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Prospects of Kiwi Production and Marketing in the Advancement of Household Economy in Dolakha District

Santoshi Malla[1,a,*], Lal Bista[1,b], Rojina Sapkota[1,c]

[1]*Institute of Agriculture and Animal Science, Tribhuwan University, Gokuleshwor College, Baitadi, Nepal*
[*]*Corresponding author*

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ABSTRACT

This study entitled was conducted in 3 places of Dolakha district namely Boach, Jiri and Bigu. The study was conducted during 20thjuly to 6th September 2017. The main aim of this study was to find out whether kiwi farming is improving household economy of people living there (i.e. Boach, Jiri and Bigu) using various tools such as questionnaire, discussion, direct observation and review of literature. A total of 60 households were randomly selected for the study. Both male and female were found to be involved in kiwi cultivation. About 60 percent and 40 percent of respondents were male and female respectively. 20 percent respondent were illiterate, 38 percent people have primary level education, 17 percent were people having secondary and S.L.C. level education respectively, similarly, the respondent completing Inter were 8 percent. Kiwi was the major cash crop in the study area and the widely used variety in the study site was Monti. Agriculture is the major occupation followed by Government job, Business and others. 47 percent were involved in agriculture, 30 percent were involved in government job, 13 percent have Business and 10 percent follow other jobs like (Teaching, Driving, Abroad). Among 60 respondents 50 percent were cultivating kiwi in 1-5 ropani of land and minimum was 12 percent who cultivated kiwi in above 15 ropani area. Training related to kiwi cultivation was also given to the respondent. 47 percent respondents were trained in kiwi cultivation and 53 percent were not trained about it. Training was organized and conducted by DADO and some other organization who were concerned about agriculture. Kiwi was mostly sold to nearest local market by the farmers themselves. Kiwi cultivation was also helping farmers in economic part. The study shows that there is an improvement of household economy and livelihood by kiwi farming.

[a] *mallasantoshi77@gmail.com* *https://orcid.org/0000-0002-8618-3180*
[b] *lalbist96@gmail.com* *https://orcid.org/0000-0002-9942-1993*
[c] *rozinasap@gmail.com* *https://orcid.org/0000-0002-4501-206X*

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Introduction

Kiwifruit is the edible berries of several species of woody vines in the genus Actinidia. It is a commercial crop in several countries which flesh is almost creamy in consistency with an invigorating taste reminiscent of a strawberries and bananas, yet with its own unique sweet flavor. It is a native plant of China, known as a Chinese gooseberry too and now commonly known as a kiwi fruit all over the world. More than 70 species of Kiwi are found and among them, Actinidia deliciosa (Fuzzy Kiwifruit) and Actinidia chinensis (Golden Kiwifruit) are cultivated commercially (Ferguason and Huang, 2007; Gautam and Gotame, 2020). The most cultivar group of kiwifruit ('Hayward') is oval which is about the size of a large hen's egg (5-8cm (2.0-3.1 in) in length and 4.5-5.5 cm (1.8-2.2 in) in diameter). It has a fibrous, dull greenish- brown skin and bright green or golden flesh with rows of many tiny, black, edible seeds. The fruit has a soft texture along with a sweet but unique flavor. Kiwi fruit is mainly produced for fresh fruit market and its processing is only a way to utilize rejected fruits (Celik, 2006).It is a fruit with a very interesting history and its recent rise in popularity reflects a combination of an appreciation for its taste, nutritional value, unique appearance and, surprisingly, its changing name. Recently, Italy, New Zealand, Chile, France, Japan and the United States are among the leading commercial producer of kiwifruit. With the growing interest in kiwifruit, there is ample space for the expansion of area under crop (Poudel et al., 2019). It provides high return per unit area (Sharma et al., 2020). It is low in calories, sugar and fat, but rich in fiber, vitamins and minerals, one kiwi fruit contains a mere 42 calories (less than typical fruit serving) and packs is 2g of fibers and a day's worth of

vitamin C. It is an excellent source of vitamin C (Xu and Zhang, 2003), a water soluble vitamin, proven to boost the immune system and aid in wound healing.

Kiwifruit is grown as well as traded internationally and the world market is dominated by a few main players. Trends in global exports are consequently heavily influenced by the production levels in the top producing countries. Nepal has adopted kiwi farming commercially in Illam since 2007 and in Kavre as well, but it was introduced in Nepal nearly 40years ago. It introduced in Nepal during Swiss Projects in some lands of Charikot and Jiri of Dolakha (Dhakal, 2018). International center for Integrated Mountain Development (ICIMOD) has been doing its research about kiwi fruit in Godawari kiwi farming (Khanal et al). Dolakha is a potential ditrict for Kiwi cultivation in Nepal along with IIlam, Kavre, Solukhumbu, Ramechhap, Dhankuta, etc (Khanal et al). Kiwifruit cultivation is usually considered difficult to establish, as kiwi have a shallow, fibrous root system, and their pollination is uneasy to obtain. In order to have maximum success, the soil should be well worked, having very fine tilth and should be fumigated before planting to reduce the incidence of kiwi pests and diseases. Kiwi plant can be grown wide range of soil but limited knowledge and extension regarding the fruit its promotion is still quite limited. Kiwi that do not meet quality standard, as fresh fruits, are processed to add value in it (Guroo et al., 2017). Farmers are adopting varieties unknowingly because research has not been done so far regarding the variety that is suitable for Nepal. Limited knowledge on plantation of kiwi farming has been facing hinders from its development. The main aim of the farmers is to increase income without any loss from limited resources and study shows that kiwi is one the economically important fruit. Due to lack of improved technology and awareness program to cultivate new crops which generate high income from same small area, people are less motivated in commercialization of kiwi fruit. Though kiwi cultivation and production seems fruitful and profitable to many farmers of many area, researches on it found to be less. There is a need of focus in this sector so that many farmers get know about it and the market status of it. We had chosen this assignment as our topic in order to find out the status of Kiwi production and its possibilities as well as opportunities in the context of Dolakha district.

One kiwi fruit contains (Table 1) about as much vitamin c as six ounces of orange juice (Xu, 2003). Kiwis are also good source of potassium than a banana. It is a good source of filling fiber which can help to reduce bad cholesterol and also contains ample amount of folate and zinc. They constitute phytonutrients such as lutein, which is important for eye health and may help to protect our cells from damage.

Table 1. Nutrients Facts of Kiwi

Nutrients	% daily value
Vitamin A	1.2
Calcium	2.3
Folate	4.3
Zinc	0.7
Vitamin C	106.7
Phosphorus	2.3
Pantothenic Acid	1.3

Source: Analyses made by the University of California

Materials and Methodology

Study Area

The study was conducted in Dolakha district of Province 3 of Nepal. It was conducted during 20thjuly 2017 to 6th September 2017. We had preferred this time for our study because period between month of July to September is the peak period of kiwi production and after October, harvesting of kiwi is done. During our study period, we found it suitable to observe the production status directly. Boach, Jiri, Bigu are the area where study was conducted. The administrative centre of district is Charikot. Dolakha district, is a mountainous district of Janakpur zone, which lies in the central development region of Nepal. In its origin the city of Dolakha was called "Abhayapur" which means "Abhay"- without fear, and "pur"- cities. That is why Dolakha is also reffered to as the "city without fear" due of the power of the god Bhimsen. We had selected this area as our study as we found that a lot of works related to kiwi production had been done in this area. We also observed that many households of this area were engaged in kiwi production. To get to know further about the status, opportunities and challenges regarding kiwi cultivation, we had conducted this study in that area (Table 2).

Table 2. Description of study area

Description	Details
Latitude	27 41' 00"
Longitude	86 04' 00"
Total Area	2191 sq.km
Total population	186,557 (in 2011)
Neighbouring districts	• Solukhumbu and Ramechhap district in the east • Ramechhap and Sindhupalchowk in the south • Sindhupalchowk in the west • Tibetan autonomous region of people's Republic of china in the north.

Source: DADO Dolakha 2070/71

Sample Size

The total number of 60 respondents of Dolakha district was surveyed for the Dolakha is sparsely populated areas and has less households in comparison to other areas and we had taken 60 households as our respondents for our study. It covered the large area and anticipated to be fruitful for our study and objective. Among which both male and female were included of the study area. Respondents were selected by using random sampling technique. We selected the respondents randomly and tried our best to cover large area.

Data Collection Method

Both the primary and secondary sources of data were used in this study. The primary data were collected from direct interview with respondents. Survey questionnaire was developed to collect necessary primary data and information by including all the necessary questions that seems fruitful for our study. We visited each and every selected households and interview was taken according to the prepared questionnaire.

Secondary data were collected from several literatures such books, published and unpublished documents from various sources, journal, articles, annual report available at different institutions like MoAD and different websites were visited.

Data processing, Analysis and Interpretation

The collected data were analysed using MS word and Excel. Descriptive statistical tools like frequency, average and percentage were used to analyse the different aspects of kiwi. Analysed data were then presented in the tables, pie-chart and bars.

Result and Discussion

Socio-Demographic Characteristics of Study Area

Distribution of respondents according to gender

Both male and female were found to be involved in kiwi farming in the study area (Figure 1). But the participation of male are found comparatively more than that of female members. It was found that about 60 % of male and 40 % of female were involved in the kiwi farming. It shows that both genders participate in its production while men seem higher. It is because male had been found having higher knowledge regarding Kiwi production, management in comparison to female. Otherwise, both were almost equally participated which is similar with the findings of Mohammed and Abdulquadri (2012). Different literatures and news also shows that male were engaged in agriculture more that of female.

Distribution of respondents according to age

The study showed that the majority of respondent were of age group above 56 i.e. 55 percent, 10% belong to age group below 25, 22% belong to age group 25-40 and remaining 13% belongs to age group 40-55 (Figure 2). It is due to many elders at home with leisure times. They couldn't be able to do works which permits to travel long distances, so that they stay at home engaging in Kiwi production whereas, young ones and adults have less times to engage in Kiwi production as they were at schools and offices respectively. For this reason, we found elder peoples of age group above 56 years engaged in its production which is in accordance with findings of Tiwari and Bhandari (2020). Age of the farmers also affects the rate of adoption of innovations and new practices (Adeoye, 2000).

Education level of the respondents

The respondents were sectioned into 5 groups (Figure 3). The education status of the respondent varied from primary to inter. Since the study was conducted in village area not all the people got opportunity to get education so, the survey among 60 respondents, 20% were illiterate, 38% were the people who got primary education, 17% were people having secondary and S.L.C. level education respectively. Likewise, the respondent completing Inter were 8%. It shows that around 80% were literate, including primary to Inter level, and some proportion were found illiterate. It means people residing in that area were acquainted with importance of education and the few illiterate due to the reason that this percentage includes elderly ones who weren't aware with education at their time period and this finding were found similar with Tiwari and Bhandari (2020) as well as **Khan et al. (2020)** while are in close with **Verma et al. (2018)** findings. Census report of Nepal of 2021 also shows that literacy rate in Nepal is higher.

Main occupation of the respondents

The respondents were found to be engaged in various occupations in the study area (Figure 4). But main occupation of the respondent in study area was agriculture which leads 47% for their livelihood, 30% were involved in government job, 13% have business and remaining 10% follow different occupation. Primary occupation of majority of peoples in Nepal is Agriculture (Durbar, 2014). Most of the respondents of our survey were people of age group above 56 years and they weren't physically active to travel long distances for job purpose, so they stay at home engaging in agricultural production. Young and adults were also found engaged in agriculture but in less percentage than that of elder. Maximun percentage of people involves in agriculture, followed by other occupations (Berkowitz et al., 2004).

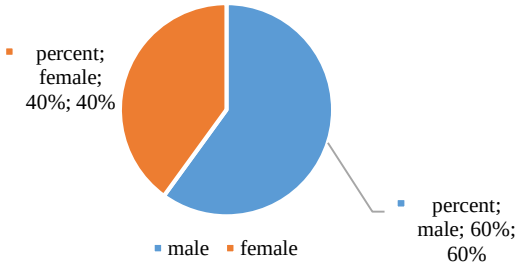

Figure 1. Distribution of respondent by gender

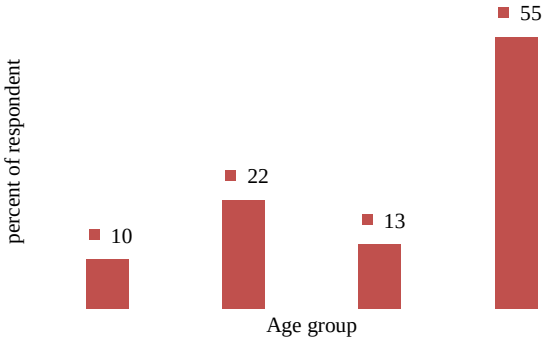

Figure 2. Distribution of respondent by age

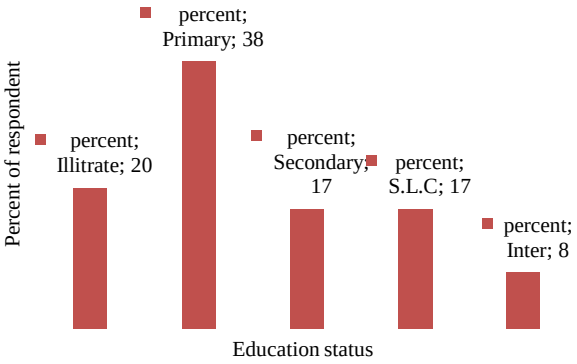

Figure 3. Distribution of respondent by education

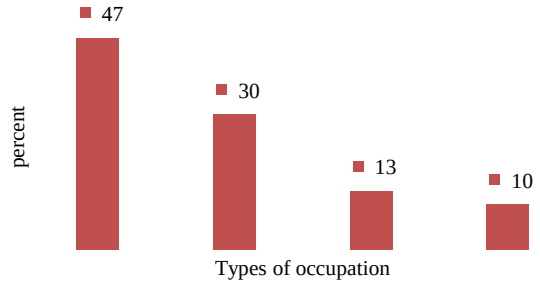

Figure 4. Types of Occupstion

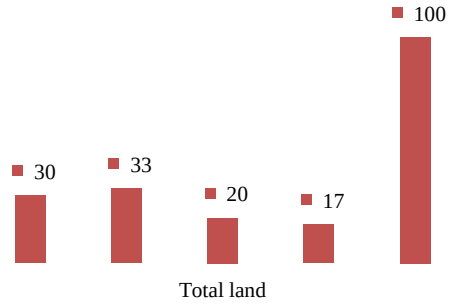

Figure 5. Total land holding of respondent

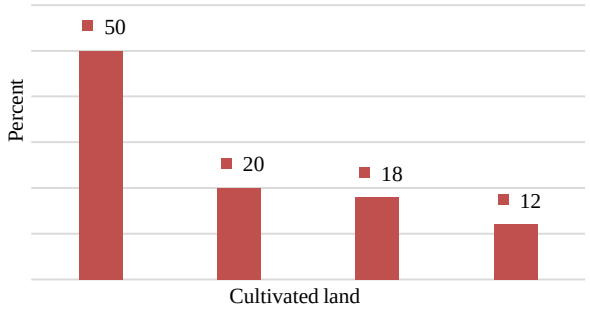

Figure 6. Kiwi cultivated area

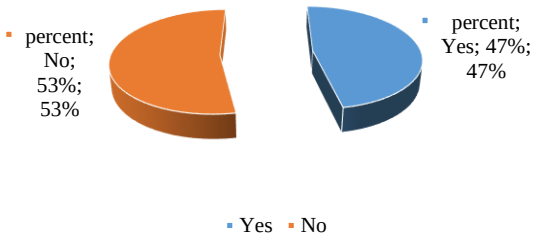

Figure 7. Kiwi cultivation

Table 4. Year of kiwi cultivated

No. of respondent	Year of cultivation	Frequency	Percentage
1	1	5	8
2	2	4	7
3	3	7	12
4	4	9	15
5	5	8	13
6	6	18	30
7	7	6	10
8	8	3	5

Total land holding of the respondents

In the study area, the maximum land holding of farmers ranged from 10-20 ropani i.e. 33% (Figure 5). Out of 60 respondents 30% holds 1-10 ropani land, 20% respondent holds 20-30 ropani area and remaining 17% holds above 30 ropani land. It shows that farmers have moderate land holdings. There is a need of modern practices for Kiwi production such as using dwarf varieties, so that land can be better utilized and more production can be obtained from available land holdings. Land holdings were maximum utilized by agriculture (Abur, 2014).

Area under kiwi cultivation

The land of the farmers of the study area under kiwi cultivation was categorized into four groups, i.e. 1-5 ropani, 5-10 ropani, 10-15 ropani and above 15 ropani. Maximum respondent i.e. 50% were cultivating kiwi in 1-5 ropani land and minimum was 12% who cultivated kiwi in above 15 ropani land (Figure 6). It is due to diversity in agriculture production. They cultivate agricultural crops as well as fruits in their farm. Farmers of that area have moderate land holdings due to which land occupied by Kiwi plants are in fair amount. Maximum population have area less than 20 ropani due to which they cultivate Kiwi in less area, while farmers having more land holdings are in less percentage, due to which less proportion of farmers has planted Kiwi in area above 15 ropani. Size of landholding is crucial for kiwi increasing productivity (Abur, 2014; Zalkuw et al., 2014).

Kiwi cultivation training

Among 60 respondents 47% were trained about kiwi cultivation practice and 53% were not trained about it (Figure 7). Training was organized by DADO at previous days and some other organization concerned about agriculture in recent days. Due to inaccessibility of extension service in this area, more than half percentage of people hadn't got training regarding the kiwi cultivation and production. Focus is needed in providing training, so that maximum people will be skilled in the field of kiwi production; enhancing the kiwi production (Dirkx, 2019).

Cultivation period (year of kiwi cultivation)

History of kiwi farming is not so long as compared with other fruit crops, in case of Nepal, it has been just 32 years of kiwi cultivation. 8% respondent have just started kiwi cultivation since last year, 7% respondent are in 2years of kiwi cultivation, in third year of cultivation respondent increased to 12%, 15% respondent started kiwi cultivation since 4 years, 13%, 30%, 10%, 5% of respondent started their kiwi cultivation since 5,6,7,8 year respectively (Table 4). It shows that people were influenced by their neighbours – who were involved in Kiwi cultivation and production and getting benefit from them-and otherbenefits such as, scope of kiwi, its high price. They being influenced involved in kiwi production gradually in upcoming years than in earlier years.

Source of irrigation

Irrigation is also one main factor that helps to grow the plant efficiently (Figure 8). During my survey I found mainly three source of irrigation, they are Rain water, Tap water and River. 67 percent were depended upon Tap water, 13 percent were depended upon Rain water. Likewise, 20 percent are depended upon River. As it seems difficult to use river water for cultivation, as it needs skilled and somehow technologies to draw water from river to the

orchards which is similar with findings of GC (2010), they depend less on river water. While due to availability of Tap water in almost all the houses, maximum population rely on tap water. Some people depend on rainfall as tap water and river irrigation seems unfeasible to them, while some were found to involve in rainwater when tapwater were insufficient to fulfill the irrigation requirements of orchards.

Cultivated variety of kiwi

Different varieties were cultivated in the field among them 27% have Monti, 30% have Monti and Hyaward both in the field, 10% have Monti and Allison cultivated in field, 7 percent have Monti, Hayward and Allison, 3 percent have Monti, Hayward, Red kiwi, four varieties viz. Monti, Hayward, Bruno, Red kiwi are cultivated by 3% and lastly Hayward was cultivated by 20% (Figure 9). Cultivation of kiwi using different varieties had been found depended on land holdings under Kiwi production. Farmers having more land holdings used for Kiwi production were found using different varieties of Kiwi, while farmers having less land holdings under Kiwi cultivation were found using 1-2 varieties. Due to this reason, large percentage were found using 1-2 varieties while less percentage were found using more than 2 varieties.

Market of kiwi

To sell kiwi there was only two options for the respondents in today's condition and they are in local market and supplying to Kathmandu. 65 percent respondent supply their product to local market, 20 percent respondent supply their products to the local market and Kathmandu, 15 percent supply kiwi to Kathmandu. It was found that people residing in that area were aware of health benefits of Kiwi, due to which kiwi farmers sells their produce locally. As there were local markets available were they can sell their large percentage of produce, while few sells their product to Kathmandu. Market plays a important role for the better management of produced goods and to get return to investment (Acharya and Agarwal, 1999).

Market channel of kiwi

In the study area, different types of channel were observed through which farmers or respondent sell their product (Figure 10). The first one is producer directly sold to the consumer by carrying the kiwi fruit in the local Haat-bazar.Secondly, the farmer sold their kiwi fruit to wholesaler from where it was directly sold to the consumer or through the retailer.Thirdly, farmers also sold their produces to the retailers from where consumer gets the fruits.Due to poor road condition, marketing seems to be hampered (Mani et al., 2018) and high transportation cost is another problem (Sharma et al., 2020).

Total income through kiwi cultivation

Kiwi cultivation was born in starting phase so there was not so high amount of income. The income from kiwi cultivation was minimum Rs. 4000 to the maximum Rs. 45000 per year. Less than Rs 10,000 was generated by 25%, income ranging from Rs 10,000-20,000 was generated by 25% respondent, 20% respondent have income between Rs. 21,000-30,000, income ranging from Rs.30,000-40,000 was 18%, 1% respondent have more than Rs. 40,000 income per year (Figure 11). People having area enough to cultivate and have used modern practices seems benefited more; earns higher income than that of people having less land holdings cultivated with kiwi. Commercial cultivation seems profitable (Gautam and Gotame, 2020), aiding in income generation (Mariyona et al., 2020).

Table 5. Market of kiwi

Market	Frequency	Percent
Local	39	65
Local, Kathmandu	12	20
Kathmandu	9	15
Total	60	100

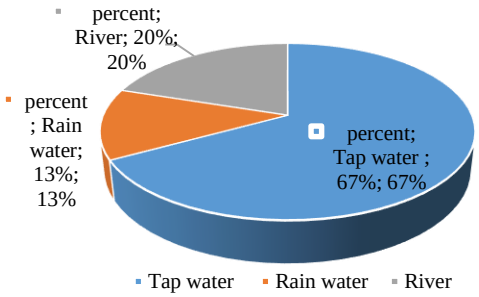

Figure 8. Source of irrigation

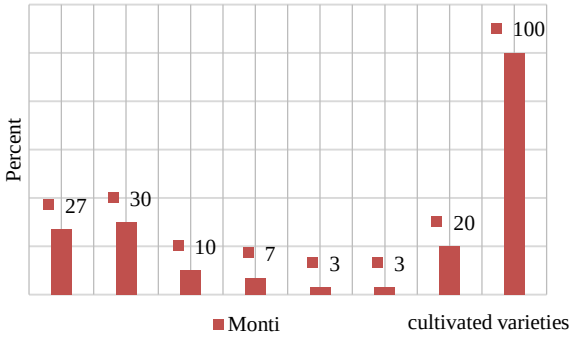

Figure 9. Cultivated varieties of kiwi

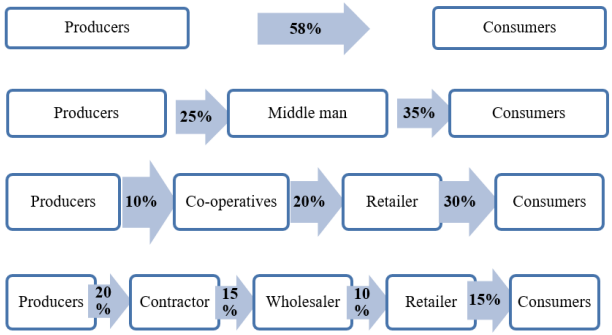

Figure 10. Marketing channel used by respondent

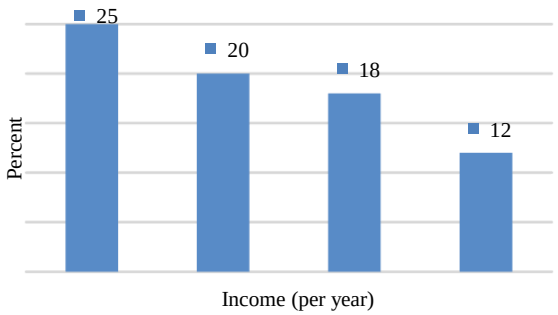

Figure 11. Total income (per year)

Help in household economy

The main objective of this study is to find out whether kiwi farming is helping in household economy or not. Hundred percent of respondent said that kiwi farming have had helped in household economy, in accordance with Sharma et al. (2020). It shows that people of that area were depended on Kiwi production for enhancing their livelihood. It seems to be the major part of their livelihood. Different literatures, magazines had shown how kiwi production had helped in developing and maintaining their household economy.

Conclusion and Recommendation

The study in these three places Jiri, Boach and Bigu concludes that these places have high scope in kiwi production. Agriculture is the major occupation followed by Government job, Business and others.Both the gender male and female were found to be involved in kiwi cultivation, male being higher than female. The education level of the respondents is low which has problem in awareness towards modern farming. As per discussion with the respondent, most of the people used their income in daily expenses. Every respondent are fully satisfied with kiwi farming. Only few farmers have taken trainings where others have gained knowledge by seeing others majority of the respondent's source of irrigation was mainly tap water, followed by River water and then Rainwater dependent. Price fluctuation and inappropriate marketing channels made the farmers difficult in gaining their economic return. Subsequent to the introduction of kiwi 40 years back now it has registered itself as crop with enormous scope and placed its compassion in the meadow of market. DADO and other agricultural program run in this district have motivated farmers to practice kiwi farming. DADO had provided ten saplings per house in Boach. Farmers in this study area practiced training and pruning in every growing season. The respondents from study site sold their products mostly to local market and less quantity to Kathmandu .Commercialization of kiwi farming can raise the living standard of the people. Diseases and insects pest management orientation, technology and information must be given to the farmers through effective training and interaction program. Farmers should make aware about the new technologies regarding production, processing and value addition and marketing the product for good returns. Government should give emphasis on commercial production of kiwi and provide subsidy and develop systematic marketing channel. Government should provide trainings and extension education to the farmers. Market mechanism should be managed in order to provide reasonable price of the production. We had presented our results and illustrated possibilities and opportunities of kiwi cultivation as well as the lack of researches in this sector had masked the opportunities. There is a need of many researches in this sector for visibility of its opportunities to the farmers.

References

Abur CC. 2014. An assessment of irrigated tomato farming on resource productivity of farmers in Vandeikya local government area of Benue state: Application of technical efficiency model. Global Journal of Human-Social Science, 14(1): 43-50.

Acharya SS, Agarwal NL. 1999. Agricultural Marketing in India, 3rd Ed. Oxford and IBH Publishing Co. Pvt. Ltd, New Delhi, India, 402 p.

Adeoye IB. 2020. Factors affecting efficiency of vegetable production in Nigeria: A review. Agricultural Economics, 1: 1-14.

Berkowitz GS, Wetmur JG, Birman-Deych E, Obel J, Lapinski RH, Godbold JH, Holzman IR, Wolff MS. 2004. In utero pesticide exposure, maternal paraoxonase activity, and head circumference. Environmental health perspectives, 112(3): 388-391.

Celik H, Zenginbal H, Özcan M. 2006. Enhancing germination of kiwifruit seeds with temperature, medium and gibberellic acid. Horticultural Science, 33(1): 39-45.

Dhakal S P. 2018. An introduction of Kiwifruit and cultivation Technology. Charikot: Temperate fruits rootstock development centre.

Dirkx E. 2019. BRACED–Building Resilience and Adaptation to Climate Extremes and Disasters (January 2015–June 2019–Grant: 7.2 million GBP) What did Welthungerhilfe's BRACED.

Durbar S. 2014. Statistical information on Nepalese agriculture. Retrieved December, 1, 2015.

Ferguson AR, Huang H. 2007. Genetic resources of kiwifruit: domestication and breeding. Horticultural reviews, 33: 1-121.

Gautam IP, Gotame TP. 2020. Diversity of Native and Exotic Fruit Genetic Resources in Nepal. Journal of Nepal Agricultural Research Council, 6: 44-55.

GC RK. 2010. An Evaluation of Multiple Use Water Systems in Mid-Hills of Nepal: A Case Study of Phulbari Multiple Use Water Systems in iDE's Project Area of Shyangja District. M. Sc. Internship Report.

Guroo I, Wani SA, Wani SM, Ahmad M, Mir SA, Masoodi FA. 2017. A review of production and processing of kiwifruit. Journal of food processing and technology, 8(10).

Khan MI, Bisen S, Mahajan G. 2020. Socio-Economic Profile of Vegetable Growers under Horticulture based Module of Farmer FIRST Project in Balaghat (MP), India. Int. J. Curr. Microbiol. App. Sci, 9(3): 3252-3257.

Khanal A, Timilsina S, Poon TB. Evaluation of Different Cultivars of Kiwifruit at Kaski Nepal.

Mani G, Kundra A, Haque A. 2018. Kiwi value chain in Arunachal Pradesh: issues and prospects. Agricultural Economics Research Review, 31(347-2018-3196): 123-130.

Mariyono J, Abdurrachman H, Suswati E, Susilawati AD, Sujarwo M, Waskito J, Zainudin A. 2020. Rural modernisation through intensive vegetable farming agribusiness in Indonesia. Rural Society, 29(2): 116-133.

Mohamme BT, Abdulquadri AF. 2012. Comparative analysis of gender involvement in agricultural production in Nigeria. Journal of Development and Agricultural Economics, 4(8): 240-244.

Poudel K, Shah MK, Mandal JL. 2019. Fruit Quality Analysis of Kiwifruit Cultivars Cultivated in Eastern Mid-Hills in Nepal. Journal of Agriculture and Environment, 20: 217-225.

Sharma A, Thapa S, Khatiwada MP. 2020. Production, Marketing and Future Prospects of Kiwifruit in Nepal. International Journal of Applied Sciences and Biotechnology, 8(2): 179-186.

Tiwari A, Bhandari T. 2020. Study on capital investment andmarketing of kiwi fruit in Ilam, Nepal. Acta Scientific Agriculture, 4(6): 13-20.

Verma KS, Kumar A, Das EPK. 2018. Adoption behaviour of cauliflower growers in Mohammadi block of Lakhimpur Kheri district of Uttar Pradesh. Journal of Pharmacognosy and Phyto chemistry, 7(2): 2643-2645.

XU XB. 2003. Researches and utilizations of germplasm resource of kiwifruit in China. Chinese Bulletin of Botany, 20(06): 648.

Zalkuw J, Singh R, Pardhi R, Gangwar A. 2014. Analysis of technical efficiency of tomato production in Adamawa state, Nigeria. International Journal of Agriculture Environment and Biotechnology, 7(3): 645-650.