INTEGRATED PEST MANAGEMENT PRACTICES IN ORGANIC FRAMING:

A Case Study of Chandragiri Municipality Thankot

A Thesis

Submitted to the Central Department of Rural Development for

The Partial Requirement for the Degree of Master of

Art in Rural Development

Submitted by:

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Kirtipur, Nepal

2024

RECOMMENDATION LETTER

The thesis entitled **INTEGRATED PEST MANAGEMENT PRACTICES IN ORGANIC FRAMING: a Case Study of Chandragiri Municipality Thankot** has been prepared by Devi Maya Rai under my guidance and supervision. I hereby forward this thesis to the evaluation committee for final evaluation and approval.

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Ramesh Neupane

Supervisor

Date: 2081/03/18

02-07-2024

APPROVAL LETTER

The thesis entitled **INTEGRATED PEST MANAGEMENT PRACTICES IN ORGANIC FRAMING: A Case Study of Chandragiri Municipality Thankot** submitted by Devi Maya Rai in partial fulfillment of the requirements for the Master's Degree (M.A.) in Rural Development has been evaluated and approved by the evaluation committee.

Evaluation Committee

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Date: 2081/03/23

07-07-2024

DECLARATION

I hereby declare that the thesis entitled **INTEGRATED PEST MANAGEMENT PRACTICES IN ORGANIC FRAMING: A Case Study of Chandragiri Municipality Thankot** submitted to the Central Department of Rural Development, Tribhuvan University, is entirely my original work prepared under the guidance and supervision of my supervisor. I have made due acknowledgements to all ideas and information borrowed from different sources in the course of preparing this thesis. The results of this thesis have not been presented or submitted anywhere else for the award of any degree or for any other purposes. I assure that no part of the content of this thesis has been published in any form before.

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Devi Maya Rai

Date: 2081/03/15

29-06-2024

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my encouraging and very caring thesis supervisor, Ramesh Neupane lecture at Central Department of Rural Development, Tribhuvan University for his inspiring words which were enough for me to accomplish my work, and still are, will forever be.

Secondly, I would like to extend my sincere gratitude to Associate Prof. Bishnu Bahadur Khatri, head of the department of Rural Development, Faculty of Humanities and Social Sciences, for his immense cooperation during my proposal defense.

I am equally thankful to all my teachers for providing me with academic support during the academic years. I would like to thank to Bhakta Kishor Rai for valuable contribution in the time of data collection.

My special thanks go to my son David Lohorung Rai and my parents for their continuous support throughout my study time.

Date:

Devi Maya Rai

ABSTRACT

An Integrated Pest Management practice in organic framing (a case study of Chandragiri municipality ward no.-3, Thankot) is a representative vision of the reality. Objective of the research is to study about social culture and economic Background of farmers, to analyze the knowledge of Integrated Pest Management in organic farming and to analyze the contribution of Integrated Pest Management in production, income and employments generation.

Descriptive and exploratory research design was used in this research. Both qualitative and quantitative data has collected in this study. Out of total 1040 household in Chandragiri Municipality Ward No. 3 (Matikhel area) of Thankot, 140 have taken on the basis of simple random sampling method. Under simple random sampling method lottery system has used for the selection of the sample. In this study both the farmers following organic farming and non-organic farming farmers has included. Household Survey and Key Informants Interview was the main tools of data collection.

Integrated Pest Management practice suggests to dig a little bit deeper than normal, organic pesticide should be used which don't harm friendly insects. It urges to use net for bad insects. Pest control procedures and farming may be categorized under different headings such as cultural, biological, chemical etc. However, there is now a strong tendency to use two or more approaches together in a system of integrated control and is called as “Integrated Pest Management”. Integrated Pest Management blending of two or more control measures in order to control pests below economic injury level. Pesticides due to its high toxicity adversely affect the balance between pest and their natural enemies like predators and parasitoids on many crops; including food, vegetable etc. An avoidance of pesticide during the main period of predator activity is desirable but in vegetable the periods of the activities of the major pests and their predators get synchronized at different density levels.

Indigenous knowledge should be promoted in organic pesticide. The concept of pest management depends on the population dynamics of the pest and the level of the damage caused by them. The use of pesticides for plant protection has steadily increased. Increasing demands for chemical pesticides resulted in private dealerships selling and distributing pesticides throughout the country. Integrated Pest Management in the context of biological knowledge, to achieve a satisfactory reduction or maintenance of pest population below the damage threshold, it should be appreciated that the decisions whether or not to apply control measures are usually required before pest populations reach the damage threshold.

Income

However, care should be taken not to overdose on pesticides because these can lead to a high residue level of toxic substances in the vegetable. Pest that commonly attack the crops includes grasshopper mites, thrips, jassids, moth, beetles and defoliating caterpillars. The presence of pesticide residues in food commodities has always a matter of serious concern. The level of pesticide residue in foodstuffs are generally legislated so as to minimize or unnecessary intake of pesticides. Labour can be minimize with the use of Integrated Pest Management due to good soil. There is possibility of more production due to better soil management.

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List of Abbreviations/Acronyms

ADB	=	Asian Development Bank
APP	=	Agriculture Perspective Plan
AVRDC	=	Agricultural Research Including Vegetable Crops
CBS	=	Central Bureau of Statistics
FAO	=	Food and Agriculture Organization
FGD	=	Focus Group Discussion
GDP	=	Gross Domestic Product
I/NGO	=	International/Non-Governmental Organization
LGP	=	Local Government Programmed
MEDEP	=	Micro Enterprises Development Programme
MOAC	=	Ministry of Environment and Cooperatives
MOF	=	Ministry of Finance
MOA	=	Ministry of Agriculture
NARC	=	Nepal Agriculture Research Council
NPC	=	National Planning Commission
PRSP	=	Poverty Reduction Strategy Paper
SADP	=	Sustainable Agriculture Development Program
UNDP	=	United Nation Development Program

CHAPTER-I

INTRODUCTION

1.1 Background of the Study

The total area of Nepal is 1, 47,181 Sq km. In the globe it is located 26.22 degree to 30.27 degree northern latitude and 80.4 degree to 88.12 degree longitude. Geographically divided into three distinct regions, Nepal has tropical monsoon climate and is beautiful naturally. Among the geographical regions, Himalayan region covers, 51, 817 Sq km, Hilly region 61, 345 sq km and terai region covers 34, 019 Sq km of land. Though Nepal is a small country but every sorts of climate can be experienced here. Every type of eco- systems are available here except desert and sea and ocean ecosystem. That's why Nepal is very rich in bio diversity. Out of the total land area of Nepal, agriculture is done only in 26, 54037 hector. No doubt almost all the Nepalese people join agriculture directly or indirectly. Commercially, including rural and urban areas about 25% that is about 40 lakhs people join agriculture (Gautam, 2015).

Nepal is an agricultural country. Agriculture is the main source of income and the backbone of nation's development. The overall development of the nation is not possible till the period agriculture is not followed in a commercial way. Even today about 73% people are found following agriculture and are fully dependent on it (Regmi, 2016). Agriculture has contributed 35% of gross domestic production. Agriculture has been providing 55% raw materials to the agro- based industries established in different corners of the nation (Gyawali, 2015).

Nepal has started periodic plan from 2013 BS, for the development of rural area, every plans of Nepal have great role for social and economic prospericy of those areas. Since 4 decades for the development of rural areas, different strategies are made out and implemented improve the living standard of rural people and overall agricultural sector is kept on the top priority (Panta & Thapa, 1982). Community development is the backbone to minimize poverty and to uplift the living standard of the people of rural areas. Backwarded and enlisted in third world country Nepal, the importance of community development has increased tremendously. The main theme of community development of both means and resources for this development of human resource is must. So community development has empowered to all the people to include them in the main stream of development, democracy and politics.

Though invested large amount of money and amount of money and implemented different plans and policies in agricultural sector, but the batter fact is that, people of the community are not able to bring concrete changes in their everyday life. Every periodic plan has given priority or agricultural sector but development of agriculture is not satisfactory. The different plans and policies of agricultural sector are not able to give priority on the necessities of the real farmers. Pesticides are distinct

poisonous chemical substances that are possibly "biocides" that are purposely introduced into the environment to remove or reduce various sorts of pests in agriculture.

The majority of pesticides released into the environment each year by human activitieare pers istent pesticides, which are among the most harmful.

Pesticides have significantly benefited human livelihoods.

Their remarkable efforts to reduce crop loss and control disease vectors have resulted in wide spread acceptance and application.

However, due to their poisonous nature, they are agents of human disease and environmental damage. Many pests have been documented attacking tea plants during cultivation.

Tea growers use several agrochemicals, including insecticides.

Pesticides do not distinguish between the target and non-target species, threatening the health and well-being of humans and wildlife in all parts of the world (Thapa & Shakya, 2006). These highly stable chemicals can remain for decades before degrading.

Their high toxicity causes a variety of negative consequences, including death, sickness, and birth problems in humans and animals.

Cancer, allergies, hypersensitivity, central and peripheral nervous system damage, reproducti ve abnormalities, and immune system disturbance are some of the specific impacts (Strecct, 1 981; Maroni, 2006).

Pesticides, due to their extreme toxicity, must be used with caution and care.

Many mishaps have happened in Nepal as a result of the unregulated use of pesticides.Pestici des is found in foods, fruits, vegetables, and the environment.Even the mother's milk is a sour ce of great anxiety.

They circulate widely, and persistent pesticides emitted in one part of the planet can be transp orted through a recurrent evaporation process and deposit through the atmosphere to locations far from the original source.

Pesticide use in agriculture has caused four types of difficulties at the tropic level: health prob lems, environmental problems, yield loss owing to nontarget pesticide application, which resu

lts in chemicalinduced pest resurgence, and ultimately a financial burden on farmers (Ghimir e, 2007)When there was production of different crops to sustain life, from that period people started using cow dong. Cow dong was used in Nepal till that period when chemical fertilizer not imported. When there was development of transportion, import of chemical fertilizers was given priority in Nepal. Especially chemical fertilizers, insecticides and pesticides entered Nepal from 1960 AD. Till the date use of chemical fertilizers, insecticides and pesticides is continued in a Nepal. It is said that agriculture sector is responsible to bring change in climate approximately by 13.5%. Panap-2066

Not only there is climatic change in our surrounding, large NO. Of people are suffering from different types of fatal diseases.

Nepal has been using chemical fertilizer for about 69 years. It is obvious; use of chemical fertilizer degrades the soil quality: Avoiding the effects of chemical fertilizer and to improve the soil quality, it is necessary to follow organic farming.

To foster organic farming in Nepal, Integrated Pest Management programme has been implemented already. According to Integrated Pest Management programmer, the micro-organism of soil will be protected well. Enemies' insects will be Protected will. Enemies insects well be removed. In this approach instead of using chemical pesticides, bio pesticides is given priority to avoid different types of diseases and to protect crops.

1.2 Statement of the Problem

Though, Nepal is an agricultural country, the land distribution system is not systematic. Mostly the real farmers don't have even a piece of land to cultivate. But also an average of half hector of total agricultural land is occupied by each of the farmers; in this context, it all the cultivable land is used for productive farming, it would be the great achievement. If the use of chemical fertilizer, insecticides and pesticides is continued in the same way, all the agricultural land of Nepal turn over desertification, said by the agricultural scientist. by the special help of Nepal agricultural research center. Agriculture and animal science study corporation. Act regarding the use of pesticides 2047, environment protection act 2054. Directory of organic agriculture production and processing system 2064, priority on organic agriculture is laid down recently.

Nonetheless, some countries have poorer regulation and enforcement. For example, some pesticides that have been banned in some countries due to their demonstrable health or environmental impacts are nevertheless used in others. Furthermore, safe practices, such as

using personal protection equipment and following advice on pesticide container labels, are poor or nonexistent in some regions (Banerjee, 1970).

Thailand has been using chemical pesticides since World War II, when DDT was imported to curb the spread of malaria. Since then, their applications have extended to include agricultural, industrial, and residential pest management. The majority of pesticides used in Thailand are imported rather than produced domestically, most likely due to the difficulty of acquiring production permission from the government. The most recent According to published statistics, more than 50,000 tons of active pesticide components (including insecticides, fungicides, herbicides, and other classes) were imported into Thailand in 2003. In the same year, 54% of agricultural holdings reported using pesticides, with 73% reporting use in the country's north (Banerjee, 1996).

There are approximately 319 types of pesticides licensed for use under Nepal's Pesticides Act and Rules (insecticides-213, fungicides-71, herbicides-23, rodenticides-8, acaricides-2, and others-2). Several pesticides are potentially harmful to humans. The most often sold chemical pesticide is BHC (Benzene Hexachloride) dust, followed by parathion methyl, zinc phosphide, aluminum phosphide, Malathion, dithane, and phorate. Worldwide estimates show that there are approximately 3 million acute pesticide poisonings (1,000,000 deliberate and 2,000,000 inadvertent). There are around 220,000 deaths per year.

There is increasement of temperature of the earth because of the change on climate. There is a negative impact on region of different regions. For example region which were found in tropical region are found on the sub-tropical region. Likewise wild animals, birds and other many creatures are also changing their natural habitat. On the basis of the above statement of the problems following research questions are posed.

i What is the social culture and economic Background of farmers?

Ii what is the knowledge of Integrated Pest Management in organic farming?

Iii what is the contribution of Integrated Pest Management in production, income and employments generation?

1.3 Objective of the Study

The main objective of this study is to Integrated Pest Management Practices In Organic Farming of different food stuffs and on vegetables. However the main objectives of these studies are as follows;

i. To examine social culture and economic background of farmers.

ii. To analyze the knowledge of Integrated Pest Management among farmers in organic farming.

iii. To analyze the contribution of Integrated Pest Management in production, income and employments generation.

1.4 Importance of the Study

As we know that Nepal is an agricultural country. Still 66.6% percent Nepalese people fully depend upon agriculture. 35%, of total gross domestic production is shared by the agriculture. Slowly the concept the farmers is being changed. These days many of the farmers are encouraged to follow commercial farming. Farmers have due intention of earning large amount of profit with in short period of time. On the name of earning profit, they are using chemical fertilizers and pesticides randomly.

On the other hand, even in remote villages the use of chemical fertilizers and patricides is increasing drastically. Lading knowledge or the proper use of chemical fertilizers and patricides, they are using it just to make profit. They don't know the harmful effects of those things or the living beings, plants, vegetation and on the environment.

The knowledge and practice on pesticides is the most important factors of the people, which determine the health status of people. It was guideline for farmers, as well as consumers for developing awareness towards the concerned field. It is helpful for planners, policy makers to formulate the policy regarding use of pesticides. It finally may be useful to launch for similar (programs) to control the problems created due to use of pesticides. It would be helpful to the further research of same type of study.

That's why this studies will be beneficial for the proper use of chemical fertilizers, pesticides and for the protection and promotion of environment and environmental resources. However the importance of this studies can be summed up below:

a. It encourages farmers to use compost manure and organic pesticides for the production of various food stuffs, vegetables and fruits.

b. This study helps to remove different types of diseases on crops through integrated pest Management method.

c. It helps to ensure the protection of different nutrients of different food stuffs and promotes human health and promotes the fertility of soil and preserve environment.

d. This studies helps to preserve and promote the health of many farmers who are indirectly victimized by the use of pesticides.

e. This studies helps to promote the slogan: Healthy food, healthy life.

f. This studies helps for the sustainable development of remote villages.

1.5 Organization of the Study

The report has been divided into five chapters. The first chapter consists with background of the study areas, statement of Problem, objective of the study, signification of the study and organization of study. The second chapter is related about literature review and conceptual review. Theoretical as well as empirical reviews are the focus point of the study. The third chapter is related with research methodology. It deals with research design, nature of the study, universe and sampling procedure as well as method of data analysis. The four chapter is related with data presentation and analysis. The last chapter deals with summary, conclusion and recommendation.

CHAPTER-II

LITERATURE REVIEW

For this research work, the literature review will be done under two categories the conceptual review and review of empirical studies. For these different books, Journals, previous research works, reports, acts, articles, plants and policies other published and unpublished documents related to the subject will be reviewed.

A review of literature on various studies related to the present study was prior to the study till completion of this work. A brief account of the literature reviewed is presented in this chapter. This attempt has been made to achieve clarity in the discussion that follows.

2.1 Theoretical Literature

Integrated Pest Management: Integreted Pest Management system is that system which gives special priority for the preservation of crops without disturbing the ecological balance and estimating the possible economic loss and managed the harmful elements like harmful diseases, insects, birds and rats. It gives emphasis on environment and mobilized the resources utilizing the traditional knowledge of farmers for sustainable development.

Integrated Pest Management is ways which manages activities on agriculture in a durable way and avoid unnecessary expenditure economically at itself is not a way of protecting the crops rather a sum of many approaches followed in agriculture.

When the scientist Rechel Karsen explained about the possible effects of poisons to the world in 1962 A.D. , then after only it is searched the after native of chemical farming. Along with this many approaches in agriculture were practiced. Among them there way development of the approaches like physical method, Mechanical method, management from agricultural farms, biological approaches. use of antienemy crops approach for carrying agricultural activities. After the implementation of these approaches, there were developments of the concept of Integreted Pest Management.

Junior Technical, Junior Technical Assistant Level Integrated Pest Management. Facilator Training guideline book 2068 Pg no. 1

Organic farming

According to the organic farming measurement directory book 2064 B.S. safe and qualitative nutration.

An integrated approach in agricultural system which insures sustainable environment, sustainable ecosystem, safe and qualitative nutrition welfare of living things and social justice for all huaman beings is compost agriculture. In compost agriculture system, there is minimum use of outer sourse and environment and be avoided many agricultural tools and procedures.

That's why organic agricultural system is a management as a whole which gives special priority for healhy agricultural activities, diversities in compost cycle of compost and protection of fertility of soil. According to this method, it is strictly restricted to use of out unhealthy things, chemicals , poisons , inter cropping seeds and so on . In short organic agriculture is that agricultural syatem which is carried out without use of any chemical substances in an integrated form which insures sustainable and environment friendly agricultural.

Organic Farming Introduction Book 2073/74 page no. 1,2

Integrated Pest Management in international practices

Bases for the initiation of integrated pest management.

- Epidemic of new diseases and insects

  a. banchitop on banana – philipines 1930

  b. Dhungre virus on paddy - philipines 1971 A.D.

  c. Sindhure on coffee - Srilanka 1967 B.S.

  d. Dadhuwas on potato- Ireland 1845

  Initiation of Integrated Pest Management

- In 16^{th} century an ant was used in china for the management of insect on orange.
- In 1972, Maina Insect was used in India to America for the management of salaha.
- In 1976, Small bees were used in Cassava for the management of insect of cabbage.
- Developing countries implemented the concept of Integrated Pest Management I 1960 A.D.
- Programmes implemented by UNDP and FAO in 1980 A.D.establishing agricultural school.
- Philpines developed the concept to train farmers.

- A model of agricultural school prepared by Indonesia
- Implementation of different programmes in South Asian countries by UNDP and FAO

Implimentation of main Insect

National Practices

- Tistiza virus, bacteria wilt – Nepal 1971 A.D.
- Fauzi Insect in maize – Nuwakot – 1974 A.D.
- Khairo phadke in paddy – chitwan-1980 A.D.

Initiation of Integrated Pest Management in Nepal

- From 10th fifth years plan and started since 1997 A.D. National through APP from 1995 A.D. – 2015 A.D.
- Pillar of agriculture backbone of crops protection.
- Intensive crops an important part of diversification.

Integrated pest management and agricultural school in the context of Nepal.

- Implementation of farmer's school on paddy by the help of agriculture and food stuffs organization.
- The first participation of Nepal on community Integrated Pest Management on paddy by the environment of agriculture and regional food stuffs organization of Nepal in Asia.
- The first National Integrated Pest Management programme conducted in Nepal from 2004 AD to 2007 AD
- The Second phase of national Integrated Pest Management programme conducted in Nepal from 2004 AD to 2013 AD.

Until the 1950s, the people of Nepal remain unaware of modern chemical pesticides and were dependent upon traditional organic techniques for killing pests. Chemical pesticides were first introduced to Nepal in 1952 when Paris green, gamaxane, and nicotine sulphates were imported from USA for malaria control. DDT made its first impact in 1956. This was soon followed by a varieties of other organochlorines (in 1950s), organophosphates (in 1960s), Carbamates (in 1970s), and Synthetic pyrethroids (in 1980s) (Koirala, 2008)

Use of pesticides in Nepal was introduced about 1952 and its' use has been increasing over the years. It has been estimated that the use of pesticides in the developing countries approximately doubled even ten years between 1945 and 1995. The establishment of Development of Agriculture, initiated the application of chemical pesticides for crop protection during the mid of the 1960s. Increasing demands for chemical pesticides resulted in private dealerships selling and distributing pesticides throughout the country (Karlman, 1987).

In 1977, the Nepal Pesticides and Chemical Industries Pvt. Ltd. (NEPCIL) were established in Bahadurgunj to supply BHC dust, Malathion, Nepcil parathion among others locally. The Indian representative such as Crop Health Production Ltd., Excel Industries Ltd., Cyanamid India Ltd., and Bharat Pulverizing Mills Ltd. were the main suppliers of pesticides in Nepal. Organizations like the Cotton Development Board (CDB) and Nepal Malaria Eradication Programs were also authorized to purchase pesticides from foreign distributors. Presently, Indian Pesticides Dealers cross the open border freely, selling pesticides in the Terai region and in major towns of Nepal (Palikhe, 2005).

There are around 50 common pesticides under 150 trade names available in the markets. Several available pesticides are possibly carcinogenic to humans. Benzene Hexachloride (BHC) dust is the most frequently sold chemical pesticide followed by parathion methyl, Zinc phosphide, Aluminum phosphide, Malathion, Dithane, and Phorate. Worldwide estimates suggest that there are about three million (1,000,000 intentional and 2,000,000 unintentional) acute pesticides poisonings and approximately 220,000 deaths each year. Most of the poisonings and 99% of deaths occur in the developing countries.

At present, large persistent chemical pesticides such as, Chlordane, DDT, dieldrin, aldrin, heptachlor, mirex, toxaphene, BHC, Lindane, Phosphamidon and Organo-mercury fungicides are banned in Nepal for agriculture and public health from 9th April, 2001. Prohibitions on the use of highly toxic pesticides in tea are quinalphos, ethion, monocrotophos, and phorate (Palikhe, 2005).

The term "Pest control" can be defined as the application of technology, in the context of biological knowledge, to achieve a satisfactory reduction or maintenance of pest population below the damage threshold. It should be appreciated that the decisions whether or not to apply control measures are usually required before pest populations reach the damage

threshold. The concept of pest management depends on the population dynamics of the pest and the level of the damage caused by them.

Pest control procedures may be categorized under different headings such as cultural, biological, chemical etc. However, there is now a strong tendency to use two or more approaches together in a system of integrated control and is called as "Integrated Pest Management" or IPM. Integrated Pest Management is therefore, can be defined as blending of two or more control measures in order to control pests below economic injury level.

The seasonal appearance of pest during tea cultivation necessitates timely management of the crop through pesticides. The main reason for sub-optimal control of pest problem that pesticide application technology is not sufficiently developed to the target sites in the drift plant parts and within the canopy all resulting in the drift of spray droplets away from the tea (Banerjee, 1976)

Being highly toxic in nature, they do not differentiate between target and non-target species. The thick foliage of the unpruned tea often prevents spray droplets from penetrating deep into the canopy where pest are often located. The unpruned only about 30%of the spray droplets are able to penetrate the top 20% of the foliage with the balance getting drifted away.

Pesticides due to it's highly toxicity adversely affect the balance between pest and their natural enemies like predators and parasitoids on many crops; including tea. An avoidance of pesticide during the main period of predator activity is desirable but in tea the periods of the activities of the major pests and their predators get synchronized at different density levels.

However, care should be taken not to overdose on pesticides because these can le¡d to a high residue level of toxic substances in the te¡ le¡ves in excess of the MRL set by the importing countries. Pest that commonly attack tea crops include mites, thrips, jassids, tea mosquito bug, leaf eating beetles and defoliating caterpillars.

The control effect by mass-trapping technique on tea tussock moth, *Euproctis pseudoconspera* (Lepidoptera: Lymanteridae) was investigated by Wang *et.al*., (2006) with synthetic sex pheromone in South China. The optimal dosage of synthetic sex pheromone was 1.5mg/septum in a trap. Twenty-five traps per hector were used in two years, large scale mass trapping experiments and a total of 146,767 males were captured. In the pheromones treated field, mating rates were significantly reduced on 9 to 12 samples dates. The result of

the experiment indicated that the mating disruption method with sex pheromone lure could all as an agents in controlling tea tussock moth.

Hen *et. al*., (2003) work on the behaviour and electrophysiological responses of the natural enemies to synomones from tea shoots and kairomones from tea aphids, *Toxoptera aurantii*. Olfactometer bioassays and electrophysiological studies showed that the aphid parasitoids, Aphidius sp., responded volatile from tea aphids, *Toxoptera aurantii*, to hexane or ether rinses off tea aphid cuticle. They found that the interaction between synomones from aphid damaged shoots and kairomones from tea aphid enhanced the responses to the plant host complex.

Similarly, several other investigations were also carried out for the control of tea pest. Sharma *et. al*., (2003) worked on the prospects in use of neem formulation and biocides in tea pest management in North-East India. From this investigation he found that neem formulations containing 0.03% and 1.5% azadirachtin showed percent reduction to the tune of 37.6-68.3%, 31.8-34.7% and 29.4% in red spider mites, thrips, and green fly respectively up to 4 weeks but 20.32-57.86% week. Their trails revealed that among sucking pest green fly was more sensible to neem formulations followed by red spider mites and thrips.

Our research farmers employ a wide range of pesticides, the majority of which are classified as "moderately hazardous" to "highly hazardous." This is concerning. More than 75% of farmers use pesticides that fall within the categories described above. The Food and Agriculture Organization recommends that WHO la (extremely hazardous) and lb (very hazardous) pesticides not be used in developing countries..

It also advocates avoiding class II (moderately dangerous) pesticides. However, the practice of spraying these "powerful" pesticides persists. Preliminary results from environmental sample tests conducted in the research area corroborate this claim. Large chemical firms support the fallacy by aggressively selling the need for more stronger pesticides to prevent crop loss. This scenario has been recorded in various nations. Also see (Nigg, H.N. et al., 1990). Our survey found that the majority of farmers were unaware of the health risks associated with improper pesticide handling. Cotton clothing was often worn as protective gear. According to studies, damp cotton clothes and cotton fabric masks increase pesticide absorption rates.

Chewing or smoking while spraying "to reduce the nauseating feeling" is equally harmful to your health. This could also mean that the farmers were sick enough to self-medicate during

the pesticide spraying session. Farmers are often able to return to the field for labor within 24 hours of using pesticides. The continuing of pesticide spraying and other farming activities simultaneously in Pesticides can still be spread in the air when in the field, resulting in "direct" exposure.

Pesticide use in Nepal began in the early 1950s, particularly with the use of DDT to eradicate malaria (Manandhar, D. N., 2005). In the past, Nepal's government promoted the import and supply of chemical pesticides to boost agricultural production. As a result, since the 1960s, pesticides have been used indiscriminately and widely in Nepal. Plant Protection Act 1972; Plant Protection Rules 1975; Pesticide Act in 1999; Pesticide Rules 1993; Environmental Protection Act 1996; Environmental Protection Rules to govern the discriminatory use of pesticides (Palikhe,1998).

Fungicides, particularly Mancozeb, were found to be widely used, with both short- and long-term health impacts on humans. exposed to dangerous levels. The usage of hazardous insecticides is projected to rise when new crops enter cropping systems. Despite individuals' extensive knowledge of the environmental concerns of pesticide use, agricultural workers did not appear to take necessary safety procedures, putting them at greater risk of chemical exposure. Exposure to organophosphates dramatically decreased Assessing Erythrocyte Acetylcholinesterase activity throughout seasons, however its use was insufficient to claim clinical symptoms, but the use of Pyrethroid insecticides and fungicides was adequate to claim acute poisoning symptoms (Atreya, K.etal. 2013). According to the theoretical literature, pesticides are used the most in vegetable production in Nepal. It is a public issue in Nepal. However, the laws continue to be unethical. The case of pesticide use. As a result, the most serious issue in Nepal is pesticide use in vegetables.

Empirical Review Agnihothrudu (1993) studied pesticides on vegetables, which are often applied after plucking. If the spray is applied between plucking, the residue can be excessive. Because spraying occurs after plucking, a deposit is left on mature tea leaves as well as shoots and leaves at various stages of growth. By the time immature leaves reach pluckable size, the residue of pesticides on them will be extremely minimal. Tvedten (2002) concentrated on tetradifon as the most efficient insecticide against a powerful pest, the red spider mite (Oligonychus coffeae). Other mites are treated with dicofol and ethion. Endosulfan helps to control pests like as thrips, aphids, tea mosquito bugs, and other sap feeders. Sap feeders and leaf eaters are also controlled with organophosphates and

pesticides such as Quinalphos and Phosphamidon. When traditional chlorinated hydrocarbons like endosulfan fail to suppress leaf eaters and defoliators, synthetic pyrethroids such as deltamehrin are used. Due to the various insect problems in tea farming, complete pesticide avoidance appears to be impossible. MRL is very important in this scenario.

Maroni (2006) investigated how agriculture has evolved dramatically over the previous 50 years, with a widespread use of pesticides to improve crop protection. For a variety of reasons, the severity of pesticide dangers is substantially greater in developing countries.

Koirala (2008) investigated in Nepal over 319 types of pesticides (Insecticides 213, 71 fungicides, 23 herbicides, 8 rodenticides, 2 acaricides, and 2 others have been registered for use under Nepal's Pesticides Act and Rules. Several pesticides are potentially harmful to humans. The most often sold chemical pesticide is BHC (Benzene Hexachloride) dust, followed by parathion methyl, zinc phosphide, aluminum phosphide, Malathion, dithane, and phorate. According to global estimates, around 3 million (1,000,000 intentional and 2,000,000 unintentional) acute pesticide poisonings occur each year, resulting in approximately 220,000 deaths.

Koirala (2008) discovered that Nepal has export potential for agriculture and processed goods in the international market. Nepal's distinctive geographic, agro-climatic, and environmentally friendly agriculture systems, as well as its use of less fertilizer and pesticides, are the primary reasons for its export potential. Nepalese tea, due to its unique flavor and scent, is popular in the domestic market. as in the international market. As a result, the market's export volume has increased. However, in recent years, Nepalese agricultural products have faced certain challenges in the export market due to the inclusion of pesticides and other chemicals.

Agnihothrudu (1993), who concentrated on the issue of pesticide residue in processed tea, is garnering attention. Tea exports are subject to stringent surveillance. This issue has not been identified in tea for local consumption. However, teas that exceed pesticide tolerance limits risk being tossed or destroyed. Pesticides sprayed to tea are removed and further diluted by rain and dew, evaporation, photolysis by sunshine, and biodegradation. Synthetic pyrethroids and organochlorines are lipophilic and can bind to The cuticle. This could explain why pesticides such as dicofol are emerging in exporting tea. A significant proportion of pesticide residue on the leaves is lost during the manufacturing process. The loss may be 30-60% (due to evaporation during thermal degradation). Compounds having a greater vapor pressure will

typically leave fewer residues than those with a lower vapour pressure. Processed tea, when infused with boiling water, extracts less minimal residue leaves in tea compared to a standardized method of extraction in the liquor rather than black/green tea, as the liquor is drunk.

Pesticides' sensitivity to light is a key aspect in determining their residues in tea. Monochrotophos is one of the most regularly used pesticides, as mentioned by the World Health Organization classified as class IB, which is severely dangerous. Monochrotophos, an organophosphate used to kill insects and mites, is a nerve toxin that can result in weakness, impaired vision, profuse perspiration, confusion, vomiting, and discomfort.

In 1992-93, Germany refused to import a cargo of Darjeeling tea infected with tetradifon, an insecticide intended to control spider mite larvae. A one-kilogram sample from the package contained 240 micrograms of tetradifon. Twenty-four times more than the maximum residue limit. Plant resilience to pests and diseases has decreased as a result of the continued use of pesticides. At the same time, increased pesticide use has made pests resistant to the chemicals. Pesticide residues in food items have always been a source of severe concern. Pesticide residue levels in food products are generally Legislation has been enacted to reduce or eliminate the use of pesticides. Pesticide residues can have long-term health consequences, including cancer, allergies, hypersensitivity, central and peripheral nervous system damage, reproductive abnormalities, immune system disturbance, and even death (Strecct, 1981; Marooni, 1990). Thus, an effective tea development policy, as well as scientific agriculture practices, efficient quality control mechanisms, and technology for planting, harvesting, production, processing, storage, and distribution, are currently required to boost Nepal's vegetable economy and consumer safety.

Nepal depends heavily on the use of pesticides to increase production. Total annual amount of pesticides used is 128.697 MT (a.i) (PPD, 2008). Approximately 50% of the farmers don't read pesticide labels before using them "they trust pesticide dealers" and follow their advice rather than to read and follow written instruction (18%). FAO (1975) estimates up to 50% crop production losses due to pests and diseases in developing countries Manandhar, 2005).
Farmers and Technology monthly, along with the development of human societies, in each and every sector, there is development of science and technology. Every community is influenced by the positive and negative impacts of science and technology. Science and technology becomes both boon and curse for the human societies. If we are fail to use the

development of science and for the betterment of human beings, it sure that there may come a day where existence of all the human being will be at risk. To live a life, in every step of human beings there must be the provision of pure air, water, food stuffs. As proportional to the growth of population it is necessary to increase the every food stuffs. And for the same purpose, to increase the agricultural production, every country have been taking help of science and technology. Specially the use of un-natural fertilize, and seed directly affecting the human health. Not only the consumer are badly affecting by the use of pesticides and insecticides, the one who keeps those things on the crops himself/herself is also badly affected. So, realizing the necessity of Natural farming and scientific farming and gaining knowledge on of their differences, Nepal has given and spread knowledge on organic farming. It is sure that the fertility of soil is degraded by the use of chemical fertilizer. If so priority must be given for the production of compost manure which can be simply prepared by the collection of leafs of different plants, cow dong soon. (Karki 2015) To kill the insects on different plants and crops, why to use the medicine/pesticides like nyuvan, Metacit ? Why not to encourage every farmers to use ass, leafs of different plants, urine of cow ? (Kartik, 2015)

So being not able to analyze the diversity of land and environment the productivity of Nepalese agriculture is decreasing day by day. Forgetting the positive and good aspects of traditional agricultural system and on the name of modernization, human beings are compelled to accept the poison in their day today life knowingly. That’s why, for today's need and to solve the problem "Natural Farming and Management of scientific tools and adjustment of natural Resources" organic farming is inevitable (Kartik, 2015).

After the depth study of the agricultural farms of karnatak and according to the farmers and agricultural expert, it is found that there is uncountable fruitful micro-organism. If that organism can be protected there is no more necessity of external investment. The necessary micro elements for the soil can be found in the soil itself. To increase the agricultural productivity, farmers are using chemical fertilizers, pesticides and insecticides randomly which causes the disappearance of many micro-organism. If we are able to make the soil friendly for the organism. There is no more necessity of using any of the compost manure or the chemical fertilizers (Deuja 2071). Exhalation of Nitrous oxide of soil is of 40% which is produced by the use of chemical in agriculture. Pesticide Action, Network Asia and the pacific. .. Pesticides are crucial public health instruments that are used to boost food supplies and prevent vector-borne diseases in addition to their agricultural usage in crop protection.

Nonetheless, current studies have indicated that pesticides can potentially be harmful to the general public's health. Research has shown that both chronic effects at low exposure levels and acutely lethal effects at high doses can occur. It has been demonstrated that insecticides including organophosphate (OP), carbamate, parathyroid, and organochlorine can pass through the human placenta and expose developing fetuses. Because several pesticide classes have been shown to be neurodevelopmentally harmful, exposure to pesticides during pregnancy is especially concerning (reviewed in Owing to the possible health consequences of pesticide exposure, the majority of nations have created laws to promote responsible use and regulate the import, export, and production of insecticides (FNCCI/AEC, 2007).

For the study, a total of thirty families were surveyed. The bulk of vegetable growers (70%) only had an elementary education, and half of them (50%) were literate. Forty percent put in five to nine hours a day of hard work in the vegetable field. Vegetables are treated with insecticides by the majority (86.6%). This demonstrated that the usage of pesticides on vegetables has increased and is on the rise in the current year. Based on the severity of the pest problem with vegetables, over one-fourth (23.3%) use pesticide three to four times, while nearly half (46.6%) apply it five to six times. It suggests that pesticides are used on vegetables often, which could lead to a rise in hazardous residue and a higher danger for vegetable growers. Customers, as well (Shrestha, 2008).

A total sample of 403 households from the watershed in the Kavreplanchwok district was drawn using a proportional random sampling technique (based on the farmers' category and altitudinal variance). It was discovered that the dangers of pesticide exposure are underestimated by nearby farmers. They also think that these hazards associated with pesticide exposure are a normal part of "farm life." Moreover, people hardly ever take the necessary safety precautions when using pesticides. In order to improve their standard of living, farmers in the study area are inclined to apply more pesticides to their vegetable crops while taking little safety precautions. However, because they face a significant danger of exposure, they are unwilling to understand the risks associated with pesticides until they see them to be genuine. Pesticide use could be decreased by community-level integrated pest management.

Promoting Integrated Pest Management as an alternative to chemical pesticides, together with education and knowledge on the appropriate use and management of pesticides, is of major importance due to costs, health and environmental consequences, and also because it

enhances the ability of local people for decision making. Regular farmer training sessions that emphasize sustainable management of the region's agro-ecosystems, local knowledge of the risks associated with pesticide exposure to human and natural resources, and safety precautions are strongly advised (Atreya, K. and et al., 2013).

According to data from the Nepali government, imports of pesticides totaling nine major groups and seven subgroups were made between 1997 and 2003. 142 g/ha of pesticides is used, which is less than neighboring counties. The greatest amount of imported insecticides & amount used on fungicides, bactericides, acaricides, and seed treatment between 2056/57 (1999) and 2060/061 (2003). In Nepal, a range of pesticides, including insecticides, fungicides, herbicides, rodenticides, acaricides, and others, are registered and used under 306 trade names and 71 technical names. Furthermore, Nepal has banned the import and use of twelve different kinds of pesticides. In a similar vein, from 1997/98 to 2001/02, there was an increase in the need for fertilizers. In a similar vein, the highest fertilizer consumption was recorded in 1994–1995 (30.4 kg/ha), and it has since fluctuated and fallen. Since 2002–2003, there has been a consistent decline in the amount of fertilizer used (H TT P://W WW.NEPJOL. INFO/INDE X.PHP/S W/ART ICLE/VIE W/2638).

Pesticide use in Nepal: Understanding Health Costs from Short-term Exposure Pesticide use in Nepal is low relative to many other countries in the world, this study, which is the first of its kind in Nepal, suggests that farmers and policy makers need to become aware of the health impacts of pesticide use as they continue to promote its use in Nepal. HTTP://WW SANDEE ONLINE. ORG/PUBLICATIONDETAIL SDI SP. PHP'? PC ID= I &PID=748

Even though the pesticide use is increasing, various factors influence its effective utilization typically in developing country that may lead to reduced health, economic loss, environmental damage etc. Thus, pesticide use has not necessarily been profitable to us. http://agriculturecornerblog.blogspot.com/2012/07/pesticide-use-inagriculture-our-health. html.

The FAO International code of conduct (1986) states that "toxicity is a physiological or biological property which determines the capacity of a chemical to do harm or produce injury to a living organism by other than mechanical means." It is concerning that the farmers in our study employ a wide variety of pesticides, the majority of which fall into the "moderately hazardous" or "to highly hazardous" categories. Pesticides, which fall into the above-mentioned categories and are utilized by more than 75% of farmers, are discouraged from

being used in developing nations by the Food and Agriculture Organization (WHO, highly hazardous; Ib, extremely hazardous).

In addition to being poisonous, pesticides also have the characteristic of persistence. The ability of a pesticide to persist can be described as a residue that works well for a while because of its low volatility and chemical stability. Pesticide half-lives, or the amount of time needed for the compound's quantity to be cut in half, are commonly used to quantify pesticide persistence in the environment. According to the report, one should stay away from class II (Moderately Hazardous) pesticides. However, the practice of using these "strong" pesticides still stands. This assertion is corroborated by preliminary findings from environmental sampling studies conducted in the research region. By implementing aggressive marketing methods that suggest stronger pesticides are required to prevent crop loss, large chemical firms contribute to the perpetuation of this fallacy. Reports of this situation have also come from other nations (Nigg, Nill, Sone, & Russ, 1990).

Development based on right, public provide partnership food stuffs protection, social inclusion conflict sensitization durable livelihood are the important things which directly effect on the different strategies and their implementation. It is necessary to keep all those peronels like junior and others who are working in agricultural sectors updated along with the change in technology. They must be competent on textual matters. If development is regarded as the right of people then only involvement of people development possible. If people are keep on the focal point then only the service provider feel their responsibilities towards the people. Ultimately it promotes good governance and makes people always alert to get their rights (UN, 1986).

It is necessary to promote the living standard of people and minimize proverty through the development of agriculture. The principle of “learning by doing” is very much beneficial to in clue every people of the community and to achieve sustainable development.

To make agricultural development activities people orient and transparent and effective the organizations of farmers must be well protected and promoted. It is not possible to improve the condition of farmers by the development of a particular sector. In rolvement of different formal and informal institutions is agriculture is a must. Institutional development is must for the smooth development of agriculture. Farmers of every community should be the included in agricultural development so that they feel their due responsibility and development would be sustainable. It is possible to include them because there is Nepalese culture working together from the various past days (Pandey, 2008).

Environmental aspect is the main aspect of sustainable development. Right agricultural development only ensures protection and promotion of environment. But these days because of environment unfriendly development of human beings, we have been facing different environmental hazards. Till the period concrete steps are not taken to improve social, economic, cultural, administrative and human aspect, these is no chance of improving the environment and it is not possible to implement sustainable development. Sustainable development is a wider and multidynamic subject. It must be accepted by all and should go accordingly (Shrestha, 2008).

From the very beginning of human civilization, agriculture is the most important source to continue livelihood. Agriculture bears one third of the domestic product and right now approximately 66.56% people depend on agriculture. It is the reliable source of employment and livelihood. But unfortunately we are not able to full fill the demands of food stuffs and guaranteed food security to the people. It is very much sad aspect of Nepal and Nepalese people.

Large number of farmers join agriculture. It provides raw materials to many agro based industries of Nepal. So it is the main source to run the livelihood of majority of the people. Though agriculture provides many opportunities to Nepalese, people at the same time these are many challenges too in this field.

Just 15% of agricultural land under the control of 50% families. 32% of agricultural land is under the control of land lords. It means there is no proper distribution of agricultural land. They are very limited cultivable land with the real farmers. Those conditions are their land barren. Because of this reality, it is very difficult to address to problems of food stuffs to agricultural department of Nepal. As the agricultural department is feeling that these is a very high hill in front of it. Agricultural production of Nepal just bear the 40% people and 60% people should depend upon the imported food stuffs whole year. The main reason behind it is the primitive way of agriculture in Nepal. Even today it is done in a subsistence way. It is not highly commercialized. There must be production of skilled human resource and they must be managed properly for the agricultural development of Nepal. There must be development of agricultural technology. There is no provision of improve seed and seedlings in Nepal. Even whatever the seed and seedlings there, farmers are not able to gate them timely and as per their requirement. There is no proper advertisement of those products and co-ordination among the institutions established for the development of agriculture in Nepal. There is no management of irrigation facility for agriculture.

Hardly about 25% farmers are able to get irrigation facility and 75% farmers should depend upon monsoon rain. Even today they are compelled to pray God Indra for timely rainfall to cultivate their land. Nepalese agriculture is fully dependent on many aspects like fertilizer, seed and seedling, irrigation, agricultural loan and grants. Out of total people of Nepal (2,64,94,504), 1,74,63,257 people depends upon agriculture. Total of 54,27,302 families fully depend upon agriculture (G.C, 2016).

Now there is problem of climatic change every countries of the world are suffering from the problem of climate change. In the field agriculture farmers are encouraged doing agriculture following modern way. They are using the means and devices of modern science and technology. They are encouraged to increase the agricultural production as per the growing demands in market. But on the name of increasing production they are using insecticides and pesticides, comical fertilizers and different types of poison randomly. The impact of chemical farming are seen negative in many of the places even the farmers who use those pesticides and insecticides being affected badly and are caught by diseases. Analyzing the modern farming system, now different debates and discursion going on in the world. It is being discursion going on is the world. It is being discussed that the traditional and old system of farming is the best because it has no more negative impacts on the environment and on human health. So the advanced countries of the world has already started the practice of organic farming the people of poor and backwarded countries also attracting toward the organic farming. There is high number of consumers in the market who are infavour of organic products. Along with the development of green house farming in the world, Nepal also started green house farming since 1960's with the use of chemical fertilizer, pesticides and insecticides. There is no doubt that green house farming increase the production, support farmers to uplift their living standard, reduces poverty but random use of chemical fertilizer, insecticides and pesticides reduce the futility of still and learn many more negative impacts on human health. It cause great destruction on eco system and environmental imbalance. So, these

The agricultural promotion and protection act 2063 B.S also has given priority act for organic farming detecting suitable lands. It is very much necessary to implement safe agricultural farming and organic farming is practices then environment. So integrated pest management on farming is must these days (Acharya, 2008).

If the use of chemical fertilizers and insecticides and pesticides has given continuity. It is sure that within 50-60 years the agricultural land of Nepal changes in to desert fiction, the same is

said by many of the agricultural Scientise the different institutions like nepal agricultural investigation commission, agricultural and vet-nary study corporation, pesticides and insecticide law 2047 B.S pesticides control act 2050 B.S. Environment proportion Act 2047 B.S Environmental pollution control act 2054 B.S. The directory for organic farming and processing and technical act 2064 (amended) etc have been advocating for organic farming. Realizing the facts, it is necessary to discourage the chemical farming and should encourage every farmer to usebio-pesticides and insecticides in agriculture.

Agricultural sector is multidynamic to achieve expected results from it is necessary to manage agricultural resources properly. Production, collection, processing, diversification, distribution, marketing and other releted sectors must be improved. Agricultural production should be based on bio-diversity. So far this concrete vision and strategies for organic farming must be made and implemented immediated. (Gautam, 2015)

The avarage atmospheric condition of our surrounding over a long period of time is called climate. The visible noticeable change in the atmospheric condition of our surrounding is called climatic change. Actually climate change is the man made problem. Along with population growth and change in natural phenomenon it very difficult to prevent climatic change but it can be minimized. The where ecosystem and the erasures depends eco system at risk these days.

Climate change has been affecting the hot cake of discussion. It is estimate that agriculture was in practice in worldwide before 13000 years. For about 10,000 years, agriculture is carried out in a managed way somehow. After the discovery of fire the people of past started cattle rearing and cultivation of crops. Barly was first cultivated in vedic period. Even it was (barly) cultivated in the mithila region (janakpur dham) of Nepal for the first time according to Rig Beda. Any types of land is suitable for the cultivation of barly that's why it is beliened that it was cultivated in south Asia first. At Ramayan period there was use of wooden plough for agriculture. The legends claim, God Krishna reared cows and had given high importance for milk products. At the end of Sama Beda, yadurbansi the hero of Mahabharat Bala Ram used to walk by carrying plough on shoulder. God Krishna conducted campaign realizing the facts rearing cattles promote agriculture. According to yujurbeda cows are belived the sources of food grains (Yaju, 2003)

After the cultivation of barley. There was practice of farming of edible oil. Similary there was cultivation of different types of grasses to make roof of house. "Yogyabed" was given top

priority on Vedic period. It was started along with its meaning: that is to manage things by oneself necessary in his/her life. That's why "yajurbed means".

Different types of crops were cultivated in mithila region from the period of Mithijanak to Davjanak like paddy, barle, cereals, green leafy vegetables, wheat etc. prasid-2071

The balance between population increase and sufficient food production is one of the most important challenges in South Asian Countries, including Nepal. The use of pesticides is an effective method to protect crops from being damaged. Over the past years there has been an increase in the use of pesticides in developing countries now account for about 20% of the worlds expenditure on pesticides. However, improper use of pesticides can cause human poisonings, accumulate as residues in food and the environment, and lead to the development of resistance in pests (Agnihothrudu, 1993).

All living things are poisoned by what poisons pests. A further consideration is dosage (which also depended on how it entered the body). Any negative impact caused, directly or indirectly, by the pesticides used to control weeds, disease, and pests is referred to as the "effect." In a similar vein, "environment" refers to any setting, including rural, urban, and agricultural areas as well as the land, water, and air that surround them (Girl, 1990). The majority of farmers in our survey were unaware of the risks to their health posed by improper pesticide handling. A Cotton garment was used as protective attire. Theoretical and empirical literature mentioned above demonstrates that Nepal uses the highest amount of pesticides on vegetables. It is becoming a bigger problem for human health. Thus, the

The most pressing issue facing Nepal is the use of pesticides on vegetables.

CHAPTER-III

RESEARCH METHODOLOGY

3.1 Research Design

This study has carried out the basis of descriptive research design. The study has investigated the benefit of organic cultivation or farming in croups and vegetables production in urban and rural sectors. The study has fined out the trends of vegetables and crops production technique, health condition and environmental condition due to organic farming. Thus the study is exploratory research.

Besides the study has made an attempt to describe the things interlink to community participation economic benefits, living standard of the people, and investigated the explored findings has described.

3.2 Rational of the Selection of Study Area:

More than 80% of the farmers of Thankot follow agriculture. Since ancient time they have been following the practice of food crops, cash crops as well as fruit and vegetable farming. But the matter of facts is that, they are using and are encouraged themselves to use more chemical fertilizers, insecticides and pesticides or any of the crops. Because of this reason and to stop the random use of chemical fertilizer, insecticides and pesticides this area is selected. Up to now no more studies and research have been conducted so far in this area about organic farming.

3.3 Nature and Sources of Data

This study goals to explore the impact of organic crops, vegetables and fruits production of the process, role of agriculture service centre Kalanki towards economic enhancement of the rural communities of area. Thus primary as well as secondary sources of data has used for data collection, primary data has collected through field survey collected through field survey such as questionnaire survey, and semi structured interview, focused group discussion and observation. Similarly secondary data has collected from various reports, books, journals and research papers, research articles. Both qualitative and quantitative data has collected from the study area to meet the objectives of the study.

3.4 Universe, Sample and Sample Procedure

Out of total 1040 household in Chandragiri Municipality Ward No. 3 (Matikhel area) (Chandragiri Municipality Profile, 2018) of Thankot, 140 (13.46 %) have taken as sample on the basis of simple random sampling method. Under simple random sampling method lottery system has used for the selection of the sample. In this study both the farmers following organic farming and non-organic farming farmers has included.

3.5 Data Collection Technique and Tools:

On the course of data collection, tools and technique are important part. The collection of primary data has generated mainly base on qualitative primary data and also follow quantitative data. Both of these qualitative and quantitative data has collected through household survey and key informant interview at the study area.

3.5.1 Household Survey:

Quantitative data for the study was provided by the household survey questionnaire. The demographic structure, sources of income, education, age and sex, family size, occupation, and the contribution of the Agriculture Service Center, Kalanki to the improvement of socioeconomic issues in the communities will all be included in this study. The information was gathered at the home level from respondents during the field survey. Annex I contains the structure for the household survey questionnaire.

3.5.2 Key Informants Interview:

Interview has used to collect the data of qualitative nature. During field work, several interviews have carried out to supplement the study. This has helpful to gather information of various aspects of the impact of organic farming activities ran by Agriculture Service Centre, Kalanki to the agro vet and stake holders of Thankot in improving the socio economic aspects, prevention of environment population, and land productive power and health hazards of rural communities of the study area.

The primary data has collated from key informants using interview guide with semi or unstructured questions. In interview key informants provide the answer of researcher's questions with regard to impact of organic forming programs to improve the socio-economic status of the communities. The interview has taken as cross checking for data obtained from questionnaire. There were four key informants used for this study. Key informants were manager of agriculture form, junior technical assistant, Ward Secretary, Chairperson of ward. The format of key informant's interview questionnaire is in annex II.

3.6 Data Analysis Methods and tools

After finishing interview schedule from the field observation collection of data has preceded. The data has collected through various methods and techniques. Thus, collected data has analyzed by using both the descriptive and statistical analysis tools like; table and graphs; etc. has used for data analysis.

CHAPTER IV
DATA PRESENTATION AND ANALYSIS

This chapter deals with the data presentation and interpretation. The agglomerated primary data from the field survey have been tabulated and their interpretation had been made thoroughly.

Population is the major component of any research. This type of sampled population sketches our real report. The sample population composition of this study has been presented under the headings and tables.

4.1 Socio-Economic Status of the Respondents

This section explains about the personal information of the respondents. Respondents are agriculture farmers of the Chandragiri Municipality-3, of Kathmandu.

4.1.1 Gender

Gender refers to the biological differences between males and females, such as the genitalia and genetic differences. The obtained data from field survey can be presented in table 4.1.

Table 4.1 Gender distribution of the Respondents

Gender Distribution	Number	Percentage
Male	86	61.42
Female	54	38.57
Total	140	100 %

Source: Field Survey, 2020

Table 4.1 shows that about gender distribution of the respondents. It seems that 61 % respondents were male whereas, 38% respondents were female.

4.1.2 Age Distribution

Age is a population's fundamental feature or biological characteristic that influences migration patterns, fertility, and mortality. In addition to reflecting the current demographic conditions of the population, age and sex structure serve as a foundation for research into historical and future demographic conditions of the population. In order to gather authentic data from the community, a range of age groups of respondents were selected for the research. The survey results are displayed in table 4.2.

Table 4.2 Age Distribution

Age Group	Number	Percentage
15-25	13	9.28
26-35	15	10.71
36-45	27	19.28
46-55	43	30.71
56-65	32	22.85
66 Above	10	7.14
Total	140	100%

Source: Field Survey, 2020

According to this table 4.2, 9 % of respondent's age group was 15-25, 10 % respondent's age group was 26-35, 19 % respondent's age group was 36-45, 30 % respondent's age group was 46-55, 22 % respondent's age group is 56-65, 7 % respondent's age group was 66 above.

4.1.3 Occupation

Occupation in the engagement of people in different activities to satisfy their daily needs. In this study, respondents' occupational status has been presented below in the table 4.3.

Table 4.3 Occupation of the Respondents

Occupations	Number	Percentage
Agriculture	73	52.14
Business	18	12.86
Trade and commerce	13	9.29
Services	9	6.43
Others	27	19.28
Total	140	100%

Source: Field Survey, 2020

Table 4.3 shows the occupational status of sample respondents of Chandragiri Municipality-3, of Kathmandu district. It seems that Agriculture as a major occupies 52.14 percent. Similarly, business (entrepreneur, ghee, handicrafts) consisted 12.86 percent and trade and commerce is the occupation of also 9.29 percent of the local respondents.

Likewise, 6.43 percent were services holders and others 19.28 percent were found in different sector occupation. It clears that due to its lowland geography, majority were engaged in agriculture sector. During the study, it is also found that most of the respondents follow Hindu religion in this area.

4.1.4 Educational Level

The foundation of development is education. It plays a significant role in a society's social and economic evolution. Humans are tools for development because they can produce commodities and services with knowledge and talent. It is believed that education is the only way to accomplish these goals. Without a doubt, education is a tool for drastically altering society. It is a way that gives us access to new technology, expertise, and information. Being literate is a prerequisite for education, which is crucial for growth. It makes it possible for someone to get the knowledge and abilities needed to go about their daily lives more smoothly. Nobody can anticipate the overall advancement of society without education. Table 4 displays the educational status of the respondent.

Table 4.4 Educational Level of Respondents

S. No.	Educational Status	Number	Percentage
1	Illiterate	32	22.85
2	Who can read and write	28	20
3	Primary	20	14.28
4	Lower Secondary Level	24	17.14
5	Secondary	20	14.28
6	+2	10	7.14
7	Bachelor	6	4.28
	Total	140	100

Source: Field Survey, 2020

Table 4 shows that about 22 % were illiterate, 20 % are just literate 14 % have up to primary education, 17 % have up to lower secondary level education 14 % have up to secondary level 4 % have up to bachelor. Illiterate and just literate are covered about more than 40 percent of the respondents Chandragiri Municipality-3, of Kathmandu.

4.1.5 Types of Family

Family structure, which is categorized into nuclear and combined families, is the next significant socioeconomic feature variable. Numerous research have shown the relationship between social influence, inventive behavior, and other modernization phenomena and the composition and structure of families. For example, McClelland (1961) discovered a connection between personality traits and family structural factors. The Colombian study

provided some tentative evidence for Rogers' (1969) hypothesis, which states that levels of achievement motivation change directly with the type of family structure and personality socialization. Table 4.5 displays the family status in this investigation.

Table 4.5 Family Status of the Respondents

Types of family	Number	Percentage
Joint Family	25	17.86
Nuclear Family	115	82.14
Total	140	100

Source: Field Survey, 2020

Table 5 shows that about 17.86 % of respondents have joint family whereas 82.14 % belong to nuclear family. It seems that majority of the respondents were belongs to nuclear family structure. A joint family is considered bigger compared to a nuclear family because a joint family includes grandparents, uncles, aunts, cousins, and in-laws, aside from the typical mother, father, and children.

Nuclear family is more common in the urban areas in comparison of rural areas. Nuclear family is one of the characteristics of the urban areas.

4.1.6 Annual Income

The availability of money is directly related to people's standard of living. Respondents were questioned about their yearly income in order to ascertain the financial situation of the selected local population. Table 4.6 displays the research results that were gathered.

Table 4.6 Annual Incomes of the Respondents

Annual Income	Number	Percentage
Rs. 50,000-70,000	12	8.57
Rs. 70,000-90,000	34	24.28
Rs. 90,000-1,00,000	22	15.72
Above Rs. 1,00,000	72	51.43

Total Households	140	100%

Source: Household Survey, 2020

Table 4.6 shows the annual income level of local respondents of Chandragiri municipality, Kathmandu district. It seems that 51.43 percent above 100 thousand, 15.72 percent households earned 90-100 thousand annually, 24.28 percent 70-90 thousand, and 8.57 percent 50-70 thousand annually. It clears that most of the local people earned above 100 thousand annually. It meets the average income level of our country.

4.1.7 Health Condition

Health can be defined as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." Health conditions, like illnesses, injuries and impairments, affect our ability to function or enjoy life. Health condition of sampled respondents can be presented in table 4.7.

Table 4.7 Health Condition of the Respondents

Health Condition	Number	Percentage
Good	95	67.86
Unsound	25	17.85
Suffering from diseases	20	14.29
Total	140	100%

Source: Field Survey, 2020

Table 4.7 shows the health condition of sample respondents of Chandragiri Municipality-3, Kathmandu. It found that 67.86 percent respondents were good in health, 17.85 percent had unsound health and rest 14.29 percent were suffering from disease. It clears that majority of the respondents have good health condition.

4.2 Farming Practices in the Study Area

Farming is the act or process of working the ground, planting seeds, and growing edible plants. It is growing crops or keeping animals by people for food and raw materials. It is a main part of agriculture. Farming practices of respondents of study area can be presented in following sub-headings.

4.2.1 Types of Crops Grown

This section presents the different types of crops which is grown by sample farmer respondents. It can be presented in table 4.8.

Table 4.8 Types of Crops Grown by Respondents

Types of Crops	Number	Percentage
Food crops	35	25
Vegetables	56	40
Fruits	27	19.28
Cash crops	22	15.72
Total	140	100%

Source: Field Survey, 2020

Table 4.8 shows the types of crops grown by farmer respondents. It seems that majority of 40 percent respondents grow vegetables, 25 percent grow food crops, 19.28 percent grow fruits and remaining 15.72 percent grow cash crops. It concludes that vegetable is the main crops in the study area.

4.2.2 Types of Manure in Growing Crops

This is a research about farming practices with Integrated Pest Management of Chandragiri Municipality-3, Kathmandu. Normally, farmers used compost and chemical fertilizer manure in their crops. Types of manure used by local respondent farmers in growing crops can be seen in table 4.9 as follows.

Table 4.9 Types of Manure in Growing Crops

Types of Manure	Number	Percentage
compost manure	35	25.00
Chemical fertilizer	40	28.57
compost and chemical fertilizers	65	46.43
Total	140	100%

Source: Field Survey, 2020

Table 4.9 indicates the types of manure used by farmer respondents in their crops. It seems majority of 46.43 percent used compost and chemical fertilizer simultaneously in their crops, 28.57 percent used chemical fertilizer and 25 percent farmer used compost manure in their crops. It clears that most farmers used compost and chemical fertilizers together.

4.2.3 Main Reason of Using Chemical Fertilizer

Respondents of study area were asked the main reason of using chemical fertilizer in their crops. Result can be presented as follows.

Table 4.10 Main Reason of Using Chemical Fertilizer

Main Reason	Number	Percentage

To increase production	35	25.00
Easy to use	48	34.28
Lacking compost manure	38	27.14
To get more profit	19	13.57
Total	140	100%

Source: Field Survey, 2020

Table 4.10 shows the main reason of using chemical fertilizer in crops. It seems that 25 percent used it to increase production level, 34.28 used for easiness, 27.14 percent used chemical fertilizer because the lack of compost manure, and remaining 13.57 percent respondents used to get more profit.

It concluded that most of farmers used chemical fertilizer for getting more production and their easiness. Nowadays, many agriculture researches proved that farmers used more chemical fertilizer in their crops.

4.2.4 Impact of Chemical Fertilizer on Human Health

Generally, farmers used chemical fertilizer to add nutrients to their soils. This maintains the soil fertility, so the farmer can continue to grow nutritious crops and healthy crops. There are also several harmful effects of chemical fertilizers. Some of the harm chemical fertilizers may cause include waterway pollution, chemical burn to crops, increased air pollution, acidification of the soil and mineral depletion of the soil.

Respondents' views on negative impact of chemical fertilizer on human health can be extended in table 4.11.

Table 4.11 Impact of Chemical Fertilizer on Human Health

Negative Impact	Number	Percentage
Invites different unexpected diseases	95	67.85
Effects as like slow poison	25	17.86
I don’t know	20	14.29
Total	140	100%

Source: Field Survey, 2020

Table 4.11 reveals the respondents' view on negative impact of chemical fertilizer on human health. It seems that majority of 67.85 percent respondent said, it invites different unexpected disease, and 17.86 percent said its effects like slow poison. Rest of the respondents *i.e.* 14.29

percent don't know about it. It clears that most of the farmers know about negative impact of chemical fertilizer on human health.

4.2.5 Opinion on Compost Manure and Organic Pesticides

Sampled respondents of Chandragiri Municipality-3, Kathmandu were asked their knowledge about compost manure and organic pesticides. Results obtained from field survey can be extended in table 4.12.

Table 4.12 Opinion on Compost Manure and Organic Pesticides

Responses	Number	Percentage
I know little bit	73	52.14
I don't know	27	19.29
I have taken training about its use	40	28.57
Total	140	100%

Source: Field Survey, 2020

Table 4.12 shows the respondents' response about knowledge of compost manure and organic pesticides. Majority of 52.14 percent respondents know little bit about it, 28.57 percent taken training about its use and remaining 19.29 respondents don't know about compost manure and organic pesticides. It concludes that most of the farmers know compost manure and organic pesticides in the study area.

4.2.6 Types of Chemical used

Respondents were asked the methods of correction in their poor crops. The result obtained from field can be presented in table 4.13.

Table 4.13 Types of Chemical used in Poor Crops

Types of chemical	Number	Percentage
Chemical Poison	64	45.71
Organic Poison	23	16.43
Both of them	37	26.43
None of them	16	11.43
Total	140	100%

Source: Field Survey, 2020

Table 4.13 indicates the methods of correction in poor crops. It seems that 45.71 percent respondents used chemical poison in their poor crops, 16.43 percent used organic poison,

26.43 percent used both of them and 11.43 percent used none of them. It clears that majority of respondents used chemical poison in crop problem. And it is also needed to encourage them about the use of organic poison for human health.

4.3 Knowledge of Integrated Pest Management in Organic Farming

The term "Integrated Pest Management" refers to the methodical evaluation of all available pest control strategies, followed by the integration of suitable controls that prevent the growth of pest populations, limit the use of pesticides and other interventions to levels that are economically feasible, and minimize or reduce the risk to the environment and public health. Applications for integrated pest management include the home, garden, and workplace, as well as agricultural and non-agricultural environments. The goal of the integrated pest management strategy is to optimize pest populations by using one or more control techniques while limiting the use of pesticides and other treatments to levels that minimize or reduce risks to the environment and human health.

4.3.1 Information about Integrated Pest Management

It was discovered during the field survey that over two of every three respondents had heard of integrated pest management. However, in reality, very few farmers were implementing integrated pest management in their fields due to the labor-intensive nature of the process compared to applying pesticides.

Table 4.14 Information about Integrated Pest Management

Response	Number	Percentage
Yes	20	14.28
No	30	21.42
I have heard but not very much confident	90	64.28
Total	140	100%

Table 4.14 shows that knowledge about integrate pest management. 14.28 percent of respondents know about integrate pest management whereas 21.42 percent respondents do not know about integrate pest management. Likewise, majority of 64.28 percent respondents only heard but not very much confident about it. It clears that most of the respondents in the study area know about integrated pest management but not much more clear.

4.3.2 Knowledge about Integrated Pest Management

Respondents were asked about actual meaning of Integrated Pest Management. Results can be extended in table 4.15.

Table 4.15 Knowledge about Integrated Pest Management

Responses	Number	Percentage
To kill insects following an integrated management approach	61	55.45
Only use of chemical to kill insects and to protect crops	31	28.18
To use organic poison	18	16.36
Total	110	100%

Source: Field Survey, 2020

Table 4.15 shows the total of 110 farmers' knowledge about integrated pest management. It found that majority of 55.45 percent respondents understand it as kill insects integrated management approach, 28.18 percent know as chemical to kill insects and protect crops and remaining 16.36 percent know as use of organic poison. It clears that majority of the farmers know Integrated Pest Management as insect killing chemical in the study area.

4.3.3 Change in Profit Margin by Using Integrated Pest Management Method

Respondents were asked about their profit level by using Integrated Pest Management method in farming system. Result can be presented in table 4.18.

Table 4.16 Change in profit margin by using IPM method

Profit level	Number	Percentage
Good profit	84	60.00
Not satisfied	26	18.57
No difference	30	21.43
Total	140	100%

Source: Field Survey, 2020

Table 4.16 exhibits the profit margin by using Integrated Pest Management method. Out of total respondents, 60 percent made good profit, 18.57 percent were not satisfied, and 21.43 percent said no difference in profit level by using Integrated Pest Management method. It clears that majority of the respondents are satisfied with Integrated Pest Management method in their farming system.

4.3.4 Investment on Integrated Pest Management Method

This section explains the investment cost of farmers on Integrated Pest Management method in their crop farming. Result can be presented in following table 4.17.

Table 4.17 Investment on Integrated Pest Management Method

Investment	Number	Percentage
It cost more	66	47.14
It cost less	27	19.29
no difference in cost between chemical method and Integrated Pest Management Method	17	12.14
I don't have any idea	30	21.43
Total	140	100%

Source: Field Survey, 2020

Table 4.17 reveals the investment on Integrated Pest Management method. Out of total respondents, 47.14 percent said that it cost more, 19.29 percent said less costly, 12.14 said no change and rest 21.43 percent have no idea about it. It clears that Integrated Pest Management is more costly farming method compared to other type of chemical method.

4.4 Contribution of Integrated Pest Management in Farming

.Change in profit margin by using Integrated Pest Management Method, Change in employment status by Integrated Pest Management Method, responses on Integrated Pest Management Approach of Farming is the major contribution of Integrated Pest Management

4.4.1 Change in Income

Respondents were asked- are there any changes in production level by using Integrated Pest Management method? Responses can be extended in table 4.16.

Table 4.18 Change in Production Level by Following IPM Method

Change	Number	Percentage
Increase	80	57.14
Decrease	30	21.42
as usual	30	21.42
Total	140	100%

Table 4.18 indicates the change in production level by using IPM method in farming system. It seems that 57.14 percent respondents have increased crops by using Integrated Pest Management, 21.42 percent have decreased and rest 21.42 percent have no change in their production level. It concluded that majority of the respondents succeed to increase their production level by following Integrated Pest Management method in farming.

4.4.2 Change in Employment

During the study, respondents were asked about change in employment status by using IPM method. Result can extended in table 4.19.

Table 4.19 Change in employment status by IPM method

Responses	Number	Percent
More people get employment because it covers more areas	37	26.43
It saves money and create more employment	38	27.14
It decreases the manpower	35	25.00
found no more differences	30	21.43
Total	140	100%

Source: Field Survey, 2020

Table 4.19 shows the employment status in farm by using Integrated Pest Management method. It seems that around 53 percent respondents said that it creates more employment, 25 percent found about decreasing and rest 21.43 percent found no difference. It concluded that Integrated Pest Management method is more positive in creating more employment opportunities.

4.4.3 Change in Production

It describes the respondents view on Integrated Pest Management approach of farming. It can be presented in table 4.20.

Table 4.20 Responses on Integrated Pest Management Approach of Farming

Responses	Number	Percentage
Like it very much	45	32.14
It is just OK	35	25.00
Don't like it	30	21.43

This approach makes no differences	30	21.43
Total	140	100%

Table 4.20 describes the response of Integrated Pest Management approach of farming. It seems that 32.14 percent respondents like it very much, 25 percent found just ok, 21.43 percent don't like it and another 21.43 percent made no differences. It clears that most of the respondents moderately liked Integrated Pest Management approach of farming in the study area.

Study also found that some respondents liked Integrated Pest Management approach by supposing various health and other benefits on the other hand, rest do not liked because of its high cost.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

It seems that 61 % respondents were male whereas, 38% respondents were female. 9 % of respondent's age group was 15-25, 10 % respondent's age group was 26-35, 19 % respondent's age group was 36-45, 30 % respondent's age group was 46-55, 22 % respondent's age group is 56-65, 7 % respondent's age group was 66 above. It seems that Agriculture as a major occupies 52.14 percent. Similarly, business (entrepreneur, ghee, handicrafts) consisted 12.86 percent and trade and commerce is the occupation of also 9.29 percent of the local respondents. Likewise, 6.43 percent were services holders and others 19.28 percent were found in different sector occupation. It clears that due to its lowland geography, majority were engaged in agriculture sector. During the study, it is also found that most of the respondents follow Hindu religion in this area.

31.43 % were highly educated, 60 % are just literate and 8.57 % were uneducated. Literate and highly educated are covered about more than 90 percent of the respondents in Chandragiri Municipality of Kathmandu.

17.86 % of respondents have joint family whereas 82.14 % belong to nuclear family. It seems that majority of the respondents were belongs to nuclear family structure. A joint family is considered bigger compared to a nuclear family because a joint family includes grandparents, uncles, aunts, cousins, and in-laws, aside from the typical mother, father, and children.

It seems that 51.43 percent above 100 thousand, 15.72 percent households earned 90-100 thousand annually, 24.28 percent 70-90 thousand, and 8.57 percent 50-70 thousand annually. It clears that most of the local people earned above 100 thousand annually. It meets the average income level of our country.

It found that 67.86 percent respondents were good in health, 17.85 percent had unsound health and rest 14.29 percent were suffering from disease. It clears that majority of the respondents have good health condition.

It seems that majority of 40 percent respondents grow vegetables, 25 percent grow food crops, 19.28 percent grow fruits and remaining 15.72 percent grow cash crops. It concludes that vegetable is the main crops in the study area.

It seems majority of 46.43 percent used compost and chemical fertilizer simultaneously in their crops, 28.57 percent used chemical fertilizer and 25 percent farmer used compost

manure in their crops. It clears that most farmers used compost and chemical fertilizers together. It seems that 25 percent used it to increase production level, 34.28 used for easiness, 27.14 percent used chemical fertilizer because the lack of compost manure, and remaining 13.57 percent respondents used to get more profit.

It seems that majority of 67.85 percent respondent said, it invites different unexpected disease, and 17.86 percent said its effects like slow poison. Rest of the respondents *i.e.* 14.29 percent don't know about it. It clears that most of the farmers know about negative impact of chemical fertilizer on human health.

Majority of 52.14 percent respondents know little bit about it, 28.57 percent taken training about its use and remaining 19.29 respondents don't know about compost manure and organic pesticides. It concludes that most of the farmers know compost manure and organic pesticides in the study area.

It seems that 45.71 percent respondents used chemical poison in their poor crops, 16.43 percent used organic poison, 26.43 percent used both of them and 11.43 percent used none of them. It clears that majority of respondents used chemical poison in crop problem. And it is also needed to encourage them about the use of organic poison for human health.

14.28 percent of respondents know about integrate pest management whereas 21.42 percent respondents do not know about integrate pest management. Likewise, majority of 64.28 percent respondents only heard but not very much confident about it. It clears that most of the respondents in the study area know about integrated pest management but not much more clear.

It found that majority of 55.45 percent respondents understand it as kill insects integrated management approach, 28.18 percent know as chemical to kill insects and protect crops and remaining 16.36 percent know as use of organic poison. It clears that majority of the farmers know Integrated Pest Management as insect killing chemical in the study area.

It seems that 57.14 percent respondents have increased crops by using Integrated Pest Management, 21.42 percent have decreased and rest 21.42 percent have no change in their production level. It concluded that majority of the respondents succeed to increase their production level by following Integrated Pest Management method in farming.

Out of total respondents, 47.14 percent said that it cost more, 19.29 percent said less costly, 12.14 said no change and rest 21.43 percent have no idea about it. It clears that Integrated Pest Management is more costly farming method compared to other type of chemical method. Out of total respondents, 60 percent made good profit, 18.57 percent were not satisfied, and 21.43 percent said no difference in profit level by using Integrated Pest Management method. It clears that majority of the respondents are satisfied with Integrated Pest Management method in their farming system.

It seems that around 53 percent respondents said that it creates more employment, 25 percent found about decreasing and rest 21.43 percent found no difference. It concluded that Integrated Pest Management method is more positive in creating more employment opportunities.

It seems that 32.14 percent respondents like it very much, 25 percent found just ok, 21.43 percent don't like it and another 21.43 percent made no differences. It clears that most of the respondents moderately liked Integrated Pest Management approach of farming in the study area. Study also found that some respondents liked IPM approach by supposing various health and other benefits on the other hand, rest do not liked because of its high cost.

5.2 Conclusions

Integrated Pest Management practice suggests to dig a little bit deeper than normal, organic pesticide should be used which don't harm friendly insects. It urges to use net for bad insects. Pest control procedures and farming may be categorized under different headings such as cultural, biological, chemical etc. However, there is now a strong tendency to use two or more approaches together in a system of integrated control and is called as “Integrated Pest Management”. Integrated Pest Management blending of two or more control measures in order to control pests below economic injury level. Pesticides due to its high toxicity adversely affect the balance between pest and their natural enemies like predators and parasitoids on many crops; including food, vegetable etc. An avoidance of pesticide during the main period of predator activity is desirable but in vegetable the periods of the activities of the major pests and their predators get synchronized at different density levels.

Promoting indigenous expertise in organic pesticide is a good idea. The idea of pest management is based on the dynamics of the pest population and the extent of the harm that the pests inflict. Pesticide use to protect plants has been rising rapidly. Pesticides are now sold and distributed nationwide by private dealerships as a result of rising demand for chemical pesticides. In the context of biological knowledge, integrated pest management

(IPM) aims to maintain or reduce pest populations below the damage threshold. However, it should be noted that decisions about whether or not to apply control measures are typically necessary prior to pest populations reaching the damage threshold.

Nonetheless, caution should be exercised to avoid overusing pesticides as this may result in a high residue level of harmful elements present in the vegetable. Among the pests that frequently attack crops are defoliating caterpillars, moths, jassids, thrips, and grasshopper mites. Pesticide residues in food products have long been a cause for grave worry. Food-related pesticide residue levels are often regulated by law to reduce pesticide consumption. Because of the healthy soil, IPM can reduce labor costs. Improved soil management could lead to increased productivity.

5.3 Recommendations

The recommendation of the present study entitled Integrated Pest Management (IPM) used in Agriculture in Chandragiri Municipality Kathmandu District is summarized as follows.

i. In order to disseminate accurate information about the pest, its status, and its control methods, it has been advised that thorough monitoring of the pest for entire years as well as research into seasonal variations and abundance be done.

ii. In addition to the use of pesticides, it has been discovered that the presence of natural enemies such ladybird beetles and siphid larvae has helped to lower the numbers of numerous pests. Therefore, it is advised to safeguard and support the natural adversary that exists in the agricultural sector.

iii. Instruction on the use of pesticides and their substitutes, such as integrated pest and vector management in agriculture; cultural practices, such as pruning, cultivating resistant plant varieties, using biological control agents, maintaining sanitation, and building buffers zones are recommended.

iv. Using pesticides is merely one strategy for managing disease and pest vectors. Pesticides should only be used when absolutely necessary, and the chosen control strategy should be tailored to the local conditions.

v. Before using pesticides in the field, use the information found on their labels and through their dealer. Use of pesticides from unlabeled containers is never advised. Unless a pesticide is going to be diluted and applied right away, it shouldn't be put into an unmarked container.

vi. When applying pesticides in the field, it should be advised to wear personal protective equipment (PPE). To minimize spills and leaks, pesticides should only be sprayed with sturdy, well-maintained equipment.

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Annex-I

Household Survey Questionnaire

Respondent's Name:

Age: **Sex:**

Village:

Ward no.: **Occupation:**

Family type: **Religion:**

Annual Income:

1. What about your educational qualification?

   a. Highly educated b. Literate c. Uneducated

2. What is your health condition?

   a. Good b. unsound c. suffering from diseases

3. What types of crops do you grow?

   a. food crops b. Vegetables c. fruits d. cash crops

4. What types of manure did you use growing crops?

   a. compost manure b. Chemical fertilizer

   c. compost and chemical fertilizers

5. What is the main reason of using chemical fertilizer?

   a. To increase more production

   b. Easy to use

   c. lacking compost manure

   d. to get more profit

6. What are the negative effects of using chemical fertilizer continuously on soil?

a. good b. bad c. no effects d. a don't know

7. Did you use chemical fertilizer?

a.yes b. no c. sometimes

8. What are the negative impact of consuming any of the food crops produced by the use of chemical fertilizers on human health and living creatures?

a. I don’t know b. invites different unexpected diseases

c. effects as like slow poison

9. Do you know about compost manure and organic pesticides?

a. yes, a know little bit b. I don’t know

c. a have taken training about its use

10. If there seen any problem each your crops, which method/procedure do you follow to correct it?

a. Chemical Poison

b. Organic Poison

c. Both of them

d. None of them

11. Did you know about Integrated Pest Management?

a. Yes

b. No

c. I have heard but not very much confident

12. If you have heard about Integrated Pest Management, What is it actually?

a. To kill insects following an integrated management approach

b. Only use of chemical to kill insects and to protect crops.

c. To use organic poison

13. What/How is the agricultural production by following Integrated Pest Management Method?

a. Production increases

b. Production decreases

c. Production is as usual

14. How much investment did you make in your farm by following Integrated Pest Management Method?

a. I invested more

b. I invested very less

c. I invested more but it reduce other expenses

d. I don't have any idea

15. What about the cost in Integrated Pest Management Method/approach?

a. It cost more

b. It cost less

c. There is no difference in cost between chemical method and Integrated Pest Management Method

d. I don't have any idea

16. What about the profit did you make by following Integrated Pest Management Method?

a. I made good profit

b. I am not satisfied by the profit

c. I don't found any difference in profit by following Integrated Pest Management and other approaches

17. What is the status of employment in Integrated Pest Management Method?

a. More people get employment because it covers more areas

b. It saves money to be invested for buying chemical poison and supports to invest more and create more employment

c. It decreases the manpower

d. I found no more differences

18. Do you like Integrated Pest Management approach of farming?

a. Yes I like it very much

b. It is just ok

c. I don't like it

d. This approach makes no differences

19. If you like this Integrated Pest Management approach, give some of the reasons of your liking?

……..

……..

20. If you don't like Integrated Pest Management approaches of farming, give some of the reasons of your disliking?

……

…….

Annex-II

Key Informant Interview Guideline

1. What are the potentialities of Integrated Pest Management?

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2. What are the constraints of Integrated Pest Management?

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3. What are the difficulties to use Integrated Pest Management?

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4. How can we manage Integrated Pest Management practice?

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5. How can we develop organic farming in better way?

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…….