

Status and Prospectus of Organic Agriculture in Awalching, Surkhet Nepal

ABSTRACT

The study on the status and prospects of organic agriculture in Awalching, Surkhet-was carried out in Awalching, Chingad rural Municipality of Surkhet district Nepal to find out the current status and prospects of organic agriculture in the study area. The study covered 130 households and the active working population was age group between 25-50 years. The study showed that 71% respondent were still illiterate, 13% of study area was connected to the main road while 87 % area was untouched with road facilities. About 90 % farmers had no knowledge of organic farming.They were still following organic production practices of their own andonly very few 10% knows about organic farming. The study also showed that about 64% farmers were moving towardsorganic agriculture and 36% were still doing invented in conventional practices with less external input of chemicalfertilizers except in Zinger farming.This offers a concept of sustainable practices based on environmental responsibility revealed that the households produce average of 510g of kitchen wasteswhich werebeing used to prepare compost manure. Out of 130 farmers, only 3% ofthem usedchemical fertilizers and 2% farmers and 90% of the farmers used chemical pesticides and did use external chemicalinputs at all respectively. Majority of the products were organic and they selling their products through different channels. 42% of them were selling their products to wholesalers. Also 40%, 9% and 7% of the farmers were selling their products tocontractor, retailer and did not produce surplus respectively. It was further revealed that majority of the income generated by the farmers about 30% was used for health issues and medicine while 28%, 12 % and 18% spenton dailylive hood, the child education and miscellaneousexpenditure respectively and only about 13% of total income was saved for future use. However positive changes in term of investment on children education, health and striating food security by the farmer was observed. The role of organic agriculture and environmental sustainability has positive relationship with each other. Besides on the yield comparisons, organic practices shows higher organic matter in soil, lower energy consumption, lower use of external inputs, better food quality, and the also potential to address global issues like climate change.

Key words: Ecosystem, food security, organic farming, sustainable agriculture,

INTRODUCTION

Agriculture is one of the largest sources of income in Nepal. Organic agriculture was included as one of the priority sectors in Nepalese agriculture since the 10th Five Year Plan (2059/060-2063/064). Organic agriculture is still at its preliminary stages; growth is sluggish and is mainly focused only on export oriented commodities such as apiculture, coffee, tea, large cardamom, ginger, lentil and others.

Ecological sustainability of food systems requires agriculture to function without degrading soil, land, water or biodiversity i.e. without harming the ecosystems on which we and agriculture depended.

This states that maintaining levels of soil organic matter and soil microorganisms which provide the nutrients and improvement of soil structure that plants need, soils that retain moisture and have inherent fertility that crops need to be productive and resilient. It also means looking after all land and water from the mountains to the sea.

Social sustainability of food systems requires agriculture to work for the majority, especially smallholder farmers, female headed households and young people living in rural areas in developing countries and also, for other consumers by providing affordable, nutritious, safe and culturally relevant foods, specially food for the rapidly escalating urban populations in developing countries like Nepal. It is our view that if local and national food systems could sustainably deliver this, then it would be impossible to achieve the Sustainable Development Goals (SDGs), hunger, gender equality, decent work and economic growth, responsible production and consumption and climate action. Shipping intensively farmed excess product from developed nations is not a sustainable food system and undermines any chance of achieving the SDGs. Shifting towards organic agriculture would lead to more eco friendly environment and makes harmony with the nature.

Economic sustainability of food systems requires agriculture to be viable for all market actors in the long run, especially smallholder farmers in developing countries. True economic sustainability requires “true cost accounting” i.e. including the environmental cost of fossil fuels used in making inputs and production. This means taking an honest look at input subsidies, carbon footprints and the cost of waste.

When crops are grown without caring for restoration of soil nutrients which could lead to exhaustion and depletion of soil vital nutrients and result in low production of agricultural products. The introduction of chemical fertilizer for managing the seed and modern approaches for farming took shape for Green Revolution (Willer and Lernoud, 2019). But the use of chemicals, pesticides and fertilizer to boost crop production could also pollute the total environment and agricultural product. Heavy usage of chemical pesticides and fertilizer could lead to a stage where the soil is no longer useful for crop production. So, the farmers started to produce food in organic manner which could adequately support food production to meet the man demand (Reganold and Wachter, 2016). Organic agriculture means cultivating the crops without using chemical fertilizers, pesticides and other synthetic products, and depends on the organic source that provides nutrients to crops (Barik,

2017). Organic agriculture is the production method which could replenish the soil nutrients and the general ecosystem and good guarantee good health through healthy and sufficient food production (Aher *et al.* 2012). This implies that organic agriculture could solve all the issues (relating to inorganic fertilizer application to soils) based on ensuring good health of soils by presenting the best option for crop production and to achieve many benefits in the present day agriculture. Modern techniques of organic farming are utilized to enhance varieties of crops growth for food production, organic farming is compatible with various environmental policies in conservation of water and soil for crop production. The organic agriculture approach relies on animal manure, green manure, organic wastes, crop rotation and using biological pest control methods to maintain nutrients, crops, productivity and control of pest and weeds (Palaniappan and Annadurai, 2018). The organic agriculture provides a basis for renewable resources which could reduce all forms of pollution in the environment by recycling the household wastes rather than dumping or burning the organic waste. Organic crops could be sustainably grown using the manure from farm-yard, earthworm casts, compost, and crop waste (Yadav *et al.*, 2013).

Organic agriculture is a holistic production management system that avoids the use of synthetic fertilizers, pesticides and genetically modified organisms, minimizes pollution of air, soil and water, and optimizes the health and productivity of interdependent communities of plants, animals and people” (FAO, 2001). To meet these objectives, organic agriculture farmers need to implement a series of practices that optimize nutrient and energy flows and minimize risk, such as: crop rotations and enhanced crop diversity; different combinations of livestock manure and plant wastes; symbiotic Nitrogen fixation with legumes; application of organic manure; and biological pest control (Scialabba and Hattam, 2002). All these strategies seek to make the best use of local resources. Organic farming is distinguished from conventional agriculture by exercising particular respect for human values, the environment, nature, and animal welfare. This regard is incorporated in the basic principles of organic farming, as formulated by the International Federation of Organic Agriculture Movements. The main principles (IFOAM, 2002) for organic farming and food processing include: the production of food of high quality in sufficient quantities, operation within natural cycles and closed systems as far as possible, drawing upon local resources, the maintenance and long term improvement of the fertility and sustainability of soils, the securing of high levels of

animal welfare, the creation of a harmonious balance between crop production and animal husbandry, the fostering of local and regional production and supply chains, and the provision of support for the establishment of an entire production, processing and distribution chain that is both socially and ecologically justifiable. These basic principles assess organic farming with a platform for secure health of environment for sustainable development, even though the sustainable development of mankind is not directly drawn up in the principles.

When the World Commission on Environment and Development dispense their 1987 report on our common future, they sought to address the problem of conflicts between environment and development goals by formulating a definition of sustainable development. Sustainable development is the kind of development which meets the needs of the present without compromising the ability of future generations to meet their own needs. An environmentally sustainable system must support a stable resource base, avoiding overexploitation of renewable resource systems or environmental sink functions, and depleting non-renewable resources only to the extent that investment is made in adequate substitutes (WCED, 1987). Sustainable development incorporate maintenance of biodiversity, atmospheric stability, and other ecosystem functions not ordinarily classed as economic resources (Harris, 2000). The United Nations report stated: 'All case studies which focused on food production in this research where data have been reported have shown increases in per hectare productivity of food crops, which challenges the popular myth that organic agriculture cannot increase agricultural productivity.' (UNEP-UNCTAD, 2008).

This survey was carried out to find the status and prospects of organic agriculture, socio-demographic information as well as to know the livelihood empowerment by organic farming in the Awalching Rural Municipality, Surkhet.

2.0 MATERIALS AND METHODS

The study was conducted in Ward No. 5 of Chingadhruar Municipality, Awalching, Surkhet district. Surkhet District a part of Karnali province is one of the seventy seven district of Nepal located about 600km west of national capital Kathmandu. Chingad rural Municipality lies in the north eastern part of Surkhet district. This municipality comprises of six wards as per the current federal structure.

For this reason the questionnaires were designed in such a way for the findings of farmers engaged in organic agriculture and promotion of organic fertilizer. The total number of surveyed households involved were 130 in Chingadh Rural Municipality, Awalching, Surkhet.

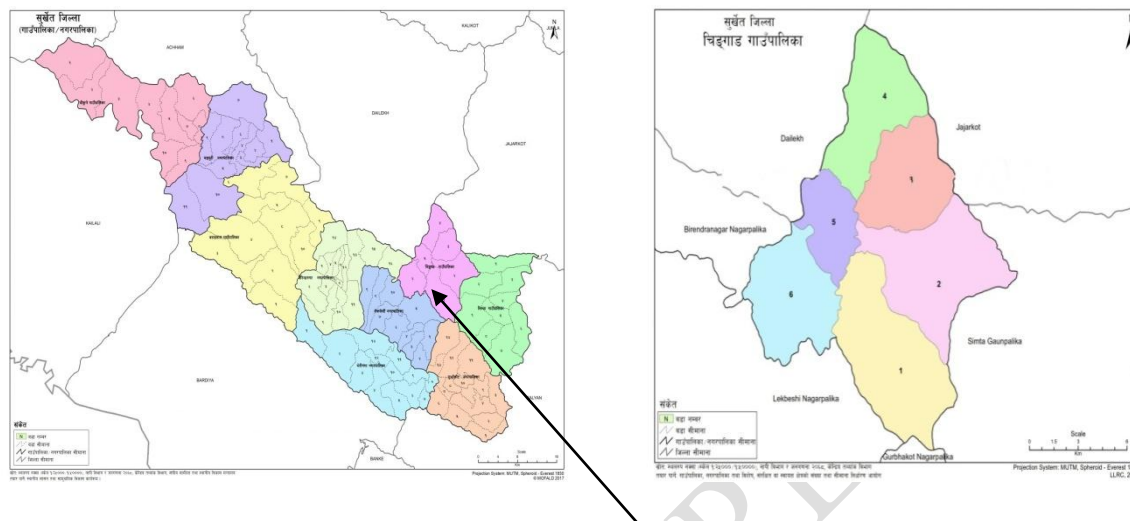


Figure 1: Map of Study area

2.1 Sample size and sampling technique

One hundred and thirty sample size was estimated from 300 farming households listed by Pream Smriti Multipurpose co-operative Ltd. in Chingadh Rural Municipality Ward -5 using the RoaSoft formula at a 95% confidence level and 82% response distribution.

2.2 Source of data

The study was based on primary and secondary data. The primary data was collected from key informants, focal group discussion, public interaction and stakeholders and from direct household survey with the use of semi structured questionnaire. The questionnaire was designed to collect the information on socio-economic profile of organic product producer, demographic information of family member, landholding of farmers and cost of production.

While the secondary data helps to make primary data collection more specific. So it was done to fulfill the gap of primary information. This data and information were obtained from various sources such as annual progress report of DoAD, Surkhet, literatures, textbooks, libraries, study reports, government's planning and policy documents, National and international journal of organic agriculture research articles and so on.

2.3 Data collection technique and tools

To generate primary data, the household survey, key informants interview, focal group discussion, and personal observation technique were as applied

2.3.1 Household survey

Information was gathered by having discussion with farmers in the study area. The survey was taken with the help of semi-structured questionnaire for collection of realistic data from household surveyed.

2.3.2 Key informant interview

The chief of the agriculture branch at the ChingadhRular Municipality, Surkhet, was the key informant interviewed. Additionally progressive farmers.

2.3.3 Collection of secondary data

The secondary information were obtained from various sources such as articles, textbooks, libraries, research papers, annual reports, leaflets, booklets by visiting different offices and institution, NARC library, DOAD, Central horticulture centers libraries etc. Information was also obtained through review of different publication mainly from the Ministry of Agriculture Development (MOALD), Central Bureau of Statistics (CBS), Institute of Agriculture and Animal Science (IAAS).

Data Analysis

The farmers were categorized into organic and conventional growers based on the type of farm input used. Farmers who don't use any kind of synthetic inputs were considered organic farmers. Ms-excel was used for the data processing and analysis of collect primary data. Data were presented using pie-chart, tables, and ranking.

3.0 RESULTS AND DISCUSSION

3.1 Demographic status

Out of the 130 respondents in the study area. The age of the respondent varied from 0-24 was 7, similarly age group 25-50 was 78 and the age group above 50 was 55. The family members of the respondents were 0-4 members were 20, similarly 5-8 family were seventy nine and the respondent with more than 9 family member were 31. From this study it was found that the active working population was age group between 25-50.

3.2 Literacy Status of the respondent

This study shows that 71% respondents were illiterate while only 4% schooled upto bachelors levels. This huge number of illiterate farmer may be due to lack of capital resource for the higher studies.

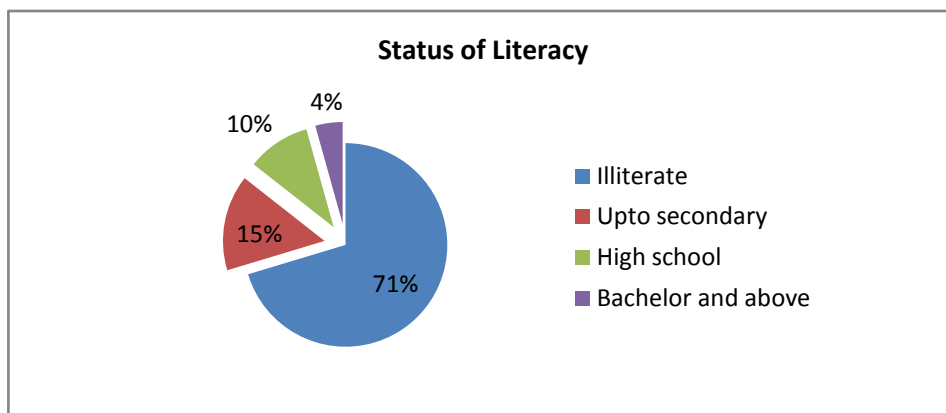


Figure 2: Literacy Status of the respondent

These data indicated that for effective adoption of practices of organic agriculture there should be mechanism of awareness raising programs in the study area.

3.3 Road Facilities

Rural transport is one of the key components for rural development as it promotes access to economic and social services generating increased agricultural incomes and productive employments (Shekhar *et al.*, 2010).

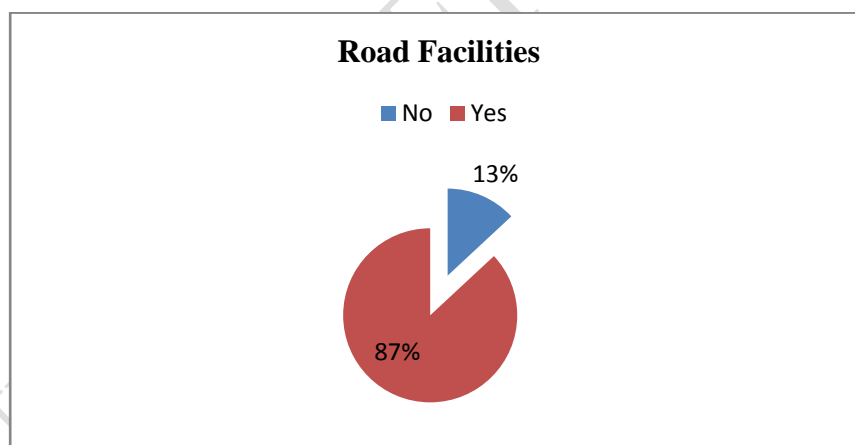


Figure 3: Road facilities

About 13% of study area was connected to the main road while 87 % area was untouched with road facilities. Rural Transport allows producers to achieve additional productive opportunities, leading to a rise in production that is highlighted by previous studies (Raballand *et al.*, 2010).

3.4 Status of organic farming in the study area

In line with the “Organic Karnali” vision of the Provincial Government, FAO Nepal and local government bodies are contributing to enhancing the livelihoods of local communities in

Karnali Province by promoting organic farming, ensuring food security, promoting cash crops and increased incomes. These bodies "Strengthening capacity of public & private sectors on organic agriculture in Karnali" have established Farmer Field Schools (FFS) to support organic farming practices, sustainable cultivation, composting, using bio-fertilizers, harvesting and grading through provision of technical supports to the farmers from Jumla, Mugu, Dailekh and Surkhet districts of Karnali Province. These bodies exchanged views with the farmers on issues related to agro production, knowledge enhancement, sustainable production, food security, income generation and other opportunities created through the Farmers Field School. Majority of the study area were by default organic areas and the involvement of farmers to incorporate synthetic input was observed to be very low.

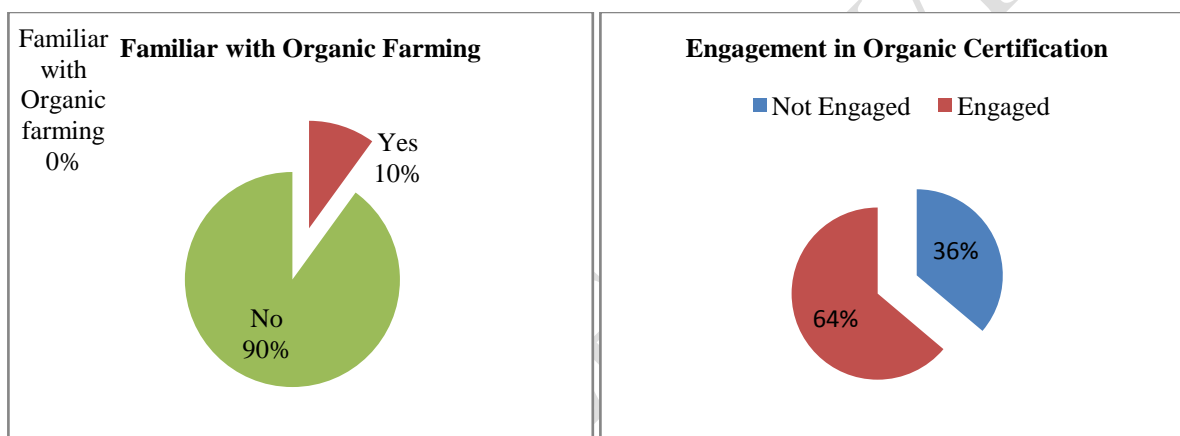


Figure 4: Status of organic farming in the study area

About 90 % farmers were aware or know organic farming is yet they are doing organic by default only very few 10% knows about the practices. This recent data also showed that about 64% farmers are moving towards organic agriculture and 36% are still engaged in conventional farming with less input of synthetic fertilizer.

3.5 Soil management

Soil health is important factor in organic farming; however, soil test is done by only 2 respondents. The remaining respondents haven't tasted the soil of their field. From the observation it was found that farmers regularly add farm yard manure and compost manure before crop plantation. Only 2 farmers use chemical fertilizers in the study area.

Compost manure is the important source of organic matter in the kitchen garden. In the study area, households produce average of 510 g of kitchen waste and the waste is being used to prepare compost manure.

3.6 Source of seed

Seeds are important agriculture inputs. Studies have shown that the use of improved seeds increases yield by 20-25%. Out of total respondents, 88% of farmers used both saved seed and hybrids while 12% of the farmers use saved seeds only.

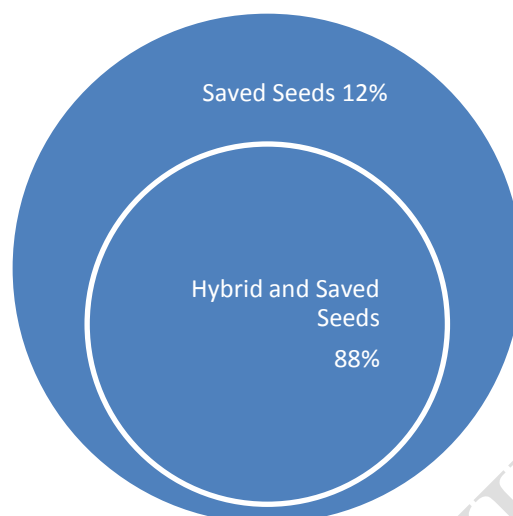


Figure 5: Source of seed

The data revealed that for promotion of organic agriculture local seeds production programs should be made viable so as to guarantee high food productivity and sustainable agriculture in the province.

3.7 Use of farm machineries

The use of farm mechanization is currently very low in Nepal. Official statistics showed that animal and human power were still the major sources of power used in agriculture, which constitute about 41% and 36%, respectively. Use of machine power had been estimated to be account for only about one-fifth of the power used in Nepal agriculture (AED, 2013; Shrestha, 2012).

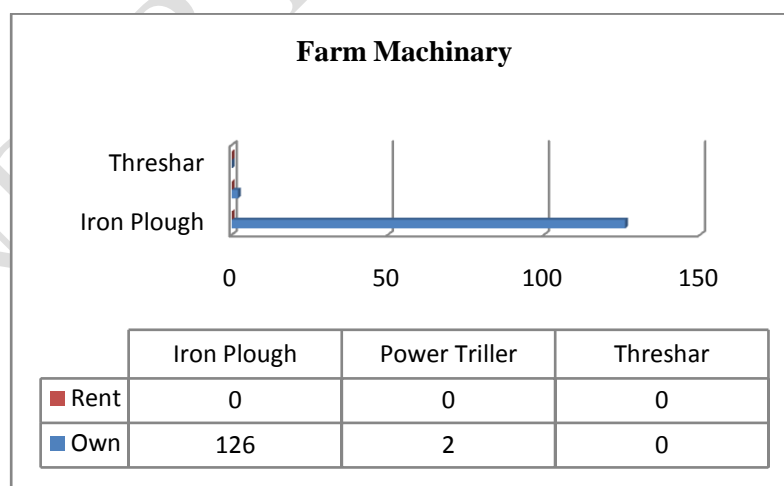


Figure 6: Status of use of farm machinery

About 90% of the currently used mechanical power were concentrated in the market accessible Terai. It was found that 2.6% farmers used farm machineries in the province. In the

hills and mountain districts, mechanization was low given the difficulties of transporting heavy machinery and using it on small terraces. However, with increasing road connectivity in rural hills and mountains, use of tractors, mini tillers, pump sets and threshers have been increasing in recent years.

3.8 Insect pest management

In Nepal, nine major pesticides groups with seven subgroups of insecticides are being used (Diwakar *et.al.*, 2008). The pesticide used amounts to 397gm/ ha which could be considered low when compared to other counties globally particularly in asia. Similarly, seven types of fertilizers being used in the country viz. Urea, Diammonium phosphate (DAP), Murate of potash (MOP), Ammonium sulphate (AS), Single super phosphate (SSP), Ammonium phosphate sulphate (APS) and Nitrogen phosphate potassium (NPK) and their average consumption was about 19.65kg/ha in 2004 and 2005, whereas as in study areas. Urea and DAP were used in less than recommended doses. However the incidence of chemical pesticides applications were vary less.

Out of 130 the households, surveyed only 19% of them were well informed about the insect-pests damaging their crops and only 3% of them made efforts to control pests by the use of biopesticides such as like cow urine and bio-ash.

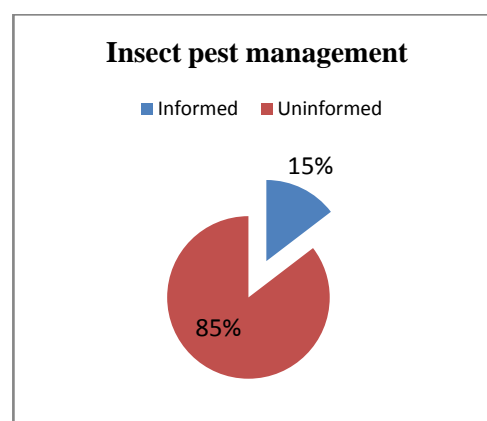
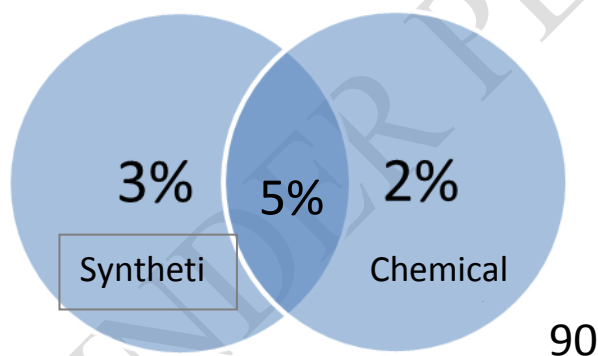


Figure 7: Fertilizer use and non useratio Figure 8: Insect pest information

Out of 130 farmers, only 3%,2 and 5% farmer's used synthetic fertilizers, chemical pesticides, both fertilizers respectively, while 90% of them did usefarmers not use any synthetic inputs at all. It was also observed that only very few of respondents used synthetic inputs such as chemical fertilizers and pesticides.

But weeds management was mainly done by mechanical methods such as hoeing, cutting and grazing. About 98% of the farmers used mechanical methods. The remaining respondents

don't manage weed at all. Also no chemical herbicides were used to control weeds in the region.

Further more crops were damaged mainly by wild animals such like monkey and deer particularly in maize and wheat farm such that nearly all the farmers were affected. Almost all (95%) people were suffering from crops damage and livestock including poultry loss. It was observed that the average loss from crops damages were as NRs. 11243 from livestock and poultry loss was NRs. 1758 per year per HHs. The major problematic animals in the province were wild boars, deers, porcupines, birds, and monkeys which were responsible for crop damaged.

3.9 Market Channel

Majority of the products were organic and they were being sold through different channels. 42, 40 and 9% of the farmers were selling their produce to wholesalers to wholesalers contractors and retailer respectively while 7% of them could not produce surplus.

3.10 Involvement in cooperatives

The study revealed that 86% of the farmers were members of agricultural cooperatives and remaining respondents were engaged in other types of cooperatives, such as multipurpose and female cooperatives. The cooperatives are the main source of loan to farmers. 80% of them have taken loan for commercial farming including 75% loan taken from agriculture cooperatives and the remaining population took loan from other financial institutions.

3.11 Use of the income generated from agriculture

The farmers use income generated from selling of their agriculture products in various ways. Majority of the income generated was used for health and medicine amounting to about 30% of the net income while about 28%, 12% 18% and 13%. Spent on daily family expenditure, child education miscellaneous and save further use respectively.

3.11 Role of organic farming on poverty alleviation

The result showed that 100% of the farmers observed decrease in yield in organic production systems. The entire report showed that, the value of organic product was not differentiated from non- organic products. Moreover financial institutions were not willing to invest organic product.

It was also noticed that the role of organic agriculture and the poverty alleviation is not significant because farmers were not receiving higher returns from the organic agriculture.

However, it was reported that farmers were able to make some positive changes in their children education, health and strengthening food security through the organic farming system.

3.12 Problems in organic farming and the solution

It was found that several challenges existed in the organic farming system. One of the prominent problems was that the production in organic farming was lower than conventional farming due to the higher incidence of insect and pest destruction of crops as well as lower soil fertility. There was also lack of institutional investment in agriculture in organic farming system as financial institutions were reluctant on investing in organic farming. Moreover, farmers face difficulties in marketing their organic products. Also farmers were not having access to agricultural inputs, such as quality seeds, manure and technical supports.

According to the farmers to overcome these problems there should be proper and regular availability of organic inputs and insects-pests management tactics as well as technical and financial supports given to the commercial organic farmers and proper marketing routes and facilities should be made.

4. CONCLUSION

The study area, Awalching Chingad Rural municipality is organic by default. The role of organic agriculture and poverty alleviation is not significant because farmers were not receiving higher returns from organic agriculture. However, in spite of the low yield from it is organic farming system. It was observed that the farmers could make some positive changes in their children's education, health, and strengthening food security. This survey revealed that it is essential to provide farmers access to quality inputs, inform technical knowledge and strengthen organic marketing to promote sustainable agriculture practices in the country. There should be price and product differentiation mechanism in the markets for promotion of organic agriculture products. Government of Nepal should provide subsidy programs for youth in order to attract them into agriculture for increase in food productivity and security even to compete well in the international market. Besides the yield comparisons, organic practices showed higher organic matter in the soils, lowered energy consumption, lowered

these of external inputs, gave better food quality, and also showed potential to address global issues like climate change.

REFERENCES

- Agricultural Engineering Division(AED). 2013. Annual Report, 2012/2013. Nepal Agricultural Research Council, Khumaltar, Lalitpur, Nepal.
- Aher, S. B., Swami, B., and Sengupta B. 2012. Organic Agriculture: Way towards Sustainable Development. *International Journal of Environmental Sciences* 3 (1): 209–16.
- Barik, A. K. 2017. Organic Farming in India: Present Status, Challenges and Technological Breakthrough. *In: 3rd Conference on Bio-Resource and Stress Management International*, 101–10.
- Chandra S., Pawannath, B.Madhavi,P. G. 1995. A Critical Review of innovative Rural Road Construction Techniques and their impacts, NRRDA, INDIA.
- Food and Agriculture Organization of the United Nations (FAO). 2001. Codex Alimentarius. Organically Produced Foods, FAO, Rome.
- Fertilizer statistics .2003-04. The Fertilizer Association of India, New Delhi. P. 77.
- Harris J. M. 2000. Basic Principles of Sustainable Development. Working Paper No. 00-040. Global Development and Environment Institute (G-DAE), USA.
- International Federation of Organic Agriculture Movements (IFOAM). 2002. Basic Standards for organic farming and processing, 2nd draft 2001.
- Jasmine, D., Tista, P., Shankar, R. and Bima, L,J.2008. Study on Major Pesticides and Fertilizers Used in Nepal. *Scientific World*.
- Palaniappan, S. P., andAnnadurai, K. 2018. Organic Farming Theory & Practice. Scientific publishers.
- Pramod. S., Rajeev, J., Bishow. P. and Saroj. L. 2020. Status of Human-Wildlife Conflict and Assessment of Crop Damage by Wild Animals in Buffer Zone Area of Banke National Park, Nepal Asia. *Journal of Conservation Biology*. 9 (2) 196-206.
- Raballand, G., Macchi, P., and Petracco, C. 2010. Rural Roads Investment Efficiency. Lessons from Burkina Faso, Cameroon, and Uganda, The IBRD/The World Bank.
- Reganold, J. P. and Jonathan, M. W. 2016. Organic Agriculture in the Twenty-First Century. *Nature Plants* 2 (2): 1–8.
- Scialabba E.N. andHattam C. 2002. Organic Agriculture Environment and Food Security. Food and Agriculture Organization of the United Nations (FAO), Rome. P. 252.
- Shrestha, S. 2012. Status of Agriculture Mechanisation in Nepal. Agricultural Engineering Division (AED), NARC, Khumaltar, Nepal. 1-4.
- United Nations Environment Programme-United Nations Conference on Trade and Development (UNEP-UNCTAD). 2008. Organic Agriculture and Food Security in Africa.
- Willer, H.and Julia L. 2019. The World of Organic Agriculture. Statistics and Emerging Trends 2019. Research Institute of Organic Agriculture, FiBL and IFOAM Organics International.

World Commission on Environment and Development (WCED). 1987. Our Common Future.
Yadav, S. K., Babu,S., Yadav, M. K., Singh, K.,Yadav, G. S. and Pal,S. 2013.A Review of
Organic Farming for Sustainable Agriculture in Northern India. International Journal
of Agronomy 2013.

UNDER PEER REVIEW