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A perceptive study of organic agriculture in Baglung municipality: farmers' barriers to and factors influencing adoption

Abstract

The process of modern organic agriculture is still nascent stage in Nepal. Though certain policies have been implemented to promote organic agriculture, the progress towards adoption is below average. Therefore, the main aim of this study was to evaluate farmers' perceptions of organic agriculture and its associated factors. The survey was conducted in Baglung Municipality, Nepal. The municipality consists of 14 wards; the purposive sampling technique was used to select 100 registered farmers. Descriptive statistics and binary logistic regression were used to present the findings of the study. The study revealed that willingness to adopt or interest in organic agriculture was found to be 2.58 times lower in illiterate farmers in comparison to literate farmers, interest in organic agriculture was found to be 1.48 times lower in females in comparison to male respondents, respondents doing commercial farming are (57.4%) more likely willingness to adopt the organic agriculture, educated respondents are (85%) more likely to adopt the organic agriculture in commercial basis, the respondent male is (65.9%) more likely willingness to adopt the organic agriculture in commercial basis. The factors were surveyed using five points Likert-scale questionnaire. The uninterested ones (37%) stated the following barriers which are ranked in ascending order of means as poor research and extension (1.20), lack of certified inputs (1.22), accredited laboratory (1.28), and technology (1.54), complicated certification (1.63), soil management problems (1.79), low production and market prices (1.97), lack of human resources (2.02). The interested ones (63%) stated the following factors which are arranged as exporting opportunity (1.45), demand (1.53), geographical advantages (1.55), employment opportunity (1.56), good exposure (1.58), development (1.66). Concerned authorities can use this survey to make major changes to establish organic farming.

Keywords: nascent stage, organic agriculture, perception, purposive, barrier

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Introduction

Background

For over a century, the typical Nepalese farming system which the farmers have been traditionally practicing with their own Indigenous and Traditional Knowledge (ITK), especially in the hilly and mountain region of our country Nepal resembles organic farming. As time passes the trend of importing inorganic agrochemicals like inorganic pesticides, fertilizers, antibiotics, hormones, etc. is increasing which is converting those traditional farming systems which were resembling organic farming have been changed into an inorganic commercial agriculture system. Slowly, due to raising awareness and education levels and changes in many more factors like living status, etc. it is seen people both farmers and consumers are showing interest in organic agriculture. However, due to lots of barriers towards organic farming like difficulty in certification, etc. despite having interest farmers are restraining their will towards organic farming. Some farmers are trying organic farming to minimize the barriers, products they are producing are not getting good recognition as organic products in the global market due to lack of certification programs, difficulty in certification, lack of accredited laboratories, etc.

In Nepal, according to the data, it is seen that area coverage by organic agriculture is about 26% but only 3% (10,000 hectares) area is certified. Organic food including both traditionally produced or certified covers only 20% of the total food market in Nepal. It is known to everyone that the Nepal government past policy and programs, rarely focused on the perspective of organic farming and food. For example, we can take the example of National Agriculture Policy 2061 B.S clearly stating that the promotion of organic agriculture products is only for export, rather than domestic food and health point of view. Therefore, in our country, organic farming is limited only to a few export-oriented commodities such as coffee, tea, apiculture, large cardamom, ginger, apple, etc., and in a certain group of farmers of a particular pocket area. Over here in Nepal Organic agriculture first appeared as one of the priority sectors in Nepalese Agriculture in the Tenth (10th) Five/year plan (2059/60-2063/64). Hereafter the trend of organic agriculture with various institutions and stakeholders are involved in research, teaching, and extension of organic agriculture in some parts of the country. The only Governmental Organic Certification Nepal (OCN) was established as certifying body for organic products in Nepal in 2009. Jumla is the only district that was declared organic by GoN (Government of Nepal) on 2009(2065/11/20).

Organic products are covering worldwide about 4.6% of the total edible food and have been increasing annually by about 20%. More than 120 countries are practicing organic agriculture. In the context worldwide about 31 million hectares of area are managed organically (Gehlot,2012) From this we can get that Organic Agriculture will be the game changer towards prosperity making the hilly region and mountain region the hub of organic agriculture if the government of Nepal moves steps towards it by now properly. This survey was done taking Baglung District, the representative of the whole hilly region know the perception of farmers towards organic agriculture.

Research methodology

A quantitative approach was used to gain a deeper understanding of the perceptions of the farmers and a qualitative approach to know about the factors associated with it. Information was collected using a Likert scale questionnaire to know about influencing and restraining factors

and structured questions to know about perception. The commercial farmers of our study were taken as the sampling population. Those farmers who registered their farms in the department of the cottage and small industries were regarded as commercial farmers in our study.

Selection of study area

The study was conducted in Baglung Municipality (14 wards) of Baglung District, Nepal. Its total area is 98.01Km square. Its location is 28° 15' 59.9976'' North and 83° 35' 59.9928'' East having elevation of about 1020m.a.s.l in the global perspective.

The choice of this region for this research is that this region can be taken as the representative of the hilly region having the potentiality to practice organic farming and also this region is well known for its agricultural activities mainly from horticulture perspectives and also due to easy access ability (Figure 1).

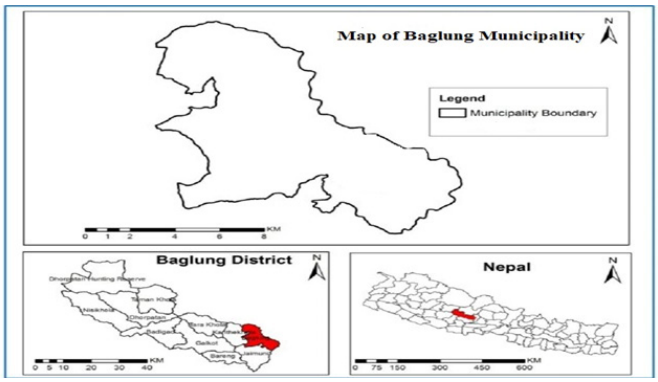

Figure 1 Map showing study area (Baglung Municipality).

Selection of participants/sampling procedure

Purposive sampling was used to select 100 registered farmers from 14 wards of the municipality in such a way that farmers from each ward will be included.

Data collection technique and procedures

The questions that were prepared for the questionnaire were set in mWater Portal and mWater Surveyor was used for the collection of the data. At least 6 farmers from each ward were taken with a structured and Likert scale questionnaire survey. Two wards were covered in a day that took a week for the completion of the survey in the whole municipality.

The following types of questions were asked of the farmers during the survey.

1) Rapport building questions just to build comfort with the farmers.
2) Demographic questions to know the identity of the farmer.
3) Main questions that will include are related to recording the perceptions of the farmers and knowing the restraining factors for adoption if they are uninterested and influencing factors for adoption if they show interest in organic farming which are present on five points Likert scale.

Data analysis technique and software

The collected raw data were analyzed by using Microsoft Excel 2016, IBM SPSS (Statistical Package for social science) to analyze descriptive statistics such as Frequency, Percentage, Tables, Graphs, and Charts of demographic data, Ranking using ascending order of means for the influencing and restraining factors, Binary logistic Regression was obtained to analyze the perception of farmers towards the organic farming.

Results and discussion

Gender of the respondents

The result revealed that 27% of the respondents were female while 73% of them were male (Figure 2).

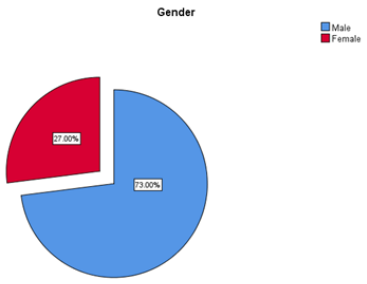

Figure 2 Pie chart showing gender of respondents.

Socio-economic status of the respondents

Ethnicity

The pie charts represent the socio-economic characteristics of the respondents that is ethnicity. The ethnicity was dominated by Brahmin followed by chherti and janajati/indigenous. Among 100 respondents, 44% were Brahmin, 27% were Chhetri, 17% were janajati and 12% were Dalits (Figure 3).

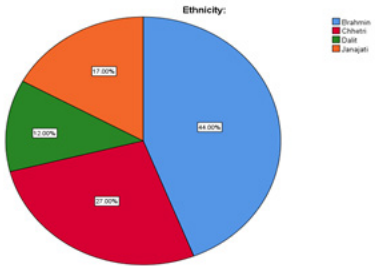

Figure 3 Pie chart showing ethnicity of respondents.

Religion

The pie- chart represents the religious status of the respondents. Among 100 respondents, 78% were Hindu, 12% were Buddhist and 10% were Christian (Figure 4).

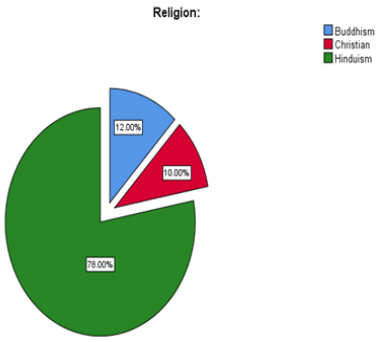

Figure 4 Pie chart showing the religious status of respondents.

Educational status

The diagram represents the educational status of the respondents. We can see mostly educated ones are involved in agriculture which can be taken as a positive sign for agriculture development. Among 100 respondents, only 8% were illiterate, 36% are from the primary level, 30% are from the secondary level, were 12% from the higher secondary level, 12% were from the bachelor's, and 2% were from the master's level (Figure 5).

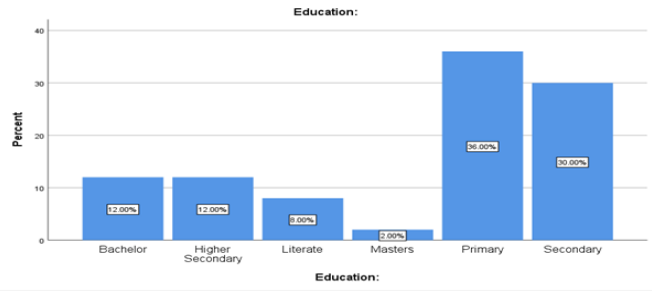

Figure 5 Bar diagram showing the educational status of respondents.

Age status

The bar diagram represents the age status of the respondents. Among 100 respondents, the most dominant age group was 40-50 which represents around 42% of the total followed by the 30-40 age group (32%), 50-60 age group (18%), 20-30 age group (5%) and 60-70 age group (only 3%) (Figure 6).

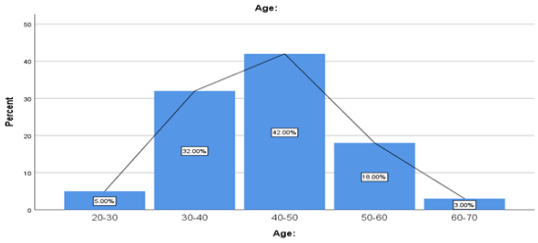

Figure 6 Bar diagram showing the Age status of respondents.

Marital status

The pie chart represents the marital status of the respondents. Among 100 respondents, 97% are married while 2% of them are unmarried (Figure 7).

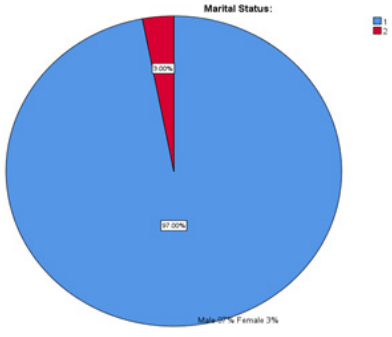

Figure 7 Pie chart showing marital status.

Interest in organic agriculture

The above bar diagram revealed that out of 100 registered farmers 63% had shown interest to adopt organic farming while 37% were restrained to adopt organic farming (Figure 8).

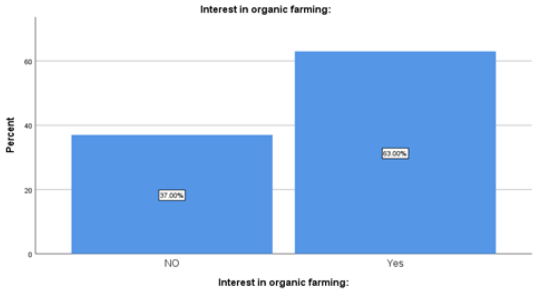

Figure 8 Bar diagram showing respondents on organic agriculture.

Willingness to the practice of interested ones

Out of 63% of respondents showing interest in adopting organic agriculture 81% were interested to have practiced on a commercial basis while 19% were interested to adopt organic farming for family purposes or can say subsistence basis (Figure 9).

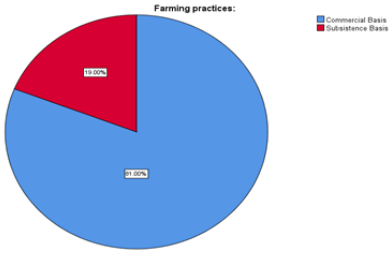

Figure 9 Pie chart showing interest to practice on a commercial or subsistence basis.

Ranking using ascending order of means

The questionnaire was present on the five points Likert scale, uninterested stated the back warding factors whereas interested ones stated influencing factors. Of those factors were taken means and standard deviation to rank them. Questionnaires on the Likert scale can be ranked in ascending order of means (Chyung et al., 2018) (Table 1).

Table 1 Table presenting the back warding factors of organic agriculture

SN	Back warding factors	Means±SD	Rank
1	Poor Research and Extension about OA.	1.20±.0.49	1st
2	Lack of machinery and certified organic Inputs like organic seeds, bio- Pesticides, etc.	1.22±0.57	2nd
3	Lack of Accredited laboratory.	1.28±0.65	3rd
4	Lack of Technology and POPs on crop and animal production.	1.54±0.62	4th
5	Complicated Certification Process and no access for certification.	1.63±0.40	5th
6	Land and soil Management Problems to meet organic criteria.	1.79±0.62	6th
7	Low Production, Productivity, and market price.	1.97±0.67	7th
8	Lack of Human resources involved in OA and skilled manpower like technicians, Organic Inspectors.	2.02±0.72	8th
9	Lack of Information and Awareness about Organic Agriculture.	2.24±0.99	9th

Where, 1- strongly Agree, 2- Agree, 3- Neutral, 4-Disagree, 5-Strongly Disagree.

Following are the influencing factors stated by the interested respondents which are ranked in ascending order of means (Table 2).

Table 2 Table showing the factors influencing organic agriculture

S.N	Influencing factors	Means±SD	Rank
1	Good Exporting Opportunity.	1.45±0.53	1st
2	Demand/Priority of organic products.	1.53±0.56	2nd
3	Geographical Advantages(Diversified ecological and climatic variation)	1.55±0.61	3rd
4	Creating Employment Opportunity.	1.56±0.63	4th
5	ITKs and Good exposure to Organic Farming.	1.58±0.69	5th
6	Development of infrastructures, organic enterprises, and associations.	1.66±0.52	6th

Where, 1- strongly Agree, 2- Agree, 3- Neutral, 4-Disagree, 5-Strongly Disagree.

Binary logistic regression to record the perception of the farmers towards organic farming

Interest in organic agriculture/willingness to adopt organic agriculture

Interest in organic agriculture was found to be significantly different in each case that is in the case of educational level, the case between males and females, and in the case of age (Table 3).

a. The odds of willingness to adopt or interest in organic agriculture were found to be 2.58 times lower in illiterate farmers in comparison to literate ones.

b. It is seen that interest in organic agriculture was found to be 1.48 times lower in females in comparison to male respondents.

c. Young age group is 57.4% more likely willing to adopt organic in agriculture than the aged group.

Table 3 Estimating the perception of farmers towards organic agriculture

Independent variables	Dependent variable (Willingness/Interest in organic agriculture)
Gender (Male=1, Female=0)	1.482 (0.393)*
Age (young=0, aged=1)	0.426 (-0.853)*
Education (Illiterate=0, Literate=1)	2.582 (0.949)*
Intercept	
Model Chi-square	30.3*
Degree of freedom	3
Negelkerke Pseudo R^2	0.61
% Correctly Predicted	63

Odds Ratios (logit coefficients) from logistic regression estimating the perception of farmers towards organic agriculture (n=100). Figures in parenthesis are logit coefficient and *=p<0.05

Willing to adopt organic agriculture on a commercial basis or subsistence basis/family purpose (Table 4)

A. The odds of educated respondents are 85% more likely willing to adopt organic agriculture on a commercial basis than to practice on a subsistence basis for family use.

B. Respondent males are 65.9% more likely willing to adopt organic agriculture on a commercial basis than subsistence basis.

Table 4 Estimating perception of farmers towards practicing organic agriculture on a commercial or subsistence basis

Independent variable	Dependent variable (willingness to adopt on a commercial and subsistence basis)
Education (Illiterate=0, Literate=1)	0.150 (1.895)*
Gender (Male=1, Female=0)	0.341 (1.077)*
Model Chi-square	7.917*
Degree of freedom	2
Negelkerke Pseudo R^2	0.122
% Correctly Predicted	80%

Odds Ratios (logit coefficients) from logistic regression estimating the perception of farmers towards practicing organic agriculture on a commercial or subsistence basis (n=100). Figures in parenthesis logit coefficient and *=p<0.05.

Discussion

Results of this research show that respondents' education level has a significant relationship with the perception of farmers toward organic farming. This result is in line with the finding of Nandwani et al.[1] On contrary the results of Isin et al.[2] show a non-significant relationship between education with the adoption of organic agriculture. In Nepal like developing countries, where there, we can see the majority of farmers are less educated, this kind of result should be considered as an encouraging result for the adoption of organic farming, as it can depict that organic agriculture cannot keep back from uneducated and less educated farmers.[3]

This finding shows that younger farmers have shown a higher interest in organic farming which is in line with the finding of Singh & George, (2012). However, less profits and higher risks in farming were becoming the factors that are restraining their will in practicing organic farming in comparison to other career jobs.

In an overall comparison of the restraining factors for the adoption of organic agriculture, it was seen that problems were there in these aspects of organic production at the grower's level, marketer's level, and also in governmental level which is in line with the findings of this research.[4] This suggests that improvement needs to be done from the root level to establish organic farming.[5–8]

Conclusion

The education level, gender, and age of farmers significantly affect their interests in the adoption of organic farming. A positive perception was found in educated, male farmers and young farmers to adopt organic farming in Balgung Municipality. However, it was seen that their perception alone is not sufficient to take action. It seems that improvement needs to be done in all aspects of organic production, at the government level, farmer level, and at marketing level.

Major factors influencing the adoption of organic farming practices found were education level, exporting opportunity, demand/priority of organic products, geographical advantage (Diversified ecological and climatic variation), employment opportunity, ITKs and good exposure to organic farming, and increasing trend of developing of infrastructures, organic enterprises, and associations. In the current research, it was determined that improvement needs to be done in the aspect of research and extension, access ability of certified organic inputs and machinery, provision of an accredited laboratory, appropriate technology and package and practices on crop and animal production, facilitation and access of certification process, land and

soil management training to meet organic criteria, techniques for higher production and productivity, production of skilled manpower like technicians and organic inspectors and raising information and awareness about organic farming and the benefits of the products on health and environment. Determination of perception and factors that affect farmer's adoption of organic agriculture can be used to devise viable and workable plans, and policies and necessary to take action for implementation of organic farming in possible areas having potential to practice.

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Conflicts of interest

The authors declared that there is no conflict of interest.

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