CASE STUDY ON KHULAZU BASA VILLAGE KIWI FRUIT PLANTATION AND MARKETING

SUBMITTED BY

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Under the Supervisor of

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St. Joseph's College (Autonomous)

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Nagaland, India

2023

DECLARATION

I hereby declare that the research work entitled "**Case Study on Khulazu Basa Village Kiwi Fruit Plantation and Marketing***"* submitted to St. Joseph's College, Jakhama (Autonomous) is a record of an original work done by me under the guidance of **Dr. Mohd Faishal**, Assistant Professor Department of Economics, St. Joseph's College (Autonomous), Jakhama.

This research has not been copied or plagiarized from any other paper, journal, documents or book and has not been submitted to any other educational institution. This is an authentic piece of work and in case there is any query regarding the same, I shall be held responsible for answering any query in this regard.

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CERTIFICATE

This is to certify that the dissertation entitled, Case Study on Khulazu Basa Village Kiwi Fruit Plantation and Marketing being submitted by Ms. Metunulu for the award of the degree of Master of Arts in Economics of St. Joseph's College (Autonomous) Jakhama is the result of her investigation under my supervision. She has fulfilled all the requirements for the submission of the dissertation under the dissertation ordinance of the St. Joseph's College (Autonomous) Jakhama, and the dissertation presented is worthy of being considered for the Master degree in Economics

The work described in the dissertation is original and has not been submitted for any other degree or diploma in this or any other university.

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(**Ms**. **Metünülü**)

ABSTRACT

The present study on “Case Study on Khulazu Basa Village Kiwi Fruit Plantation and Marketing” was conducted in Khulazu Basa Village located in Chetheba subdivision, Phek district of Nagaland having a population of 2423 with 624 household from 1st to 6th March, 2023 with the objective to study area along with the problems and challenged involved in Kiwi farming. Data were collected using both primary and secondary source where 50 respondents were purposively selected and interviewed using questionnaire method.

The study revealed that majority of the Kiwi farmers in the study area have landholdings equal to 0.5 acres or below which shows that the production level is low because productivity depends on the size of area under cultivation. The results showed that the average annual production of Kiwi is less than 500 kilograms. Poor marketing infrastructure, small landholdings and price discrimination were some of the constraints faced by the farmers in the study area. Study suggested provision of storage facility along with setting up proper industry linkages and proper marketing system to increase production.

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INTRODUCTION

1.1 Introduction :

Kiwi fruit is a berry described as sweet and tart flavor just like gooseberry. It is native to China and center of origin is in the mountain ranges of South Western China. This is why it is also called as Chinese gooseberry. This fruit is brought to the New Zealand from the China in the early 20th century by the missionaries. Its name is derived from the native bird of the New Zealand i.e. "Kiwi". It belongs to the family *Actinidia* and its botanical name is *Actinidia delicosa*. It is declared as the national fruit of the China but the *Actinidia* genus is native to India, Japan and Chile.

Kiwi fruit farming and marketing have emerged as a profitable agribusiness in many parts of the world. The global kiwi fruit market is dominated by New Zealand, followed by Italy and Chile. These countries have well established kiwi fruit industry and their exports account for a significant share of the global market. The global Kiwi fruit market is expected to grow at a CAGR of 5.3% during the forecast period (2021- 2026), driven by the increasing demand for exotic fruits and the growing health- consciousness among consumers. The largest producer of Kiwi fruit are Italy, Japan and Chile respectively. Kiwi production area worldwide is 82,258 ha (**Mishra and Shukla, 2014**)

Kiwi fruit has high health benefits and is the most nutrient-rich of the top 26 fruit consumed in the world today. It also has the highest density of any fruit for Vitamin C and magnesium limited mineral in the food supply of most affluent countries and a nutrient important for cardiovascular health. Kiwi fruit has been shown to contain an anti-mutagenic component, helping to prevent the mutations of genes that may initiate the cancer process. Kiwi fruit has shown to be an immune booster, mostly likely due to its extremely high vitamin C content and its complement of antioxidant compounds which is why Kiwi fruit is known as one of the most nutrient-rich fruits (**Jindal et al. 2021**)

In India, the total area under cultivation is 4000 ha and production is 12000 MT. Kiwi is mostly grown in the mid-hills of Himachal Pradesh, Uttar Pradesh, Sikkim, Jammu and Kashmir,

Meghalaya, Arunachal Pradesh and Kerala. The main Kiwi varieties grown in India are Abbott, Allison, Bruno, Hayward, Monty and Tomuri. Presently, India imports 4000 tonnes of Kiwis from New Zealand, Italy and Chile while the domestic production is around 13000 MT of Kiwi fruit in an area of 4000 Ha in states like Arunachal Pradesh, Himachal Pradesh, Mizoram and Nagaland. While Nagaland has been introduced to Kiwi cultivation, the state is now considered to be the second largest producer and second largest in acreage. Kiwi production in the state is highest in Phek, Zunheboto and Kohima district and is being introduced in other districts. The main varieties grown are Hayward, Allison and Bruno. Nagaland presently cultivates a mix of all four varieties of Kiwi including Hayward, Allison, Monty and Bruno. It is large, broad oval shaped with slightly flattened sides and of superior flavor and good quality keeping.

Although the Kiwi is a recent introduction in the state, it has assumed tremendous popularity and preference among the growers as well as consumers due to its favourable properties for easy maintenance and marketing besides having high nutritional and medicinal values. According to the Directorate of Horticulture (2016-17), Nagaland Kiwi fruit production was 2524 tons (243 hectare).The five producing district are Kohima, Wokha, Zunheboto, Phek, and Peren. Phek district is the largest producer of Kiwi fruit with and production of 709 tones (79 hectare) and followed by Zunheboto respectively.

Over the years, the Kiwi fruit production has grown rapidly. The current trend in Kiwi fruit production in the district is towards organic and sustainable agriculture, with farmers adopting eco- friendly practices to improve the quality of the niche markets for organic Kiwi fruit, which fetches a premium price in the market. The state government has also recognized the potential of Kiwi fruit production in the region and has taken steps to promote it further. The government has established Kiwi fruit nurseries, provided training and technical assistance to farmers and facilitated market linkages for the sale of Kiwi fruit.

1.2 Objectives :

(a) To study the production and productivity of Kiwi in the study area
(b) To study the income generation through Kiwi plantation
(c) To analyse the prospects of Kiwi plantation in the study area
(d) To study the problems faced by the Kiwi farmers

1.3 Limitations of the Study:

(a) The study is limited to Khulazu Basa Village of Phek district of Nagaland and may not be representative of the Kiwi fruit industry in Nagaland.
(b) The sample size may be small due to limited resources and time constraints.
(c) The study is biased on self- reported data from the participants, which may be subject to biases.
(d) The study may be limited by the availability and reliability of secondary data sources.
(e) The study may be affected by external factors such as government policies, market trends and natural disasters which are beyond the control of the researchers.

1.4 Statement of the Problem :

There is lack of awareness about prospects of the production because of insufficient funds and help from the government. There is also wastage because lack of opportunities and proper structured management which is a major constrain in enhancing the productivity. Not much comprehensive study on Kiwi farming in Nagaland especially in the study area has been done before as a result there is a gap of research. Thus there is a need to do studies and bring awareness in the study area

1.5 Significance of the Study :

Kiwi fruit is a newly introduced in the study area. This study is carried out in order to highlight the potentiality as well as the problems that come with Kiwi farming in the study area. The Kiwi farmers in the study area have less information about the marketing capacity outside the study area. Thus through this study the people will understand about the production and marketing credibility in Kiwi plantation and also the drawbacks that come with it. The Kiwi fruit plantation and marketing in Khulazu Basa village have not been studied in-depth so far. Hence, this study aims to explore the Kiwi farming practices and marketing strategies adopted by the farmers in the study area.

1.6 Research Methodology:

(a) Area of study:

The study will be carried out in Khulazu Basa Village in Chetheba Subdivision, Phek district, Nagaland.

(b) Sampling design:

50 respondents will be selected and studied using purposive sampling.

(c) Sources of data:

Both primary and secondary sources of data collection will be used.

(d) Tools and technique:

To analyse the data collected, statistical tools like bar chart, pie chart etc.

(e) Period of study:

1st March to 6th March, 2023

1.7 Chapterization :

- Chapter 1: Introduction
    - 1.1 Introduction
    - 1.2 Objective
    - 1.3 Statement of the Study
    - 1.4 Significance of the Study
    - 1.5 Research Methodology
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  This chapter will include an overview of various academic writings on similar topics done by various scholars to get a greater depth of knowledge about the research topic

- Chapter 3 : Profile of the Respondents and the Study Area
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- Chapter 5 : Challenges and Suggestions

This chapter will bring to light the challenges faced by the Kiwi farmers and offer some suggestions to tackle those problems.

- Chapter 6 : Findings, Prospects and Conclusion:

This chapter will highlight the major findings from the study conducted, the prospects of Kiwi farming and Conclusion.

CHAPTER: 2
LITERATURE REVIEW

The literature review highlights the importance of Kiwi fruit farming and marketing in India and other parts of the world. The review will provide a theoretical framework for the case study on Kiwi fruit plantation and marketing in Khulazu Basa village and will guide the data collection and analysis in this study.

Strik and Cahn (2000) in Growing Kiwi Fruit studied the different process in Kiwi plantation and its management. The study was done on more than 13 different types of Kiwi fruit which are categorized as Fuzz Kiwi fruit, HardyKiwi, Kolomikta kiwi and Silver Vine Kiwi. It displayed the various steps which must be taken into account while establishing a Kiwi Vineyard which may include site selection, planting design, wind, water, soil and so on. The study also focused on the management of the Kiwi fruit vineyard which is essential for optimum growth and productivity. The process under vineyard maintenance or management includes fertilization, irrigation, pollination, fruit thinning and pruning and training. The final stage of Kiwi fruit plantation would include harvesting handling and storage.

Laipoulou and Haralabidis (2002) in A Study of the Factors Influencing the Kiwi Production Cost address the uncontrollable factors influencing the production of the farm and its economic result. The study was carried out in a farm situated in the area of Livadia, Northern Greece, covering a period of 7 years i.e. 1987-1994 from the initial planting stage to full growth. Several factors like climatic conditions, labor cost, land, rent and other costs were examined during the study. One major problem in the study shows the farmers in Greece tends to leave out the production cost, the rent of the field and the cost of other several factors as a result it hindered the process to ring out an accurate results. However despite of these shortcomings it was revealed that the growth phases were well established as a result the factors influencing the quality of the product was greatly controlled. Thus, the study made a conclusion that if much attention is given to other uncontrolled factors as well then the Kiwi farm would be very profitable.

Lin et al. (2011) in Effect of Kiwi Fruit Consumption on Sleep Quality in Adults with Sleep Problems examined the effects of Kiwi fruit on the sleeping habits of the adult. The study was carried out in Taipei Medical University where 24 subjects who had sleeping disorder due to stress or health problems from the age of 20-50 years were selected for the study. Primary method of collecting data was use where the subjects were studied for 4 weeks in order to check the changes in their sleeping pattern with the consumption of Kiwi fruit. The subjects were made to eat 2 Kiwi fruit1hour before bedtime for 4 weeks. The study revealed that there was improvement in the sleeping pattern after 4 weeks of consuming Kiwi fruit and may help in further research about sleeping-mechanism.

Jindal and Sharma (2016) made a research on Kiwi: A Potential Fruit Crop in North-East India with the objective to find out the areas suitable for production of temperate fruits and the major constraints in Kiwi fruit production. The study was carried out in the North-East India where 2-5 districts from each state were selected for the survey depending on their engagement in Kiwi plantation. The field survey revealed that West Sikkim is taking lead in Kiwi production followed by other states like Arunachal Pradesh, Nagaland, Meghalaya, Assam and so on. Some major constraints in Kiwi production included lack of quality planting material, package of practices, modern technology and trained manpower. The study shows that Kiwi plantation has a bright prospect in North-East states where farmers earn about Rs4-5 lakhs per hectares annually. The temperate fruits, particularly Kiwi fruit, could be developed into a vital industry for sustainable economy for the North Eastern states.

Mog et al. (2017) conducted a study on A Statistical Study on Pineapple in North-Eastern States of India for Sustainable Policy Development where database of 23 years in North Eastern states have been used. The initial year is 1991-92 and latest is 2013-14 which examined the instability of trend over years of pineapple area and production and productivity of pineapple crop. The study revealed that the production in North Eastern part is far lower as compared to the other parts of the country. The crop has high potential thus improved varieties and production would help the economic development of the entire region.

Rakha et al. (2017) in Qualitative and Shelf Life Evaluation Studies on Kiwi Fruit explores the nutritional value and the changes in the kiwi fruit when it is stored. The study was carried out at State Institute of Food Processing Technology, Lucknow, India. During the study the Kiwi fruit were analyzed physically for their chemical parameters. The study displayed the richness of the Kiwi fruit in ascorbic acid which was retained enormous at every storage period at its reducing sugar were in erased during storage period.

Shukla et al. (2018) in the study titled International Journal of Tropical Agriculture analysed the Kiwi fruit cultivation in Himachal Pradesh where many temperate fruits like apples, pears, plums etc are also cultivated. The study was conducted at Indian Agriculture Research Institute, Regional Station and Shimla from 2013 to 2016 where five species of kiwi were planted and assessed. The study revealed that the yield of the fruit increased with increasing age.

Yadav and Shalendra (2018) made a study on Kiwi Value Chain Analysis and Market Assessment for Lower Subansiri District, Arunachal Pradesh with the objective to carry out the value chain analysis and the identify the gaps in Kiwi value chain. Lower Subansiri is divided into 3 blocks i.e., Ziro-I, Ziro-II and Tamen-Raga. The study was conducted in Ziro-I as the cluster because Kiwi is almost entirely grown in Ziro-I block of the district where a total of 41 farmers across different villages were selected for the survey where they were interviewed to collect general information and data on socio-economic background, scale of production, marketing channels etc. Data was collecting using structured questionnaires and by referring published reports, information and data base of relevant sources and their website. The study

showed that 53% of the sample consisted of small farmers, 37% were semi-medium farmers and 5% were medium farmers. None of them fall in the category of large farmers. It also brings forward the economic status of the farmers where the average annual income of female was comparatively then the male farmers. One major problem in their findings shows that the farmers do not receive much support from the government with respect to subsidies/support for kiwi cultivation .It was also seen that farmers faced many challenges because of the requirement of high investment in the initial years of Kiwi cultivation. Moreover many farmers are ignorant and do not follow recommended package of practice. The study suggested that there is a need on-farm proper training and demonstration with regular monitoring and assistance.

Ragab et al. (2019) in Nutritional and Chemical, Studies on Kiwi *(Actinidia deliciosa) Fruits* assessed the chemical composition, phytochemicals and nutritional values of kiwifruits. The study was conducted by peeling and drying the Kiwi fruit (*Actinidia deliciosa*) for 6 hours which was then minced into powder form. The study showed that Kiwi fruit had high mineral content, phenolic compounds, flavonoid compounds and also fat content of 0.5% which is more as compared to other fruits. The study also revealed that Kiwi fruit has many health benefits as it had high nutritional value as well as anti-nutritional factors.

Begum et al. (2019) in Marketing of Orange: A Value Chain Perspective in the Selected Areas of Sylhet District in Bangladesh evaluated the marketing system and value chain analysis. The study was carried out in Sylhet district of Bangladesh where 40 producers were selected as sample. Both primary and secondary source of data collection was used. One major finding of this study showed that the marketing system of orange in Sylhet district is moved from the hands of producers to the hands of the consumers through 6 separate channels. A major challenge faced by the producers is that there is a need for proper financial assistance and that the present value chain analysis warrants a restructuring.

Sharma et al. (2020) examined Production, Marketing and Future Prospects of Kiwifruit in Nepal with an attempt to analyze the production trend, the export and import, current and future prospects of Kiwi fruit in Nepal. The data were acquired from the secondary source of FAO, MoAD, TEPC and various books and statistical records. The study revealed that the area under cultivation in Nepal has been increasing over the years with an average annual growth rate of Kiwi production of 46.5% from fiscal year 2014/15 to 2016/17. Some obstacles that the producers faced is the high initial cost, shortage of quality planting material, poor marketing facilities etc.

Tiwari and Bhandari (2020) in Study on Capital Investment and Marketing of Kiwi Fruit in Llam Nepal presented the socio-economic condition of the Kiwi entrepreneurs with the objective to assess the investment, marketing and provide guidance or measures for the promotion of Kiwi farming. The study was conducted in Llam municipality and Sandakpur rural municipality of Llam district where 41 farmers who were growing kiwi for at least 4 years were selected as samples. The data which was collected through primary source using questionnaires and

interview method were evaluated systematically using data analysis. The study revealed that Kiwi cultivation in Llam district was found to be very profitable and contributed as a source of income to the Kiwi farmers. However one of the major problems in the findings shows that the farmers need to be more educated about the marketing structure. There were also shortage of storage facility and the fear of getting attack by the wild animals was also considered as one of the major production and marketing problems. The study concluded by suggesting expanding its Kiwi production along with providing greater storage facility.

Thakur et al. (2020) in Effect of CPPU (Sitofex) on Quality and Yield in Kiwi Fruit made an attempt to study on the different effects of N-(2-Chloro-4-pyridyl)-N'-phenylurea (CPPU) on Kiwi fruit. The study was carried out in Chamba district of Himachal Pradesh, India in 2018 which was conducted by spraying the CPPU on Kiwi vines for 7 years. The findings shows that there was an increased in fruit size and yield in Kiwi with a high net returns and there can be possibility of great improvement in the future.

Verma et al. (2021) conducted a study on Phyllactinia actinidiae (Jacz.) Bunkina Causes Powdery Mildew on Kiwi Fruit in India with an objective to study the powdery mildew disease on Kiwi fruit. The symptoms were first identified in Solan District in Himachal Pradesh in May 2020. In June 2020 the samples were taken to Fruit Pathology Laboratory in order to investigate its pathogenicity and morphology. The study showed that the disease was identified as *Phyllactinia actinidiae* which caused powdery mildew. They concluded that the disease can be a threat to the kiwifruit industry even though the disease is low at present.

Yarazari et al. (2022) carried out a study on *Production and Marketing Problems Faced by Dry Grapes Producers of Karnataka.* The study was carried out in 2 taluks located in Vijaya district, Karnataka where 200 respondents were selected. Heavy investment on inputs, high rate of interest, lack of adequate extension support and technical guidance, lack of support from the government were some of the limitation in the production and marketing. The study concluded by suggesting that entrepreneurship development program needs to be carried out so as to make the people aware about the full potential of dry grape production.

CHAPTER: 3

PROFILE OF THE STUDY AREA AND THE RESPONDENTS

This segment contains a brief profile of the study area and the respondents. A total of 50 Kiwi farmers were selected and interviewed personally to find out in greater detail the benefits and the cost of carrying out Kiwi cultivation in the village. A table and figure for each variable is given presenting the data.

3.1 Brief Profile of the Study Area

Figure 3.1 Graphical representation of the study area

Source: Google map

Khulazu Basa Village is situated in Chetheba circle of Phek district, Nagaland (India) with a population of 1839 as per census data of 2011, in which male population is 924 and female population is 915. The total number of house hold in the village is 531. According to the census 2023 carried out by the Chakhesang Public Organization, the total population has increased to 2423 with 1231 male and 1192 female with 624 household.

In 2011 semi-government organizations from Pfutsero known as Chakhesang Women Welfare Society (CWWS) came to Khulazu Basa Village and distributed Kiwi saplings to farmers. They encouraged the farmers to carry out Kiwi farming by providing them with financial assistance, tools and materials and educating them on the benefits of Kiwi farming. As a result, most of the Kiwi farmers have started their Kiwi farming journey with the saplings provided by the CWO. Most of the farmers in this village have been cultivating kiwi fruit for over a decade. The Kiwi

fruit production in Khulazu Basa village is predominantly of Hayward variety, which is known for its high yield and good quality. The production of Kiwi fruit in Khulazu Basa Village is mainly organic with no use of chemicals and pesticides. The farmers use organic manure and bio- fertilizers to enhance soil fertility and improve the quality of the fruit. The Kiwi fruit production is predominantly of the Hayward variety, which is known for its high yield and good quality. Overall, Kiwi fruit production in Khulazu Basa village is a promising agricultural venture for small- scale farmers in the region. With its growing popularity and market demand, Kiwi fruit cultivation has the potential to boost the rural economy and improve the livelihoods of local farmers.

3.2 Age Group

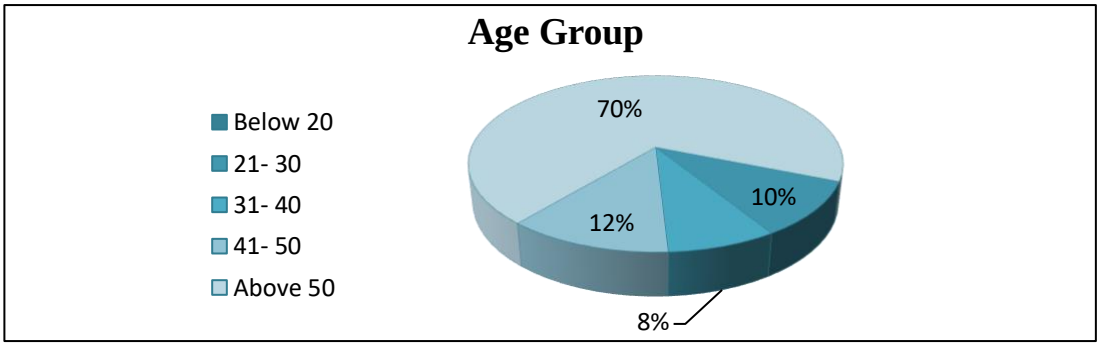
Table 3.2.1 Age group of the respondents

Age Range	No. of respondents	Percentage
Below 20	0	0
21- 30	5	10%
31- 40	4	8%
41- 50	6	12%
Above 50	35	70%
Total	**50**	**100%**

Source: Field Survey 1st March to 6th March, 2023

On the above table the age group of the respondents has been divided into 5 categories. Most of the Kiwi farmers out of 50 respondents belong to the category 'Above 50' with a total of 35 respondents ut of 50 respondents. While the age group 21-30 had 5 respondents, age group 31-40 had 4 respondents and 41-50 had 6 respondents.

Fig: 3.2 Graphical representation of the age group



Source: Field Survey 1st March to 6th March, 2023

3.3 Gender

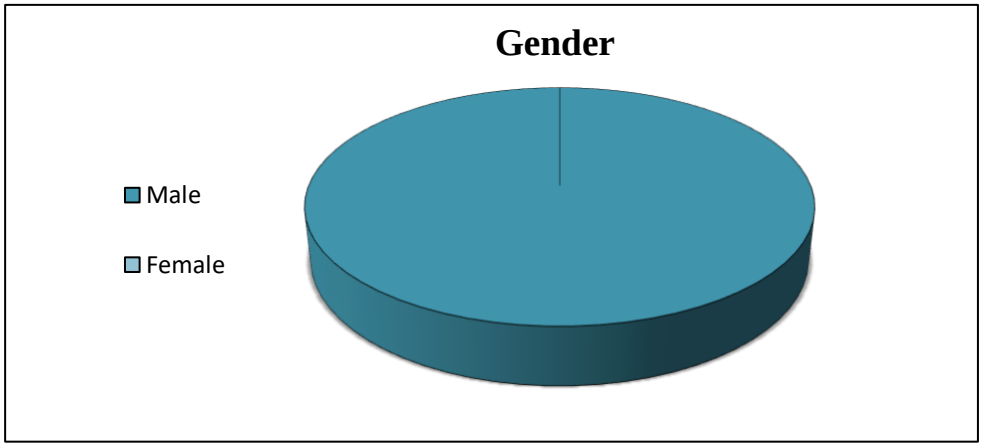
All of the 50 respondents were male mainly because of the patriarchy system where the father or the male is the head of the family and looks after the entire household. However there is no doubt that women also plays a very important role and helps out in looking after the Kiwi farm such as weeding, harvesting, selling etc.

Table 3.3.1 Gender of the respondents

Gender	No. of Respondents
Male	50
Female	0
Total	**50**

Source: Field Survey 1st March to 6th March, 2023

Figure 3.3 Graphical representation of gender of the respondents



Source: Field Survey 1st March to 6th March, 2023

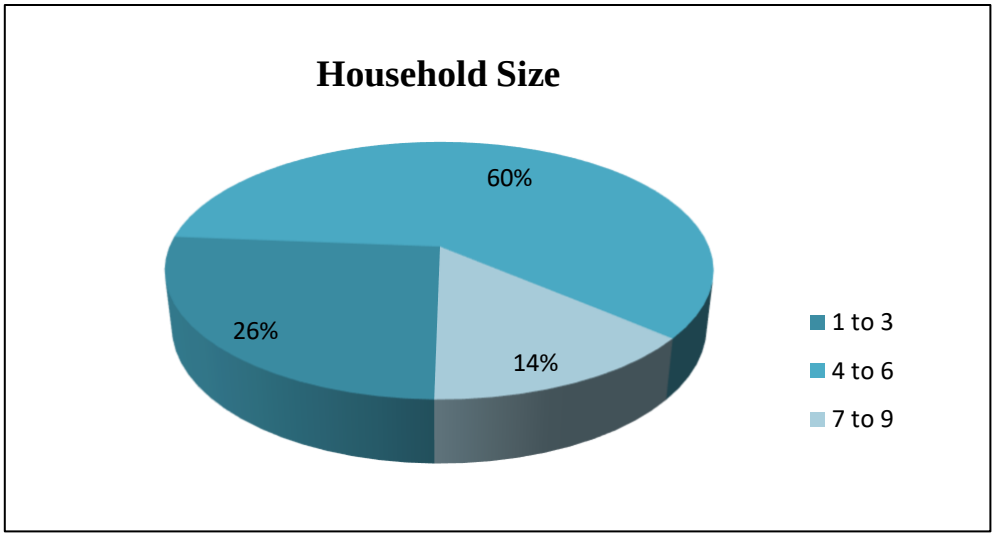
3.4 Household Size

Table 3.4.1 Household size of the respondents

Household Size	No. of Respondents	Percentage
1-3	13	26%
4-6	30	60%
7-9	7	14%
Total	**50**	**100%**

Source: Field Survey 1st March to 6th March, 2023

Figure 3.4 Graphical representation of household size of the respondents



Source: Field Survey 1st March to 6th March, 2023

Majority of the respondents i.e. 60% has a household size falling in the category of 4-6 followed by 26% in the category 1-3 and 14% in the category 7-9. These data were collected base on how many family members are currently living together under one household and excluding those children who are married and living in a different household.

3.5 Marital Status

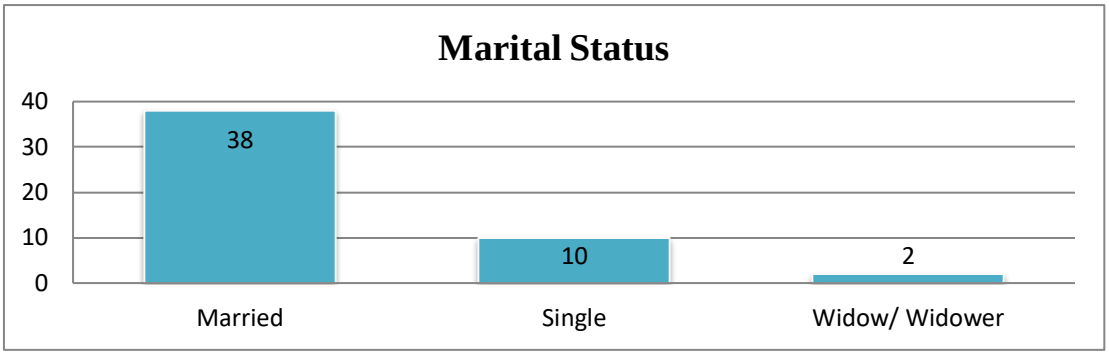
Table 3.5.1 Marital status of the respondents

Marital status	No. of Respondents	Percentage
Married	38	76%
Single	10	20%
Widow/Widower	2	4%
Divorced	0	0%
Total	**50**	**100%**

Source: Field Survey 1st March to 6th March, 2023

Marital status is the legally defined marital state. There are several types of marital status: single, married, widowed and divorced.

Fig: 3.5 Graphical representation of the marital status



Source: Field Survey 1st March to 6th March, 2023

3.6 Educational Qualification

Educational qualification refers to the official confirmation, usually in the form of a certificate, diploma or degree, certifying the successful completion of an education program or a stage of program. The table given below shows that majority of the respondents out of 50 respondents has acquired moderate education.

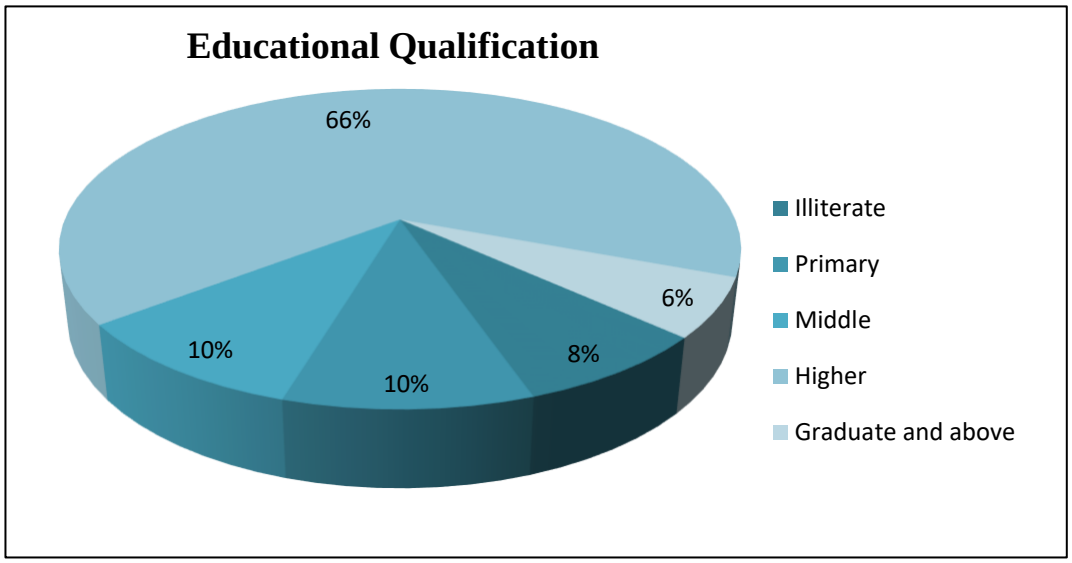
Table 3.6.1 Educational qualification of the respondents

Educational Qualification	No. of Respondents	Percentage
Illiterate	4	8%
Primary	5	10%
Middle	5	10%
Higher	33	66%
Graduate and above	3	6%
Total	**50**	**100%**

Source: Field Survey 1st March to 6th March, 2023

The educational qualification can be represented graphically as shown in figure 3.6. Out of 50 respondents only 8% are illiterate while 10% have acquired primary level of education, 10% have acquired middle level of education, 66% have acquired higher level of education and 6% are under the category of Graduate and above. This shows that the farmer's education level is fairly good.

Figure: 3.6 Graphical representation of education qualification of the respondents



Source: Field Survey 1st March to 6th March, 2023

3.7 Main occupation of the respondents

The main occupation of the people living in the rural areas is agriculture. As such out of the 50 respondents, majority of the respondents are agriculture as their main occupation. Almost all the people in the village are engaged in both terrace cultivation and shifting cultivation.

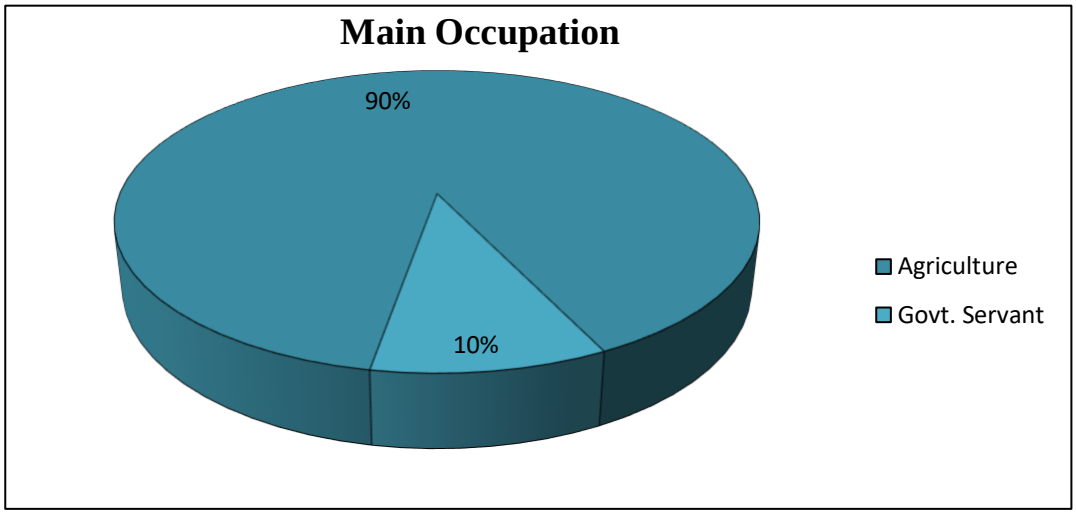
Table 3.7.1 Main occupation of the respondents

Main Occupation	No. of Respondents	Percentage
Agriculture	45	90%
Govt. Servant	5	10%
Total	**50**	**100%**

Source: Field Survey 1st March to 6th March

The main occupation of the people as represented in the pie chart below shows that 90% of the respondents are exclusively dependent on agriculture for their livelihood while 10% of the respondents are partially employed as government servants but they also partially depend on agriculture.

Figure: 3.7 Graphical representation of the occupation of the respondents



Source: Field Survey 1st March to 6th March, 2023

CHAPTER: 4

ANALYSIS AND INTEPRETATION OF DATA

This chapter contains analysing and interpreting the assembled data by reviewing and examining the data regarding the production, productivity and income.

4.1 Source of Saplings

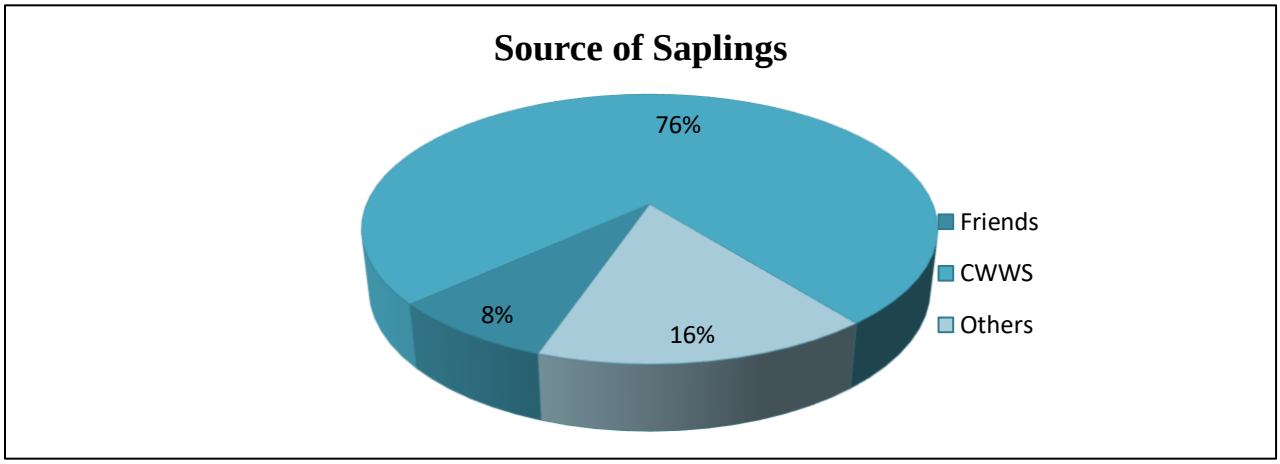
Majority of the Kiwi farmers got the Kiwi saplings from Chakhesang Woman Welfare Society (CWWS) which indicates that almost all the Kiwi farmers started their journey at the same time, while the others got the saplings from neighboring village i.e. Thipuzu Village which is one of the major Kiwi fruit producing village in Phek district.

Table 4.1.1 Source of Saplings

Source of saplings	No. of Respondents	Percentage
Friends	4	8%
CWWS	38	76%
Others	8	16%
Total	**50**	**100%**

Source: Field Survey 1st March to 6th March, 2023

Figure: 4.1 Graphical representation of source of saplings



Source: Field Survey 1st March to 6th March, 2023

4.2 Area Under Cultivation

Area under cultivation means the area that corresponds to the total sown area. The area of landholdings by the farmers for kiwi farming is measured based on acres. The farmers in Khulazu Basa Village are mostly small to medium-sized, ranging from 0.5 to 2 acres in size. The plantations are solely owned and managed by the individual farmers with no government intervention. The farmers who own and managed these plantations are mostly small- scale farmers who have diversified their crops to include Kiwi fruit as a high- value cash crop.

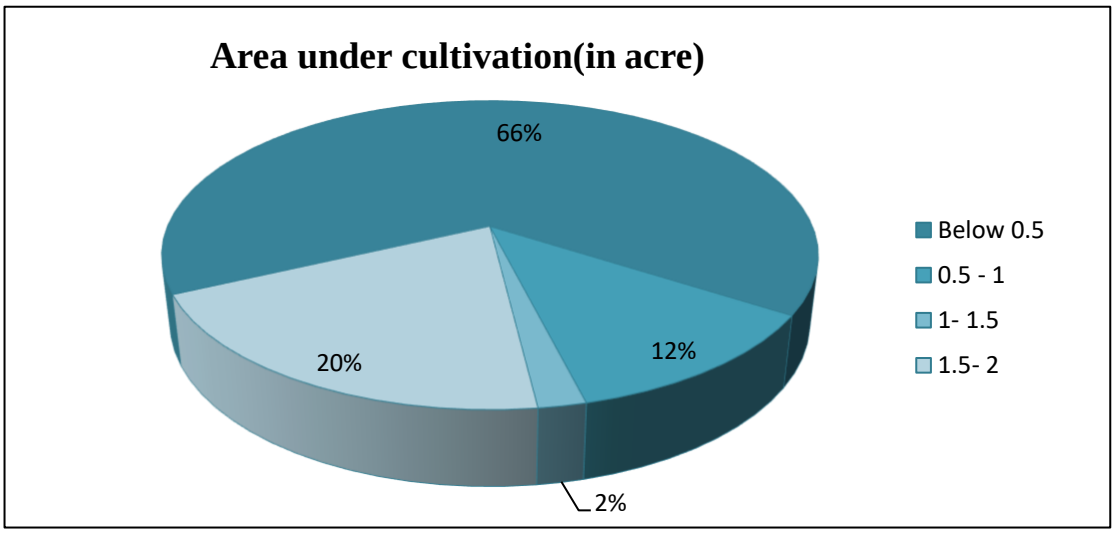
Table 4.2.1 Area under cultivation

Area under cultivation (in Acre)	No. of Respondents	Percentage
Below 0.5	33	66%
0.5 - 1	6	12%
1- 1.5	1	2%
1.5- 2	10	20%
Total	**50**	**100%**

Source: Field Survey 1st March to 6th March, 2023

The data given in the table shows that majority of the farmers i.e. 66% own land equal to 0.5 acres or below.

Figure 4.2 Graphical representation of area under cultivation



Source: Field Survey 1st March to 6th March, 2023

4.3Years of Experience

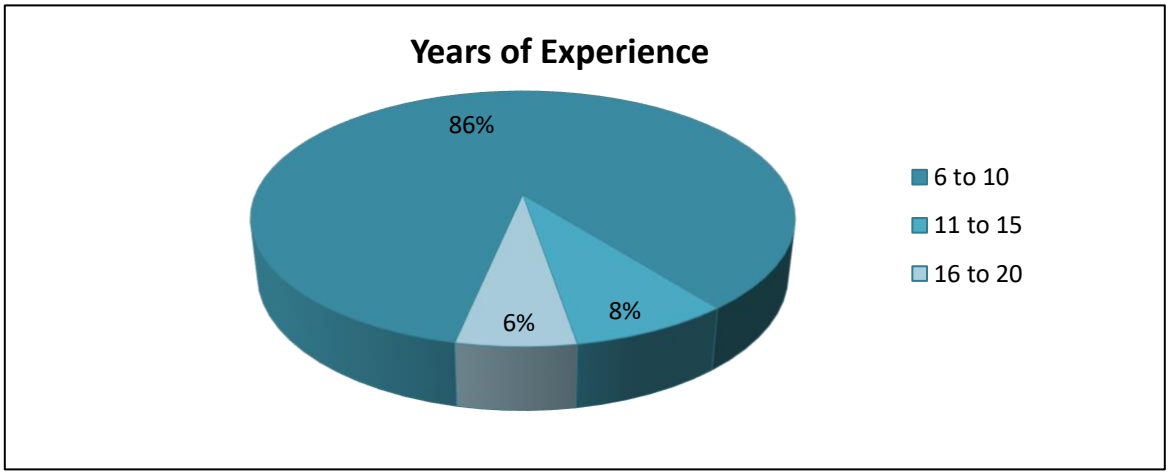
The table below shows the year of experiences of the farmers in Kiwi farming. About 86% of the respondents have experience within the year range of 6- 10, 8% have experience within the year range of 11- 15 years while 6% within the year range of 16- 20 years. The years of experience ranging from 6 years to as long as 20 years indicate that Kiwi farming started in the study area during the early 2000s.

Table 4.3.1 Years of experience of the respondents

Year	No. of Respondents	Percentage
6 - 10	43	86%
11- 15	4	8%
16- 20	3	6%
Total	**50**	**100%**

Source: Field Survey 1st March to 6th March, 2023

Figure: 4.3 Graphical representation of years of experience



Source: Field Survey 1st March to 6th March, 2023

4.4 Harvesting Months

The production process of Kiwi fruit in Khulazu Basa Village involves several stages including planting, orchard management, harvesting and post- harvesting handling.

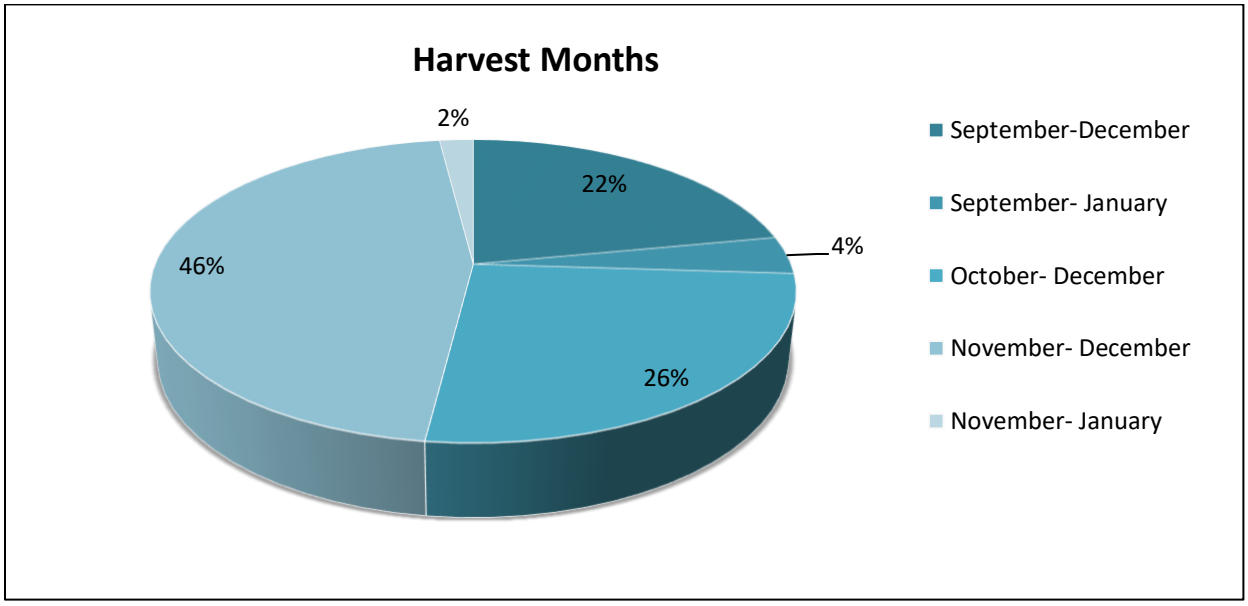
Table 4.4.1 Harvesting months of Kiwi fruit

Harvest month	No. of respondents	Percentage
September-December	11	22%
September- January	2	4%
October- December	13	26%
November- December	23	46%
November- January	1	2%
Total	50	100%

Source: Field Survey 1st March to 6th March, 2023

The harvesting of Kiwi fruit in the study area usually takes place between October and December which would sometimes extent till January depending on the weather conditions and maturity of the fruit. Farmers would carefully handpick the fruit to avoid damage and ensure optimal quality.

Figure 4.4: Graphical representation of harvesting months



Source: Field Survey 1st March to 6th March, 2023

4.5 Labour Employed

Majority of the farmers would employ family labour as the land under Kiwi cultivation is small and they usually prefer working themselves. Moreover most of them are just mere farmers and they cannot afford to hire labour when they can do the work themselves.

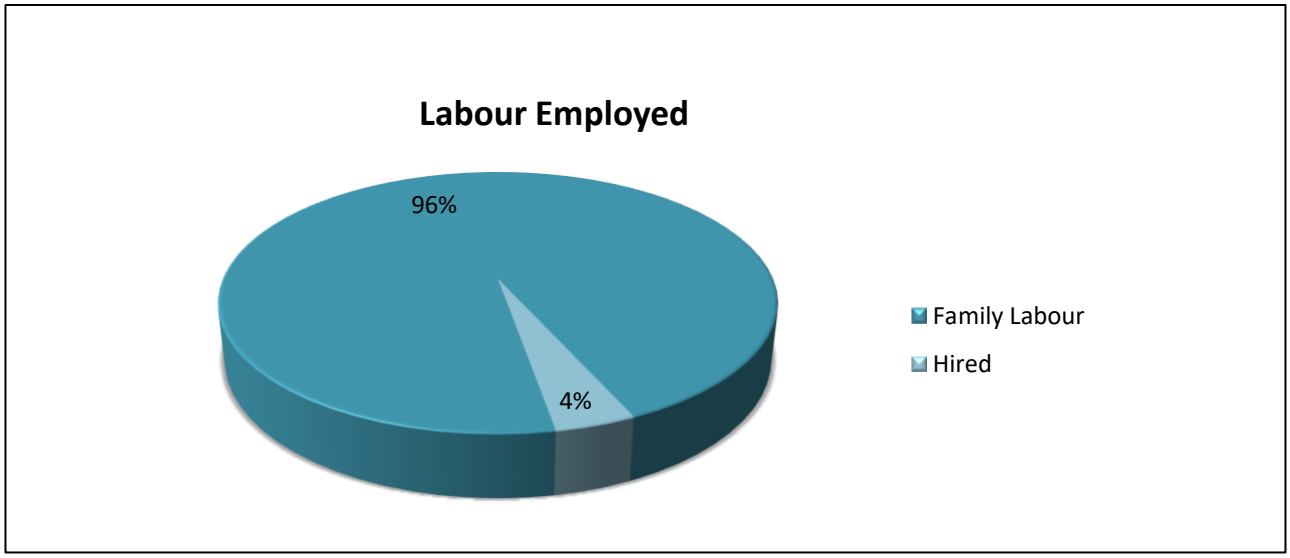
Table 4.5.1 Labour employed

Labour Employed	No. of Respondents	Percentage
Family Labour	48	96%
Hired	2	4%
Total	**50**	**100%**

Source: Field Survey 1st March to 6th March, 2023

The data given shows that only 4% i.e. only 2 people out of 50 respondents hires labour to work. However this does not mean that only the hired labour would work. The hired labour usually helps only during the initial plantation and during weeding.

Figure: 4.5 Graphical representation on the type of labour employed



Source: Field Survey 1st March to 6th March, 2023

4.6 Yearly Production

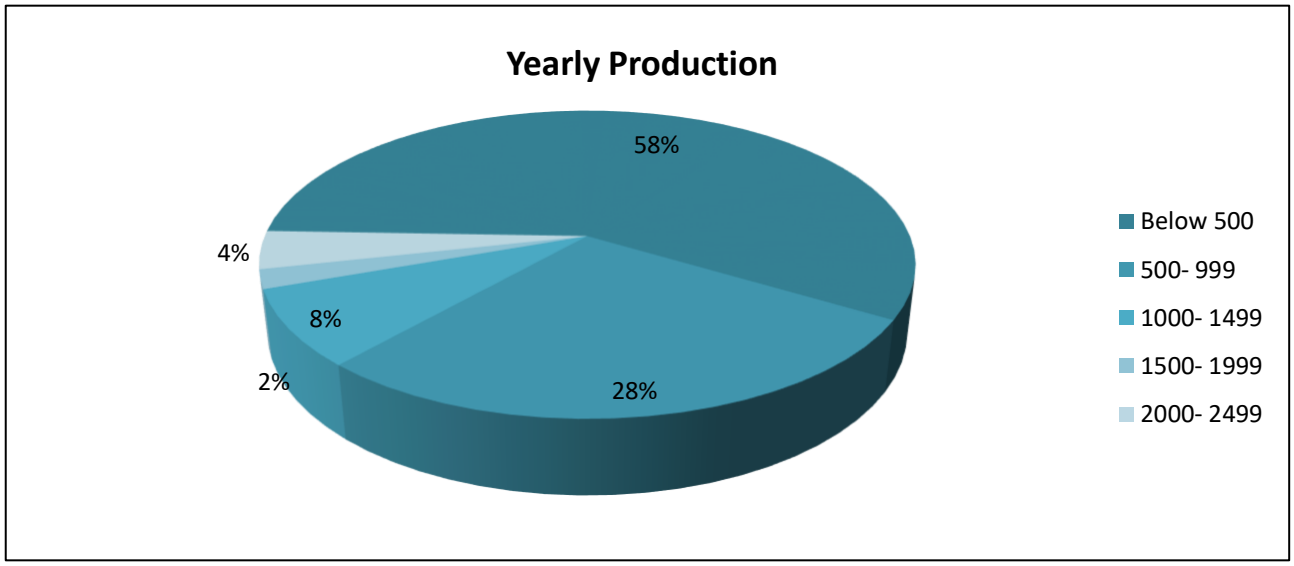
Table 4.6.1 Yearly production

Yearly Production	No. of Respondents	Percentage
Below 500	29	58%
500- 999	14	28%
1000- 1499	4	8%
1500- 1999	1	2%
2000- 2499	2	4%
Total	**50**	**100%**

Source: Field Survey 1st March to 6th March, 2023

The above table 4.6.1 shows the annual productivity of the farmers. It is calculated in terms of Kilograms. The production unit is divided into five categories i.e. Below 500, 500- 999, 1000- 1499, 1500- 1999, 2000- 2499. Majority of the respondents i.e. 58% belong to the category Below 500.

Fig: 4.6 Graphical representation of yearly production



Source: Field Survey 1st March to 6th March, 2023

4.7 Spoilage Rate

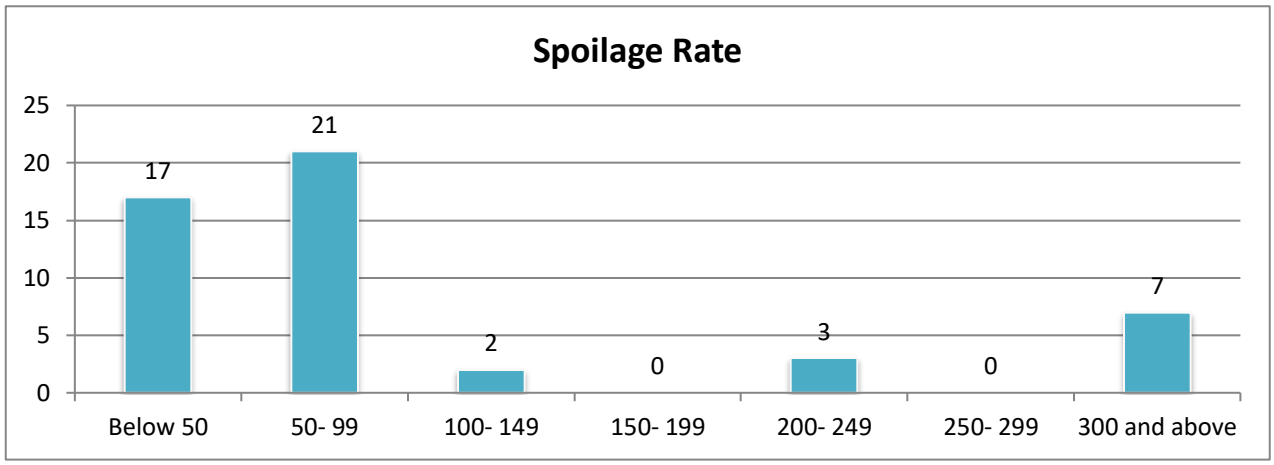
The spoilage rate is measured in terms of kilograms. As given in the table below majority of the Kiwi farmers i.e. 42% tends to experience a spoilage rate of 50- 99 kgs, 34% of the farmers experience a spoilage rate of Below 50 kgs, 14% experiences a spoilage rate of 300 and above, 6% experiences a spoilage rate of 200- 249 kgs and 4% experiences a spoilage rate of 100-149 kgs.

Table: 4.7.1 Spoilage rate

Spoilage rate (in Kgs)	No. of Respondents	Percentage
Below 50	17	34%
50- 99	21	42%
100- 149	2	4%
150- 199	0	0%
200- 249	3	6%
250- 299	0	0%
300 and above	7	14%
Total	**50**	**100%**

Source: Field Survey 1st March to 6th March, 2023

Figure: 4.7 Graphical Representation of the spoilage rate



Source: Field Survey 1st March to 6th March, 2023

4.8 Main Market

Marketing channels and strategies play a crucial role in the success of any agricultural product. The local market for Kiwi fruit in Khulazu Basa village is primarily comprised of small- scale retailers or middlemen who purchase the fruit directly from the farmers. One of the most common marketing channels for Kiwi fruit in the study area is through intermediaries such as retailers and middlemen as shown in the table given below. Most the farmers prefer selling off their produce to the middlemen because they would come to the village itself and take the

produce which means the farmers would not have to worry about arranging transportation or finding buyers.

Table 4.8.1 Main market

Main market	No. of Respondents	Percentage
Retailer	20	40%
Middlemen	27	54%
Others	3	6%
Total	50	100%

Source: Field Survey 1st March to 6th March, 2023

4.9 Market Price

The rate set by the village authorities is 60- 80 per kg in the study area. However the price of Kiwi fruit usually depends on the size of the fruit. The intermediaries would buy the fruit from the farmers at a low price and would resale to other agents or consumers at a higher price. As shown in the table below the retailers would buy within the price range of 40-50 while the middleman would buy at price range of 40- 60 and others in the price range of 35- 90.

Table 4.8.1 Market price of Kiwi fruit

Market price	Retailer	Middleman	Others
60- 80	40- 50	40- 60	35- 90

Source: Field Survey 1st March to 6th March, 2023

4.8 Annual Income

As shown in the table 4.9.1, the income group are categorize as Below 10,000, 10,000- 19,999, 20,000- 29,999, 30,000-39,999 and so on. About 34% of the respondents have total income which is equal to 10,000 or below followed by 36% of the respondents have total income ranging between 10,000- 19,999, 10% have total income ranging between 20,000- 29,999, 8% have total

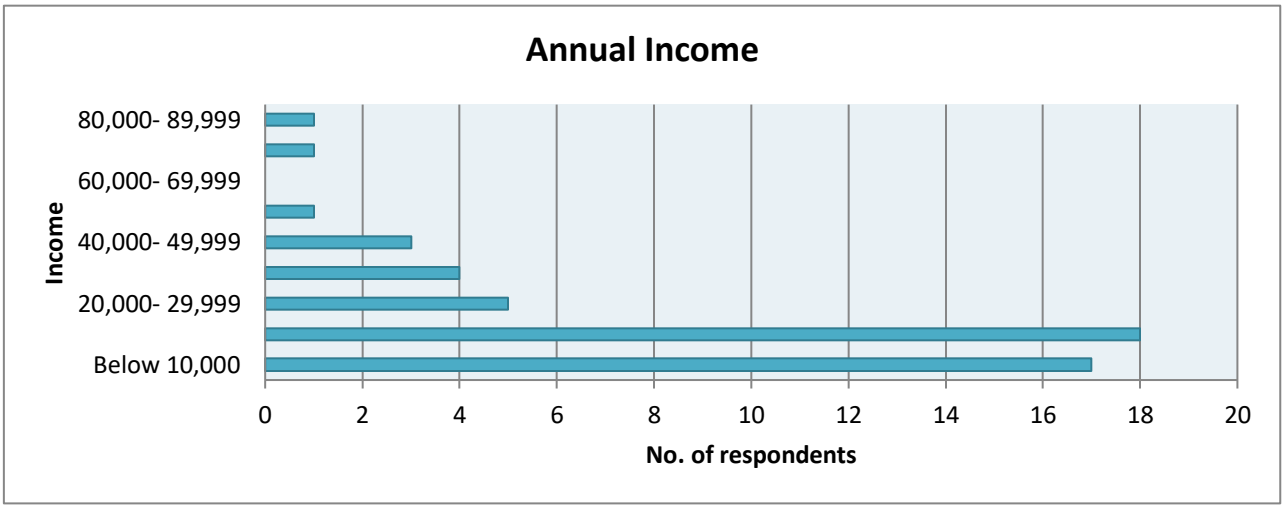
income ranging between 30,000- 39,999, 6% have total income ranging between 40,000- 49,999 while 2% each have income range between 50,000- 59,999, 70,000- 79,999 and 80,000- 89,999.

Table 4.9.1 Yearly Income

Annual Income	No. of Respondents	Percentage
Below 10,000	17	34%
10,000- 19,999	18	36%
20,000- 29,999	5	10%
30,000- 39,999	4	8%
40,000- 49,999	3	6%
50,000- 59,999	1	2%
60,000- 69,999	0	0%
70,000- 79,999	1	2%
80,000- 89,999	1	2%
Total	50	100%

Source: Field Survey 1st March to 6th March, 2023

Figure 4.9 Graphical representation of Annual income



Source: Field Survey 1st March to 6th March, 2023

4.9Income Sufficiency

This data was collected based on how many kiwi farmers were contended with the income earned from Kiwi farming. The table below shows that 30% of the farmers are contended with the income earned from kiwi farming mainly because they are aware of the fact that they have less area under cultivation for kiwi fruit and small land holdings would mean less production.

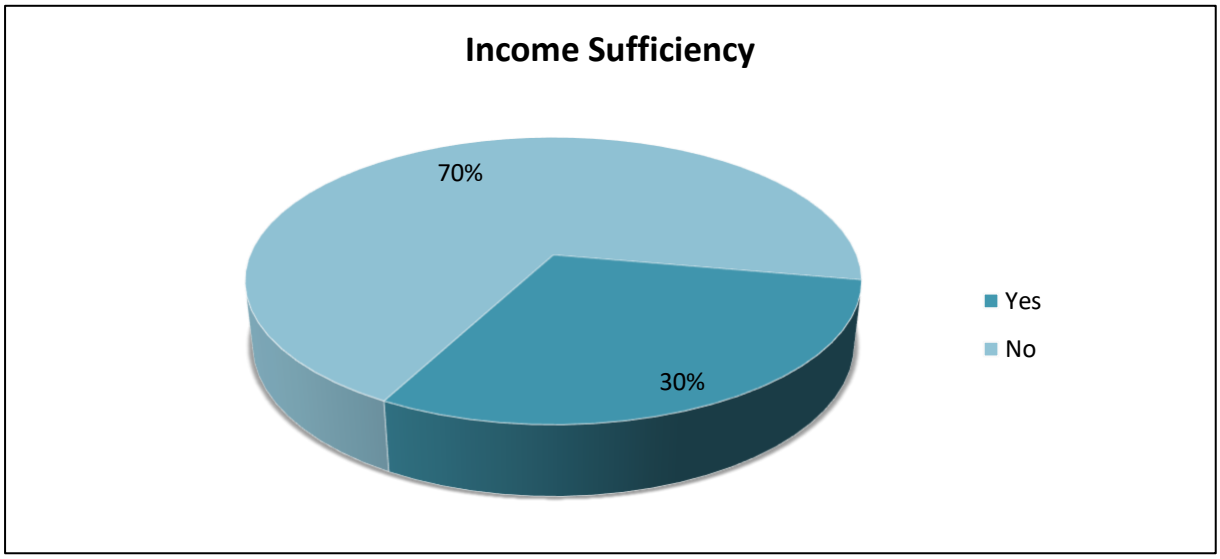
While 70% of the respondents are not contended with the income earn from kiwi farming because price discrimination that they face because of improper marketing infrastructure.

Table 4.10.1 Income Sufficiency

Income Sufficiency	No. Of respondents	Percentage
Yes	15	30%
No	35	70%
Total	50	100%

Source: Field Survey 1st March to 6th March, 2023

Figure: 4.10 Graphical representation of Income Sufficiency



Source: Field Survey 1st March to 6th March, 2023

CHAPTER: 5

CHALLENGES AND SUGGESTIONS

This chapter will analyse the constraints and highlight the challenges and problems faced by the farmers in the study area and analyse the way forward for better practice in Kiwi farming.

5.1 Some problems and challenges faced by the Kiwi farmers are :

(a) Small land holdings: Most of the farmers have small land holdings. As shown in table 4.2.1 majority of them have land equal to 0.5 acres and below which is one of the major problem as to why there is less production. More areas for cultivation would mean more production. However it is observed that the Kiwi farmers in Khulazu Basa village are engaged not only in Kiwi farming but also in other agricultural practices such as shifting cultivation and terrace cultivation.

(b) Lack of skill: During the initial stage of introducing the Kiwi farming in the study area by the CWWS, there was a fair amount of training and information given to the farmers as to how to go on about with the plantation. However most of the farmers do not have any formal training and they only depend on their instinct and experience which is why there is constraints in the production.

(c) Poor marketing network: Marketing involves bringing the produce from the farmer to the consumer. It includes activities such as finding buyers for the products, negotiating prices and transporting goods. In Khulazu Basa Village the Kiwi fruit production has been steadily increasing however the marketing channels and strategies used by farmers are limited. The marketing structure in the rural areas is not proper and the farmers do not have any external knowledge and information about the marketing system. Therefore they are force to sell their produce at a low price or even give them away because they cannot find buyers. This situation creates an incentives for small farmers not to produce more than what they need for their own consumption. This is one of the biggest problems faced by the farmers in the study area.

(d) Price discrimination: Improper marketing structure results in price discrimination to the farmers. The farmers do not have any control in setting up the price of their own produce. It is the middleman or whoever is buying who would demand the price and the farmers do not have any say.

(e) Lack of storage facility: There are no storage facilities. The Kiwi farmers in the study area would go and harvest the kiwi fruit only when there is demand. Thus the farmers are force to sell off their produce immediately. The farmers in the study area would store the fruit in their own respective home.

(f) Lack of infrastructure: There are no proper infrastructural facilities. Farmers have to depend on others to transport their produce which increases their costs significantly.

(g) Inadequate transport: Farmers in the study area have Kiwi farm that are far from the village or where there is no proper road connectivity. As a result they are required to transport their produce themselves by foot which is time consuming and this can also mean that farmers are not able to bring the product to better market where they will get adequate profit. Moreover even if there is road connectivity, the farmers often do not have the luxury to hire transportation system and sometimes they prefer doing the work manually.

(h) Lack of modern farming equipment: Majority of the farmers in the study area are solely dependent on primitive tools and equipment such as spade, double edge axe, knives etc because most farmers don't have lands huge enough to use advanced instruments. They do not have access to modern technology which hampers their production.

(i) Lack of capital: There is no credit systems made available to the Kiwi farmers. The lack of financial resources affects not only productivity but also affects the quality of agricultural produce. Moreover the schemes from the government are yet to reach the farmers mainly because they do not have the knowledge on how to acquire it and they have limited information on the availability of such schemes. Most of the farmer in the study area makes expenses on transportation while 4% from 50 respondents makes expenses while hiring labour.

(j) Schemes from Government: The data analysis shows that most of the farmers have attained moderate education however they do have any knowledge or information regarding the schemes available regarding agriculture. So far none of the farmers in the study area have gotten any financial help or schemes from the government.

(k) Attack from pests and insects: Pest can attack and break the plant's root, stem, leaf, or other parts which can affect the quality and quantity of production. However the farmers are not much concerned about this because it is not very prevalent as a result they don't intend on using pesticides or insecticides. Apart from the attack from pest, there are wild animals such as squirrels, birds etc that would come and eat the kiwi fruit from the branch itself. This increases the spoilage rate.

(l) Natural calamities: There is hardly any natural calamity that causes hindrance to the production. However in April 19, 2022 there was heavy hailstorm in some parts of the study area which destroyed many properties and also damaging many crops.

(m) Crop management: During the initial stage of planting the saplings, most farmers face the difficulty of setting up post for the branches to grow which is the most crucial part of Kiwi farming.

(n) Inexperience labour: Most of the farmers in the study area lack proper training. They do not have proper scientific knowledge and lack systematic approach to farming. They mainly carry out Kiwi farming practice just based on their experience and traditional method.

In conclusion, the performance of Kiwi fruit production in Khulazu Basa Village is influenced by various factors such as planting techniques, crop management and market structure. Despite the favourable conditions for kiwi fruit cultivation, farmers face several challenges that affect their production and profit margins. Therefore, it is crucial to address these challenges and provide farmers with the necessary technical knowledge and infrastructure to improve the performance of Kiwi fruit plantations in the region.

5.2 Suggestions to tackle the problems and challenges faced by the farmers:

(a) Proper marketing system: The marketing system should be properly managed so that the farmers can sell their products at a fair price. In this manner, the farmers organisations such as the Farmers Union (FU) or the village authority in the study area can play a better role in administrating the marketing system and protect the interests of the farmers from getting exploited which is often seen in the form of price discrimination.

(b) Financial help: Proper financial help should be given to the farmers so that they can expand their areas for cultivation and increase their productivity. There are hardly any credit facilities available for farmers to carry out such practices. The village authorities at the local level must try to acquire credit facilities for such farmers and encourage them to carry on with the practice of kiwi farming because it is immensely profitable.

(c) Storage facility: Kiwi fruit is marketed for consumption as fresh fruit. Kiwi fruit are available only for three to four months in a year, this arises a need of proper storage facility and processing units. Thus the farmers need to maintain a proper storage facility so that the Kiwi fruits can be preserved during the period between the harvesting and selling off in the market.

(d) Government aid: The government should ensure that farmers are connected to the market so that they can reap a fair price for their produce.

(e) Proper industry linkages: For better disposal of Kiwi fruit produce, the producer – industry linkage need to develop as the fruit has potential for processing and preservation.

(f) Create awareness: The farmers can be educated on the importance of carrying out Kiwi farming.

CHAPTER: 6

FINDINGS, PROSPECTS AND CONCLUSION

The findings of this study will provide insights of the best practices for Kiwi farming and marketing in Khulazu Basa village which could help the farmers to enhance their productivity and profitability.

6.1 Some of the major finding includes:

(a) Nagaland is one of the second largest producers of Kiwi fruit in India. It contributes 30-40 metrics tons. The five producing district are Kohima, Wokha, Zunheboto, Phek, and Peren.

(b) Phek district is the largest producer of Kiwi fruit and production of 709 tones (79 hectare) and followed by Zunheboto respectively.

(c) The study found that Kiwi fruit production in the area is relatively new, with most farmers having only started cultivating the crop in the last decade. The study identified several factors affecting the performance of Kiwi fruit plantations in the area including the use of improved cultivars, proper management practices and access to markets.

(d) Socio-economic profile reveals that majority of the Kiwi farmers in the study area belong to the age group ‘Above 50’, all of whom are male.

(e) Majority of the farmers have small land holdings with land equal 0.5 acres and below. The largest landholders in study area would be equal to 2 acres only.

(f) Majority of the farmers earn an income between 10,000 to 19,999 as shown in the table 4.9.1, while 34% of the farmers earn an income Below 10,000. However the farmers are contended with the earnings from the Kiwi farming because majority of the farmers have land holding equal to 0.5 acres and below.

(g) From the data analysis we find out that most of the farmers prefer selling off their produce to the middlemen because they would come to the village itself and take the produce which means the farmers would not have to worry about arranging transportation or finding buyers.

(h) The farmers are especially interested in carrying out the Kiwi farming because there is not much cost incurred in maintain the Kiwi farming practice. Even though 4% out of 50

respondents would incur expenses in hiring labour, majority of the farmers does the work themselves and the only thing they invest is their time.

(i) The study found that farmers in the area face several challenges related to marketing, including lack of information about market demand and limited access to markets.

6.2Prospects of Kiwi farming:

The demand for Kiwi fruit has been increasing in the domestic and international markets. India is a net importer of kiwi fruit and the majority of the Kiwi fruit consumed in India is imported from countries such as New Zealand, Italy and Chile. The Indian government has taken various initiatives to promote Kiwi fruit cultivation and exports, including subsidies to farmers and setting up cold storage and packaging facilities.

The Kiwi fruit industry in Nagaland remains largely unexplored and underdeveloped. However, the demand for kiwi fruit is increasing in India due to its nutritional value and health benefits. Kiwi fruit cultivation has the potential to contribute to the local economy and improve the livelihoods of farmers. The state government has taken various initiatives to promote kiwi fruit cultivation in the region. However, there is limited information available on the production and marketing practices of Kiwi fruit in Nagaland.

The Kiwi production in Khulazu Basa village, district of Nagaland has a relatively short history, with the first kiwi fruit orchard established in the early 2000s. Initially, the cultivation of kiwi fruit in the study area was limited only to few, but it gained popularity among farmers due to its high cultivation.

6.3 **Conclusion**

The study on “Case Study on Khulazu Basa Village Kiwi Fruit Plantation and Marketing” has shown that Kiwi cultivation can be a profitable venture for farmers. The findings of the study have highlighted that the various issues and challenges that farmers face in the production and marketing of Kiwi fruit in the study area and suggested that farmers can increase their production and profit margins by adopting appropriate practices such as high-yielding varieties, nutrient management, effective marketing strategies such as improving product quality and utilizing market information.

While there are still some limitations and challenges, such as limited market infrastructure and lack of market information, the growing interest in Kiwi fruit production and marketing in the study area presents opportunities for further development and growth.

Overall, the study concludes that Kiwi fruit production in Khulazu Basa Village has significant potential for growth and expansion. However, the successful development of the industry will depend on the implementation of appropriate policies and interventions to address the challenges faces by the farmers in the area.

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ANNEXURE

I, Metunulu, a student of St. Joseph's College (Autonomous), Jakhama, am currently pursuing my Master of Arts in the Department of Economics. As a part of my dissertation, I am undergoing a research on the title "A Case Study on Khulazu Basa Kiwi Fruit Plantation and Marketing". The purpose of this questionnaire is to collect data intended for educational purpose only. Your answers will be treated as completely confidential and will only be released as part of statistical analysis. Therefore your participation will be highly appreciated.

1) Respondent No.
2) Gender: Male/ Female
3) Age:
   (a) Below 20
   (b) 20- 30
   (c) 30- 40
   (d) 40- 50
   (e) Above 50
4) Marital Status:
   (a) Married
   (b) Single
   (c) Widow/ Widower
   (d) Others

5) Educational Qualification:
   (a) Illiterate
   (b) Primary
   (c) Middle
   (d) Higher
   (e) Graduate and above

6) Total number of members in the family: ……..
   Male…… Female …….
9) Age & Occupation of your family:

Sl No.	Age	Occupation	Sl No.	Age	Occupation

10) How long have you been practicing Kiwi farming?
    (a) Less than 1 year
    (b) 2-3 years
    (c) 3-4 years
    (d) 4-5 years
    (e) More than 5 years

11) How did you learn about Kiwi farming?
    (a) Family
    (b) Friends
    (c) Others, please specify:

12) Is agriculture your main occupation? Yes/ No
    If no, please specify:

13) Are you a member of any farmer cooperative society? Yes/ No
    If yes, please specify:

14) What is your source of saplings?

15) What are the tools and implements used?
    (a) Traditional tools
    (b) Modern tools
    (c) Others, please specify:

16) How many areas of land are under Kiwi production? (in acres/ sq. feet)

17) What type of labour do you usually employ?
    (a) Family labour
    (b) Hired labour
    (c) Others, please specify:

18) What is the wage rate of labour per day?
    (a) 200- 400
    (b) 400- 600
    (c) 600- 800
    (d) More than 800

19) When do you harvest?

20) How many times do you harvest in a year?
   (a) Once
   (b) Twice
   (c) Thrice

9) Do you have storage place for your yield? Yes/ No
   If no, then where do you keep your produce?

10) What is the monthly/ yearly production? (in kg)

11) What is the problems face during production of Kiwi fruit?
   (a) Poor soil quality
   (b) Attack from pest and disease
   (c) Lack of government support
   (d) Lack of information
   (e) Use of primitive tools
   (f) Others, please specify:

12) What are the various cost incurred in the production process?
   (a) Labor wage
   (b) Manures
   (c) Fertilizers
   (d) Transportation
   (e) Others, please specify:

13) How much quantity of Kiwi fruit do you produce for commercial purpose?

14) How much quantity of Kiwi fruit do you produce for self- consumption?

15) Do you face any spoilage? Yes/ No

16) If yes, what was the main reason for spoilage?
   (a) Lack of storage facilities
   (b) Attack of pests and diseases
   (c) Natural calamities
   (d) Others:

17) How much quantity of Kiwi fruit gets spoiled?

18) How do you market your produce?

Quantities	Consumers	Middleman	Retailer	Wholesaler	Others
10- 20 kilos					
20- 30 kilos					
30- 40 kilos					
50- 60 kilos					
60- 70 kilos					
70- 90 kilos					
90- 100 kilos					
More than 100 kilos					

19) Price received from consumers:

20) Price received from middleman:

21) Price received from retailer:

22) Price received from wholesaler:

23) Price received from others:

24) What is the market price of Kiwi fruit?

25) How is the price determined?

26) Are you satisfied with the market price?
   (a) Satisfied
   (b) Not satisfied

27) Where do you prefer to sell your produce?

28) Are you contended with the income earn from kiwi farming? Yes/ No

29) Do you have access to market information on Kiwi fruit (demand, supply, price, etc) Yes/ No

If yes, where do you get information :

30) Do you face any challenges or problems under Kiwi marketing? Yes/ No
31) If yes, what are the problems?
    (a) Price fluctuation
    (b) Low returns
    (c) Lack of demand
    (d) Lack of storage facilities
    (e) Lack of market
    (f) High transportation cost
    (g) Lack of support from the government
    (h) Others, please specify:

32) Have you attended any training, workshop or seminars on Kiwi production? Yes/ No
    If yes, was it helpful?

33) Are you aware of Government schemes and facilities? Yes/ No
        If yes, please specify:

34) Do you have access to any credit facilities provided to the farmers?
    (a) Yes
    (b) No
35) If yes, please specify:

36) Have you benefited from any governmental schemes? Yes/ No
    If yes, please specify:

37) In your opinion what is the biggest problem faced by your household in marketing:
    (a) Lack of demand
    (b) Lack of support from the government
    (c) Lack of storage facilities
    (d) Lack of transport facilities
    (e) Lack of quality planting materials
    (f) Poor soil quality
    (g) High price of fertilizers
    (h) Lack of market information
    (i) Lack of proper marketing structure
    (j) Lack of training and workshop

38) Suggest some measures to improve Kiwi production and marketing:

39) Do you plan on making this Kiwi marketing business bigger?

Signature:

THANK YOU FOR YOUR PARTICIPATION

PHOTO GALLERY

These photos were collected during the field survey (i.e. 1st March to 6th March, 2023) which shows the leaf development stage of Kiwi fruit viz the first major growth stage.