Original Research Article

STATUS OF ORGANIC AGRICULTURE IN AWALCHING, SURKHET

ABSTRACT

The study on "Status and prospects of organic agriculture in Awalching, Surkhet" was carried out in Awalching, ChingadRural Municipality of Surkhet district to find out the current status and prospects of organic agriculture in the study area.This study covered 130 households and the active working population was age group between 25-50 years. Study shows 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 were unknown about organic farming yet they are following organic production practices of their own, only very few 10% knows about organic farming. This study also shows about 64% farmers are moving towards organic agriculture and 36% are still doing conventional practices with less external input of chemicalfertilizer except in Zinger farming.This offers a concept of sustainable practices based on environmental responsibility. Study shows households produce average of 510 g of kitchen waste and being used to prepare compost manure. Out of 130 farmers, only 3% farmer's use chemical fertilizers, 2% farmers use chemical pesticides and 90% farmers don't use external chemicalinputs at all. Majority of the products are organic and they sell products through different channels. 42% of the farmers sell their products to wholesalers, 40% farmers sell their products to contractors, 9% farmers sell their products to retailer, and 7% farmers don't produce surplus.Majority of the income generated is used in health and medicine, i.e., 30% while 28% percent is spent on daily livelihood, 12 % on the child education, 18% on the miscellaneous, and the farmers save remaining 13% for future use.The role of organic agriculture and environmental sustainability has positive relationship with each other. It is reported that the respondents are able to make some positive changes in children education, health and strengthening food security.Besides the yield comparisons, organic practices shows higher organic matter in soil, lower energy consumption, lower use of external inputs, better food quality, and also potential to address the global issues like climate change.

Key words: Ecosystem, organic farming, sustainable agriculture, questionnaires, informants

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 consumers by providing affordable, nutritious, safe and culturally relevant food, once again, especially food for the rapidly escalating urban populations in developing countries like Nepal. It is our view that if local and national food systems do not sustainably deliver this, then it will 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 production from developed nations is not sustainable food and undermines any chance of achieving the SDGs. Shifting towards organic agriculture leads to more eco friendly 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.

Crops are grown without caring for restocking which leads to exhaustion and depletion of soil and result in low production of crops. The introduction of chemical fertilizer for managing the seed and modern approaches for farming took shape for Green Revolution (Willer and Lernoud, 2019). The use of chemicals, pesticides and fertilizer boost up the crop production and started to pollute the total chain in agriculture. Heavy usage of chemical pesticides and fertilizer make the soil in a stage where no longer crops are produced. So, the farmers started to produce food in organic manner that required for supporting the demand of human (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 for crop production that provides nutrients to the crops (Barik, 2017). Organic agriculture is the production method which withstands the soil nutrients, ecosystem and health of people(Aher*et.al.* 2012). It suggest that organic agriculture solve all the issues based on the ensuring the health ofsoil by presenting best option for crop production and achieve many importance in the present day agriculture. Modern techniques of organic farming are utilized to enhance varieties of crop, policies in conservation of water and soil for crop production. The organic agriculture approach rely on animal manure, green manure, organic wastes, crop rotation and using biological pest control methods to maintain nutrient, productivity and control pest and weeds (Palaniappan and Annadurai, 2018). The organic agriculture provided based on the renewable resources which reduce the pollution in environment by recycling the household waste relatively than dumping and burning the organic waste.Organic crop can be sustainably grown using the manure from farm-yard,earthworm, compost, and crop waste(Yadav *et al.*, 2013).

"Organic agriculture is a holistic production management system that avoids 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 and plants; 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, 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 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 AwalchingRural Municipality, Surkhet.

MATERIALS AND METHODS

The study was conducted in Ward No. 5 of ChingadhRular 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 current federal structure.

For this 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 householdinvolved were 130 in ChingadhRular Municipality, Awalching, Surkhet.

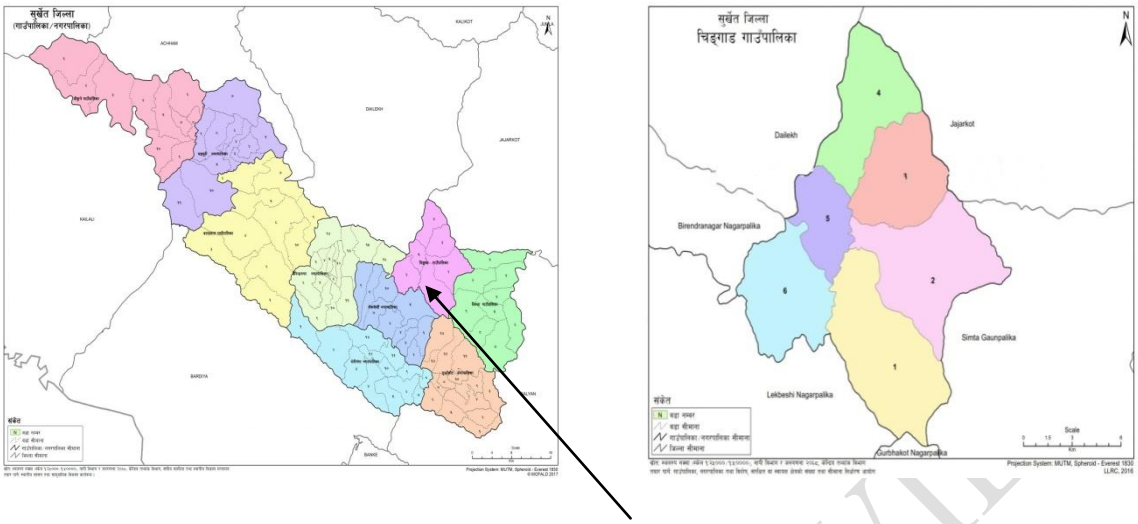


Figure 1: Map of Study area

Sample size and sampling technique

130 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.

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.

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.

Data collection technique and tools

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

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 survey.

Key informant interview

The chief of the agriculture branch at the ChingadhRular Municipality, Surkhet, was the key informant interviewed. Additionally, Mr. Dambar Bahadur Rana and Bhim Rana are two progressive farmers.

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 library etc. Information was also obtained through review of different publication mainly Ministry of Agriculture Development (MOALD), Central Bureau of Statistics (CBS), Institute of Agriculture and Animal Science (IAAS) etc

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 collecting primary data. Data were analyzed using pie-chart, tables, and ranking.

RESULTS AND DISCUSSION

Demographic status

Out of 130 respondents in the study area, 102 were Kshetri, 27 were Dalit and one was Janajati. The age of the respondent 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.

Literacy Status of the respondent

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

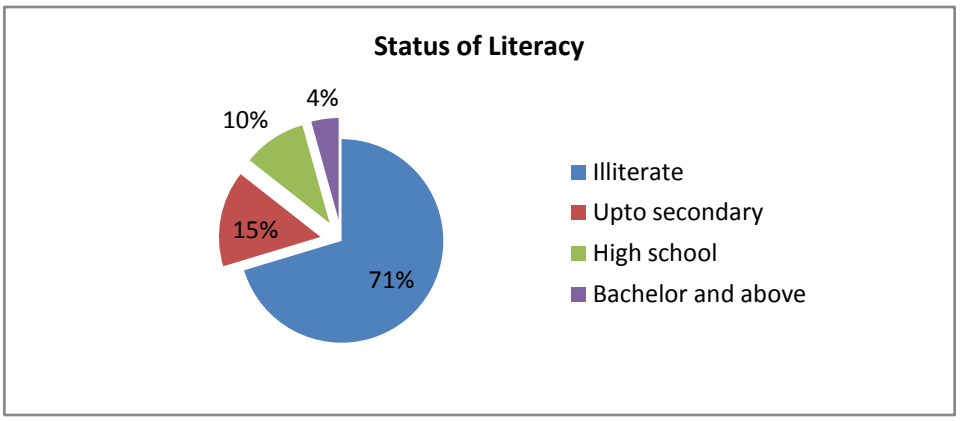


Figure 2: Literacy Status of the respondent

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

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 income and productive employments (Shekhar *et al.*, 2010).

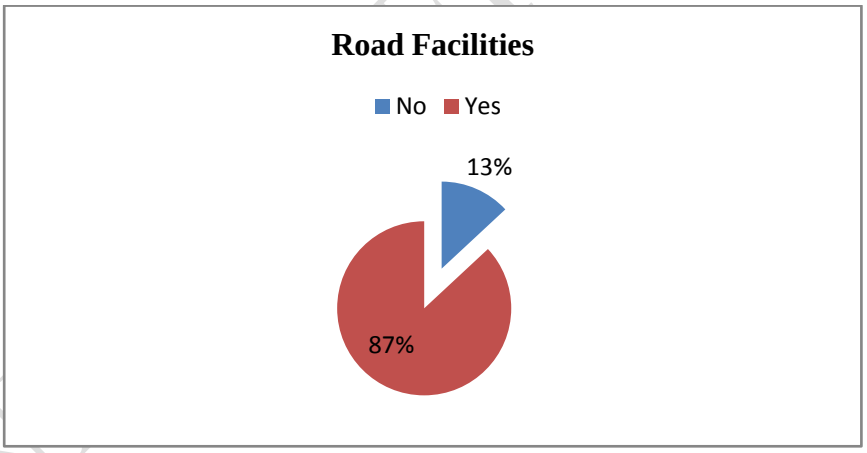


Figure 3: Road facilities

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 numerous studies (Raballand *et al.*, 2010).

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" has established Farmer Field Schools (FFS) to support organic farming practices, sustainable cultivation, composting, using bio-fertilizers, harvesting and grading through provision of technical support to the farmers from Jumla, Mugu, Dailekh and Surkhet districts of Karnali Province. These bodies exchanged views with the farmers of study area 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 seen very low.

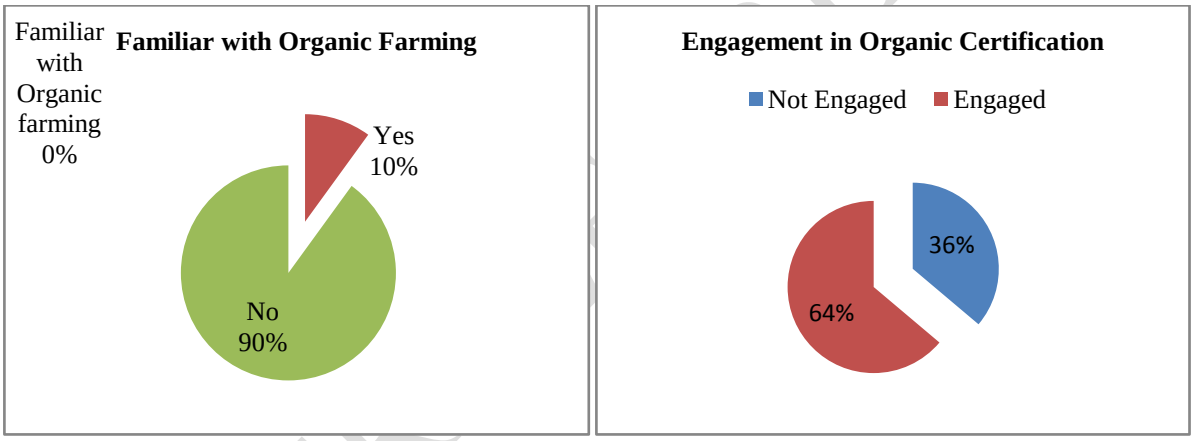


Figure 4: Status of organic farming in the study area

About 90 % farmers were unknown about organic farmers yet they are doing organic by default only very few 10% knows about organic farming. This recent data also shows about 64% farmers are moving towards organic agriculture and 36% are still doing conventional farming with less input of synthetic fertilizer.

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.

Source of seed

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

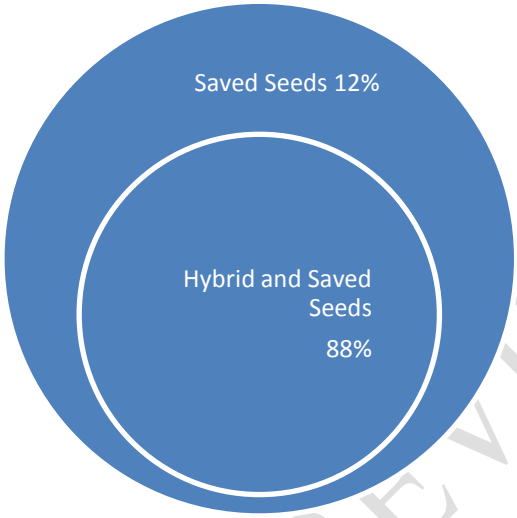


Figure 5: Source of seed

The data revealed that for promotion of organic agriculture local seed production programs should be made viable in study site for making agriculture sustainable.

Use of farm machineries

The use of farm mechanization is currently very low in Nepal. Official statistics show that animal and human power are still major sources of power used in agriculture, which constitute about 41% and 36%, respectively. Use of machine power is estimated to be only about onefifth of the power used in Nepal (AED, 2013; Shrestha, 2012).

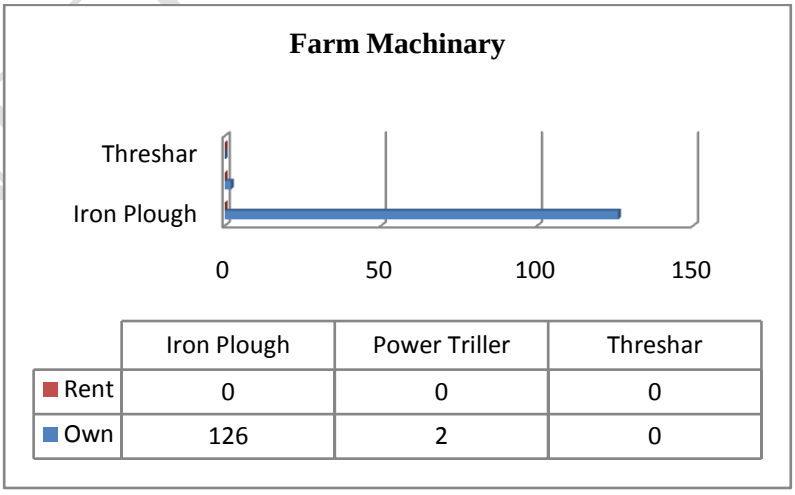


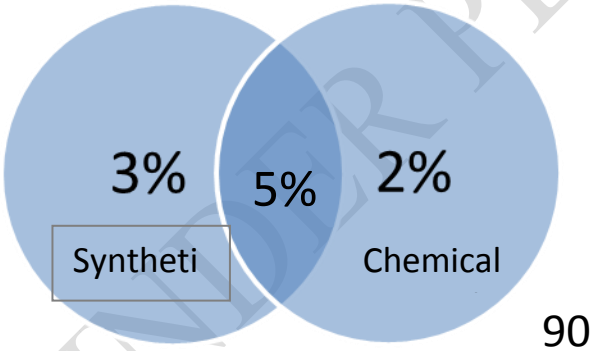
Figure 6: Status of use of farm machinery

About 90% of the currently used mechanical power is concentrated in market accessible Terai. It was found that 2.6% farmer's uses farm machineries in the study area. In the hills and mountain districts, mechanization is 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 is increasing in recent years.

Insect pest management

In Nepal, nine Major Pesticide's groups with seven subgroups of Insecticides are in use (Diwakar *et.al.*, 2008). The pesticide use amounts to 397gm/ ha which is low compared to other counties. Similarly, seven types of fertilizers are being used in Nepal viz. Urea, Diammonium Phosphate (DAP), Murate of Potash (MOP), Ammonium Sulphate (AS), Single Super Phosphate (SSP), Ammonium Phosphate Sulphate (APS) and NPK in Nepal and the its consumption is 19.65kg/ha in 204/05, where as in study area urea and DAP were used in less than recommended doses but the incidence of chemical pesticides application was vary less.

Out of 130 households, only 19 households are informed about the insect pests damaging their crops and only 3 of them make effort to control pest by the use of biopesticides like cow urine and ash.



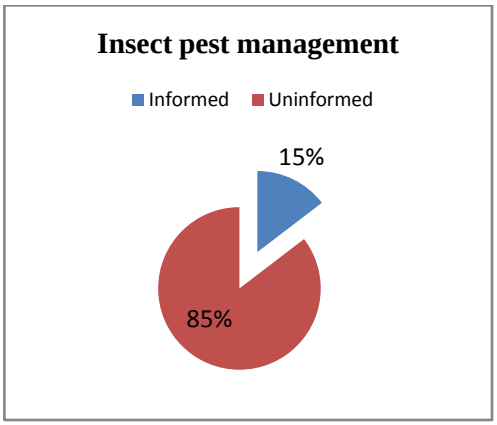


Figure 7: Fertilizer use and non use ratio Figure 8: Insect pest information

Out of 130 farmers, only 3% farmer's use synthetic fertilizers, 2% farmers use chemical pesticides, 5% use both fertilizers and 90% farmers not use any synthetic inputs at all. In the study area, Very less number of the respondents uses synthetic inputs, i.e., chemical fertilizers and pesticides in the study area.

Weed management is mainly done by mechanical methods viz. hoeing, cutting and grazing. Around 98% of the respondents use mechanical methods. The remaining respondents don't

manage weed at all. No chemical herbicides were being used to control weeds in the study area.Mainly crop is damaged by wild animals like monkey and deer in maize and wheat,out of 130 respondent 129 were affected.Almost all (95%) people are suffering from crop and livestock as well as poultry loss damage. The average loss from crop damage was NRs. 11243 from livestock and poultry loss was NRs. 1758 per year per HHs. The major problematic animals in the study area are wild boar, deer, porcupine, birds, and monkeys which are responsible for crop damage.

Market Channel

Majority of the products are organic and they are being sold through different channels. 42% of the farmers sell their products to wholesalers, 40% farmers sell their products to contractors, 9% farmers sell their products to retailer, and 7% farmers don't produce surplus.

Involvement in cooperatives

In the study, it was found that 86% of respondents are the member 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 for farmers. 80% of the respondents have taken loan for commercial farming; out of which 75% have taken loan from agriculture cooperatives and the remaining have taken loan from the other financial institutions.

Use of the income generated from agriculture

Farmers use income generated from selling of their agriculture products in various ways. Majority of the income generated is used in health and medicine, i.e., 30% while 28% percent is spent on daily livelihood, 12% on the child education, 18% on the miscellaneous and the farmers save remaining 13% for future use.

Role of organic farming on poverty alleviation

In the study, 100% of the respondent reported the decrease in yield in organic production systems. The entire respondent reported that the value of organic product is not differentiated from non- organic products. Financial institutions do not like to invest for organic product.

The role of organic agriculture and the poverty alleviation is not significant because farmers are not receiving higher returns from the organic agriculture. However, it is reported that the respondents are able to make some positive changes in children education, health and strengthening food security.

Problems in organic farming and the solution

In the study, it was found that several challenges exist in organic farming. One of the prominent problems is that the production in organic farming is lower than conventional farming due to the higher incidence of insect and pest and lower soil fertility. There is also lack of investment in agriculture in organic farming as financial institutions are reluctant in investing in organic farming. Moreover, farmers face difficulties in marketing their organic products. Farmers don't have excess to agricultural inputs, such as quality seeds, manure and technical support.

In farmers views, to overcome these problems there should be proper availability of organic inputs and insect pest management tactics as well as technical and financial support given to the commercial organic farmers and proper market facilities should be made.

CONCLUSION

The study area, AwalchingChingad Rural municipality is organic by default. A majority 90% of the farmers are practicing organic agriculture practices whereas 10%of farmers use synthetic inputs- chemical pesticides and fertilizers.About 10 % of farmers were unknown of organic farmers yet they are doing organic by default and 90% know about organic farming. At the same time, about 64% of the respondents are organic ICS-certified farmers, the rest of the respondents were in the process of certification and only a few 10% of respondents used synthetic fertilizers and were planning to shift wards conversion period of organic farming.The role of organic agriculture and poverty alleviation is not significant because farmers are not receiving higher returns from organic agriculture. However, it is reported that the respondents can make some positive changes in children's education, health, and strengthening food security. It is essential to provide farmers access to quality inputs, inform technical knowledge and strengthen organic marketing to promote sustainable agriculture practices in the study area. There should be price and product differentiation mechanism in the market for promotion of agriculture products. Government of Nepal should provide subsidy programs to youth for attracting them in agriculture for compete in international market. Besides the yield comparisons, organic practices show higher organic matter in the soil, lower energy consumption, lower use of external inputs, better food quality, and also potential to address global issues like climate change so that organic product are demanding from various parts of the world.

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