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Socioeconomic Conditions of Apple Growers in Marpha, Mustang District

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Abstract

Socio-economic condition of the farmers plays a crucial role in agriculture. Apple is one of the key fruits with potential to generate income and employment in the high mountain districts of western Nepal. The objective of the study has to analyze the socioeconomic status of apple grower in Marpha of Mustang district. A total of 145 households have been sampled out of 235 households by using simple random sampling technique and interviewed with a semi-structured questionnaire to obtain data regarding socioeconomic condition, production, marketing channels, cost and apple price from apple growers as well as secondary sources of data obtained from the District Agriculture Development Office and Temperate Horticulture Development Center, Marpha, Mustang with other published and unpublished documents. The study concluded that socioeconomic conditions of marginal farmers have significantly improved during the last three decades because of apple farming. Seasonal road and poor marketing infrastructure, underprivileged technical knowledge, unavailability of inputs in time, insect pest damage and lack of storage facilities, price disparity and low quantity of production have been noticed major production and marketing problems in the study area.

Keywords : Agriculture, demography, employment, farmers, horticulture

Introduction

Apple (*Malus domestica*) accounts for 50 percent of the world's deciduous fruit tree production (USDA, 2013). Apple is a fruit of temperate climate and native in many parts of Europe and Asia Worldwide. Apple is the fourth most extensively produced deciduous fruit in 94 countries (Anon, 2010).

Nepalese economy is predominantly an agricultural-based economy. Agriculture sector contributes 27 percent of GDP in the fiscal year 2018/19 (MoAD, 2015) and employs 65.6 percent of the total Nepalese population (MoALD, 2020). Apple (*Malus domestica*), belongs to the family *Rosaceae* and is perishable in nature. It is believed that the edible apple originated in Central Asia. It is small to medium tree with dark green serrated leaves and fleshy edible fruits (Collett, 2011). Apple farming in Nepal started in Kali Gandaki valley before the 1960 but first commercial apple farming in Nepal started at Marpha, Mustang when Horticultural Farm was established and introduced new varieties of apples and production methods in 1966. Now farmers are being aware and attracted by fruit cultivation and growing apple all over Nepal where there is suitable climate and possibility of farming. Apple can be used differently like fruit, jam, juice and wine.Nepal has planted apple trees within the total area of 13,463 ha, out of this, only 5701 ha is under productive

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area, and production is 48,611 Mt. with productivity of 8.53 Mt/ha. There is 1440 ha total area in Mustang under apple fruit cultivation with 550 ha productive area, where the production is 6845 Mt. with productivity of 12.45 Mt/ha (2077/78) comparatively higher than national average productivity (MoALD, 2021).Apples are also grown in Jumla, Manang Mugu and Dolpa, besides the Mustang district. Among them, Mustang and Jumla are the largest suppliers of local apples in Nepal. Subsistent in nature with low productivity may lead to the high inefficiencies in production and marketing of apple thereby hindering the commercialization of apple farming in Mustang (Gayek et al., 2020).

The socio-economic characteristics of the farmer affect the organization and management of farm as well as the production and market contribute to a medium level. Therefore, it is necessary to have a broad understanding of social and economic profile of the households who have been actually engaged in apple growing (Bhardwaj et al., 2019). Socio-economic condition particularly age, literacy status, income and land holding size greatly influenced the knowledge level of the farmers. The farmers should be sufficiently exposed to the technological developments so that they will develop confidence as well as competency and adopt improved practices resulting in area expansion, better production and productivity (Singh et al., 2020).In this study, socio-economic characteristics comprises of distribution of apple growers, age group, ethnic composition, occupational structure, literacy status, size of land holding by households, use of fertilizers, production of apples, marketing channels of apple have been analyzed.

Methods and Materials

This study has been conducted in the Mustang district of Nepal. Ward number 3 of Gharapjhong Rural Municipality has been purposively selected because it has the major area of apple production in the district. Similarly, it has also the command area of Prime Minister Agriculture Modernization Project (PMAMP), Project Implementation Unit, Apple Zone, Mustang. The objective of the study has to analyze the socioeconomic status of apple grower . A total of 145 households have been sampled out of 235 total households covering 62 percent by using simple random sampling technique and interviewed with a semi-structured questionnaire to obtain data regarding socioeconomic condition, production, marketing channels, cost and apple price from apple growers as well as secondary sources of data obtained from District Agriculture Development Office and other published and unpublished documents like annual progress report of Temperate Horticulture Development Center, Marpha and Gaunpalika Profile of Gharapjhong.

Study Area

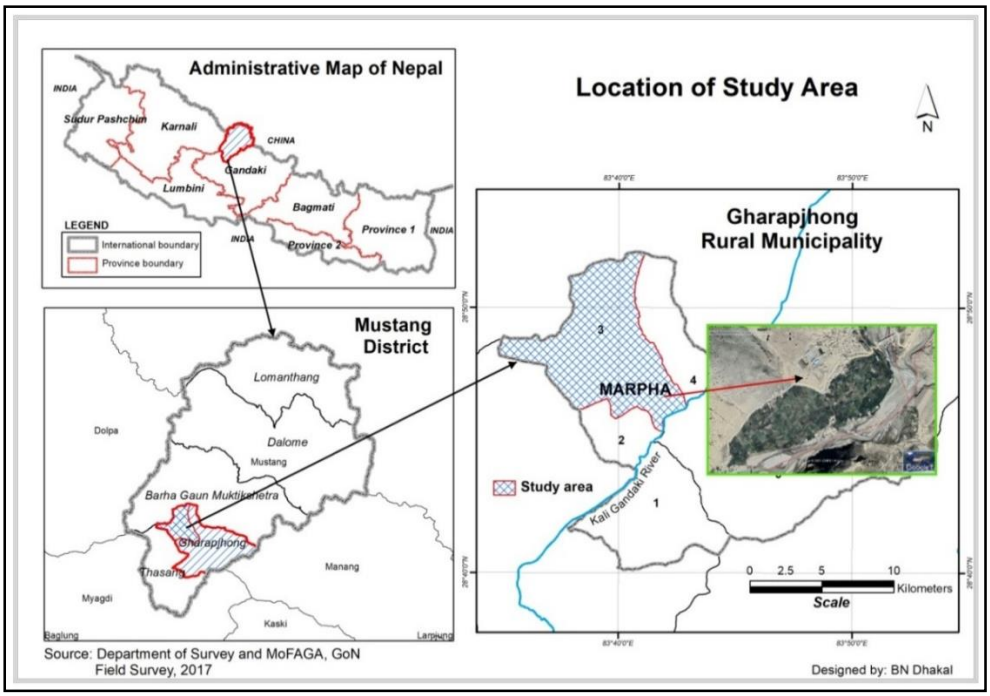
Mustang district is located in the Gandaki Province of northern Nepal in a high hilly region (Himalayas) and extends northward onto the Tibetan plateau. Mustang is one of the remote areas in Nepal covers an area of 3,573 km^2 and has a population of 14,596 within the households of 3268 (CBS, 2021) and it is sparsely populated. The district headquarters located at Jomsom. Mustang experiences a cool and semi-arid type of trans-Himalayan climatic condition which is lies in the rain shadow area of the Annapurna region with an annual temperature of 10.9^{oC} and

average precipitation of 300 mm, where temperature exceeded 26°C in summer season and falls up to -9°C in winter season.

Gharapjhong Rural Municipality is one of the 753 local units of Nepal lies among the five Rural Municipalities of Mustang, Gandaki Province.This rural municipality is divided into five wards. The total area of this rural municipality is 122 km^2 and the total population is 4875 with male population 2904 and female population of 1971 residing within in the households of 921 (CBS, 2021).This rural municipality is located East of Barhagau Muktishetra and Thasang Rural Municipalities and west of Manang district, North of Thasang Muktishetra Rural Municipality, Manang and Myagdi districts, South of Barhagau Muktishetra Rural Municipality. Bhote Thakali, Gurungs, Chhetries (Bista), Dalits are the major ethnic groups living in this rural municipality. Most of them follow the Buddhism religion however dalits and other ethnic group believe on Hinduism also. In addition to apple cultivation, people are engaged in cultivation of other crops like potato, oat, buckwheat, maize and wheat etc., livestock keeping, business, cottage industries, daily wages and service activities also. Marpha is 7 kilometers away south from Jomsom (District headquarter of Mustang) and lies to the bank of Kaligandaki river. The center is extended at 28º 20' to 29º 05' North latitude and 83º 30' to 84º 15' East longitude with altitude of 2650 masl.

Figure 1

Location map of study area



Result and Findings

Socio-economic and demographic characteristics of the respondents

Age group

Among the socio-economic status characteristics, age is one of the most important character in understanding their view about the particular problems, by a large age indicates extent of maturity in particular individuals. In that sense age becomes more important to examine the response. It has found that 13.1 percent of the total respondents having below 15 years of age in the study area, between 15 to 59 years (economically active group) have about 70.3 percent and above 60 years has a minority of 16.6 percent only (Table 1).

Table 1

Population distribution by age group in the study area

Age group	No of respondents	Percentage
Below 15	19	13.1
16 to 59	102	70.3
Above 59	24	16.6
Total	**145**	**100.0**

Source: Field Survey, 2017

Ethnic composition

In Nepal, ethnicity also influences the level of educational attainment. It has been found that the majority of the apple farmers (78.6 percent) in the study area have been found from Janajati, 14.5 percent of farmers have been found from Dalits and very small farmers (6.9 percent) have been informed from Chhetri (Table 2).

Table 2

Ethnicity of apple farmers in the study area

Ethnicity	No of respondents	Percentage
Janajati	114	78.6
Dalits	21	14.5
Chhetri	10	6.9
Total	**145**	**100.0**

Source: Field Survey, 2017

Occupational Structure

Occupation is one of the determinant indicator to evaluate the socioeconomic condition of individual that socialize him or her in a particular manner which in turn reflects his or her prototype of behaviors and extent understanding of demanding occurrence. The quality of life is also determined by an individual's occupations and the income he/she drives from it. It has been found that most of the respondents (55.8 percent) have depended on agriculture activities. Furthermore, it has informed that 16.6 percent respondents have been involved in daily wages apart from apple cultivation for their subsistence of daily life. Similarly, 11.0 percent respondents have been involving in business, 9.0 percent respondents have depending on foreign remittances and 7.6 percent of respondents have been involving various activities like cottage industries, government and private services, construction contractors etc. (Table 3).

Table 3

Occupational structure of the apple growers

Activities	Number of respondents	Percentage
Business	16	11.0
Agriculture	81	55.8
Foreign employment	13	9.0
Daily Wages	24	16.6
Others (cottage industries, services, contractor etc.)	11	7.6
Total	**145**	**100.0**

Source: Field Survey, 2017

Literacy Status

Education status very often tends to be related to the economic status of the people. It is well known fact that education is one of the most important characteristics that might affect the person's attitudes and the way of looking and understanding any particular social phenomena. In a way, the response of an individual is likely to be determined by his educational status and therefore it becomes imperative to know the educational background of the apple growers. People with higher level of attainment also tend to be involved in more gainful off-farm activities. It has

been found that most of the respondents have literate in the study area. More than 85 percent respondents have different level of education however small portion of respondents still have illiterate (Table 4).

Table 4

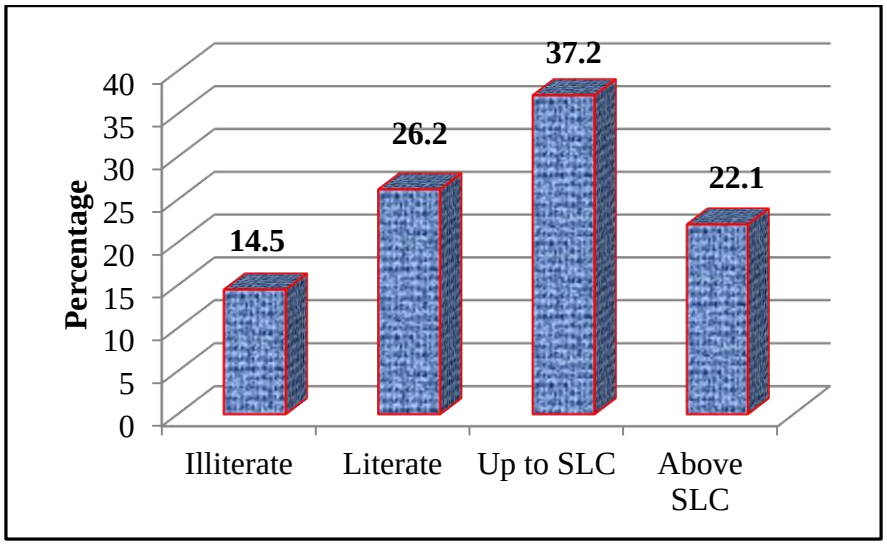
Education status of the respondents

Qualification	No of respondents	Percentage
Illiterate	21	14.5
Literate	38	26.2
Up to SLC	54	37.2
Above SLC	32	22.1
Total	**145**	**100.0**

Source: Field Survey, 2017

Figure 2

Education status of the respondents



Size of land holding by households

Size of land holding is also more important factor in socio- economic status of the farmer's family. Land holding in the study areas of apple growers is given in Table 5. It indicates that the maximum

apple growers (46.9 percent) have been found medium apple growers in terms of land holding categories (2.0 to 5.0 ha.) followed by 24.8 percent apple growers have small land holding categories (1 to 2 ha.), 18.6 percent apple growers have large land holding categories (above 5.0 ha.) and 9.7 percent marginal apple growers who had less than 1 hectare land (Table 5). Some researcher also found the same trend that medium land holding families grows apple in Marpha area.

Table 5

Size of land holding by households

Land size (Ha.)	Households	Percentage
Large (Above 5 ha.)	27	18.6
Medium (2 to 5 ha.)	68	46.9
Small (1 to 2 ha.)	46	24.8
Marginal (less than 1 ha.)	14	9.7
Total	**145**	**100.0**

Source: Field Survey, 2017

Use of fertilizers

The productivity of apple is affected by the use of farmyard manure.It has been found that most of the farmers (56 percent) have dependent on inorganic fertilizers for apple cultivation in Marpha. However, 23 percent farmers have been using bio-fertilizers and 21 percent use organic manure in their fields as these households own their livestock and use the livestock excreta as manure.

Production of apples

It has been found that production of apples in Marpha is increasing at a rapid rate. The apple production in the year 2015/16 was 3600 Mt. and it reached to 5818 Mt. in the year 2019/20. Where productivity also has been increased from 3.762 to 6.407 MT. per hectare during the same period though it is less than national level (8.53 MT. per hectare) . The different varieties of apples grown here include Royal, Red, Golden, Richard Delicious, Cox orange, Pipin, Pakistani masadi, Amri, Fuji, Raimer, Craab apple, American and Maharaja. Besides fresh apples, they also produced apple candies, apple brandy, wine, juice, crumble (dried apple).

Table 6

Area and production of apple in Marpha (last five years)

Year	Area (ha)	Production (Mt.)	Yield
2019/20	908	5818	6.407
2018/19	1257	5727	4.556
2017/18	900	5188	5.764
2016/17	867	4500	5.190
2015/16	957	3600	3.762

Source: Temperate Horticulture Development Center, Marpha (2020)

Marketing channels

Intervention in the marketing of apple is required to increase the prosperity of farmers and the encouragement of agribusiness. The satisfaction level of farmers from production and marketing of apple has been found deprived. The marketing channels has found not efficient in enhancing the marketing of apple.It has been found that 58 percent of the apple growers sell their apples through wholesaler, 31 percent by middle man (commission agents)and 11 percent by the help of retailers. It usually depends on the production of the apples.

Problems of apple growers

Seasonal road and poor marketing infrastructurehas been identified by the 60 percent respondents to be the major problem in apple production. Furthermore, 42.1 percent of respondents have been indicated the lacking of technical knowledge for production of apple, 37.2 percent of the respondents have informed that unavailability of inputs in time has became most serious problem for apple production. Insect pest damage (32.4 percent), lack of storage facilities (26.9 percent), price disparity (23.4 percent), and low quantity of production (22.8 percent) have been identified major problems of apple production and marketing problems in the study area. Similarly, there has been informed other problems like irrigation, government policies, etc.

Table 7

Problems of apple grower

SN	Problems	Respondents	Percentage
1	Seasonal road and poor marketing infrastructure	87	60.0
2	Underprivileged technical knowledge	61	42.1
3	Unavailability of inputs in time	54	37.2
4	Insect pest damage	47	32.4
5	Lack of storage facilities	39	26.9
6	Price disparity	34	23.4
7	Low quantity of production	33	22.8
8	Others (irrigation, government policies, etc.)	19	13.1

Source: Field Survey, 2017

Recommendation by the respondents

Efforts should be made to ignore the influence of commission and forwarding agents on apple trade and to establish such a distribution system of fruit as would ensure direct sale to the consumer. This type of marketing channel will be remunerative. Storage should also be constructed at export marketing centers to ensure the grower for storage at terminal markets when they feel low returns of their product as result of surplus at export marketing centers.

The available transport facilities of every mode have to be improved and expanded suitably. Economically poor growers should provide loans on low interest against their produce. Market information centers should be established which will provide the apple growers and trader's day to day knowledge and information about the happenings and trends prevailing in the various marketing centers in and outside the study area. Such a facility will help the growers/traders to decide about future market strategy. Adequate training arrangements should be made for imparting capacity development by the horticulture experts and provide education to the growers so as to equip them to face the marketing challenges. Apple growers may be informed about the latest horticulture technology; they should be trained in the art of bargaining, selling, price fixation and so on. Cooperative marketing is a unique pattern of marketing where the growers sell their produce to the cooperatives organized with the help of the Government. Although, there are some cooperative in the practice, these are totally inadequate and inefficient to meet the requirements and demand of the apple.

Advertising and publicity media should be expanded within and outside the production area. It is strongly suggested that there should be a national campaign launched by the various concerned stakeholders by creating an agency with foreign market association and organization. Horticulture

Research laboratories should be established in Marpha area so that control on pests and diseases may become possible. To meet the present requirement of irrigation feasible methods of irrigation i.e., wells, ditches, storage ponds and river canals etc. should be developed and extended. Merely by extended application of one particular method of irrigation cannot meet the requirement and demands of irrigation.

Table 8

Recommendation by the respondents

SN	Recommendations	Number of respondents	Percentage
1	Improve marketing channel	93	64.1
2	Upgrading in transportation facility	81	55.9
3	Development of storage facilities	44	30.3
4	Establishment of marketing information and news service	41	28.3
5	Capacity development training to the growers by technical experts	36	24.8
6	Promotion of cooperative marketing	33	22.8
7	Conduct advertisement campaign, publicity and establish research laboratories	29	20.0
8	Develop irrigation infrastructure	26	17.9

Source: Field Survey, 2017

Conclusion

Horticulture is a growing sector in the agricultural economy of Nepal. Apple is the most important temperate fruit product and highly potential in producing in the North Western Himalayan region of Nepal that found to be a profitable farm enterprise. Socio-economic condition of apple growers particularly age group, ethnic composition, occupational structure, literacy status of household head, size of land holding by households, use of fertilizers, production of apples, marketing channels have been analyzed in this study. Apple production has found mostly subsistent in nature with low productivity (only 6.407 MT per hectare comparison to national yield of 8.53 MT per hectare) in the study area. Intervention in the marketing of apple is required to increase the profitability of farmers and the promotion of agribusiness. Most of the respondents have found

literate in the study area and more than 56 percent households have been involving in agriculture activities with medium level (2 to 5 ha.) land holding size.

It is suggested by the farmers that the government should make available of inputs like plants, fertilizers, pesticides, spray machine and other inputs at subsidized rates and develop basic marketing infrastructures. That increases the financial risk to growers, especially of marginal growers.

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