

## Original Research Article

### Status and Prospects of Organic Agriculture in Awalching, Surkhet, Nepal

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#### ABSTRACT

The study on the "Status and prospects of organic agriculture in Awalching, Surkhet" was carried out in Awalching, Chingadi Rural Municipality of Surkhet district, Nepal, 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. The study showed that, 71% respondents 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 had no knowledge of about organic farming, yet they were are still following organic production practices of their own and, only very few, 10% knows about organic farming. This study also showed that, about 64% farmers were are moving towards organic agriculture and 36% were are still doing involved in conventional practices with less external input of chemical fertilizers except in Zinger farming. This offers a concept of sustainable practices based on environmental responsibility. It revealed that the study shows households produced average of 510g of kitchen wastes which were are being used to prepared compost manure. Out of 130 farmers, only 3% of the farmer's used chemical fertilizers and, 2% farmers used chemical pesticides and 90% of the farmers used chemical pesticides and did not use external chemical inputs at all respectively. Majority of the products are were organic and they were selling their products through different channels. 42% of the farmers were selling their products to wholesalers. Also, 40% farmers sell their products to contractors, 9% farmers sell their products to retailer, and 7% of the farmers were selling their products to contractors, retailers 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 medicines; i.e., 30% while 28% percent is spent on daily livelihood, 12% on the child education, and 18% spent on daily livelihood, the child education and on the miscellaneous expenditures respectively. And only about 13% of the total income was the farmers saved remaining 13% for future use. However, positive changes in terms of investment on the children education, health and strengthening food security by the farmers was observed. 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, on the yield comparisons, organic practices showed higher organic matter in soil, lower energy consumption, lower use of external inputs, better food quality, and the also potential to address the global issues like climate change.

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**Key words:** Ecosystem, organic farming, sustainable agriculture, food security, questionnaires, informants

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#### 1.0 INTRODUCTION

Agriculture is one of the largest sources of income in Nepal. Organic ~~a~~Agriculture was included as one of the priority sectors in Nepalese agriculture since the 10<sup>th</sup> Five Year Plan (FYP) (2059/060-2063/064). Organic ~~a~~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. ~~A~~and also, for other consumers by providing affordable, nutritious, safe and culturally relevant foods; ~~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 ~~could~~ not 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 products~~ ~~from~~ developed nations is not a sustainable food system and undermines any chance of achieving the SDGs. Shifting towards organic agriculture would ~~leads~~ 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 wastes.

~~When~~ ~~c~~Crops are grown without caring for restoration of soil nutrients ~~which~~ ~~could~~ leads to exhaustion and depletion of soil vital nutrients and result in low production of agricultural products ~~erops~~. The introduction of chemical fertilizer for managing the seed and

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modern approaches for farming took shape for Green Revolution (Willer and Lernoud, 2019).

~~But the use of chemicals, pesticides and fertilizer to boost up the crops production could also and started to pollute the total chain environment and in agricultural products.~~ Heavy usage of chemical pesticides and fertilizers ~~could lead to make the soil in~~ a stage where ~~the soils is~~ no longer ~~useful for~~ crops ~~are~~ productioned. So, the farmers started to produce food in organic manner, ~~which could adequately that required for support food production to meet human demand in 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 sources ~~for crop production~~ that provides nutrients to ~~the~~ crops (Barik, 2017). Organic agriculture is the production method which ~~withstands could replenish~~ the soil nutrients ~~and the general~~ ecosystem and ~~guarantee good~~ health of ~~people through healthy and sufficient food production~~ (Aher *et al.* 2012). ~~It suggest~~ This implies, that organic agriculture could solves all the issues ~~(Relating to inorganic fertilizers application to soils)~~ based on ~~the~~ ensuring ~~good the~~ health of soils by presenting best option for crops production and ~~to~~ achieve many ~~importance 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 the various ~~environmental~~ policies ~~on~~ conservation of water and soils for crops production. The organic agriculture approach rely on animal manure, green manure, organic wastes, crop rotation and using biological pest control methods to maintain nutrients, crops' productivity and control of pests and weeds (Palaniappan and Annadurai, 2018). The organic agriculture provided ~~based on the for~~ renewable resources which ~~could~~ reduce all forms of ~~the~~ pollution in the environment by recycling the household wastes ~~relatively rather~~ than dumping ~~and or~~ burning the organic wastes. Organic crops ~~could an~~ be sustainably grown using the manure from farm-yard, earthworm casts, compost, and crop wastes (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 nutrients and energy flows and minimize risk, such as: crop rotations and enhanced crop diversity; different combinations of

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livestock [manures](#) and plants [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 dispensed their 1987 report [on](#); 'Our Common Future'; they sought to address the [problems](#) 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).

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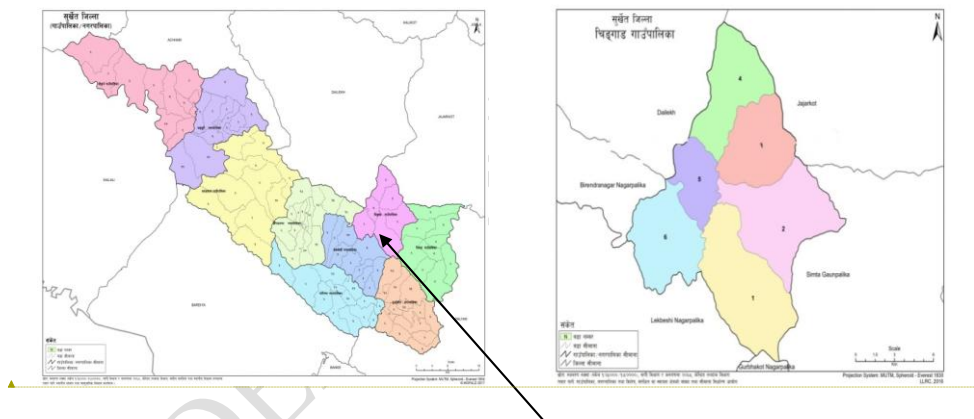
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This survey was carried out to find the status and prospects of organic agriculture, socio-demographic information as well as to know the livelihood empowerment by organic farming in the Awalching Rural Municipality, Surkhet.

## 2.0 MATERIALS AND METHODS

The study was conducted in Ward No. 5 of Chingadh Rural 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. Chingadh 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 fertilizers. 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 (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.

### 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

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designed to collect the information on socio-economic profile of organic product producers, demographic information of family members, 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 reports of DoAD, Surkhet, literatures, textbooks, libraries, study reports, government's planning and policy documents, National and international journals of organic agriculture research articles and so on.

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### 2.3 Data collection technique and tools

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

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#### 2.3.1 Household survey

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

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#### 2.3.2 Key informant interview

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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 ~~some~~two progressive farmers were interated.

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#### 2.3.3 Collection of secondary data

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The secondary information were obtained from various sources such as articles, textbooks, libraries, research papers, annual reports, leaflets, booklets by visiting different offices and institutions, 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) etc

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### 2.4 Data Analysis

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

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## 3.0 RESULTS AND DISCUSSION

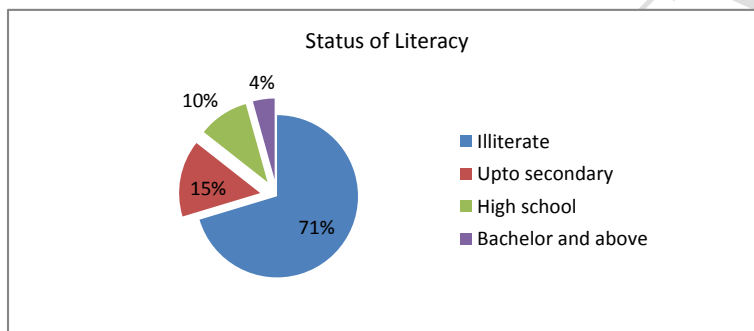
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### 3.1 Demographic status

Out of the 130 respondents in the study area, 102 were Kshetri, 27 were Dalit and one was Janajati. The age of the respondents 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 respondents 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 respondent were upto bachelors<sup>2</sup> levels. This huge number of illiterate farmers may be due to lack of capital resources 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 areassite.

### 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).

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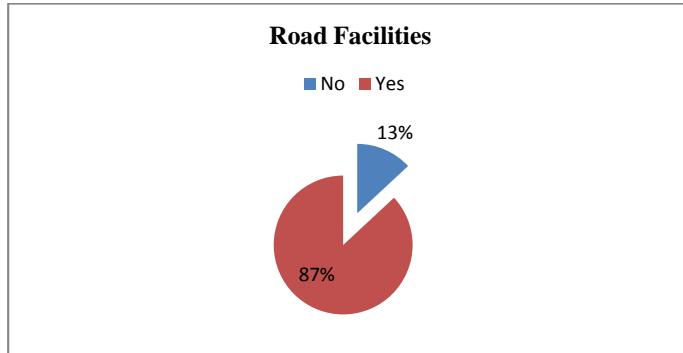
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**Figure 3:** Road facilities

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

#### 3.4 Status of organic farming in the study areas

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 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 observed to be very low.

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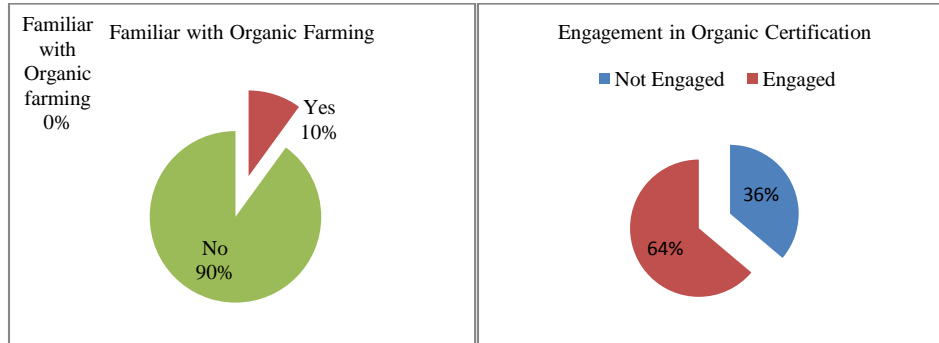
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**Figure 4:** Status of organic farming in the study area.

About 90% farmers were ~~unknown~~ aware or know what about organic farming ~~users~~ yet they are doing organic by default only very few, 10% knows about ~~organic farming~~ the practice. This recent data also shows that about 64% farmers are moving towards organic agriculture and 36% are still ~~engaged~~ doing conventional farming with less input of synthetic fertilizers.

### 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~~ 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 used both saved seeds and hybrids while 12% of the farmers used saved seeds only.

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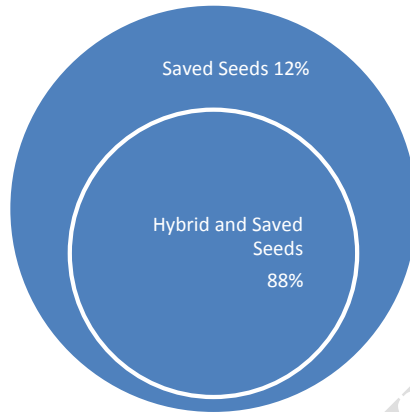
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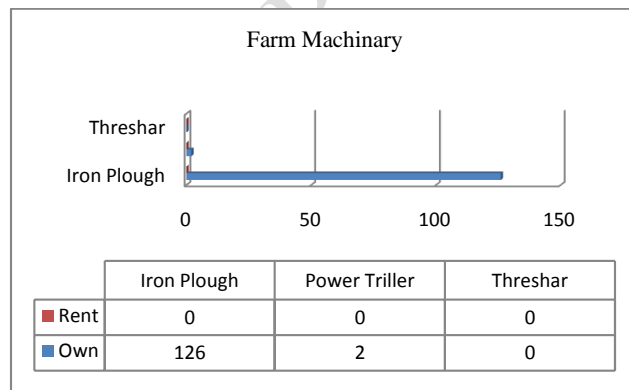


**Figure 5:**Source of seed

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

**3.5 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

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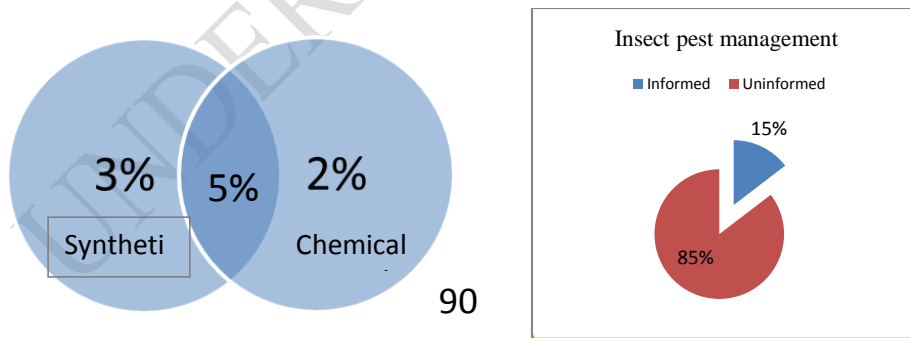
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About 90% of the currently used mechanical power ~~were~~ concentrated in the market accessible Terai. It was found that 2.6% farmer's ~~used~~ farm machineries in the province, study area. In the hills and mountain districts, mechanization was low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

### 3.6 Insect pest management

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

Out of 130 the households surveyed, only 19 (~~--~~%) of them ~~households were well~~ are informed about the insect-pests damaging their crops and only 3 (~~--~~%) of them ~~made~~ make 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, and 5% farmer's used synthetic fertilizers, 2% farmers use chemical pesticides, 5% use both fertilizers respectively. While 90% of them did use and 90% farmers not use any synthetic inputs at all. It was also observed that only very few of in the

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study area. Very less number of the respondents used synthetic inputs such as, i.e., chemical fertilizers and pesticides, in the study area.

But weeds management was mainly done by mechanical methods such as viz. hoeing, cutting and grazing. Around About 98% of the respondents farmers used mechanical methods. The remaining respondents don't manage weed at all. Also, no chemical herbicides were being used to control weeds in the region. study area.

Further more, Mainly crops were is damaged mainly by wild animals such like monkeys and deers particularly in maize and wheat farms; such that, nearly all the farmers out of 130 respondent 129 were affected. Almost all (95%) people were suffering from crop damage and livestock including as well as poultry loss damage. 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 study area province were wild boars, deers, porcupines, birds, and monkeys which were responsible for crops damage.

### 3.7 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 products to wholesalers, 40% farmers sell their products to contractors, 9% farmers sell their products to and retailers respectively, while and 7% of them could not produce surplus.

### 3.8 Involvement in cooperatives

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

### 3.9 Use of the income generated from agriculture

The farmers used 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 i.e., 30% of the net income while about 28% percent was spent on daily livelihood, 12% on the child education, 18, and 13% on the miscellaneous and the farmers

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~~save remaining 13% for future use spent on daily family expenditures, child education, miscellaneous and save future use respectively.~~

### 3.10 Role of organic farming on poverty alleviation

~~In the study, 100% of the respondent farmers observed reported the decrease in yield by organic production systems. The entire respondent reported showed that, the value of organic products was not differentiated from non- organic products. Moreover, financial institutions were not willing like to invest in organic products farming.~~

~~It was also noticed that, the role of organic agriculture and the poverty alleviation were not significant because farmers were not receiving higher returns from the organic agriculture. However, it was reported that the respondents are farmers were able to make some positive changes in their children education, health and strengthening food security through the organic farming system.~~

### 3.11 Problems in organic farming and the solution

~~In the study, 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 insects and pest destruction of crops and stored produces as well as and 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 faced difficulties in marketing their organic products. Also, farmers were not having excess to agricultural inputs, such as quality seeds, manure and technical supports.~~

~~According to the farmers views, 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, Awalchingingad 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.~~

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Comment [W25]: Not clear. Recast

Comment [W26]: Here is not for results presentation but for a brief summary of the findings

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~~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 were~~ not receiving higher returns from organic agriculture. However, in spite of the low yield from the organic farming system, it was observed~~is reported that the respondents can~~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, study area. There should be price and products' differentiation mechanism in the markets for promotion of organic agriculture products. Government of Nepal should provide subsidy programs ~~to~~for youth in order to~~for~~ attracting them into agriculture for increase in food productivity and security event~~to~~ compete well in the international markets. Besides the yield comparisons, organic practices showed higher organic matter in the soils, lowered energy consumption, lowered the use of external inputs, gave better food quality, and also showed potential to address global issues like climate change, ~~so that organic product are demanding from various parts of the world.~~

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