) Is price rate being constant for a year or it fluctuating? If yes, what are the major factors for it?

.....

12) What are major responsible factors of tea grading and price rate for it? Which grade of tea you are producing most?

.....

13) Suggestions from facilitator if any?

.....

.....

Facilitate by:

Date:

Annex- III

Check List for Key Informant Interview

Name of Respondent:

Age:

Sex:

Address:

Education Status:

Occupation:

1. What are the positive impacts/advantages of tea?
.....
2. What are the major problems/ challenges that you are facing in tea cultivation?
.....
3. What the Government/ Tea Board / Cooperative have done for the development of tea farming? Have you got any advantages through that?
.....
4. In your opinion, what should Government do for the betterment of tea farming? What type of facilities/ subsidy/ program should be conduct by Government to overcome these types of constraints?
.....
5. Do you think that Government Authority should do something to solve the problems that are facing by tea farmers and also to encourage tea farmers for its enhancement?
.....
6. Suggestion from facilitator if any?
.....

Facilitate By.....

Date

Annex - IV

Organic Tea Farmers

S.N.	Name of Respondents	Sex (M/F)	Age	Occupation	Area of Planted in (Ropani)	Literacy Status
1	Uttar Kumar Mukhiya	Male	53	Tea Farmer	25	Literate only
2	RanbirMukhiya	Male	60	Tea Farmer	30	Intermediate Level
3	DipeshRai	Male	44	Tea Farmer	45	Secondary Level
4	TamburRai	Male	63	Tea Farmer	23	Primary Level
5	TchiringYelmu	Male	61	Tea Farmer	18	Primary Level
6	RudraGurung	Male	42	Tea Farmer	12	Secondary Level
7	KuldipRai	Male	30	Tea Farmer	33	Bachelor Level
8	SaritaRai	Female	32	Tea Farmer	18	Intermediate Level
9	Ram B. Sherpa	Male	51	Tea Farmer	21	Secondary Level
10	Ser B. Dhami	Male	40	Tea Farmer	12	Primary Level
11	Sukra Raj Pariyar	Male	37	Tea Farmer	9	Primary Level
12	BijayaDahal	Male	41	Tea Farmer	16	Intermediate Level
13	Puja Ghimire	Female	45	Tea Farmer	23	Primary Level
14	Ran B. Karki	Male	43	Tea Farmer	22	Secondary Level
15	Hiran Bhattarai	Male	53	Tea Farmer	25	Intermediate Level
16	Prem Sharma	Male	40	Tea Farmer	28	Secondary Level
17	Kul B. Ghimire	Male	55	Tea Farmer	22	Secondary Level
18	LokmanShrestha	Male	49	Tea Farmer	17	Secondary Level
19	PradeepRai	Male	33	Tea Farmer	38	Bachelor Level
20	Hem Raj Limbu	Male	44	Tea Farmer	36	Intermediate Level

Source: Field Survey, 2018

Annex - V
Non-organic tea farmers

S.N.	Name of Respondents	Sex (M/F)	Age	Occupation	Literacy Status
1	SukmanRai	Male	39	Tea Farmer	Primary Level
2	SapanaMukhiya	Female	41	Tea Farmer	Primary Level
3	Ramesh Mukhiya	Male	45	Tea Farmer	Secondary Level
4	Ram Prasad Yelmu	Male	49	Tea Farmer	Intermediate Level
5	HariGurung	Male	53	Tea Farmer	Secondary Level
6	Lalman Bhattarai	Male	42	Tea Farmer	Intermediate Level
7	JogendraDhami	Male	49	Tea Farmer	Primary Level
8	BhumikaChapagain	Female	39	Tea Farmer	Bachelor Level
9	BikramRai	Male	35	Tea Farmer	Bachelor Level
10	JanamRai	Male	40	Tea Farmer	Intermediate Level
11	PabitraRai	Female	40	Tea Farmer	Lower Secondary
12	Siva Gurung	Male	41	Tea Farmer	Intermediate Level
13	KanchaMukhiya	Male	56	Tea Farmer	Literate only
14	ThambirPariyar	Male	53	Tea Farmer	Primary Level
15	Narayan Kuwar	Male	53	Tea Farmer	Intermediate Level
16	Harihar Nepal	Male	49	Tea Farmer	Intermediate Level
17	Purna K. Ghimire	Male	52	Tea Farmer	Secondary Level
18	JhumaBajgain	Female	52	Tea Farmer	Secondary Level
19	Krishna Niroula	Male	50	Tea Farmer	Secondary Level
20	Prem Bhattarai	Male	52	Tea Farmer	Secondary Level
21	PratapPradhan	Male	49	Tea Farmer	Intermediate Level
22	MaiyaRai	Female	45	Tea Farmer	Intermediate Level
23	SanamMukhiya	Male	37	Tea Farmer	Bachelor Level
24	HarkaYelmo	Male	46	Tea Farmer	Secondary Level
25	Pemba Sherpa	Male	51	Tea Farmer	Lower Secondary
26	Tilak B. Thami	Male	56	Tea Farmer	Lower Secondary
27	Surya Rai	Male	41	Tea Farmer	Intermediate Level
28	PrithviB. Limbu	Male	59	Tea Farmer	Lower Secondary
29	RupeshMukhiya	Male	36	Tea Farmer	Intermediate Level
30	Kumar Rai	Male	50	Tea Farmer	Lower Secondary

Source: Field Survey, 2018