Value Chain Analysis of Agro-Products of Ri-Lajong FPO in Ri-Bhoi District, Meghalaya: A Case Study

Project Report

Submitted to the

Central Agriculture University, Imphal

in partial fulfillment of the requirements

for the award of the degree of

Master of Business Administration (Agriculture)

In

Agri Business Management

by

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SCHOOL OF SOCIAL SCIENCES

COLLEGE OF POST GRADUATE STUDIES

IN AGRICULTURALSCIENCES

CENTRAL AGRICULTURAL UNIVERSITY, IMPHAL
Umiam, Pin: 793103, Meghalaya, India

September 2024

Dedicated

To My

Dearest Parents

SUBOD SAH

AND

BINDU DEVI

COLLEGE OF POST GRADUATE STUDIES IN AGRICULTURAL SCIENCES
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CERTIFICATE – I

Certified that **Mr. Uday Kumar** {Admission No. **CAU/CPGS/MBA/M22/03**; Registration No. **U-18-JH-01-001-B-H-045**} has satisfactorily prosecuted his course of research for a period of not less than two semesters and that the project report entitled **"Value Chain Analysis of Agro-Products of Ri-Lajong FPO in Ri-Bhoi District, Meghalaya : A Case Study"** submitted by him to the Central Agricultural University, Imphal – 795 004 (Manipur) in partial fulfilment of the requirements for the award of the degree of **Master of Business Administration (Agriculture)** in the subject of **Agri Business Management** is the result of original research work conducted by him under my supervision and is sufficiently of high standard to warrant its presentation to the examination.

I also certify that the thesis or part thereof has not been previously submitted by him for a degree of any University.

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CERTIFICATE – II

This is to certify that the project report entitled **"Value Chain Analysis of Agro-Products of Ri-Lajong FPO in Ri-Bhoi District, Meghalaya : A Case Study"** submitted by **Mr. Uday Kumar [Regn. No. U-18-JH-01-001-B-H-045]** submitted to the Central Agricultural University, Imphal – 795 004 (Manipur) in partial fulfilment of the requirements for the award of the degree of **Master of Business Administration (Agriculture)** in the subject of **Agri Business Management** has been approved by the Student's Advisory Committee after oral examination jointly with a Dean's Nominee.

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DECLARATION

I here by declare that project report entitled **“Value Chain Analysis of Agro-Products of Ri-Lajong FPO in Ri-Bhoi District, Meghalaya: A Case Study”** is an authentic record of the work done by me and that no part thereof has been presented for the award of any other degree, diploma, associateships, fellowships or any other similar title.

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Date……. Uday Kumar

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LIST OF ABBREVIATIONS

ABBREVIATIIONS	FULL FORM
AMSL	Above Mean Sea Level
B:C	Benefit cost
CAU	Central Agricultural University
CEO	Chief Executive Officer
etc	and so on
et.al.,	Co-workers
Fig.	Figure
FPC	Farmer Producer Company
FPO	Farmer Producer Organizations
GCA	Gross Cropped Area
GDP	Gross Domestic Product
GOM	Government of Meghalaya
ha	Hectare
KCC	Kisan Credit Card
kg	Kilogram
SFAC	Small Farmers Agribusiness Consortium
NABARD	National Bank for Agricultural and Rural Development
NEH	North Eastern Hill
Qtl	Quintal

SOI	Survey of India
US	United State
viz.,	Namely
$	Dollar
₹	Rupee
%	Percentage

ABSTRACT

A value chain is a progression of activities that a firm operating in a specific industry performs in order to deliver a valuable product (i.e., good or service) to the end customer (Porter, 1985). The Farmers Producer Organizations (POs) are formal rural organizations whose member are smallholder farmers who organize themselves with the objective of improving farm income through Improved production, marketing, and local processing activities (Rondot, 2001). As of March 2023, India has 23,354 active FPOs, with 821 in the North East (NAFPO, 2023). This study focuses on two main objectives: (1) To work out the value addition of four major Agri-products of Ri-Lajong FPO. (2) To study the costs and margin of value added Agri-products. Primary data was collected from the CEO, Vice president and Treasurer of the FPO using pre tested standardized interview scheduled. Secondary data was collected from the annual reports of government agencies, websites and FPO. The study established analytical frameworks, including cost concepts, value addition, marketable surplus, market margin, marketing cost, net return and B:C ratio for different agro-products of the FPO. The study found value addition for Turmeric was highest with ₹45.88/kg among all the major products. The B:C ratio for Turmeric, Ginger, Pineapple and Black pepper were 1.53, 1.44, 2.17, 1.36, with highest B:C ratio (2.17) was Pineapple. The study recommends that the FPO should thoroughly explore and implement the setup of a processing unit and must investigate opportunities in the global market and explore the potential of e-commerce platforms to expand its reach and enhance its market presence.

Keywords: *Value chain, Farmers Producers Organizations, Ri-Lajong, Agro-Products*

Chapter-1

Introduction

Chapter 1

Introduction

1.1 Background of Value chain

The increase of middle-class and upper-class populations in India over the past few decades has resulted in notable shifts in their dietary habits and preferences. When the global agriculture markets are growing and developing, it has happened globalized. But because they are unable to integrate with global markets due to the tiny volume of their product and marketable excess, impoverished small holder in developing nations like India are unable to profit from such improvements (De Janvry and Sadoulet 2005, Daviron and Gibbon 2002, Reardon and Barret 2002). For impoverished and smallholder farmer in emerging nations, particularly India, it is the main cause of their declining economic viability. The demand for agricultural products appears to be rising significantly on a global scale as a result of urbanization, population growth, and other associated issues. Consequently, the worldwide agricultural value chain is currently valued at US $5 trillion, a figure that is projected to rise in the future.

Value chain analysis looks at the kind and amount of value addition in a supply chain as well as possible waste reduction. Unlike process output measurements, it expressly focuses on the factor that determine value within a manufacturing process. The idea of an agricultural value chain encompasses all the steps and player involved in getting agricultural goods from input supplier to farmer fields and, eventually, customer For the chain to be viable, each stakeholder is connected to the other Reducing middlemen in the chain and bolstering value-adding activities through improved technology and inputs, enhanced infrastructure, processing, and exports would be possible by connecting farmer to markets through effective value chains (Higgins *et al* 2010).

Farmer-producer organizations (FPOs) are created to organize marginal and small farmer in a state at various levels in order to enhance the member standard of living (Singh and Vatta, 2019; Kumar *et al*., 2021; Srikar *et al*., 2021). FPOs are the most practical organization for energizing producer to strengthen their capacity, increase their combined output, and strengthen their ability to negotiate for inputs and farm goods (Manaswi *et al*., 2018; SFAC, 2022). When agricultural output reaches end-customer, a value chain of player and activities adds value to it. Through

processing, packaging, storage, transportation, and distribution, the agricultural value chain vertically connects or networks corporate organizations. It includes the flow of goods, knowledge, and information, as well as financial and social capital, and it culminates in the final product for customer while also establishing price points and allocating profits at each level (Gereffi *et. al.,* 2001).

A value chain is a progression of activities that a firm operating in a specific industry performs in order to deliver a valuable product (i.e., good or service) to the end customer (Porter, 1985).

- Highlighting three crucial value chain levels:
  - Value chain actor: These individuals create, process, exchange, and own things directly.
  - Supporter of the value chain: They offer services but never interact with the product directly. However, they improve the product's worth.
  - The regulatory environment, regulations, infrastructures, etc., which have an impact on the value chain (Bammann, 2007).

Agricultural value chains represent the movement of goods, information, and expertise from farmer to producer to consumer, and they offer opportunities for value addition at every stage. By changing resources and utilizing infrastructure by maximizing its institutional context, value chains seek to add value to the products or services. Farmer, producer, trader, food corporations, retailer, and consumer make up the typical agricultural and food value chain. The availability of resources and physical infrastructure, market orientation, institutions, and availability of markets are all significant barrier to the development of value chains (Grunert *et al,* 2005, Porter, 1990 and Scott, 1995).

Value chain analysis study helps to map the value chain of a specific product involving various value chain actor, which may use qualitative or quantitative approach. While the produce moves from one chain actor to another chain actor, it gains value in the form of price mark-up. The chain actor who actually transacts a particular product as it moves through the value chain, include input dealer (e.g., seed supplier), farmer, trader, processor, transporter, wholesaler, retailer and final consumer. The value chain framework has been used as a powerful analysis tool for strategic planning and is useful in identifying and understanding crucial aspects to achieve competitive strengths and core competencies in the marketplace. The model also reveals how the value chain activities are tied together to ultimately create value for the consumer. In order to conduct the value chain analysis, the activities are split

into primary and support activities. Primary activities are those that are related with production, while support activities are those that provide the background necessary for the effectiveness and efficiency, such as human resource management.

Value chain analysis studies, which may take a qualitative or quantitative approach, assist in mapping the value chain of a particular product including numerous value chain participants. Produce gains value in the form of price markup when it travels from one chain retailer to another. Input dealer (such as seed provider), farmer, merchants, processor, transporter, wholesaler, retailer, and ultimate consumer are among the chain player who actually transact a specific product as it goes along the value chain. The value chain framework is helpful in finding and comprehending essential factor to obtain competitive strengths and core competencies in the marketplace. It has been employed as a potent analysis tool for strategic planning. The value chain operations are linked together in the model to finally provide value for the consumer. The activities are divided into primary and support activities in order to undertake the value chain analysis. Primary activities are those that are involved in production, whereas support activities, like human resource management, offer the backdrop essential for effectiveness and efficiency.

1.2 Development of Farmer Producer Organization in India

In 2003, the Companies Act, 1956 underwent an update that added a provision for the establishment of FPCs. A producer company is a cross between a private limited company and a cooperative society, according to the National Bank for Agricultural and Rural Development (NABARD). As such, it benefits from both the shared advantages of a cooperative society and the expert management of a private limited company. Despite significant financial assistance and over 15 year of government effort, the country only has about 5000 Farmer Producer Organizations, of which about 3200 are registered as Producer Companies and the remainder as Cooperatives / Societies, etc. Founded by NABARD, the Small Farmer Agri-business Consortium, or private program. The majority of FPCs are located in a small number of states, including Bihar, Madhya Pradesh, Karnataka, and Maharashtra. Indian Organic Farmer Producer Company, Kerala was the country's first FPC and was established in 2004.While some of the FPCs are involved in commercial seed production, a sizable majority of them have been selling farmer agricultural inputs including seeds and insecticides. Only a small number of FPCs, meanwhile, have succeeded in turning a profit. Indian farmer generally confront a number of challenges because of their tiny operations, and small and marginal farmer in particular. The inability to establish

economies of scale, low amounts of marketable surplus leading to low bargaining power, capital shortages, lack of market access, ignorance and lack of information, defects in the market, and inadequate infrastructure and communications are a few of these. In light of this, there has been a rise in recent year in interest in the Farmer Producer Organization and their business. Its ability to help reduce poverty has received a lot of attention. The majority of the research on collective action highlights that the primary advantages of organizing farmer are the decrease of transaction and coordination costs and the increase in economies of scale. Other important justifications for forming agricultural organizations include the development of countervailing power, preferential conditions for accessing capital markets, risk management, and income enhancements. In this environment of hybrid organizations, the majority of farmer organizations function as multipurpose organizations and provide a wide range of services to their member, regardless of the particular kind of organization. The paradigm of farmer producer organizations and producer firms, which are emerging as a new type of formal farmer organization in the agricultural sector of India, as a bridge between institutions of collective action and market-driven commercial corporations for analysis. One example of how agricultural communities are changing towards more profit-oriented forms of organization is the rise of producer businesses. These adjustments might be understood as responses to a changed commercial and regulatory landscape in India. Producer businesses foster an entrepreneurial spirit at the community level, in contrast to top-down smallholder market integration approaches like contract farming or outgrowing. They support farmer empowerment by giving them control over important assets and production choices. Producer businesses simultaneously work to open up new markets by creating adaptable connections to highly specialized demand through agricultural product value addition. The market's supply and demand sides are both negatively impacted by this fragmentation of Indian agriculture. Small-holding farmer frequently struggle to use information and technology, which is a problem with the supply side. In general, low levels of technology input lead to low output levels, poor earnings, and low production of surplus value to sustain family life. Finding a sufficient supply of goods matching certain quality criteria at the necessary time is sometimes challenging on the demand side of the marketplaces. Large-scale distribution companies, like the developing retail chains in India, are also looking for alternatives to the current supply models, which involve a number of independent middlemen, including small aggregator, trader, and wholesaler, in between smallholder production and retail distribution. Consequently, it is difficult to meet the increasing demand both domestically and internationally for some products, such high-value vegetables sourced from smallholder farms, in terms

of both consistent volume and quality. About 138 million agricultural holdings total 92.8 million marginal holdings and 24.8 million small holdings are found in India (Census, 2011). This means that almost 85 per cent of all holdings are small and marginal, and they make up 44.6 per cent of the country's managed area. Land fragmentation causes an annual increase in the number of land holdings in the marginal and small sector of 1.5 to 2.0 million. In addition to being economically unfeasible, the farmer adoption of high-yielding varieties and inputs like seeds and fertilizer is also hindered by this fragmentation and disorganization. Due to their lack of market access, they are compelled to sell their produce directly from the field.

1.3 The problem of the study

Meghalaya state and India both have seasonal agricultural production. During the flush season, there is a lot of output, and during the lean season, there is significantly less. Businesses are starting to recognize the challenge of efficiently employing the excess production during flush seasons. In order to lengthen the lean season and preserve agricultural products for a longer period of time, India's agricultural surplus must be processed. Behind every successful company there is always, at least one idealist. This is true in case of this company also. Shri Pralad Singh Tur founder Chairman of Ri-Lajong Farmer Producer Company, Nongpoh, Ri-Bhoi district, Meghalaya is a driving force behind this company. In order to provide small and marginal farmer in Ri-Bhoi and the surrounding region with a profitable vocation and help them raise their level of life, he came up with the idea to form a farmer enterprise. The FPO was started with 50 farmers during the year 2011-12 but now it is working with more than 5000 farmers. The FPO offer its member farmer a wide range of services, including hybrid seeds and saplings, improved piglet breeds, scientific farming methods, hoeing and cultivation instruments, etc. Regarding the sale and processing of agricultural goods, Ri-lajong Farmer Producer Company is among the most prosperous, reputable, and well-established Farmer Producer Organizations in the Ri-Bhoi area. Since Meghalaya is well-known for its turmeric and other agricultural products, Ri-lajong FPO is one of the unions that is essential to the state's agricultural business. The company started off selling turmeric to other Indian states when it first opened for business in 2011–12.

Given the Farmer Producer Company's track record of success, it was determined to use this business as a case study to examine various facets of its economic operations. It is therefore, the study viz., “Value chain analysis of agro-products of Ri-Lajong FPO in Ri-Bhoi District, Meghalaya: A case study” is undertaken with the following specific objectives.

1.4 Objectives

1. To work out the value addition of four major Agri-products of Ri-Lajong FPO.
2. To study the costs and margin of value added Agri-products.

1.5 Hypothesis

1. Ra-Lajong FPO provides better returns to the farmer.
2. Ra-Lajong FPO is a growing and well established FPO.

1.6 Limitations of the Study

It is a single unit case study. Conducted considering the technical, financial and management aspects for the economic assessment of the project. The aspects such as expansion of marketing strategies, efficient technical and financial management decides the economic efficiency of the project. It is quite difficult to generalize results of the study for other processing units. The findings of the study would have applicable only to similar situations.

1. The collection of data is difficult as unavailability of separate section of the company information.
2. The available data is in complex and mixed all the section industry of the company.
3. There is problem to find out the processing cost of the company as a separate section.
4. Unavailability of data quantity loss of products at time of processing.

Chapter-2

Review of Literature

Chapter 2 Review of Literature

The literature evaluation on pertinent components of the research is an essential component of any systematic research endeavor. It facilitates correct comprehension of the theoretical underpinnings, analytical problems pertaining to the research problem, and conceptual features.

2.1 To work out the value addition of four major Agri-products of Ri-Lajong FPO

Thornton (2019) concluded according to the value chain study of Bengal gram in Rajasthan, farmer is not getting paid more because of their poor connections with processor or customer Opportunity for intervention includes establishing an FPC and supporting new ventures in value-added chickpea product secondary processing. In the secondary processing of value-added chickpea products like dal, besan, and roasted gram, there is also opportunity for startup support from FPOs or individual entrepreneur

Ramappa *et al.* (2017) concluded that research on the tomato value chain in Karnataka revealed improvements in system efficiency, which benefited the chain's participants. Selling to supermarkets might yield more profits for farmer than selling to other distribution channels.

Govil *et al*. (2020) attempted to compile a complete dataset of all the Indian Producer Companies (PCs) that are registered. As of March 31, 2019, 4.3 million small farmers nationwide were served by 7374 PCs, according to their analysis. Four states account for over 50 per cent of PC usage: Maharashtra (26%), Uttar Pradesh (10%), Tamil Nadu (7%), and Madhya Pradesh (6%). 92 per cent of PCs are farm-based, while only 3 per cent of member are female. There were 2.6 PCs per 1 lakh farmer and 582 stockholders on average each PC. Three year or older accounted for 79 per cent of PCs.

Manaswi *et al*. (2018) attempted to assess how well each state did at promoting FPOs. Numerous FPOs are being established and promoted with assistance from organizations such as SFAC and NABARD. There were 2816 FPOs nationwide as of April 30, 2018, of which 740 were supported by SFAC and 2076 by NABARD. These FPOs mobilized and connected 13,21,785 farmers in total. The number of POPIs per 1000 hectares of Gross Cropped Area (GCA), the KCC per operational landholding, the

percentage of rural literacy, the ease of doing business, and the number of markets per 1000 hectares of GCA are the five criteria that they found as impacting the effectiveness of different states in promoting FPOs. Based on their data, the states that performed best in terms of the number of FPOs per agriculture GDP were Madhya Pradesh, Himachal Pradesh, Uttarakhand, Mizoram, and Sikkim, whereas the states that performed worst were Tripura, Jammu & Kashmir, Uttar Pradesh, Arunachal Pradesh, and Goa.

Chandan et al. 2020 conducted research on the economic analysis of coffee production in Nepal's Arghakhanchi and Gulmi districts was done by. For every ropani produced, the total cost of production was USD 19.16. Labour costs accounted for 40% of the total cost. A coffee yield of ₹75.00 kg/ropani was achieved. Because of its high B:C ratio, coffee production was found to be more profitable in Gulmi than in Arghakhanchi. It was advised to make investments in the coffee industry in order to improve the mechanisation status, which will lower the labour cost share and ultimately raise people's living standards and household economies.

Satish et al. (2019) calculated the expenses and benefits of growing coffee in the Andhra Pradesh, India, district of Visakhapatnam. Coffee cultivation had a total variable cost per hectare of ₹ 27,674.22, but yielded a total return of ₹ 84,550.39. For every kilogramme of fresh fruit berries, the production cost came to ₹ 9.82. The study area's coffee cultivation was profitable, as evidenced by the per hectare gross margin of ₹ 56,876.17. With a benefit-cost ratio of 3.05, coffee growing was clearly a highly lucrative business. With a profitability index of 2.05, coffee growers in the research region made ₹ 2.05 for every rupee invested in the production process.

2.2. To study the costs and margin of value added agri-products.

Kumar *et al.* (2018) examined the economics of mustard production in the Rajasthani district of Swai Madhopur. The sample consisted of 40 Chauth Mata Agro-produce₹ Company Ltd. member and 40 non-member of the area. The findings showed that the member net return was ₹3917/ha. Higher than that of the non-member, and that their cultivation costs were ₹1295/ha. lower than those of the non-member. The input-output ratio was 1:1.29 for member and 1:1.20 for non-member.

Calkins and Ngo (2005) examined the effect of producer cooperatives on the living conditions of Ghanaian and Cote d'Ivoirean communities that farm cocoa. Using current inputs, the member production increased by 19 per cent above that of

the non-member, according to the study's findings. Comparing member farmer to non-member, the former obtained stronger market connections, greater returns, and more equitable bean weight measurement and quality assessment.

Sahu *et al.* (2018) compared 50 members with their non-member counterparts in order to analyze the socioeconomic impact of Udaipur Agro producer Company Ltd. The outcome was as follows: member' income, production, and employment generation were much higher than those of non-member The member enjoyed improved food, shelter security, health, and education. In terms of social empowerment, there was also a notable distinction between the member and non-member

Gurung and Chaubey (2021) concluded that FPOs can be extremely important in advancing organic farming. East Sikkim producer groups are able to locate effective sales outlets for their organic goods. Group farmer earn more money annually than do individual farmer FPOs may assist with a variety of tasks, including enhancing economies of scale, value addition, marketing, input provision, capacity building, exporting, and more.

Dahal and Rijal (2020) conducted a study in Sindhuli, a region of Central Nepal, to analyse the value chain of ginger. Value chain analysis identified the main participants as producers, traders (wholesaler and exporter), retailers, and consumers. A healthy margin of fifty-five percent of the retail price went to the farmers; however, dishonest traders kept the remaining portion of the profit. The study area's ginger farming had a BC ratio of 2.42, indicating that it was a profitable enterprise. Farmers were able to earn an additional 1.42 rupees for every ₹1.00 (0.0088 US$) they invested in ginger. The high frequency of rhizome rot in the study area was the reason for the low productivity of ginger.

Nilo et al. (2020) studied on the value chain analysis of organic range chicken, farmers sold live organic/range chicken to middlemen for roughly ₹250.00 per kg at the farm gate. The dressed chicken was then sold by the middlemen to its processor in open markets or city marketplaces for roughly ₹300.00 per kg. The processor then sold it to the general public or consumers, realizing a net margin of roughly ₹30.00 to ₹50.00 per kg. The findings showed that there was an unfair profit distribution along the organic chicken value chain, with middlemen making more money.

Chapter-3

Materials and Method

Chapter 3 Materials and Methods

Research methodology is a means of studying how science does research and of methodically resolving research problems. The research area's description, the sampling strategy, the types and sources of the data, and the analytical methods used are all covered in this chapter. In order to promote comprehension, key phrases and topics from the research are also provided. The methodology is presented under the following major heads:

3.1 Description of the study area

3.2 Sampling plan

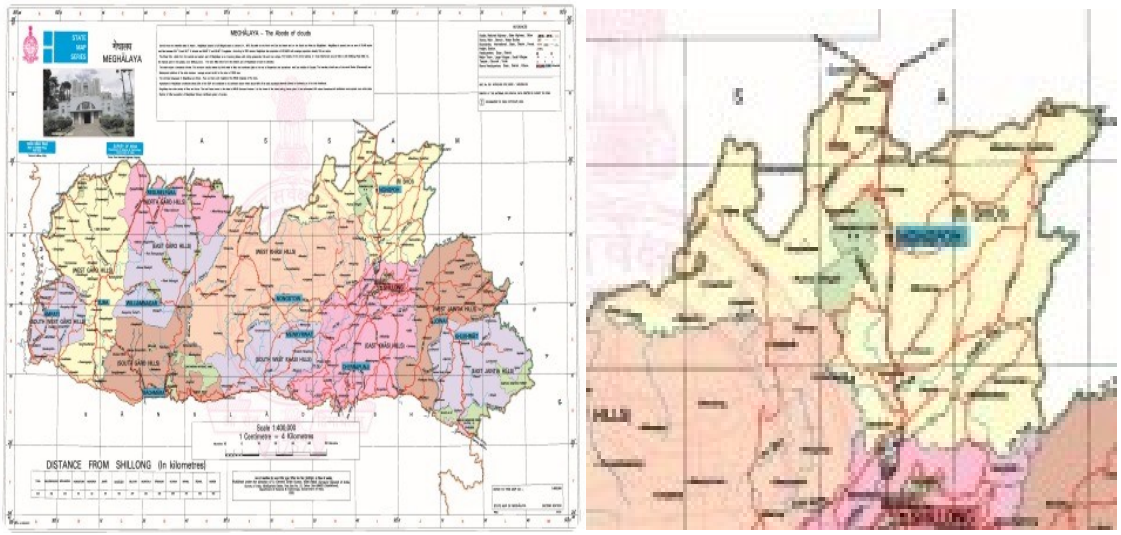
3.3 Collection of data

3.4 Analytical techniques

3.1 Description of the study area

The present study was conducted in Meghalaya state of the North Eastern Hill Region of India. With the enactment of the Constitution (Thirteen Amendment) Act, 1962, the state of Meghalaya came into existence as the sixteenth state of the Indian union. Meghalaya with a geographical area of 22,429 square kilometres lies in the North Eastern Hill (NEH) region of India. The state is bounded by three sides of Assam and from south is bounded by international boundary of Bangladesh. The state lies between latitudes 25°02' and 26°07' N and longitudes 89°49' and 92°50'E. Topographically, the state is mountainous and the altitude varies from 60m to 1961m (AMSL) (MBB, 2017).

The state is inhabited by 3 major tribes namely Khasi, Jaintia and Garos. The Khasis reside in Central Meghalaya, the Garos in Western Meghalaya, and the Jaintia’s in Eastern Meghalaya. These tribes are dispersed throughout the state. The Boros, Koches, Hajongs, and Rabhas are some more smaller tribes. According to the 2011 census, the population of Meghalaya was 2,964,007, with 1,492,668 females and 1,471,339 males. 79.93 per cent of Meghalaya's population lives in rural areas, while 20.07 per cent live in urban areas. Meghalaya had a sex ratio of 986 females for every 1,000 men, which is more than the 940 national average. In Meghalaya, the rate of literacy increased from 62.56 per cent in 2001 to 75.48 per cent in 2011(GoM, 2024).



(Source: SoI, 2024)

Fig 3.1 Map of Meghalaya State and Ri-Bhoi District

The state has twelve districts *viz.*, North Garo Hills, East Garo Hills, South Garo Hills, West Garo Hills, South west Garo Hills, West Jaintia Hills, East Jaintia Hills, East Khasi Hills, West Khasi Hills, South West Khasi Hills, Eastern west Khasi Hills, Ri-Bhoi. The primary industry for the people of Meghalaya is agriculture. Sixty-two percent of Meghalaya's agricultural area is devoted to growing food grains, twenty-five percent to cash crops, nine percent to horticultural crops, and the remaining four percent to other crops.

Approximately 80 per cent of the people in Meghalaya are solely dependent on agriculture, making the state essentially an agrarian economy. Meghalaya's land area is cultivated to a depth of over 10 per cent. The state's agriculture is distinguished by its poor productivity, low yields, and restricted application of modern technology. Because of this, although while agriculture employs the great majority of the people, agricultural output only contributes a small portion of the state's GDP, and the majority of those working in agriculture continue to live in poverty. Jhum cultivation, a traditional shifting agricultural practice, cover a part of the farmed land. In 2001, Meghalaya yielded 230,000 tons of cereal grains. With over 80 per cent of the state's food grain output going to rice, it is the predominant food grain crop. A few additional cereals and pulses, along with maize and wheat, are also significant food grain crops. Some of the other significant income crops are potatoes, ginger, turmeric, black pepper, areca nuts, bay leaf (Cinnamomum tamala), betel, short-staple cotton, jute, mesta, mustard, and

rapeseed, among other In addition to its main food crops, rice and maize, the state is well known for its horticulture products, which include bananas, jack fruits, guava, oranges, lemons, pineapples, and litchis, as well as its fruits, which include plums, pear, and peaches (GoM, 2021). The present study was conducted in Ri-Bhoi district of the state of Meghalaya. Ri-Bhoi District came into existence and assumed the hierarchical status of the district on the 4thJune 1992 by upgrading the former Civil Sub-Division. The district was carved out from the east while East Khasi Hills District and lies between North Latitudes 25˚15' and 26˚15' and between East Longitudes 91˚45' and 92˚15'. The Bhois of Ri-Bhoi District are the sub-group of the main Khasi Tribe. The majority of the Bhois speak the Bhoi dialect, although they use the Khasi dialect as a major subject in their schools. In Ri-Bhoi District, there are other groups of tribes, viz., Garos, Karbis, Marngar, Mikir, Bodos and Lalungs. The Bhois follow the matrilineal system. Children bear the title of the mother and she is the safe keeper of all properties owned by her parents. The youngest daughter is entitled to the properties of the parent (GoM, 2022).

3.2 Sampling Plan

A flow chart of the sampling plan for the present study is given below.

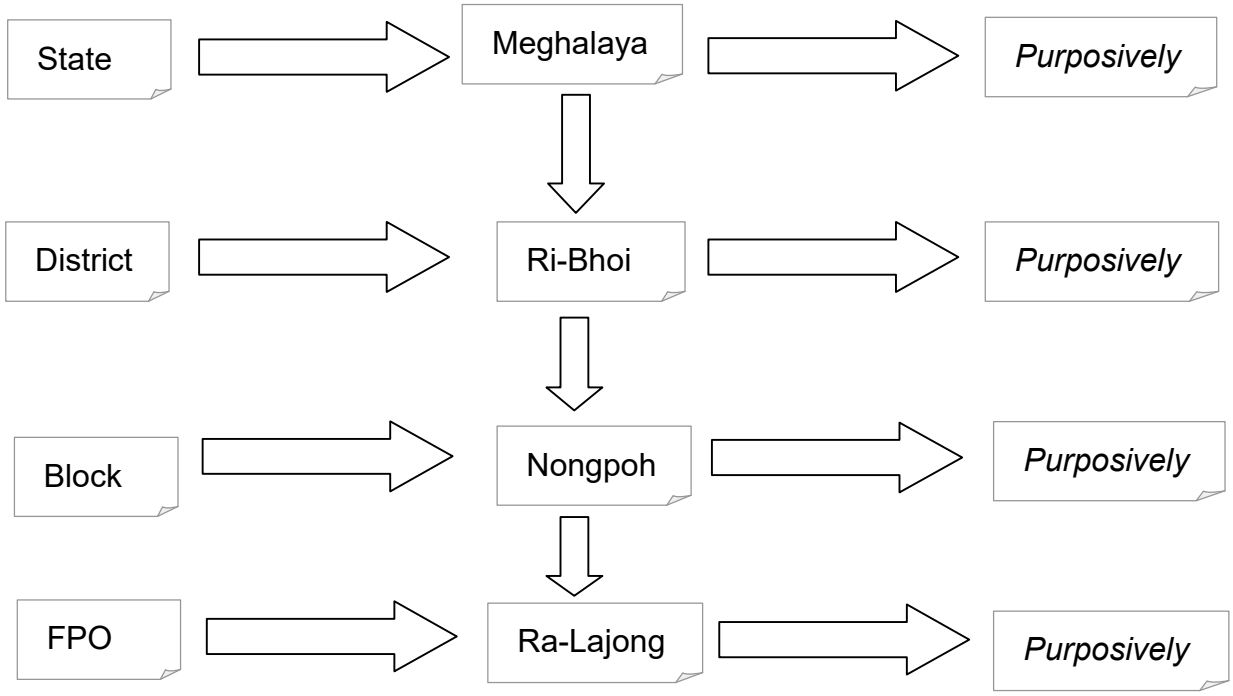


Fig 3.2 Schematic representation of sampling plan

3.3 Collection of Data

To attain the objectives, both primary and secondary data were used. Primary data was collected from the various information such as pre-tested interview schedule was studied. Secondary data is collected from various publications, research reports, journals, articles and record of the FPO. The information on Agri-products, selling, marketing and its disposal pattern was also collected.

3.4 Analytical Techniques

In order to attain of the study, the data collected were compiled and analyzed systematically. The analytical measure like tabular analysis, descriptive statistics and cost concepts were applied to meet the objectives of the study.

3.4.1 Cost of cultivation of the crops

To calculate the cost of cultivation of the major four crops, variable and fixed cost was calculated:

(a)Variable cost

The variable cost includes hired human labor, family human labor, bullock labor wages, seed cost, manure cost, fertilizer cost, biofertilizer cost, miscellaneous expenses, interest on working capital, which are calculated in ₹ per hectare.

(b)Fixed cost:

This includes the rental value of land, land revenue, Depreciation and Interest on fixed capital.

1. Value of hired human labour (Permanent & Casual)
2. Value of owned bullock labour
3. Value of hired bullock labour
4. Value of owned machinery
5. Hired machinery charges
6. Value of fertilizer
7. Value of manure (Produced on farm and purchase)
8. Value of propagating material (both farm-produced & purchased)
9. Value of insecticides & fungicides
10. Irrigation charges (both of the owned & hired tubewells, pumping set etc.)
11. Canal-water charges
12. Land revenue, cesses and other taxes
13. Depreciation on farm implements (both bullock-drawn & worked with human labour)
14. Depreciation on farm buildings, farm machinery and irrigation structures
15. Interest on the working capital
16. Miscellaneous expenses (wages of artisans, cost of ropes & repair to small farm implements)

Cost A_2 = Cost A_1 + rent paid for leased in land

Cost B_1 = Cost A2 + interest on value of owned fixed capital assets (excluding land)

Cost B_2 = Cost B_1 + rental value of owned land (net of land revenue) + rent paid for leased in land

Cost C_1 = Cost B_1 + imputed value of family labour

Cost C_2 = Cost B_2 + imputed value of family labour

3.4.2 Marketing cost

The total cost incurred on marketing by the producer/seller and of the various intermediaries involved was computed as;

$TC = PC + \Sigma MCi$

Where,

TC = Total cost of marketing

PC = Cost incurred on the marketing of the produce by the producer

MCi = Cost incurred by the i^{th} middleman

3.4.3 Marketable surplus

Marketable surplus is the residual left with the producer after meeting his requirement for family consumption; farm needs for seeds (if any) and payment to labor in kind, payment to the landlord and social and religious obligations. It may be expressed as:

$MS = P - C$

Where,

MS = Marketable surplus, P = Total production

C = Total requirements (family consumption, farm needs, payment to labour and donating for social/religious function)

3.4.4 Market margin

Net profit margin = Net income / Revenue

Net income = Revenue – Cost

3.4.5 Net return = Selling price of Products – Total cost incurred in producing the product

3.4.6 Value addition = Total cost incurred in producing the product – Cost of raw materials

Chapter-4

Results and Discussion

Chapter 4 Results and Discussion

The results and discussion are organized under the following headings in accordance with the goals that have been established.

4.1 About the company

4.2 Cost of cultivation of the crops

4.3 Cost of handling operations and processing

4.4 Value addition of the products

4.5 B:C ratio of the company

4.6 Marketable surplus of the products

4.7 Producers marketing cost of the products

4.8 FPO / Processor marketing cost of the products

4.9 Retailor marketing cost of the products

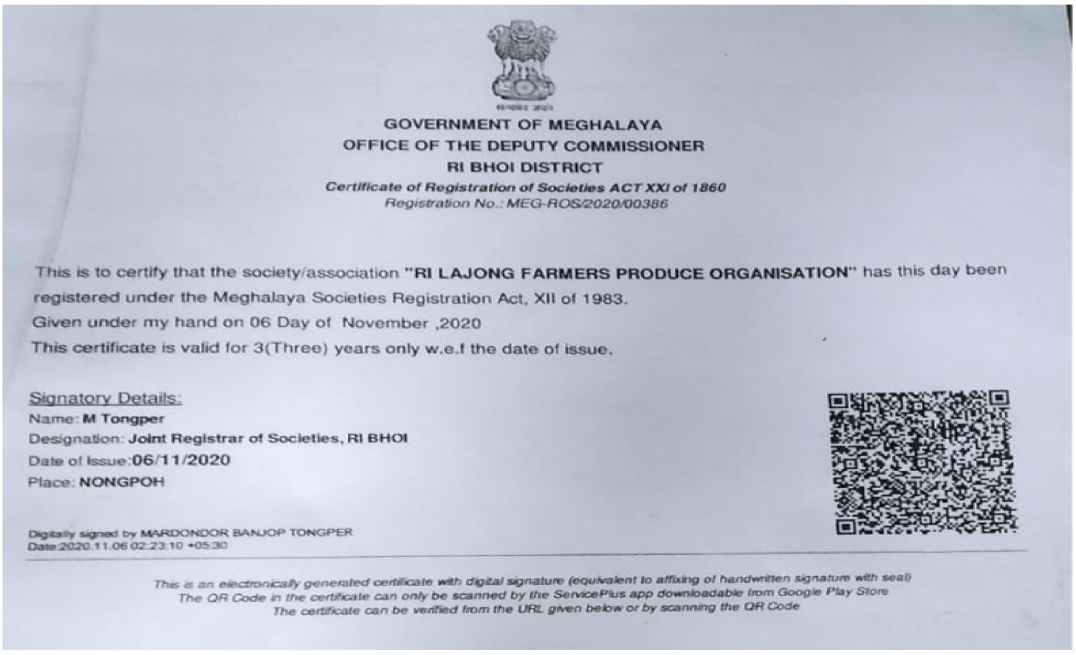
4.10 Net return of the company

1.1 About the company

The name of the FPO is RI LAJONG FAMER PRODUCE ORGANIZATION. The CEO of the company is Mariam Maring and vice president of the company is Pralad Singh Tur. FPO is located at Nongpoh, Ri-Bhoi district of Meghalaya. The FPO was started by 50 farmers during the year 2011-12 but know it is working with more than 3000 farmers. The main agri-product of the company are black turmeric, black pepper, pineapple, black rice, sticky rice, ginger, turmeric, rice bear, juha rice, fruits, vegetables and spices. The FPO was started by College of Post Graduate Studies in Agricultural Sciences, Umiam, CAU-I, Meghalaya, which is successful in enhancement of livelihood of farmer of Ri-Bhoi district, Meghalaya. The income of participated farmer has high income as compared to non-participated farmer (Sharma *et.al*, 2023).

Table 4.1 Profile of the FPO

Name of the company	RI LAJONG FAME₹ PRODUCE ORGANIZATION
Adress	Near Central Bank of India, Nongpoh, Ri-Bhoi, Meghalaya
Registration no.	MEG-ROS/2020/00386
Year of established	2011-12
Class of Company	Cooperative
Registered under	Meghalaya Societies Registration Act, XII of 1983



GOVERNMENT OF MEGHALAYA
OFFICE OF THE DEPUTY COMMISSIONER
RI BHOI DISTRICT
Certificate of Registration of Societies ACT XXI of 1860
Registration No.: MEG-ROS/2020/00386

This is to certify that the society/association **"RI LAJONG FARMERS PRODUCE ORGANISATION"** has this day been registered under the Meghalaya Societies Registration Act, XII of 1983.
Given under my hand on 06 Day of November ,2020
This certificate is valid for 3(Three) years only w.e.f the date of issue.

Signatory Details:
Name: **M Tongper**
Designation: **Joint Registrar of Societies, RI BHOI**
Date of Issue:**06/11/2020**
Place: **NONGPOH**

Digitally signed by MARDONDOR BANJOP TONGPER
Date:2020.11.06 02:23:10 +05:30

This is an electronically generated certificate with digital signature (equivalent to affixing of handwritten signature with seal)
The QR Code in the certificate can only be scanned by the ServicePlus app downloadable from Google Play Store
The certificate can be verified from the URL given below or by scanning the QR Code

Fig.4.1 FPO registration certificate

4.1.2 Handling operations and processing of turmeric

The first step in processing turmeric is to thoroughly clean the rhizomes of the plant to get rid of dirt and contaminants. The rhizomes are cleaned and then cooked for around 45 minutes in water to soften and intensify their colour. To enable uniform drying, the boiling rhizomes are chopped into smaller pieces. After that, the pieces are sun-dried to ensure that all moisture is gone. The bits of turmeric are dried and then processed in a grinder to a fine powder. The last stage is to sieve the powder to produce high-quality turmeric powder with a consistent particle size.

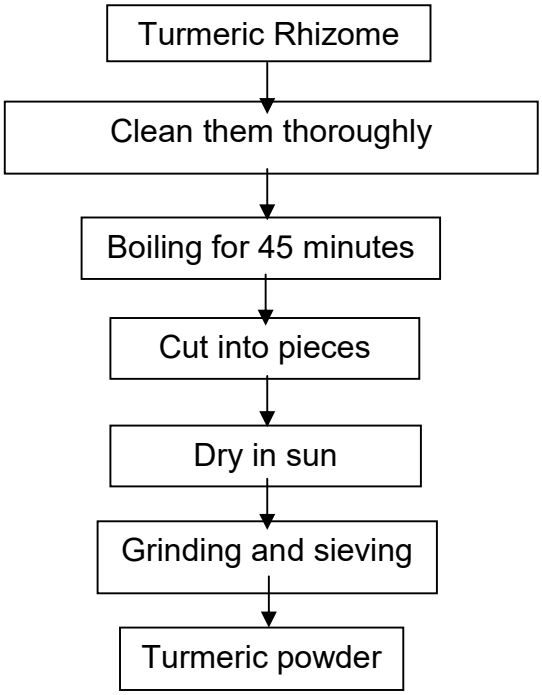


Fig. 4.2 Flow Chart of handling operations and processing of turmeric powder

4.1.3 Handling operations and processing of ginger

Cleaning ginger thoroughly to get rid of impurities and dirt is the first step in the processing procedure. To guarantee constant quality and convenience of use, the ginger is meticulously sliced into uniform pieces after cleaning. The next step in keeping the chopped ginger fresh and prolonging its shelf life is to dry it out by removing some of the moisture. After drying, the ginger pieces are placed in food-grade plastic bags or containers, making sure the seal is airtight to keep the product's quality and avoid contamination. With this technique, the nutritional value, flavour, and scent of the ginger are retained for prolonged use and storage.

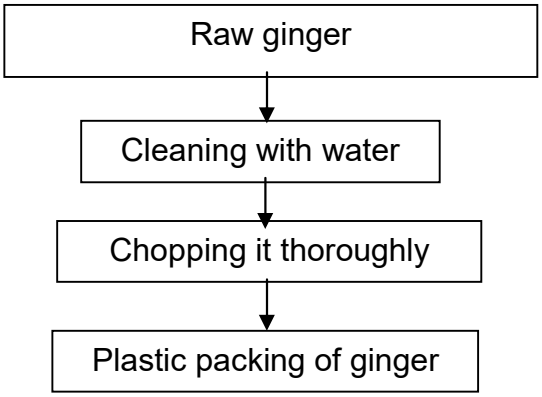


Fig. 4.3 Flow Chart of handling operations and processing of ginger

4.1.4 Handling operations and processing of pineapple

Cleaning raw pineapples with clean water to get rid of impurities and dirt is the first step in the pineapple processing process. Following cleaning, the pineapples are divided into three groups: 700g, 1000g, and 1500g, according to weight and maturity. To guarantee ideal quality, maturity indexes including colour and hardness are also evaluated. After grading, the pineapples are packaged with care in food-grade plastic boxes to ensure their safety throughout storage and transportation. By using this procedure, the pineapples are handled hygienically, graded precisely, and kept in good condition, preserving their freshness and quality for the customer.

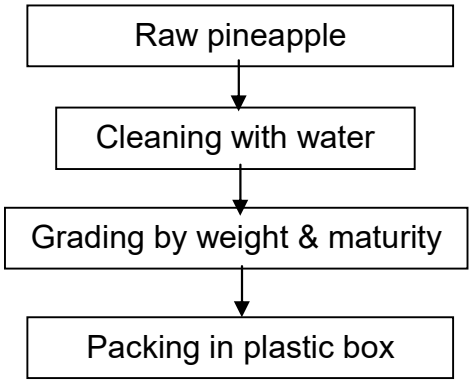


Fig. 4.4 Flow Chart of handling operations and processing of pineapple

4.1.5 Handling operations and processing of black pepper

The first step in processing black pepper is washing the raw peppercorns in water to get rid of any dust, debris, or contaminants. The peppercorns are well cleaned, then spread out into an even layer and allowed to dry in the sun. Reducing the moisture level by sun drying is essential to preventing mold formation and preserving the flavour and perfume of the pepper. Black pepper is sealed in food-

grade plastic bags or containers after it has completely dried to keep out moisture and contaminants. The quality, freshness, and long shelf life of the black pepper are guaranteed by this scientific process.

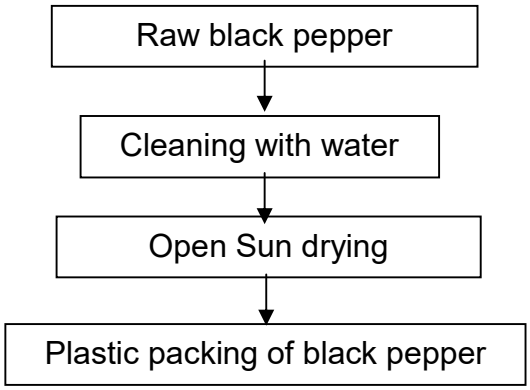


Fig. 4.5 Flow Chart of handling operations and processing of black pepper

4.2: Cost of cultivation of the crops

The analysis of variable costs across the four crops demonstrates distinct variations in financial requirements in the Table 4.2 Labor costs, calculated based on ₹381 per man-day, show that Turmeric and Ginger both require 144 man-days, amounting to ₹54,864 each. Pineapple, requiring 150 man-days, including a slightly higher labour cost of ₹57,150, while Black Pepper, with 130 man-days, has the lowest labour cost of ₹ 49,530. Electricity charges are consistent for all crops at ₹ 1,000, except for Turmeric, which including a higher cost of ₹ 2,500. Seed costs show significant disparities, with Pineapple requiring the highest seed investment at ₹ 1,32,000 for 44,000 kg. Ginger follows with ₹ 35,000 for 600 kg, Black Pepper at ₹ 26,000 for 1,300 kg, and Turmeric at ₹ 15,000 for 500 kg. Bio fertilizer expenses are specific to Ginger (₹1,200) and Pineapple (₹10,000), indicating different nutrient requirements for these crops. Manure costs are ₹11,250 for Turmeric (7.5MT), ₹18,750 for Ginger, ₹15,000 for Pineapple, and ₹12,000 for Black Pepper. Miscellaneous expenses are ₹3,000 for Turmeric, ₹2,000 for Ginger, ₹2,500 for Pineapple, and ₹1,500 for Black Pepper. The total working capital required reflects the financial commitment needed for each crop. Pineapple has the highest working capital requirement at ₹2,17,650, followed by Ginger at ₹1,13,114, Black Pepper at ₹1,00,030, and Turmeric at ₹87,814. This indicates varying levels of capital intensity across the crops. With an interest rate of 7 per cent, the cost of capital for working capital is as follows: Turmeric including ₹6,146.98, Ginger ₹7,917.98, Pineapple ₹15,235.50, and Black Pepper ₹7,002.10. These figures represent the additional financial burden due to the cost of capital and are integral to understanding the overall financial requirements

of each crop. Depreciation, calculated at 10 per cent, results in a fixed cost of ₹12,000 for each crop. The rental value of land is ₹20,000 for Turmeric and ₹15,000 for Ginger, Pineapple, and Black Pepper. Additionally, a machine cost of ₹1,20,000 is allocated for all crops. Consequently, the total fixed capital for Turmeric is ₹1,40,000, while for Ginger, Pineapple, and Black Pepper, it is ₹15,000 each. Combining fixed and variable costs provides a comprehensive view of the total financial outlay required for each crop. Turmeric has the highest total cost at ₹2,27,814, whereas Ginger, Pineapple, and Black Pepper's figures were not fully provided, but given the provided fixed costs, they seem considerably lower and should be verified for accuracy. The interest on fixed capital, calculated at a rate of 10 per cent, amounts to ₹14,000 for Turmeric, and ₹1,500 each for Ginger, Pineapple, and Black Pepper. These costs highlight the ongoing financial commitment required to maintain the necessary fixed assets.

Table 4.2 Cost of cultivation of the four crops per hectare

			TURMERIC		GINGER		PINEAPPLE	BLACK PEPPER	
Sl.No.	**Particular**	Quantity	Amount (₹)	Quantity	Amount (₹)	Quantity	Amount (₹)	Quantity	Amount (₹)
A	**Variable cost**								
1	Labour		32804 (12.61)		32804 (23.85)		32460 (13.01)		28010 (22.67)
2	Family labour		22060 (8.48)		22060 (16.03)		24690 (9.90)		21520 (17.42)
2	Electricity charges		2,500 (0.96)		1,000 (0.72)		1,000 (0.4)		1,000 (0.80)
3	Seed cost	0.5 MT	15,000 (5.77)	0.6 MT	35,000 (25.44)	44,000 sucker	1,32,000 (52.93)	1300 cutting	26,000 (21.04)
4	Bio Fertilizer	0.012 MT	1,200 (0.46)	0.015 MT	1,500 (1.09)	0.01 MT	10,000 (4.01)	0.01 MT	10,000 (8.09)
5	Manure	7.5 MT	11,250 (4.32)	12.5 MT	18,750 (13.63)	10 MT	15,000 (6.02)	8 MT	12,000 (9.71)
6	Miscellaneous		3000 (1.15)		2,000 (1.42)		2,500 (1.00)		1,500 (1.21)
7	Total working Capital		87,814 (33.77)		1,13,114 (82.24)		2,17,650 (87.27)		1,00,030 (80.97)
8	Interest on working capital @7 per cent		6,146.98 (2.36)		7,917.98 (5.75)		15,235.5 (6.10)		7,002.1 (5.66)
B	**Fixed Capital or Expenses**								
9	Depreciation@10 per cent		12,000 (4.61)						

10	Rental value of own land		20,000 (7.69)		15,000 (10.9)		15,000 (6.01)		15,000 (12.14)
11	Machine		1,20,000 (46.16)						
12	Total Fixed Capital		1,40,000 (53.85)		15,000 (10.9)		15,000 (6.01)		15,000 (12.14)
13	Total cost (Fixed+ Variable)		2,59,961 (100)		1,37,532 (100)		2,49,385.5 (100)		1,23532 (100)
14	Interest on fixed capital @10 per cent		14,000 (5.38)		1,500 (1.09)		1,500 (0.60)		1,500 (1.21)
15	Cost- A1		2,03,901 (78.43)		98,971.98 (71.96)		2,08,195.5 (83.48)		85,512.1 (69.22)
16	Cost- A2		2,03,901 (78.43)		98,971.98 (71.96)		2,08,195.5 (83.48)		85,512.1 (69.22)
17	Cost- B1		2,17,901 (83.82)		1,00,472 (73.05)		2,09,695.5 (84.08)		87,012.1 (70.43)
18	Cost- B2		2,37,901 (91.51)		1,15,472 (83.96)		2,24,695.5 (90.09)		1,02,012.1 (82.57)
19	Cost- C1		2,39,961 (92.30)		1,22,532 (89.09)		2,34,385.5 (93.98)		1,08,532.1 (87.85)
20	Cost- C2		2,59,961 (100)		1,37,532 (100)		2,49,385.5 (100)		1,23,532.1 (100)

(Figures in parenthesis are in percentage)

4.3 Cost of handling operations and processing

Significant differences in cost structures are found in the cost analysis of handling operations and processing activities for black pepper, ginger, pineapple, and turmeric that farmer carry out at the Farmer Producer Organization (FPO) level. Table 4.3 shows the specific split for each commodity per quintal. The total variable cost per quintal for turmeric is ₹4588. The primary factor driving the cost is machine labor, which is the largest expense at ₹2295 per quintal. Additional significant expenses are ₹600 for packaging, ₹565 for labor, and ₹490 for curing each quintal. A quintal's worth of additional expenses for grading and washing, drying, polishing, storing, and other fees total ₹638. The ultimate cost per quintal for turmeric is ₹4909.16 after adding ₹321.16 for interest on working capital at a rate of 7 per cent. Ginger has relatively lower processing and handling expenses, with a quintal-wise total variable cost of ₹695. At ₹565 per quintal, labor costs are the highest. Cleaning and grading come in second at ₹70 per quintal, packaging comes in at ₹40 per quintal, and other expenses come in at ₹20 per quintal. The final cost per quintal for ginger is ₹743.65, after interest on working capital is included, totaling ₹48.65. When pineapple is valued at 5 kuri, or 100 fruits, it displays a quintal total variable cost of ₹720. Human labor costs ₹390 per quintal, packing costs ₹200 per quintal, and other costs ₹100 per quintal are the main cost components. At ₹30 per quintal, cleaning and grading are quite inexpensive. Upon factoring in the ₹50.4 interest on working capital, the total cost per quintal of pineapple increases to ₹770.4. The quintal cost of black pepper is ₹750 total variable cost. This amount includes ₹390 for labor costs per quintal, ₹240 for packaging, ₹100 for drying, and ₹20 for additional expenses.

Table 4.3 Cost of handling operations and processing performed at FPO level by farmer

		TURMERIC	GINGER	PINEAPPLE	BLACK PAPPER
Sl. No.	Particular	₹/Qtl.	₹/Qtl.	₹/5 kuri	₹/Qtl.
1	Cleaning And Grading	82	70	30	
2	Curing	490			
3	Drying	90			100
4	Polishing	190			

5	Storing	180			
6	Packaging	600	40	200	240
7	Human Labor	565	565	390	390
8	Machine Labor	2295			
9	Other Charges	96	20	100	20
10	Total variable cost	4588	695	720	750
11	Interest On Working Capital@7 per cent	321.16	48.65	50.4	52.5

4.4 Value addition of the products

The analysis of the data reveals significant variations in the value addition of different agricultural products through processing in the Table 4.4 Despite a relatively high processing cost of ₹45.88 per kg, the value of turmeric shows a significant growth, rising by 69.41 per cent from ₹150 per kg to ₹300 per kg. Ginger's value increases by 47.83 per cent, from ₹90 per kg to ₹140 per kg, while having a lower processing cost of ₹6.95 per kg. With a processing cost of ₹7.2 per kg, pineapple shows the largest percentage rise in value, jumping from ₹25 per kg to ₹70 per kg, or 151.2 per cent. With a cost of ₹300 per kg for raw materials and ₹7.5 per kg for processing, black pepper exhibits the lowest percentage gain in value at 37.5 per cent, reaching ₹420 per kg. These results imply that although the end value is affected by processing expenses, the total value addition is largely determined by the raw material acquisition price and the market demand for processed goods. In order to maximize profitability in agricultural processing, it is critical to optimize processing costs and comprehend market dynamics, as this econometric research illustrates.

Table 4.4 Value addition of the products by the FPO

Sl. no.	Particular	TURMERIC (₹/kg)	GINGER (₹/kg)	PINEAPPLE (₹/kg)	BLACK PEPPER (₹/kg)
1	Purchase price of raw material	150	90	25	300

2	Processing cost	45.88	6.95	7.2	7.5
3	Price pf processed products	300	140	70	420
4	Increase in the value of processed products	104.12	43.05	37.8	112.5
5	Per cent increased in the value of processed product over raw material	69.41	47.83	151.2	37.5

4.5 B:C ratio of the company

As shown in Table 4.5 there are significant variations in the economic results of growing black pepper, pineapple, ginger, turmeric, and black pepper. For every commodity, the benefit-cost (B:C ratio) and processing, gross expenses, gross income, net profit, and raw material costs are taken into account. Turmeric's cost as a raw ingredient is ₹15,000; an extra ₹4,588 is spent on processing it, for a total cost of ₹19,588. Turmeric farming generates ₹30,000 in total revenue, with a net profit of ₹10,412. Although profitable, ginger's B:C ratio of 1.44 is little lower than turmeric's. Based on 5 kuri, or 100 fruits, the cost of producing one pineapple is ₹2,500 for raw materials and ₹720 for processing, for a total cost of ₹3,220. Pineapple yields a gross income of ₹7,000 and a net profit of ₹3,780. Among the four commodities, pineapple has the greatest B:C ratio (2.17), indicating its significant profitability. The cost of producing black pepper is ₹30,000 for raw materials and ₹750 for processing, for a total cost of ₹30,750. Black pepper generates a gross income of ₹42,000, with a net profit of ₹11,250. The B:C ratio for black pepper is 1.36, indicating profitability, albeit the lowest among the analyzed commodities.

Table 4.5 B:C ratio of the products in the FPO

		TURMERIC	GINGER	PINEAPPLE	BLACK PEPPER
Sl. No.	Particular	Amount (₹/Qtl.)	Amount (₹/Qtl.)	Amount (₹/5 kuri)	Amount (₹/Qtl.)
1	Raw material	15,000	9,000	2,500	30,000
2	Processing	4588	695	720	750

	cost				
3	Gross expense	19,588	9,695	3,220	30,750
4	Gross income	30,000	14,000	7,000	42,000
5	Net profit	10,412	4,305	3,780	11,250
6	B:C Ratio	1.53	1.44	2.17	1.36

4.6 Marketable surplus of the products

As shown in the Table 4.6 the examination of marketable surplus for black pepper, pineapple, ginger, turmeric, and turmeric provides important information about the amounts produced, used, and offered for sale. Table 4 presents a comprehensive analysis of these quantities. The total amount of turmeric produced is 1250 quintals. Of this, 125 quintals are set aside for seed and 25 quintals are consumed at home, for a total of 150 quintals that are utilized. As a result, there is 1100 quintal market surplus for fresh turmeric. Additionally, the market excess in powdered form is 275 quintals when taking into account the conversion to powder, which represents 25 per cent of the fresh weight. Ginger displays 750 quintals as the total quantity produced. Of this, 20 quintals are set aside for seed and 8 quintals are consumed at home, for a total of 28 quintals that are utilized. Consequently, there is a 722 Qtl. market surplus for ginger. When pineapple production is measured in kuri (1 kuri is equal to 20 fruits), 1200 kuri are produced overall. 350 kuri are utilized in total; 100 kuri are used for domestic consumption and 250 kuri are reserved for seed. Thus, 850 kuri represents the pineapple market surplus. The total amount of black pepper produced is 150 quintals. Only 0.2 quintals are used for household consumption, and 0.1 quintals are used for seed, for a total of 0.3 quintals utilized. Consequently, there is 149.7 quintals of black pepper market surplus.

Table 4.6 Marketable surplus of the products in the company

		TURMERIC	GINGER	PINEAPPLE	BLACK PEPPER
Sl. No.	Particular	Quantity in Qtl.	Quantity in Qtl.	Quantity/ 5 kuri	Quantity in Qtl.
1	Total produced quantity	1250	750	1200	150
2	Quantity used for home	25	8	100	0.2
3	Quantity used for seed	125	20	250	0.1

4	Total quantity utilized	150	28	350	0.3
5	Marketable surplus (Fresh)	1100	722	850	149.7
6	Marketable surplus (Powder @25 per cent)	275			

4.7 Producers marketing cost of the products

As shown in the Table 4.7 understanding of the costs borne by producer and the net prices obtained can be gained from the examination of marketing expenses related to the sale of pineapple, black pepper, turmeric, and ginger. Table 4.7.1 provides a thorough summary of these expenses. The net price that producer receive for turmeric is ₹30,000 per quintal. 140 is the overall marketing cost per quintal after deducting the cost of loading and unloading and transportation, which comes to 110. As a result, the net price plus marketing expenses equals the producer's selling price of ₹30,140 per quintal. Producer of ginger get paid ₹10,000 per quintal as net price. Ginger has a transportation cost of 100 and loading and unloading costs of 30, for a total marketing cost per quintal of 130. Therefore, ₹10,130 per quintal is the producer's selling price for ginger. The net price that pineapple produce₹ earn is ₹7,000 per 50 kuri, or 100 fruits. Pineapple has a marketing cost of 145 per kuri after transportation costs of 115 and additional loading and unloading costs of 30. Hence, the pineapple producer sells it for ₹7,145 per 50 kuri.

Table 4.7 Producer's marketing cost of the products

		TURMERIC	GINGER	PINEAPPLE	BLACK PEPPER
Sl. No.	Particular	Amount (₹/Qtl)	Amount (₹/Qtl)	Amount (₹/5kuri)	Amount (₹/Qtl)
1	Net price received by produce₹	30,000	10,000	7,000	42,000
2	Transportation cost	110	100	115	120
4	Loading / Unloading	30	30	30	30
5	Total Marketing cost	140	130	145	150
6	Producer selling price	30,140	10,130	7,145	42,150

4.8 FPO / Processor marketing cost of the products

As shown in the Table 4.8 the report goes into great detail about the marketing expenses FPO/ Processor bear for the commodities turmeric, ginger, pineapple, and black pepper. The following commodities have aggregator buy prices: black pepper at ₹42,150 units, pineapple at ₹7,145 units, ginger at ₹10,130 units, and turmeric at ₹34,906 units. These amounts reflect the initial expenditure incurred in order to acquire the corresponding products. Many running expenses are incurred after the purchase. Room rent expense that must be incurred for storage varies somewhat across the commodities, costing ₹105 units for each of ginger and pineapple and somewhat more at ₹110 units for black pepper and turmeric. Each commodity's loading and unloading costs are always evaluated at ₹30 units, guaranteeing effective management of the cargo. Transport expenses, which are necessary to move the products from the place of purchase to the market, vary slightly: ₹100 units are charged for ginger, ₹110 units for turmeric, ₹115 units for pineapple, and ₹120 units for black pepper. The logistics necessary to guarantee on-time delivery to market locations are reflected in these transportation expenses. For turmeric, ginger, pineapple and black pepper, the total marketing cost is computed as ₹245 units, ₹240 units for ginger, ₹255 units for loading/unloading and ₹255 units for transportation. This amount includes room rent. This thorough cost analysis shows the total amount of money required to prepare the commodities for the market. The FPO/ Processor add a 5 per cent margin to the purchase price in addition to these expenses to cover their profit. Thus, for turmeric, ₹506.5 units for ginger, ₹357.25 units for pineapple, and ₹2,107.5 units for black pepper, the margin is as follows. By using this margin, trade₹ may be sure they will make a fair profit for their time and money. The ultimate FPO/Processor selling prices which include the margin and all marketing expenses per quintal are as follows: ₹34,906 units of turmeric, ₹10,876.5 units of ginger, ₹7,757.25 units of pineapple, and ₹44,512.5 units of black pepper. These selling prices give a thorough picture of the financial transactions involved in the marketing of these agricultural commodities by reflecting the entire cost structure and profit margin.

Table 4.8 FPOs/ Processor marketing cost of the products

		TURMERIC	GINGER	PINEAPPLE	BLACK PEPPER
Sl. No.	Particular	Amount (₹/Qtl.)	Amount (₹/Qtl.)	Amount (₹/5 kuri)	Amount (₹/Qtl.)
1	FPO Purchase price	30,140	10,130	7,145	42,150
2	Room rent	105	110	110	105

3	Loading / Unloading	30	30	30	30
4	Transportation cost	110	100	115	120
5	Total Marketing cost	245	240	255	255
6	FPO/ Processor margin@15 per cent	4,521	506.5	357.25	2,107.5
7	FPO's selling price	34,906	10876.5	7757.25	44512.5

4.9 Retailor marketing cost of the products

As shown in the Table 4.9 the table presents the cost breakdown for four commodities: turmeric, ginger, pineapple, and black pepper. ₹31,892 for turmeric, ₹10,876.5 for ginger, ₹7,757.25 for pineapple (per 5 kuri), and ₹44,512.5 for black pepper are the retailer's purchase prices per quintal (₹/Qtl). Further expenses consist of lodging, transportation, and loading/unloading; these factors add up to ₹390 for ginger and turmeric, ₹380 for pineapple, and ₹365 for black pepper. Using a 20 per cent retailer profit, the amounts for turmeric, ginger, pineapple, and black pepper are ₹6,378.4, ₹2,175.3, ₹1,551.45, and ₹8,902.5, respectively. As a result, the ultimate consumer purchase prices for ginger, pineapple, turmeric, and black pepper are ₹13,441.8, ₹9,688.7, and ₹53,780, respectively. This analysis shows how important it is for store margins and beginning purchase prices to have an impact on final consumer prices; among all the categories, black pepper has the highest costs.

Table 4.9 Retailer marketing cost of the products

		TURMERIC	GINGER	PINEAPPLE	BLACK PEPPER
Sl. No.	Particular	Amount (₹/Qtl)	Amount (₹/Qtl)	Amount (₹/5 kuri)	Amount (₹/Qtl)
1	Retailer Purchase Price	31,892	10,876.5	7,757.25	44,512.5
2	Room rent	200	200	180	150
3	Loading / Unloading	40	40	30	35
4	Transportation cost	150	150	170	180
5	Total Marketing cost	390	390	380	365

6	Retailer Margin@20 per cent	6,378.4	2,175.3	1,551.45	8,902.5
7	Consumer purchasing price	38,660.4	13,441.8	9,688.7	53,780

4.10 Net return of the company

As shown in the Table 4.10 considering the selling prices, total revenues, expenses, and net returns of each commodity—turmeric, ginger, pineapple, and black pepper—the economic analysis of net returns offer thorough summary of the financial results for these goods. Each commodity has a different price per kilogram: black pepper costs ₹420, pineapple costs ₹70, ginger costs ₹100, and turmeric costs ₹300. The perceived value of each commodity and the state of the market are reflected in these prices. Multiplying the selling price by the total quantity sold yields significant revenue figures: black pepper yields ₹6,287,400 from 14,970 kilograms, pineapple earns ₹5,950,000 from 85,000 kilograms, ginger yields ₹7,220,000 from 72,200 kilograms, and turmeric generates ₹8,250,000 from 27,500 kilograms. The substantial economic contributions that each commodity makes to the entire financial environment are shown by these revenue number The total expenses, which include all costs related to manufacturing, marketing, and distribution, come to ₹5,126,019 for turmeric, ₹2,413,415 for ginger, ₹2,611,340 for pineapple, and ₹4,612,634 for black pepper. These costs are a reflection of the extensive cost structures associated in introducing each item to the market. The profitability of each commodity can be ascertained by calculating the net return per kilograms, which is obtained by deducting all costs from all revenue and dividing the result by the entire quantity sold. Black pepper yields ₹111.87 per kilograms, pineapple yields ₹39.27, ginger yields ₹66.57, and turmeric yields ₹113.59 per kilograms. These number highlight how profitable the different commodities are, with black pepper and turmeric showing especially large net returns per unit. Overall, the net returns—which show the whole profit after subtracting all costs from total revenue—are noteworthy. For example, black pepper brings in ₹1,674,766; turmeric, ₹3,123,981; ginger, ₹4,806,585, pineapple, ₹3,338,660. Various net returns show the total financial viability and success of growing and selling various agricultural products; the large net returns of pineapple and ginger make them stand out as especially profitable endeavour. The profitability of turmeric, ginger, pineapple, and black pepper is examined in detail in this financial analysis, which also highlights each

product's unique contributions to the agricultural economy. The analysis is done in a clear and professional manner.

Table 4.10 Net return of the company per kilogram

		TURMERIC	GINGER	PINEAPPLE	BLACK PEPPER
Sl. No.	Particular	Amount (₹)	Amount (₹)	Amount (₹)	Amount (₹)
1	Selling Price	300	100	70	420
2	Total revenue	82,50,000	72,20,000	59,50,000	62,87,400
3	Total Expenses	51,26,019	24,13,415	26,11,340	46,12,634
4	Net return for 1 Kg	113.59	66.57	39.27	111.87
5	Net return	31,23,981	48,06,585	33,38,660	16,74,766

Chapter-5

Summary and Conclusion

Chapter 5 Summary and Conclusion

The analysis of variable costs for four crops—Turmeric, Ginger, Pineapple, and Black Pepper—reveals significant differences in their financial requirements. Labor costs, calculated at ₹ 381 per man-day, amount to ₹54,864 for Turmeric and Ginger (144 man-days each), ₹ 57,150 for Pineapple (150 man-days), and ₹49,530 for Black Pepper (130 man-days). Electricity charges are ₹ 1,000 for all crops except Turmeric, which including ₹ 2,500. Seed costs vary greatly, with Pineapple requiring ₹ 1,32,000 for 44,000 kg, Ginger ₹ 35,000 for 600 kg, Black Pepper ₹ 26,000 for 1,300 kg, and Turmeric ₹ 15,000 for 500 kg. Bio fertilizer expenses are specific to Ginger (₹ 1,200) and Pineapple (₹10,000). Manure costs are ₹ 11,250 for Turmeric, ₹ 18,750 for Ginger, ₹15,000 for Pineapple, and ₹ 12,000 for Black Pepper. Miscellaneous expenses are ₹ 3,000 for Turmeric, ₹2,000 for Ginger, ₹ 2,500 for Pineapple, and ₹ 1,500 for Black Pepper. The total working capital required for each crop is highest for Pineapple at ₹ 2,17,650, followed by Ginger at ₹ 1,13,114, Black Pepper at ₹1,00,030, and Turmeric at ₹87,814. With an interest rate of 7 per cent, the cost of capital for working capital is ₹ 6,146.98 for Turmeric, ₹ 7,917.98 for Ginger, ₹15,235.50 for Pineapple, and ₹7,002.10 for Black Pepper. Depreciation, calculated at 10 per cent, results in a fixed cost of ₹ 12,000 for each crop. The rental value of land is ₹ 20,000 for Turmeric and ₹ 15,000 for Ginger, Pineapple, and Black Pepper. Additionally, a machine cost of ₹ 1,20,000 is allocated for all crops. Consequently, the total fixed capital for Turmeric is ₹ 1,40,000, while for Ginger, Pineapple, and Black Pepper, it is ₹ 15,000 each. Interest on fixed capital, at a rate of 10 per cent, amounts to ₹14,000 for Turmeric, and ₹ 1,500 each for Ginger, Pineapple, and Black Pepper. Handling and processing costs per quintal show that Turmeric has a total variable cost of ₹4,588, with the largest expense being machine labor at ₹2,295 per quintal. The final cost per quintal for Turmeric, including interest on working capital, is ₹4,909.16. Ginger's total variable cost per quintal is ₹695, with labor being the highest at ₹565. The final cost per quintal for Ginger, including interest, is ₹743.65. Pineapple's total variable cost per quintal is ₹720, with human labor at ₹390 being the highest. The final cost per quintal for Pineapple, including interest, is ₹770.4. Black Pepper's total variable cost per quintal is ₹750, with labor costs at ₹390 being the highest.

The benefit-cost (B:C) ratio and net profit analysis show variations in economic outcomes for the crops. Turmeric has a raw material cost of ₹15,000 and processing cost of ₹4,588, resulting in a total cost of ₹19,588 and a net profit of

₹10,412 from a gross income of ₹30,000. Turmeric's B:C ratio is 1.53. Ginger has a B:C ratio of 1.44 with a total cost of ₹10,695 and a net profit of ₹4,305 from a gross income of ₹15,000. Pineapple, with the highest B:C ratio of 2.17, has a total cost of ₹3,220 and a net profit of ₹3,780 from a gross income of ₹7,000. Black Pepper, with a B:C ratio of 1.36, including a total cost of ₹30,750 and generates a net profit of ₹11,250 from a gross income of ₹42,000. Marketable surplus analysis reveals that Turmeric produces 1,250 quintals, with 125 quintals for seed and 25 quintals for home consumption, leaving a market surplus of 1,100 quintals (275 quintals in powdered form). Ginger produces 750 quintals, with a market surplus of 722 quintals. Pineapple produces 1,200 kuri (20 fruits each), with a market surplus of 850 kuri. Black Pepper produces 150 quintals, with a market surplus of 149.7 quintals. The net prices and marketing expenses for the crops show Turmeric produce₹ receive ₹30,000 per quintal with a total marketing cost of ₹140, resulting in a selling price of ₹30,140. Ginger producer get ₹10,000 per quintal with a marketing cost of ₹130, leading to a selling price of ₹10,130. Pineapple produce₹ earn ₹7,000 per 50 kuri with a marketing cost of ₹145, resulting in a selling price of ₹7,145. Black Pepper produce₹ receive ₹42,150 per quintal with marketing costs not specified in detail. FPO incur various costs including room rent, loading/unloading, and transportation, which vary slightly across commodities. They add a 5 per cent profit margin to the purchase price, resulting in final selling prices of ₹31,892 for Turmeric, ₹10,876.5 for Ginger, ₹7,757.25 for Pineapple, and ₹44,512.5 for Black Pepper. Economic analysis of net returns shows significant revenues and net returns for each commodity. Turmeric yields ₹8,250,000 from 27,500 kg, Ginger yields ₹7,220,000 from 72,200 kg, Pineapple earns ₹5,950,000 from 85,000 kg, and Black Pepper generates ₹6,287,400 from 14,970 kg. Net returns per kilogram highlight profitability: Turmeric (₹113.59), Ginger (₹66.57), Pineapple (₹39.27), and Black Pepper (₹111.87). Total net returns show substantial profitability: Turmeric (₹3,123,981), Ginger (₹4,806,585), Pineapple (₹3,338,660), and Black Pepper (₹1,674,766). This detailed financial analysis underscores the varying levels of financial commitment and profitability across Turmeric, Ginger, Pineapple, and Black Pepper, providing a comprehensive understanding of their economic viability and contributions to the agricultural economy.

The financial analysis of turmeric, ginger, pineapple, and black pepper reveals distinct variations in variable costs, capital requirements, and profitability for each crop. Labor costs per crop highlight these differences: Turmeric and Ginger each require 144 man-days at ₹54,864, Pineapple needs 150 man-days costing ₹57,150, while Black Pepper, with 130 man-days, including the lowest labor cost of ₹ 49,530.

Electricity costs are uniform at ₹1,000, except for Turmeric at ₹2,500. Seed costs show significant disparity, with Pineapple demanding the highest investment at ₹1,32,000. The total working capital requirements are highest for Pineapple (₹2,17,650) and lowest for Turmeric (₹87,814). An interest rate of 7 per cent adds to the financial burden, with Pineapple incurring the highest cost of capital at ₹15,235.50. Fixed capital costs include ₹20,000 for Turmeric's land rental and ₹15,000 for the other crops, along with a universal machine cost of ₹1,20,000. Depreciation, calculated at 10 per cent, results in a fixed cost of ₹12,000 per crop. Combining fixed and variable costs, Turmeric's total financial outlay is ₹2,27,814, the highest among the crops. When processing costs per quintal are considered, Turmeric leads with ₹4,588, driven primarily by machine labor. The final cost per quintal, including interest on working capital, is highest for Turmeric at ₹4,909.16, and lowest for Ginger at ₹743.65. Profitability varies: Turmeric yields a net profit of ₹10,412 with a B:C ratio of 1.44. Pineapple, with the highest B:C ratio of 2.17, generates a net profit of ₹3,780. Black Pepper, though profitable, has the lowest B:C ratio of 1.36 and a net profit of ₹11,250. Ginger, with a B:C ratio of 1.44, shows a net profit of ₹4,806,585 from a gross income of ₹7,220,000. Marketing expenses reveal the net prices received by producer, with Turmeric and Ginger commanding higher per-unit values compared to Pineapple and Black Pepper. Aggregator incur additional costs, impacting final selling prices. Ultimately, net returns per kilogram highlight the profitability of each crop, with Turmeric and Black Pepper providing significant returns. This comprehensive financial analysis underscores the varying economic viability of these crops, with Pineapple and Ginger standing out as particularly profitable.

Recommendation:

Among the suggestions offered to the business were the following:

1. Encourage Farmer Producer Organizations (FPOs) to invest in technology and infrastructure to increase processing efficiency and add value to crops like ginger and turmeric.
2. Encourage the adoption of sustainable farming methods and biofertilizer to improve soil health and lessen reliance on chemical fertilizer, which will cut input costs.
3. To guarantee that farmer obtain fair prices for their produce and that they have access to trustworthy market information, greater market ties and price support mechanisms should be established.

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