

**VALUE CHAIN ANALYSIS OF BLACK PEPPER  
IN KERALA**

*by*  
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**(2016-25-001)**



**DEPARTMENT OF RURAL MARKETING MANAGEMENT  
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VELLANIKKARA, THRISSUR - 680 656  
KERALA, INDIA**

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**HENA .M  
(2016-25-001)**

**THESIS**

**Submitted in partial fulfilment of the requirement  
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**Department of Rural Marketing Management  
COLLEGE OF CO-OPERATION, BANKING AND  
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VELLANIKKARA, THRISSUR - 680 656  
KERALA, INDIA**

**2020**

## **DECLARATION**

I, hereby declare that the thesis entitled “**Value chain analysis of black pepper in Kerala**” is a bonafide record of research work done by me during the course of research and the thesis has not been previously formed the basis for the award to me of any degree, diploma, fellowship or other similar title, of any other University or Society.

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# *Introduction*

# CHAPTER I

## INTRODUCTION

Modern marketing techniques and restructured markets for agriculture products has made the agriculture producers to fight against a number of penalties which they are actually not practiced or trained. As an alternative, new innovative practice like value chain approach has been identified in improving their ability to combat the restructured market conditions. In developing countries, a huge numbers of deprived people continue to carry out agriculture practices and the needed inputs were distributed through subsidy programs to safeguard household food security and to increase their income. Political sensitivities are always connected with the supply of subsidized inputs to farmers and infrastructure plays a critical role in determining the cost and time of supplying inputs to farmers, especially, the users of agricultural inputs, are likely to be large numbers of farmers distributed over vast areas. Linking farmers with successful development schemes has given remarkable outcome in developing countries with increased productivity, market integration and increased income for farmers. In the same way, considerable gains can be achieved from supporting linkages between agro-processing SMEs and larger enterprises (WBG, 2018).

Agricultural value chains has started to recognize as a set of interlinked activities that work to deliver higher quality and higher value products to meet consumer demand and with the coordinated effort of farmers, input suppliers, traders, processors, distributors and marketers. Many productive off-farm activities in agricultural value chains in developing countries are undertaken by small and medium scale enterprises and a very few large firms. Thus, value chain analysis is essential to understand markets, their relationships between partners, the participation of different actors, and the critical constraints that limit the agricultural production and therefore, the competitiveness of smallholder farmers. While in many countries, farmers currently are given only a small fraction of the final value of their output, and on the contrary, in practice the

associated risk and rewards are shared down to the value chain (Achchuthan and Kajanathan, 2012).

The encouragement of value chains in agriculture aspire to improve the competitiveness of agriculture in national and international markets and to create better value added, within the country or region. The key aim is to attain growth that benefits the rural poor to the greatest possible level without hampering their position compared to other demographic groups. In marketing view, the value chain approach starts from an understanding of the consumer demand and includes the different distribution channels linked with different stages of production, processing and marketing (GTZ, 2006). Earlier value chains of agricultural products were left unattended and now policy makers identified the realistic possibilities of agricultural product chains to generate value added and employment opportunities (UNIDO, 2009).

### **1.1 Agriculture value chains**

Agro-value chains covers activities like product handling, processing, distribution and recycling at farm, rural and urban level to convert agricultural inputs to final product. In addition to these actions in successive stages, monetary value and information are exchanged and finally the value is gradually added (Silva and Filho, 2007). UNIDO (2009) staff working paper on agro-value chain analysis and development made the concept of value chains in agriculture more explicit and precise. Agro-value chain analysis can *“highlights the need for enterprise development, enhancement of product quality and safety, quantitative measurement of value addition along the chain, promotion of coordinated linkages among producers, processors and retailers, and improvement of the competitive position of individual enterprises in the marketplace”*.

Agriculture value chain analysis is an inclusive analysis to assist agriculture producers of less developed and developing countries to stimulate economic growth of poor (Haggblade *et al*, 2012). Raju and Singh (2014) pinpointed the significance of pro-producer agriculture value chain and they further added, it can be a way for poverty reduction and social development. They

highlighted the necessity of small farmer integration, small holder agriculture viability and collaboration across chain actors and importance of rural advisory and support services to farmers, especially, in case of market information and innovative production and processing techniques. Aforesaid evidences from different countries supported the need for proper flow of market information and the farmers' effort to overcome the challenges associated with modern marketing situations. Similarly, it is equally important to strengthen the value chain relationship between agriculture producers and other actors in the chain through mutual benefit and cooperation. The final impacts on small holder farmers would be to have food security, as well as a sustainable income and environment. They can reach international markets by establishing viable agriculture value chains by building relationships in chain networks to survive the restructured markets in the modern era.

Value chains comprise of all activities from production to consumption of a product. An agricultural value chain includes activities along specific inputs, production, collection, transformation, trade, export, wholesale and retail marketing and consumption (FaBe *et al.* 2009). Value chain actors are all the individuals or organizations and enterprises related to a value chain, which are important for understanding the functioning and performance of the value chain. They are often associated with particular value chain activities. For analytical purposes, logically it can be differentiated as chain actors and supporting actors. Chain actors have the ownership of raw, semi-processed or finished product at one stage in the value chain. Supporting actors or service providers are not directly involved in value chain activities. A typical example would be an extension officer or an NGO involved in capacity building (Stein and Barron, 2017).

ADB (2008) remarked on analyzing governance in value chains is greatly beneficial. They recognized "Governance" as both "official" supported by law and "commercial" rules emerged in practice because of competition in production sector. The term Governance, cannot be limited to the legal and regulatory requirements that influence business operations and market access in a value

chain, while in real sense, it includes an array of instruments like the contracts between value chain participants, government regulatory frameworks enforced etc. to even the unwritten “norms” that determines the participants in the market.

Value chain linkages are the channels or business relationships that connects the different value chain activities and through which a product passes from the production to the consumption stages. It can be divided as vertical and horizontal linkages. Vertical linkages connects actors involved in different activities of the value chain, from input suppliers to producers, processors, wholesalers, distributors, exporters, and so on, to the consumer. Vertical linkages are the commercial relationships involved in bringing the product up through the value chain (Dunn 2014). Horizontal linkages connects actors performing the same activity within the value chain. An example of horizontal linkages would be producer groups. Important functions of horizontal linkages include more cost-effective access to inputs, services and information and the empowerment of farmers to advocate for change (Stein and Barron, 2017).

## **1.2 Status of black pepper production in India**

Black pepper apparently called as “Black Gold” internationally, was the first oriental spice offered to Western countries like Rome and Greece. Later, this spice has gained high demand and value in Europe and its fame has even made changes in Western cuisine along with the entry of other spices (Ravindran and Kallapurackal, 2012). Black pepper is native to South India and are widely cultivated in tropical regions. At present, Vietnam is the leading producer and exporter, accounts for around 34 percentage of the total black pepper production in the world (Puri, 2013). India has lost the crown of leading producer and exporter of black pepper to Vietnam and it is the largest consumer of black pepper among the black pepper producing countries (Sabu, 2015). The total export of black pepper and value added products of black pepper from India was 21,468 MT, in which the share of value added products was 42 per cent (IPC, 2014).

**Table 1.1 Area and production details of black pepper in India (2015-16 to 2017-18)**

Sl.No	State	2015-16		2016-17		2017-18(Est)	
		Area (ha)	Production (tons)	Area (ha)	Production (tons)	Area (ha)	Production (tons)
1	Karnataka	34990	23000	37750	31000	37750	35000
2	Kerala	85948	21000	85210	20000	86740	22000
3	Tamil Nadu	4349	1500	4910	2000	4360	2000
	Total (including other states)	131790	48500	134280	57000	135920	64000

Source: Spices board, 2019

In India, black pepper cultivation is mainly confined to southern states like, Kerala, Karnataka and Tamil Nadu. Altogether, the total area under cultivation is around 128,850 ha with these states, accounting for almost 94.8 percent of the total area under cultivation (Spices Board, 2019).

Black pepper is mostly cultivated as inter crop in the homestead gardens in Kerala. The area under cultivation and production of black pepper in Kerala was 2,03,956 ha and 58,240 MT respectively in 2001-2002 and it has diminished to 84,065 ha and 29,408 MT respectively in 2013-14 (GoK, 2015). At present, Kerala had 85,141 ha of total area under black pepper cultivation with a total production of 37,995 MT (GoK, 2018).

Idukki, Wayanad, Kannur and Kasargod districts contributes about 73.41 percent of total area under black pepper cultivation and 82.5 percent of total black pepper production in the state, in which Idukki and Wayanad districts together contributes 74 percent of the total black pepper production in kerala, from 65 percent of the total area under pepper cultivation in the state (GoK, 2018).

### **1.3 Black pepper export from India**

The total quantity of black pepper exported from India in 2017-2018 was 16,840 MT with a value of ₹82,078.40 lakhs, where the large quantity (6,376.17 MT) of black pepper was exported to USA for a value of ₹31,094.09 lakhs, followed by UK (2,250.05 MT with a value of ₹8,978.34 lakhs), Germany (916.57 MT with a value of ₹6,715.63 lakhs), Sweden (833.57 MT with a value of ₹5,018.92 lakhs), etc (Spices Board, 2019). The quantity and value of black pepper exported from India to different countries are presented in Table. 1.2.

Comparing with other spices in trade, black pepper is highly susceptible to price fluctuations. Black pepper traded internationally shows that price change for the commodity was more than five per cent from one month to another (Chopra and Bessler, 2005).

Price variations in black pepper are influenced by many factors like international prices, domestic production and consumption, trade agreements and export-import policies. In 1990-1991, the average price of Malabar Garbled pepper (MG1) in Kochi market was ₹33 per kilogram and in 1999-2000 it was augmented to ₹215 per kilogram, and later in 2005-2006 the average price crashed down to as ₹66 per kilogram. While, in 2007-2008, the price showed a positive movement and reached a better position with an annual average price of ₹140 per kilogram and in 2008-2009, the commodity price decreased to ₹129 per kilogram.

**Table 1.2 Country wise export of black pepper from India (2016-17 to 2017-18)**

Item/Major Country	2016 - 2017		2016 - 2017		2017 - 2018	
	Quantity (MT)	Value (₹ in lakhs)	Quantity (MT)	Value (₹ in lakhs)	Quantity (MT)	Value (₹ in lakhs)
USA	10740.47	65961.15	8128.17	52679.79	6376.17	31094.09
UK	2160.86	14904.33	1868.25	11738.01	2250.05	8978.34
Germany	2504.90	14456.83	972.30	7905.81	916.57	6715.63
Sweden	649.88	4748.80	1034.10	7804.79	833.57	5018.92
Canada	589.64	3677.50	361.46	2306.33	731.41	3564.57
Japan	697.47	5086.22	746.71	5418.25	484.20	2938.61
Netherlands	1566.44	10027.14	264.28	1906.06	371.69	2249.02
Australia	480.91	3373.68	301.16	1812.05	453.82	2140.14
France	430.97	3262.85	516.77	2547.79	486.01	2098.45
Spain	449.82	2204.10	290.06	1294.10	371.13	1446.66
UAE	663.31	3982.42	302.75	1815.03	231.73	1130.27
Turkey	251.40	1422.66	207.50	1361.69	263.82	1086.80
Total (Inclusive of others)	28100.00	173041.50	17600.00	114312.60	16840.00	82078.48

Source: Spices Board, 2019

An all-time higher price was recorded for black pepper as ₹750/kg in August 2014, while the scenario of continuous increasing stopped there and started seeing a decrease later on and the price reached to ₹610 in May 2015 (Sabu, 2015). Later in 2018, the average price per kilogram of black pepper reduced to less than ₹400/kg and at present, the price of one kilogram of black pepper is below ₹300 per kilogram (Spices Board, 2019).



#### **1.4 Statement of the problem**

Majority of agricultural production in India is carried out in small farms (Singh, 2002) and in Kerala the prime contribution towards the black pepper production is by small and medium farmers and mostly grown in home gardens as intercrops. Black pepper was one of the significant agricultural commodity value chain existed in Kerala, which gave hope for the farmers. A value chain is a collection of value adding activities through which a product passes from the design to the consumption stages, where the value of the product increases at each node in different stages from production to consumption. By undertaking a research on the value chain of black pepper in Kerala gave a better understanding of where the black pepper farmers in Kerala stand in the global value chain of black pepper. Further, it disclosed whether the black pepper farmers in the value chain are getting reasonable price or not, who does the value addition activities of black pepper and who capitalize the benefits of value addition.

Analysis of the value chain actors, their relationships and coordination in the value chain and the influence of the formal and informal rules, regulations and standards that influence the value chain, the linkages between actors and the constraints in the value chain has helped to develop solution for the problems faced by black pepper farmers and to capture better opportunities to improve their performance in the value chain.

#### **1.5 Objectives of the study**

In this background, the following objectives were fixed for conducting the research study entitled “Value chain analysis of black pepper in Kerala”,

- 1) To map the value chain of black pepper in Kerala,
  - 2) To examine the governance influence on value chain actors,
  - 3) To evaluate the producer farmer’s linkages with other value chain actors,
  - 4) To analyze the opportunities and constraints faced by value chain actors,
- and

- 5) To suggest appropriate strategies to upgrade the performance of value chain actors of black pepper.

### **1.6 Scope and importance of the study**

Analyzing the value chain revealed the share of profits of intermediaries which in turn helped to understand farmer's position in the chain and may help them to realize better retail prices in future. Thus with this background, the present study focused on having a depth analysis of value chain of black pepper with a key research question of how to progress the livelihood condition of rural population involved in black pepper production in Kerala. The results of the study exposed the role of the actors included in the value chain and how these actors supported the farmers in the production and marketing of black pepper.

### **1.7 Limitations of the study**

Limitations of the study are the following,

- 1) Buyers in Kochi market were reluctant to provide the details needed for the study, hence they were not included in the study.
- 2) Pepper in brine is the only green pepper product included in the study, as the exporters included in the study were not processing other green pepper products.

During the conduct of any research, errors might have happen and this research is also no exception. Altogether, truthful efforts have been taken to perform and materialize the research in a methodical way. The results of the study entirely depended on the sample farmers' responses, which may be biased, as it is related with the honesty of the respondents and cannot be controlled. On the other hand, possible measures were adopted to reduce the errors.

### **1.8 Presentation of thesis**

The thesis work entitled "Value chain analysis of black pepper in Kerala" is divided into five major chapters. The first chapter describes the entire research design which included the objectives of the study on which the research has

conducted, the statement of the problem, the scope and importance of the study and the limitations experienced by the researcher. Literatures reviewed by the researcher are chronologically presented in the second chapter. Third chapter describes the materials and methods employed to perform the research such as study area, sampling frame, variables selected and measured and the statistical tools used for analyzing the objectives. The results are explained and discussed in chapter four, and the final chapter five deals with summary of findings and conclusions of the research.

# *Review of Literature*

## **CHAPTER II**

### **REVIEW OF LITERATURE**

Literature survey on the research subject facilitates better understanding of the theoretical concepts and explanations through an inquiry of empirical evidences from past research. It helps to reveal the progress of the research on the subject in relation with the current study's objectives. In this chapter, an elaborate and structured effort is in use to describe the concept on which the current research work has been undertaken. Accordingly, a separate part on value chain approaches, agricultural value chains, its mapping, value chain governance and coordination, linkages among chain actors, value chain upgrading, constraints and opportunities and empirical evidences from agricultural value chain analysis carried out in India and in different parts of the world are included.

#### **2.1 Concept and theoretical explanations**

##### **2.1.1 Value chain**

Porter (1985) opined in "Competitive Advantage," a value chain comprise of whole range of discrete, though interrelated, activities involved in the design, production and marketing of a product. In short, a value chain intends to maximize the benefits or value that could be generated out of the combined operation of all interrelated value chain actors.

A definition by McCormick and Schmitz (2001), about value chain was, *"set of value-adding activities through which a product passes from the design to the consumption stages. The worth of the product increases at each point of the process, hence the term value chain."*

Later, Hellin and Meijer (2006) defined value chains as *"full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to the final customers, and disposal after use"*.

Definition for the value chains can be seen in two different ways, a narrow sense and in a broad sense. Value chain in a narrow sense, consist of those range of activities which executed within a firm to produce an output, where the producers to consumers are interconnected and each activity put in an additional value to the end product. Dissimilar to the former view, value chain in a broad sense, narrates it as a complex series of actions of interrelated actors like producers, processors, traders, service providers etc. This chain also explains the backward and forward linkages among the chain actors who are engaged in trading, processing, exporting to add proportional value to the final product (DFID, 2008).

The difference between a supply chain and a value chain is perfectly clarified in the ADB's Evaluation Knowledge Study (2012) on "Support for Agricultural Value Chain Development". The sequence of steps and participants involved in the process from production to delivery of a product to market is called a value chain. A value chain is not identical to a supply chain. A value chain is about linkages generating value for the consumer whereas a supply chain converts commodities into products from producers to consumers. When a value chain generates value for the consumer, a supply chain deals with logistics. The productivity, efficiency and depth of agriculture value chains are crucial for running agribusiness. Because the value chains operate globally, and the farmers in Asia and the Pacific has to enter into a competition with exporters from other part of the globe.

In common idiom, when we talk about supply chains, we usually talk about a downstream flow of goods and supplies from the source to the customer. While the value flows the other way. The customer is the source of value, and value flows from the customer, in the form of demand, to the supplier. That flow of demand, sometimes referred to as a "demand chain" is manifested in the flows of orders and cash that parallel the flow of value, and flow in the opposite direction to the flow of supply. Thus, the primary difference between a supply chain and a value chain is a fundamental shift in focus from the supply base to the customer. Supply chains focus upstream on integrating supplier and producer

processes, improving efficiency and reducing waste, while value chains focus downstream, on creating value in the eyes of the customer. This distinction is often lost in the language used in the business and research literature.

### **2.1.2 Value chain approaches**

The literature on concept of value chain approaches has divided into the three major research streams including Porter's Framework (1985), the filiere approach (Durufle and Fabre, 1988), and the Global approach by Gereffi, G and Korzeniewicz (1994) and Kaplinsky (2000).

#### **2.1.2.1 Porter's framework**

As described by Porter (1985) the concept of value chain has a strict business application and the framework helps to determine the current and potential competitive advantage for the firms. For which a series of activities has to be separated and to found competitive advantage on those activities. He pinpointed the important primary activities which add value directly to the product and support activities which have indirect effect on the product value in his model. The value chain he visualized includes those specific activities the firms can create value for their product by taking strategic decisions. Porter match intra-link functions with the concept of the multi-linked value chain itself, which he refers as the value system. With the help of the concept of the value system, Porter balanced his concept of the value chain. The value system basically extends the idea of the value chain to inter-industry linkages. In short, the value system is not that different from the concept of the Filière (Kaplinsky, 1998).

As Porter's framework became the original influential work to attain better business performances by employing competitive strategies, his viewpoint on value should also be discussed. Feller *et al* (2006) believed that Porter's concept of value is *"the amount buyers are willing to pay for what a firm provides"* and value chain has visualized as *"the combination of nine generic value added activities operating within a firm"*. Accordingly, all successful and efficient value chains can create profits. By the last thirty years, Porter's strategic

concept “value chain” and its analysis has been emerged to cater all business and its operations.

### **2.1.2.2 Filiere (thread) approach**

DFID (2008) reported filiere as an instrument to evaluate the production system of agricultural commodities in developing countries, which has concentrated on the different practices involved in trade, processing and export of final product and its consumption. Filiere approach showed a resemblance to the broad concept of value chain which has explained earlier in this chapter. The two filiere approaches relevant to value chain analysis are:

- The economic and financial evaluation of filieres, (adopted in various French funded development projects) talk about how to make income and how it has to be allocated in commodity chain. It separated the cost and incomes associated with local components and international components and their contribution to GDP.
- The strategy focused analysis of filiere, investigated the possibility of individual strategies and combined strategies and developed a systematic framework for upgrading the commodity chains.

### **2.1.2.3 The global approach**

Kaplinsky and Morris (2001) mentioned that in the era of globalization, the opinion of increase in incomes gap in a country and between countries are well accepted. Prior to this, Gereffi and Korzeniewicz (1994) used the value chain concept to evaluate globalization. Global value chain analysis presents a theoretical frame work to comprehend the integration of firms into viable structure in market (Gereffi, *et al*, 2001).

The key dimensions of Global Commodity Chains were first documented by Gereffi (1994) as input-output structure, geographical coverage, form of governance and institutional framework. On the other hand, he couldn't suggest how to quantify these dimensions or what advantages can be gained by taking



part in a commodity chain. Unlike the filiere approach which concentrated on agricultural commodities, the GCC approach highlighted the manufacturing firms and its economic integration internationally (Bair, 2005). Afterward, the Global Commodity Chain (GCC) approach was changed to an impressive form as Global Value Chain (GVC) analysis (Humphrey and Schmitz, 2000). Comparing with the earlier concepts and approaches, Global value chains looks into the governance factor, its relationships between participants and value chain upgrading. Value chain operators should necessarily understand and analyze the markets before engage into the upgrading activities in the chain. This will ultimately help to connect producers to probable markets. Thus, the value chain approach starts from an understanding of the consumer demand and works its way back through distribution channels to the different stages of production, processing and marketing (GTZ, 2006).

After reviewing the Global value chain studies, Reji (2013) made an opinion that, the studies those addressed the process of integration of developing country firms into the value chains of large firms in developed countries, looked at the relationships between firms, and its governance and upgrading practices to become more competitive. All the above explained approaches give an idea about the path in which the product and services moves along the value chain from the production end to the consumption end.

### **2.1.3 Mapping of value chains**

A theoretical and realistic tool “market map” is supported by Hellin and Meijer (2006), which facilitates to spot out the policy issues that may be delaying or enhancing the performance of the chain and also the institutions and organizations providing the services. It is easy to find out the extraneous factors that influence the way the chain works by examining the interlinking components in the market map, such as value chain actors, enabling environment (infrastructure and policies, institutions and processes that shape the market environment) and service providers (the business or extension services that support the value chains’ operations).

About preparing a value chain map, DFID (2008) expressed it as “*a picture is worth a thousand words*”. Mapping a value chain illustrates a clear understanding of the range of operations, the participants and their relationships within the value chain. As a rule, qualitative and quantitative measures is to be used to depict the various actors of the chain and the connections between them, in all activities including the procurement of inputs to the final processing. The driving force behind a value chain mapping should be to explore benefits for the marginalized poor who are deprived of poverty, gender issues and other adverse factors (UNIDO, 2009).

European Commission (2011) in a working document on “Analysis and development of inclusive value chains: to support small scale producers to access agricultural markets”, elaborated, value chain analysis as a complex and lengthy assignment amid detailed justifications with calculations. Furthermore, information was summarized to a possible extent into a large number of graphical representations, so that value chain mapping becomes an easy tool acceptable for all parties concerned with.

Almost a similar viewpoint was expressed by Haggblade *et al* (2012), and they described the use of value chain maps in their paper on “A Conceptual Framework for Promoting Inclusive Agricultural Value Chains” funded by International Fund for Agricultural Development (IFAD). According to them, value chain maps are a schematic snapshot of the major value chain actors, and a structure which illustrates the flow of raw material, product and information through the chain at a given point in time. The flow of the product vertically through the chain searches the various possibilities of distribution nodes, whereas the horizontal business relationships between the same types of suppliers in the value chain results in a productive function.

The output of the first stage is the actual value chain map, i.e. a visualization of the full value chain with its constitutive parts and how they relate to each other. In the second stage the value chain is used to bring out stories about how the system functions, what opportunities and constraints exist within the

chain, as well as potential ways to develop the value chain suitable for the beneficiaries (Stein and Barron, 2017).

#### **2.1.4 Value chain governance and coordination**

The term “governance” has elucidated in detail with the importance of exchange of information and production activities by Gereffi (1994), further explained it as, the degree of control to outline the functional division of labour in the chain, determining the allocation of resources and gains and its flow within the chain and finally, to set entry barriers to limit monetary profits in specific segments. “Buyer driven” governance relations and “producer driven” governance relations in value chains were reported, where the former chains are implemented by large established businesses and the latter are directed by technology intensive firms. He added, Global Commodity Chains (GCC) has two different governance structures: one imposed by core manufacturers in producer-driven commodity chains and the other provided by major retailers and brands in buyer-driven production networks in different countries.

While in the view of Kaplinsky (2000) “Governance” is the power or authority to finalise who should participate and who should not participate, as an actor in the value chain. He explained it as the authority to fix rules, which offer help to chain participants to achieve the pre fixed standards and to check the chain performance and these elements are included in the governance thought.

The Global Value Chain (GVC) approach gives emphasize to the concept of ‘governance’, the value chain operations are performed by the producers in the developing country, where the parameters for the products and processes are stipulated by the buyers’ right throughout the chain. Government agencies and international organizations are compelled to meet the compliance in quality, labour and environmental standards (Humphrey and Schmitz, 2000).

Situations are not always easy, certain firms or actors in the value chain structure generate their own restrictions and made it oblige on other actors to abide by these parameters. That is the reason, Humphrey and Schmitz (2002)

doubted that the question of governance arises when some firms in the chain works according to parameters set by others. For the compliance of such parameters, essential support is needed from governance structures to transmit information about parameters and to apply compliance. Likewise, compliance with the set parameters should be monitored and enforced through inspection and testing.

Gereffi *et al* (2001) listed out the major features of governance in value chain as follows:

- Coordination within value chains can be in three forms: inter-firm networks, quasi-hierarchical relationships between powerful lead firms and independent but subordinate firms in the chain, and vertical integration within enterprises.
- Two attributes: their market power and their positioning in chain segments, derived from a multiplicity of barriers to entry (Gereffi *et al* derived it from Kaplinsky 1998).
- Governance structures react to two distinct needs for coordination. ie, 1) Companies production are as per supplier specifications and they extend governance structures to harmonize supplier actions. 2) Companies are exposed to risks due to chances of suppliers' failures, eagerly interfere more to coordinate and check the supply chain.
- Lead firms' impose control over the key resources, decisions about entry to and exit, and monitoring of suppliers in the value chain and assist with technical support to suppliers to achieve the necessary performance. Chain differs significantly on these reasons: strong governance implemented, governance concentrated in a single firm, and the number of lead firms' exercises governance in the chain.

It is noticed that literature review on "Value Chain Governance" has witnessed a collection of opinions from different authors. While the questions asked by Gereffi *et al*, (2001) seems still relevant and need to be tackled. ie, 1) What is the role of government agencies and other external forms of regulation

in determining both product and process parameters in value chains? 2) To what extent is there a trade-off between coordination and control within the chain and the use of external agencies to certify and regulate firms? 3) How to recognize chain dynamics by giving importance to power relationships within chains.

As a continuance, Roldan (2008) argued power is exercised when lead firms are able to set and/or impose the parameters under which others in the chain operate. In line with the earlier concepts and approaches, Global value chains looked into the governance factor, its relationships and value chain upgrading.

Further research on this focus by Gereffi *et al* (2005), led to the development of a theory on Value chain governance and they identified three variables:

- i) the *complexity* of information and knowledge transfer required to sustain a particular transaction, particularly with respect to product and process specifications;
- ii) the *codification* of information and knowledge and, it can be efficiently transmitted without transaction-specific investment between the parties;
- iii) the *capabilities* of actual and potential suppliers in relation to the requirements of the transaction.

<b>Governance type</b>	<b>Information complexity</b>	<b>Ability to codify information</b>	<b>Supplier capabilities</b>
Market	Low	High	High
Modular	High	High	High
Relational	High	Low	High
Captive	High	High	Low
Hierarchy	High	Low	Low

They proposed five basic types of value chain governance derived from empirical observations on the basis of the identified variables, where each variable is characterized with two values – high or low. It is classified as markets, modular, relational, captive and hierarchical, which forms the basis of governance relations.

- 1) Market: The complexity of information exchanged is relatively low and transactions can be governed with little explicit coordination, where price remains the major factor.
- 2) Modular: Products are supplied on customer's specifications, suppliers provide turn-key services suppliers by taking responsibility of services and technologies and make capital investment on behalf of customers.
- 3) Relational: Mutual dependence and high levels of asset specificity are the result of complex interactions between buyers and sellers. Tacit knowledge must be exchanged between buyers and sellers, and where the cost of shifting to new partners are high.
- 4) Captive: Complexity of product specifications are both high but supplier capabilities are low, then value chain governance will tend toward the captive type. This is because low supplier competence in the face of complex products and specifications requires a great deal of intervention and control on the part of the lead firm. Captive suppliers are dependent on the lead firm for complementary activities such as design, logistics, component purchasing, and process technology upgrading.
- 5) Hierarchical: When product specifications cannot be codified, products are complex, and highly competent suppliers cannot be found, then lead firms will be forced to develop and manufacture products in-house. This governance form is usually driven by the need to exchange implicit knowledge between value chain activities as well as the need to effectively manage complex webs of inputs and outputs and to control resources, especially intellectual property.

Additional clarifications were given by Webber and Labaste (2009) through a portrayal of governance in value chains of firms, done by highlighting the power, knowledge and benefits forcefully disseminated among the firms. He proposed another meaning for the term, as a description of sharing of information and systematic standards encouraged by the governing unit of the value chain. Later, Keane (2008) made a categorization of governance structures into two: i) internal to the value chain and 2) external to the value chain. External governance includes the obligatory rules and regulations all producers are expected to comply for making their product reach the global markets. Internal governance structure is usually implied as the overall form of inter connections within a chain for effectiveness.

The concept put forward by ADB (2008) for analyzing governance in value chains is greatly advantageous. They recognized “Governance” as both “official” supported by law and “commercial” rules emerged in practice because of competition in production sector. The term “Governance”, cannot be limited to the legal and regulatory requirements that influence business operations and market access in a value chain, while in realism, it includes an array of instruments like the contracts between value chain participants, government regulatory frameworks made obligatory, to even the unwritten “norms” that determines the participants in the market. As an example, it may be a simple instruction from wholesalers regarding the harvest of agricultural produce to reduce quantity and quality loss and on the contrary, it can be complex as a foreign government’s comply of international standards concerning permissible levels of pesticide residues on imported products.

The study on value chains should not be confined to firm and its supplier’s relations whereas the value chain governance and its implications can be well utilized in all business activities including agricultural input and produce marketing.

### **2.1.5 Linkages in value chains**

Gereffi (1994) felt the importance of taking into account the backward and forward linkages in the different stages of production, where manufacturers exert their power to control backward linkages with raw material and constituent suppliers or forward linkages to retailing. In retailing, the distributors get an opportunity to create a relationship with customers or consumers.

Lazarrini *et al* (2001) advocated a new concept of the net chain to show the interrelationships between the horizontal and vertical dimensions in value chains. Vertical relationships may present in all stages in the value chain or may skip value chain links, for example, relationships between traders and retailers. Horizontal relationships between actors can also have various shapes, such as farmer cooperatives or price agreements between traders. The structure of a network is largely dependent on the market channels that are preferred by various actors in the chain. He defined, a marketing channel as a link which fills the gap between producers and the market and forming a “channel” for products and services that are offered for sale to the customers.

*“Linkages are defined as a business relationship between two parties of the value chain/network”* (DFID, 2008). The discussions advanced to the analysis of linkages to find out which organizations and actors are linked together and to spot out the motives for their linkages. In most cases, the actors deliberately linked together to gain benefits from linkages. Hence, analysis of linkages and benefits revealed the constraints in linkages and the level of trust among the participants also. In general, Linkages are of two types: Vertical and Horizontal linkages, where a vertical linkage explains the relationships between actors in the value chain and the horizontal linkages make clear the linkages among the actors at the same level of value chain.

### **2.1.6 Value chain upgrading**

Upgrading refers to the acquisition of technological capabilities and market linkages that enable firms to improve their competitiveness and move into higher-value activities (Kaplinsky and Morris, 2001). Later, different types of



probable upgrading to increase the competitiveness of the participants in the value chain were identified, such as i) process upgrading, ii) product upgrading, iii) functional upgrading and iv) inter-chain or sectoral upgrading (Humphrey and Schmitz, 2002).

McDermott (2007) defined upgrading as “*the shift from lower-to higher-value economic activities by using local innovative capacities to make continuous improvements in processes, products and functions*”. Ultimately, value chain analysis aims to understand the functioning of a value chain and to identify and support implementation of upgrading strategies. While, according to Henriksen *et al* (2010) upgrading can be broadly defined as a desirable change in chain participation that increases rewards and/or reduces exposure to challenges. Typically, such analysis is supported by a value chain map, which consists of (a) value chain activities, (b) value chain actors, (c) value chain linkages, and (d) a context in which the value chain is situated. These four items are essential for a value chain map and it indicates what and how to map and how to upgrade a value chain.

For a balanced analysis of value chains, Trienekens (2011) proposed three key elements: network structure, horizontal and vertical market channel relationships, value added and governance and organizational arrangements between value chain actors. He further envisaged the concept of “value added” as the value created at different stages and by different actors throughout the value chain. Value added may be related to quality, costs, delivery times, delivery flexibility, innovativeness, etc. The size of value added is decided by the end customer’s willingness to pay. The major motive to identify the opportunities of a company to adopt value addition mainly rest on the size and diversity of markets and how much the company is technically capable. The study on the consumer behavior on product acceptance by the consumers and process requirements is vital in the production of a needed product to the market with right value.

### **2.1.7 Constraints and opportunities**

Understanding the opportunities and constraints of agricultural producers within a given value chain can be analyzed after depicting the activities happening within the chain, and the relative factors have high persuasion over the performance of that chain (Bolwig *et al*, 2010). External factors like infrastructure, policies, trade-agreements, access to credit, property rights etc. are external to the value chain, but had noticeable impact on its performance and therefore, should be consider in value chain analysis. In short, producers are rooted in larger systems of activities, relationships that provide both opportunities and constraints for the upgrading of agricultural production systems and source of income. A better understanding of the opportunities and constraints faced by agricultural producers helps to benefit from and reduce risks in agriculture production involved in a value chain, and together it is important to make certain that markets works in favour for the poor.

Stein and Barron (2017) recommended value chain mapping helps to comprehend what opportunities and constraints producers face if they are to benefit from participating in value chains. The mapping emphasized the significance of strategies used by the actors, horizontal linkages within a community, the potential role of supporting actors upgrading the value chains.

### **2.1.8 Agricultural value chains**

Agro-value chains covers activities like product handling, processing, distribution and recycling at farm, rural and urban level to convert agricultural inputs to final product. In addition to these actions in successive stages, monetary value and information are exchanged and finally the value is gradually added (Silva and Filho, 2007).

Economic development and growth in agriculture are interlinked terms, which are the targets of developed and developing countries throughout the years. It is believed that agriculture growth and development results in poverty reduction globally, while it also support the fact that agriculture alone cannot do a magic to erase the poverty and inequality from the world scenario. However,

the search for an alternative solution attracted the policy makers in the setting up of agro industries. In a long run, agro industries maintained with successful value chains, can amplify considerably the rate and scope of industrial growth. Hence, globally, various governments of developing countries have started promoting the agribusiness enterprises after realizing the better forecasts of growth of agro industries in developing countries, they have started to spent considerable portion of investment to support the production of agricultural inputs such as fertilizers, bio pesticides etc. (UNIDO, 2009).

UNIDO (2009) staff working paper on agro-value chain analysis and development made the concept of value chains in agriculture more explicit and precise. The paper added, agro-value chain analysis *“highlights the need for enterprise development, enhancement of product quality and safety, quantitative measurement of value addition along the chain, promotion of coordinated linkages among producers, processors and retailers, and improvement of the competitive position of individual enterprises in the marketplace”*.

Studies and literature focused on agricultural value chains identified the key factors that affect the performance of the value chain. ADBG (2016) identified the areas where the focus in designing interventions contributing to the proper function of the value chain and they listed the following:

- a) Institutional setup which includes the mandatory laws, rules and regulations, policies of government, international trade agreements by the international bodies, and social norms and customs prevailed in the society.
- b) Infrastructure including transportation infrastructure, market facilities, information and communication infrastructure, warehousing services and other advanced technologies.
- c) Price information system or marketing.
- d) Technical knowhow and training
- e) Business development services such as finance, transportation, quality control.
- f) Agricultural research and extension.

The above factors may help to facilitate increased productivity, efficiency and profitability of the value chain. Without access to marketing infrastructure and lack of warehousing during excess production may lead to price fall and may adversely affect the producers. Similarly, governance and government policies also controlling the interactions of the various actors in the value chain.

## **2.2 Empirical evidences from various studies**

### **2.2.1 Studies on agricultural value chains**

Modern retail chains and new food value chains have helped in the reduction of price and production risks and the farmers get assured returns. The study on “Value chains and retailing of fresh vegetables and fruits in Andhra Pradesh” (Reddy *et al*, 2010) revealed that demand for quality and other specific requirements may exclude small scale farmers from the value chains because the small scale farmers cannot produce quality and safe produces. For them, the production of specific quality required for agriculture produces or demanded products may not be viable and cost effective. Vendors’ role became strong in the modern value chain by reducing the information gap with training and channelization of modern retailers and farmers. They suggested, the need for visible investments for building modern value chains by the retail sector shall be materialized with the support of the government and its machineries. For which, the required efforts are:

- i) favorable environment for individuals to capitalize business opportunities,
- ii) fix standards for products to ensure better quality,
- iii) post-harvest storage and transportation facilities, skilled manpower and infrastructure facilities, and
- iv) business relationships between producers and the distributors.

Kumar *et al* (2011) wrote a review article on “Value Chains of Agricultural Commodities and their Role in Food Security and Poverty Alleviation: A Synthesis”, based on 18th Annual Conference held at National Academy of Agricultural Research Management (NAARM), Hyderabad. The

article revealed the concepts of value chains and value chain analysis, which has been evolving in India and hence, a need arose on the lucidity of these concepts was felt unanimously. Therefore, it was suggested that both professional societies like AERA (Agricultural Economics Research Association) and the national institutions like NAARM, NIAP (National Institute of Agricultural Economics and Policy Research) etc. should take the lead in developing conceptual framework for value chain analysis and addressing the issues and concerns related to value chains for different agricultural commodities. Besides, several specific recommendations emerged from the depth discussions during the conference and it included:

- Examination of the organized requirements to ensure inclusiveness of resource-poor farmers in agricultural value chains.
- Identification of new corridors to develop successful value chains.
- Assessment of the contribution of technology, policy, institutional and infrastructural facilities for the upgrading of value chains.
- Study on the role played by information in value chain development and ways to enhance farmers' access to information.
- Identified the need to assess the roles of various externalities (social, economic and environmental) in commodity-specific value chains.
- Organize trainings, demonstrations, awareness generation, exposure visits and farmer-scientist interactions on different aspects of agricultural value chains.
- Promotion of the alternative sources of energy through policy support system.
- Capacity building with the participatory risk assessment for improving quality and safety along the value chain.
- Establishment of Farmer-friendly communication networks for Indian farmers to give proper market information.
- Arrange mechanisms to support farmers' linkage with markets..

Mumbeya (2011) exhibited the inadequate cooperation between farmers and other market chain participants in the cassava value chain in Congo. The

relationship between various actors appears to be informal and changes occasionally. Assemblers or wholesalers seem to have trustworthy relationship as each wholesaler works with specific rural assemblers. The rule prevailed like, selling to highest bidders commands the relationship between the agent groups. The participants do not have a common vision, trust, joint action and negotiation. In general, the poor farmers remain as price takers, as the market information of prices and quality requirements in different markets doesnot reach them. Cassava value chain identified as demand driven, where the traders and wholesalers are the true power holders in the value chain. Traders assess the quality of cassava before it is sold to retailers. They control product quality by sorting and hardening during harvest period in the field itself, thereby, they put the farmers in danger position in the cassava value chain.

The coffee produced in Coorg district in Karnataka flows to international households through different actors which includes producers, hullers, agents, curers, exporters, roasters and retailers and finally consumers (Kodigehalli, 2011). According to her, coffee value chain has buyer driven governance structure, where the roasters controls the chain. Consumers of coffee shared their preferences and these requirements are mainly influence the roasters' organizations. Indian coffee failed to access global market due to poor quality and low quantity of supply of coffee. Apart from the aforementioned challenges, innovations through upgrading activities, collective action of the producers can renovate the chain to higher profit margins favorable for the growers. Moreover, necessary efforts are required to permit the proper flow of market information and technical knowledge throughout the chain and to lessen the roasters authority to perform regulations in the coffee value chain. Certified and specialty coffee's quality standards created by global buyers has actually closed the door of entry of Indian coffee growers to these markets to an extent.

According to Rajkumar (2012) a notable increase had shown in food mileages among the organized retailers. A 'food mileage' is operated with the maximum utilization of available resources and less cost manpower available in the rural areas where maximum cultivation located, business opportunity to

marginal farmers, continuous employment opportunities to farm laborers’, and employment creation in transportation. In addition to the above factors, for joining the global supply chain by the rural area farmers they need the factors like varied agro climatic regions, huge untapped rural resources, suddenly rising food demand in the non-farm area, innovative market mechanisms, government's initiatives, expected investments in agribusiness and infrastructure.

Vegetables producers in Habro and Kombolcha Woredas of Oromia Region in Ethiopia have to overcome the challenges like non availability of modern input supply, high post-harvest losses, limited access to market, unattractive price of vegetables, inadequate storage and transportation facilities, less quality vegetables and the illegal trade to Somalia (Woldesenbet, 2013). The main chain participants were input suppliers, vegetable producers, collectors, wholesalers, retailers, exporters and consumers. As the chain gets expanded, vegetables passed through many intermediaries with meagre value addition and finally reach the consumers. Governance power was with the wholesalers and exporters and they obtain the major share of profit. Being a buyer driven value chain, minimum trust existed between various actors. The smallholder farmers remained as price takers, were not organized and were not governing the value chain and never negotiated the price due to the fear of rejection of their produce by the buyers and may have to face a post-harvest loss at the end.

Asian Development Bank’s Technical Assistant Consultant’s Report (2013) on “Advanced Project Preparedness for Poverty Reduction and Institutional Development for a Value Chain Approach to Agribusiness in Bihar” captured the following aspects of stakeholder linkages:

- Farming community’s business relationships among middle-men and traders.
- Roles of infrastructure support providers in marketing, and
- Kind of business relationships, information through contacts, selling and distribution of agricultural commodities and facilities provided by institutional agencies.

In Bangladesh, an NGO CARE, acts as a value chain facilitator and considers each node in the value chain and the actual stimulator of each actor in the value chain. McKague and Siddiquee, (2014) in their wide thought commented that value chain actors hold a common interest in the efficiency or effectiveness of their value chain, where the reasons for failures vary from one value chain to other. The common explanations for the failure were lack of information on the benefits, lack of leadership and mistrust in the value chain. The efficiency of the value chain depends on the quality of the product that transfers through the chain. According to them, the NGO tried to support small holder farmers for a long term and intended to convert farmers and other value chain actors vibrant in their activities. They have done their best to protect farmers against risk and uncertainties by ensuring less imbalances among the chain actors.

The producers' collective has the ability to preserve a pro-producer agriculture value chain by diminishing poverty and by enabling social progress, as highlighted by Raju and Singh (2014). The inclusive part played by agri producers' collective is to recover its various constituents like agricultural practices, post-harvest losses and ecosystem service agendas. They recommended the opportunities for producers and acknowledged the various determinants of sustainable agri value chain in the Indian context for small holder's agriculture. Chang *et al* (2015) expressed their apprehension about the neglected producers in the agri food value chain. The growing numbers of supermarket in the country has quickly changed the belief of many people that it can reduce the poverty in rural areas. The results of many studies emphasized the positive outcome to the rural people who has linked to the modern retail value chain, but there were a lot in numbers actually ignored and who were away from this change.

Drastic change in Indian agriculture made it technology driven, innovation guided and business oriented agrarian production, agri science and agribusiness. In these times, the opportunities for growth offered by the agribusiness firms should be grabbed by the value driven chains (Jain, 2016). He



concluded his article on “Inclusive Development in Agri-Commodity Value Chain: Role of Institutions and Institutional Models” with the following suggestions:

- Augment small farmers’ integration through Farmer Producer Organizations (FPOs),
- Provide guidance to farmers for timely and adequate finance and enable linkages in business,
- Encouraging partnerships between value chain participants,
- Create capability in value addition and marketing,
- Help farmers to produce quality products with standards,
- Boosting the management capacities of small farmer associations,
- Add marketing and value chain features into existing extension methods,
- Farm mechanization through combined production,

The linkages identified by Nga and Lebailly (2016) in the chicken chain of Vietnam illustrated the informal characteristics among the actors. They recommended that by improving the linkages among farmers, the ultimate result will be increased power in negotiations with traders. Cooperatives, input suppliers, traders, retailers, supermarket and restaurants, veterinary services should be free to cooperate with other actors in the chain to form a tight and official chain. They suggested, extension and educational institutions should support farmers to obtain more benefits.

An article on “Contributing to a better understanding of the value chain framework in developing countries”, Bokelmann and Adamseged (2016) expressed that the strategy and coordination of the value chain development in developing countries are not limited to activities and actors in the value chain only. That means, the concept of value chain can be used in other activities and actors outside the chain also, such as universities, research centers, government bodies and other civil society organizations. Their opinions should be taken into account and used wisely to increase the benefits of smallholder farmers. Universities should have a flexible action in the field of food value chain

management, climate change, food security and poverty reduction by adding these new topics to their programs. They understood that value chain analysis and management could be an influential tool to realize and achieve the goal of poverty reduction and food security in developing countries.

Communities living around the Outamba Kilimi National Park in Sierra Leone experience every year a notable loss in their income due to lack of awareness about post-harvest handling and processing of Mango. As a result, the Mango producers were not getting better prices for their produce by meeting the required quality standards. The identified value chain network participants includes: a) nursery producers, b) fresh mango producers, c) harvesters and assemblers, d) processors and e) traders. The chain network is not fully developed to its capacity, and as a result, the actors faced constraints in diverse forms such as inputs shortage, lack of training on mango production and post-harvest practices, poor market information and inadequate network relationships to grab and share opportunities in the market. Mango production and value addition in Sierra Leone can be increased by a suitable value chain network with better relationships within the actors and finally, they can achieve competitiveness along the value chain integration (Arlinloye *et al*, 2017).

Rao *et al* (2017) analysed the changes and increasing interactions in all nodes of food value chain and tried to mark out their interactions with innovation systems and related impacts. They categorized three streams in food value chain, like upstream (farmer or producers), mid-stream (processors, wholesalers and other logistics) and downstream (retailers) and confirmed that innovative changes has occurred in the mid-stream of the value chain in segments of food processing. They felt that interfaces between retailers, wholesalers, processors, logistics, cold storages, farmers and consumers has increased and the legal environment will more encouraging the farmers after the GST will be enforced.

### **2.2.2 Studies on value chain governance**

“Transformation of value chain governance: The impact of food safety regime on fishery sector of Kerala” inquired the forms of coordination between

the participants in sea food value chain, Somasekharan *et al* (2015) and they identified, “captive” coordination was found between boat owners and auctioneers, and “market” coordination was predominant between auctioneer and exporter’s agents. “Relational” coordination continued between peeling units and export houses and between exporters and export agents, where “modular” coordination coexisted with “market” coordination. In addition to that, they are knowledgeable about the multiple form of coordination which exerts power over the various nodes of sea food export value chain. Sea food value chain in Kerala, obviously a buyer driven chain and they suggested the upgrading of national system for testing, certification and laboratory accreditation bearing in mind the international parameters and requirements which has to be competent in domestic and international market.

Sustainability labels such as UTZ certified, Fair Trade, CAFÉ Practice, 4C, Nespresso AAA, Rainforest Alliance in the national coffee value chain in the selected countries proved that these labels have been promoted by international trade firms. The lift of sustainability labels has reinforced the demand driven nature of the coffee global value chain global governance (Snider *et al*, 2016). Now, the producers and producers’ organizations claims to restore sustainability label standards to retain their business. However, the national value chain governance not modified significantly and are committed to market, modular or relational governance structures.

Watabaji *et al* (2016) conducted a study on “Integrative role of value chain governance: evidence from the malt barley value chain in Ethiopia” and their attempt was to look into the relationships and trust among the malt barley value chain members. The study revealed that the trust among malt barley value chain members was positively interrelated to value chain integration at all interfaces. They exposed that farmers were highly dependent on cooperatives for agricultural input distribution and dependent on traders for the marketing. There existed an optimistic relationship with value chain integration at the cooperative-farmer and farmer-trader interfaces.

### **2.2.3 Studies on constraints and opportunities**

A study was carried out by Setu *et al* (2018) on constraints faced by the Guava farmers in production and marketing of Guava in Allahabad district of Uttar Pradesh. They identified financial constraints, production constraints and marketing constraints separately for the farmers. Likewise, Gupta and Prashanth (2004) scrutinized the constraints of cashew nut production and marketing. They listed out the major constraints like lack of money and lack of soil testing facilities, which were felt by ninety percent of the growers. Later, Negi and Anand (2015) observed huge post-harvest losses in fruits and vegetables in India, due to the lack of infrastructure such as cold storages, refrigerated vans, cool chains, and ripening chambers. The study revealed the absence in linkages between production, research system and international consumerism and they suggested, embracing of precision farming can upgrade the value chain in different agro-climatic regions.

Achchuthan and Kajanathan (2012) exposed the challenges and opportunities of value chain actors in the dairy sector after analyzing it in a systematic way in the study. Diseases and death of animals, lack of grade breed and ineffective management were the major challenges for the farmers, while demand for dairy products, retail tea shops and consumers in the Karachchi division were identified as the major opportunities. While analyzing dairy sector as source of employment and a business opportunity for poverty alleviation, the contribution of livestock production to livelihoods and income generation for smallholder farmers were high compared to most crops. Further, cooperative society in the Karachchi division did not had enough technological facilities to preserve the pure milk and they did not undertake any value addition of milk to milk toffee, ice cream, yoghurt etc.in the large scale.

Jacob and Job (2015) found out that the major problems faced by black pepper farmers were incidence of pest and diseases, unavailability of labor and change in climate. The problems faced by black pepper traders were fluctuating prices of black pepper and import of black pepper from other pepper producing countries like Vietnam and Sri Lanka. He pointed out that the area, production,

productivity, export quantity and domestic price of black pepper had substantial impact in the value of black pepper export from India. Later, Rajan and Ranjithkumar (2018) also identified problems associated with the black pepper producers in Wayanad, which includes lack of awareness about disease resistant new varieties of black pepper, poor organized markets, easy licensing for black pepper processing units and lack of effective training for the farmers.

#### **2.2.4 Studies on black pepper and black pepper economy**

Black pepper cultivation and production has certainly added to the rural employment and farmer's income in Kerala and Tamil Nadu. Growers expect better price for black pepper, even though the prices fluctuate sharply, the black pepper farming gets extended to new areas. Madan (2000) concluded his article by giving stress on the word "quality" in the world of spices and the quality and hygiene should start from the farm level.

Although black pepper had been cultivated in Kerala for centuries, the yield of black pepper in India is one of the lowest in the world. This is due to the fact that people were growing black pepper in a casual way (plant and forget) and the precise cultivation practices were not in vogue, and it has resulted in a wide gap in black pepper productivity in India (320 kg/ha) and in Thailand (4500kg/ha) (Ravindran, 2000). In view of that, Peter and Nybe (2002) highlighted the need for technology adoption for boosting productivity and quality of black pepper, and they have identified it as the requirement for the success of black pepper industry in India in the liberalized trade regime.

Sharangil and Acharya (2007) examined the status, issues and scopes of supply chain in banana, black pepper, capsicum and seed spices and suggested that spice growers or exporters need to spend more time in marketing than in production activities. They pointed out the following issues for considerations:

1. Lack of demand driven crop planning by taking into consideration of market channels, value addition, allocation of resource, area and varieties to be cultivated etc.

2. Start agro-service centers to organize production, value addition, marketing, networking and for encouraging the stakeholders for good yield.
3. Awareness and training about value addition,
4. Interdependence among chain members.

A study has undertaken (Hema *et al*, 2007) to identify the drivers for black pepper production, to examine the profitability of the farmers and to analyse the price behaviour and mechanism of price transmission in black pepper in Idukki and Wayanad districts. The results revealed that the production of black pepper has become unremunerative for farmers due to low prices in the domestic and global markets tied with increasing input costs. Further, from the estimates of production and demand for black pepper during the period 2005 to 2015, unveiled that production will be over the domestic demand in a big way. The availability of disease-free planting material and financial assistance on easy terms would help the farmers to replace the senile plantation for realizing increased crop yield and profitability.

Decision makers are more concerned about the business profits and motivated to adopt organic black pepper cultivation, while health or environmental concerns bothers them less. Other adoption studies (Asfaw *et al*, 2009; Evenson and Gollin, 2003) carried out in conventional agriculture in developing countries also supported the same fact. Selvan and Cherian (2008) revealed that black pepper was grown in almost every homestead or plot of land in the plains and high ranges like Idukki and Wayanad of Kerala, the major black pepper producing state in India and small and marginal farm holdings dominated 80 percent of the total number of black pepper farms in Kerala.

The trade status of four major plantation commodities like, Black Pepper, Tea, Coffee and Cardomom was analysed by Nagoor (2010) and identified a new low cost producer of black pepper Vietnam and the appearance of European countries in selling overseas value added products. As a result, India is losing export competitiveness in international market. He predicted, India still can have

prospects in exporting value added black pepper in the international market, especially to European countries. To grab this opportunity, it is necessary to make the black pepper producers adaptable to the international requirements. He expressed his apprehension about the need to examine the impact of duty free black pepper imports on domestic prices and the share of duty free imported black pepper in re-export of black pepper from India. There is high possibility that Vietnam may increase its low priced black pepper export to India.

The average productivity of black pepper vine is highest in Karnataka (1 kg) and lowest in Kerala (0.6 kg). The low production per unit area in India was due to the system of mixed cultivation in a single farm, compared to mono cropping followed in Vietnam, Brazil etc. with a population ranging from 1100 to 2000 vines per hectare. In India, the population of vines being considerably lower as 200 to 250 per hectare, especially in homestead conditions. Moreover, the domestic consumption in India is higher than in any other black pepper producing countries (IISR, 2013).

Yogesh and Mokshapathy (2013) stated that the productivity of black pepper in India was one of the lowest in the world and the production of black pepper has got a significant influence on its export. World exporters gained remarkably in quality and cost and it became major deterrent for black pepper exports from India. Domestic consumption includes black pepper for grinding, extraction of oil and oleoresins, the requirements of other industries, households and food establishments. In 2011, domestic consumption of black pepper producing countries is estimated at around 121,000 MT.

A study on “Value chain analysis of black pepper in Karnataka” was conducted in Kodagu, Hassan and Chikmagalur districts of Karnataka by Ganapathy *et al* (2014). They identified that no grading, value addition and certification was done by the sample farmers at the farm gate. Most of the traders (86.66 percent) sold their produce to the wholesalers. Wholesalers purchased 60 percent of black pepper from village level traders. Retailers purchased 46.66 percent of black pepper from the processors. In all the three districts, black pepper

is the main high income generating plantation crop. Integrated Nutrient Management (INM) was followed to grow black pepper and N:P:K compost, sheep manure and bio-fertilizers like trichoderma and pseudomonas were used by majority of the farmers. None of the black pepper farmers were producing white pepper. The dried seeds were cleaned and stored by using either plastic or gunny bags. The packed produce were either sold or stored by the farmer depending on the prices prevailing in the market. In black pepper value chain, the major actors involved includes input supplier, farmer, trader, wholesaler, retailer, processor and consumer.

The study entitled “Pepper economy of Kerala in the pre and post WTO regimes” unlocked the elements that influenced the changes in economics of black pepper cultivation in the liberalized WTO regime. In her study, Jacob (2015) found out incidence of pest and diseases, unavailability of labour and changes in climate were the major problems for black pepper cultivation. Pepper traders faced problems like fluctuating prices for black pepper and import of black pepper from other pepper producing countries like Vietnam and Srilanka. Further, the researcher agreed on the fact that the area, production, productivity, export quantity and domestic price of black pepper had significant influence in the value of black pepper export from India.

In an article on “Adoption and impact of black pepper certification in India”, Parvati and Waibel (2015) expressed that fair trade does not add any additional benefit over organic certification. This can be due to the fact that for both organic and fair trade farmers, the additional costs of certification were high, which were not satisfactorily rewarded by higher market prices. Moreover, for a smallholder black pepper farmer, in both systems the advantage of fair trade prices only comes into play if market prices fall below the minimum organic black pepper price.

Sabu (2015) expressed her opinion in the improper implementation of warehouse receipt system and if executed properly it would have enabled the black pepper farmers to borrow from bank to meet their immediate needs. To



prevent distress sales, dissemination of sensible market information and training to farmers on suitable selling decisions based on price movements can ensure a minimum income for black pepper farmers. Most of the black pepper farmers were not aware of how to use market intelligence in favor of production and marketing decisions. She also suggested, the need for black pepper specific price stabilization strategy which can offer a stable income for the farmers.

Black pepper, an intercrop grown in home gardens in Kerala, appeared senile and unproductive crop in most farms which needed to be replanted. The farmers rush in search of planting materials of black pepper subsequent to a price rise of black pepper in market, while good quality planting materials of high yielding varieties are reduced in supply in the market. In this scenario, the requirements of Kerala black pepper farmers are: i) shade tolerant high yielding varieties suitable for Kerala, ii) farmers to be aware about scientific crop management practices to ensure better productivity of the crop, iii) ensuring planting of improved high yielding varieties like Panniyoor 1 (world's first hybrid pepper which performs well under open conditions) to Panniyoor 8 depending on availability of sunlight, proper and scientific crop management, iv) ensuring prophylactic measures for pest and disease management, v) promoting good agricultural practices. Proper awareness to farmers on post-harvest handling and value addition of black pepper can help them to realize better income (Rageena, 2016).

Ravindran and Kallapurackal (2012) expressed that black pepper was the first oriental spice introduced to the Western world, which helped to improve flavor and preservation of food. It is also used in medicine, as a carminative and febrifuge, aiding in digestion, and curing the common cold.

NRPPD Discussion Paper on "Organic farming in spices in Wayanad district" by Varghese (2016) discussed about the organic products, especially spices. Spices were exported to different countries, where the market behavior outside the country, the regulations of the Government of India and the countries

of the consumers are different. Furthermore, it is vital to spread out the domestic market for the organic spices.

United Nations Framework Convention on Climate Change (2007) defined climate change as *“a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is, in addition to natural climate variability, observed over comparable time periods”*. Kumar *et al* (2017) published a research article on “Impact of climate change on black pepper production in Idukki and Wayanad districts of Kerala” and the analysis was over the data on rainfall, temperature and relative humidity for a period of 29 years (from 1987 to 2015). The data on black pepper production on both districts exposed the reality of a positive influence by the rainfall and a negative influence by the temperature. Increase in rainfall augment the black pepper production, while heavy rainfall and high relative humidity will result water logging, adversely affects the pepper plants.

Sreejith (2016) conducted an analysis on the institutional support to organic black pepper farmers in Idukki district and reported that Peermade Development Society (PDS) in Idukki was the most important institution supporting organic black pepper production. Black pepper farmers expressed their concern over the lack of exclusive market for organic produce, low productivity and unaware about organic standards.

Bhai and Eapen (2017) stated that the black pepper vine is native to South India and is grown in nearly all tropical regions. Currently, Vietnam was leading in the export of black pepper, totaling around 35 percent of the world supply which was followed by India, Brazil, China and Sri Lanka. In India, black pepper was cultivated largely in Kerala, Karnataka and Tamil Nadu and in a limited extent in Maharashtra, North eastern states and in Andaman and Nicobar Islands. Developmental agencies such as Directorate of Arecanut and Spices Development, Spices Board, State Agriculture Departments etc. has extended strong support for the black pepper farmers in the distribution of healthy and

disease free planting materials in Kerala, as there was a huge demand for good quality planting material.

In the words of Puri (2017), black pepper (*Piper nigrum*) belongs to the family Piperaceae, is a flowering vine cultivated for its fruit, and usually when the fruit is dried known as “peppercorn”. Fully matured fruit is approximately 5 millimeters (0.20 inches) in diameter, dark red and like all drupes, contains single seed. Cooked and dried unripe fruit is specifically referred as “black pepper”, unripe fruit as “green pepper” and ripe fruit seeds as “white pepper”.

A review on cultivation practices of black pepper in India was done by Kumar and Swarupa (2018) and they expressed the difficulty in attain the desired productivity for the black pepper producing countries. The major challenges included were replanting of old plantations, conservation of soil and moisture to survive the climate change, integrated pest and disease management, and controlled pesticide application.

Sreejith (2017) examined the adoption of organic practices by black pepper farmers in Idukki district and he specified that organic farmers were less inclined towards scientific organic management practices and mostly followed organic by default utilizing the rich forest soils.

Abraham (2018) exposed the longest marketing channel of black pepper trade and it included collecting produce directly from the producers by means of local merchants and wholesale traders and finally, moved to the exporters to the consumers, which was the last link in the chain. Commission agents also collected the products from the farmers and sold it to the retail traders according to the demand from the consumers and the availability with the black pepper farmers.

### **2.3. Conclusion**

The literature related with the different value chain approaches, its applicability in agriculture value chains, conducted by different agencies were reviewed and it convincingly supported that value chain analysis can be an appropriate measure to find out the position of black pepper farmers in Kerala,

and to recognize which actor in the black pepper value chain gets the major share of profit in the value chain. The studies carried out in different countries exclusively on mapping of agriculture value chains, value chain governance and coordination, linkages in value chain, the constraints and opportunities in value chains etc. were reviewed under separate headings in this chapter and it confirms the need for including the current objectives in the research work. It should be noted that no study on value chain analysis of black pepper was identified among the literature reviewed for the study. Hence, it was decided to carry out the research, while the methodological aspects are narrated in the next chapter which included, the study period and location, data source, sample design and variables used and data collection and analysis techniques.

# *Materials and Methods*

## **CHAPTER III**

### **MATERIALS AND METHODS**

The study on “Value chain analysis of black pepper in Kerala” was a primary examination over the black pepper farmers, hill produce dealers, wholesalers, exporters, marketing cooperatives, commission agent, farmer producer company and the retailers.

This chapter elucidate in detail the methodology used for the study, the types of data used for analysis, the justification about the study area selected, sampling procedure adopted, method of data collection and the different statistical tools employed for data analysis. The techniques used to map the black pepper value chain, to examine the governance influence over the value chain actors, the linkages exist between the actors in the value chain, and the major constraints faced by the different actors in the value chain are arranged under the following subtitles:

1. Conceptual exposition and operational definitions
2. Study period
3. Locale of the Study
4. Sources of data
5. Sample design
6. Variables measured
7. Data Collection
8. Data Analysis

#### **3.1. Conceptual exposition and operational definitions**

##### **3.1.1 Value chain**

Value chain is, “a set of value-adding activities through which a product passes from the design to the consumption stages”. The worth of the product increases at each point of the process, hence the term “value chain”.

### **3.1.2 Value chain actors**

Actors are all the individuals or organizations, enterprises and public agencies related to a value chain and therefore, important for understanding the functioning and performance of the value chain.

### **3.1.3 Value chain mapping**

Mapping a value chain illustrates a clear understanding of the range of operations, the participants and their relationships within the value chain.

### **3.1.4 Value chain activities:**

Value chains comprise of all the activities from production to consumption, as well as waste utilization, of a certain product. Typical examples of activities along an agricultural value chain includes specific inputs, production, collection, transformation, trade, export, wholesale and retail marketing, and consumption.

### **3.1.5 Value chain governance**

“Governance” is the authority to decide who should participate and who should not participate, as an actor in the value chain. It can be the authority to fix rules, render help to chain participants to achieve the pre fixed standards and to check the chain performance included in governance thought.

### **3.1.6 Linkages in value chains**

Linkages are defined as a business relationship between two parties of the value chain or network. In general, linkages are of two types such as vertical linkages and horizontal linkages, where a vertical linkage explains the relationships between actors in the value chain and a horizontal linkage clarifies the linkages among the actors at the same level of value chain.

### **3.1.7 Agro-value chain analysis**

Agro-value chain analysis “highlights the need for enterprise development, enhancement of product quality and safety, quantitative measurement of value addition along the chain, promotion of coordinated linkages among producers, processors and retailers, and improvement of the competitive position of individual enterprises in the marketplace”.

### **3.2. Study period**

The primary data collection from the black pepper farmers and the other chain actors were collected between January to April 2019 in Idukki and Wayanad districts.

### **3.3. Locale of the Study**

The study area selected was Idukki and Wayanad districts of Kerala state, since these districts accounted for the first and second position under the area of black pepper cultivated in Kerala during 2016-2017 and had the maximum share of about 51.4 percent of the total production. The high range district of Kerala, Idukki, is known as the “Spice Bowl”. As per the 2011 census, the district accounts only for 3.32 percentage of the total population of the state and had the lowest population density in the state. While agriculture is the main occupation of the people in the district, where dairying became the major supplementary source of income for the farmers. The district has agro-climatic conditions suitable for the cultivation of plantation crops and spices, and the major crops cultivated includes black pepper, cardamom, tea, coffee, rubber and coconut.

Wayanad district known as the “Eden of God’s own country”, a large area of the district is covered by forest, agriculture the backbone of the economy of the district and more than half of the population are engaged in agriculture in order to earn their livelihood. The major agricultural crops in the district are coffee, tea, cocoa, pepper, plantain, vanilla, rice, coconut, cardamom, tea, ginger, etc. Wayanad is also known for its rice production. The two rice of the district namely Wayanad Jeerakasala rice and Wayanad Gandhakasala rice is very



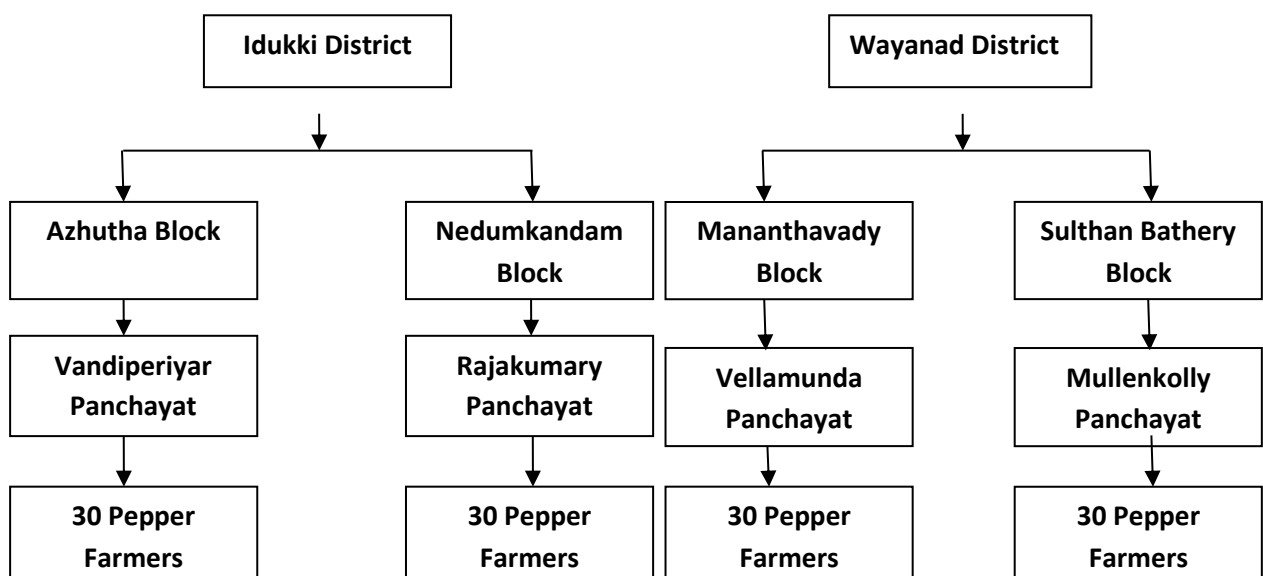
popular with its peculiar properties. Cattle farming and tourism sector also earns revenue for the district.

### 3.4 Sources of Data

The present study was based on primary data collected from Idukki and Wayanad districts of Kerala and secondary data were collected from the published sources.

### 3.5 Sampling Design

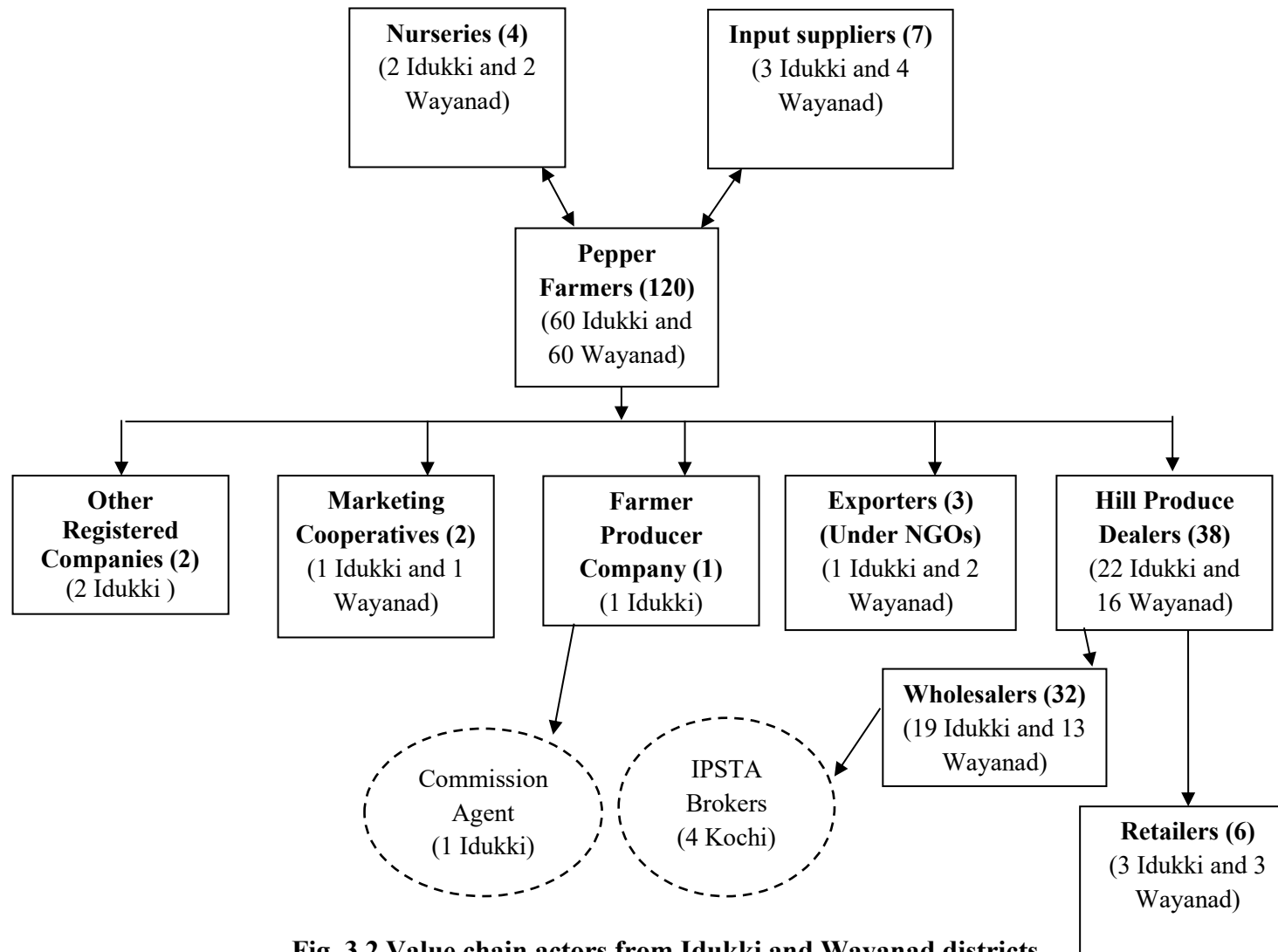
Two blocks each from Idukki and Wayanad districts were identified with the criteria of highest area under black pepper cultivation and one panchayat each from the selected blocks were identified from blocks to conduct survey for the black pepper farmers ie. Vandiperiyar Panchayath from Azhutha block and Rajakumari Panchayat from Nedumkandam block have selected from Idukki district and Mullenkolly Panchayath from Sulthan Bathery block and Vellamunda Panchayat from Mananthavady block has selected from Wayanad district.



**Fig. 3.1 Selection of black pepper farmers**

Thirty black pepper farmers were selected from each panchayat at random and thus, a total of 120 farmers were selected for the study from Idukki and Wayanad districts (Fig. 3.1). The lists of the farmers were obtained from the respective Krishi Bhavans in the village. The other value chain actors (Fig. 3.2) were identified using snowball technique and the size of the sample were limited to a maximum of one hundred actors, who were input suppliers, hill produce dealers, wholesalers, retailers, exporters, cooperatives, farmer producer company, etc.

The nature of this study was both qualitative and quantitative and it was necessary to monitor and comprehend the value chain activities in the chain through which the black pepper passes to the final consumer. The study included contacts and connections with different actors in the value chain and expert interviews were carried out with Officials in Spices Board, Agriculture Officers in Krishi bhavan, Principal Agriculture Officer (district level), and Officials of NGOs etc.



**Fig. 3.2 Value chain actors from Idukki and Wayanad districts**

### 3.6 Major variables measured

Specific variables were identified for analyzing the objectives of the study:

- a. To map the value chain of black pepper
  - Core processes in value chain,
  - Actors involved in the value chain,
  - Flow of product,
  - Flow of knowledge and information in the value chain
  - Value at different levels of the value chain,
  - Geographical flow of black pepper in the value chain,
  - Services that feed into the value chain,
  - Relationships and linkages between value chain actors,
  - Constraints faced by the value chain actors.
  - Value chain map matrix.
- b. To examine the governance influence on value chain actors
  - Formal and informal rules, norms and standards that influence the value chain,
  - Rule setting firms and other agencies,
  - Quality standards of the required output among the chain actors.
  - Value chain governance structure
- c. To evaluate the producer farmer's linkages with other value chain actors
  - Vertical and horizontal linkages of farmers,
  - Frequency of contact,
  - Level of formality,
  - Reason for linkages,
  - Short term and long term linkages
  - Level of trust.

d. To analyze the opportunities and constraints faced by different value actors in the chain

- Constraints faced by the farmers and other value chain actors in input supply, production, marketing and exporting.

### **3.7 Black pepper products selected for the study**

#### **i. Black pepper**

Black pepper is produced from green, unripe drupes of the pepper plant. The drupes are cooked briefly in hot water, both to clean them and to prepare them for drying, the drupes are dried in the sun or by machine for several days. On another way, the green berries are separated from the drupe by hand, then sun dried without the boiling process. After drying, the spice is called black peppercorn.

#### **ii. White pepper**

White pepper, entirely consist of the seed of the pepper plant after removing the darker coloured skin of the pepper fruit. A process known as retting, removes the flesh over the black pepper seed, as it softens and decomposes when soaked in water for about a week. After rubbing, the flesh and the skin get removes completely from the seed and the naked seed is then dried.

#### **iii. Green pepper**

Green pepper, is made from the unripe drupes, dried green peppercons, which are treated in a way to retain the green colour, such as treatment with sulphur dioxide, canning or freeze-drying.

### **3.8 Data collection**

The data collection was carried out through personal interview using well-structured interview schedules. Separate interview schedules were prepared for collecting information from input suppliers, farmers, hill produce dealers, wholesalers, processors cum exporters and retailers. The interview schedule for farmers covered aspects such as general farm characteristics, details of black

pepper cultivation and production, details on selling of black pepper, information sources for farmers, linkages with other actors and constraints and opportunities faced by black pepper farmers and the farmers knowledge about value added products of black pepper . The interview schedule for other actors included the general characteristics, quantities of black pepper handled, processed, value added and profit realized and the constraint faced by them. Finally, the data obtained were tabulated and processed with the help of MS Excel and IBM SPSS (Statistical Package for the Social Sciences).

### 3.9 Data analysis

Following are the statistical tools employed in the study for analyzing the data collected from the respondents.

Sl.no	Objectives	Statistical tools used
1	To map the value chain	Percentage analysis and Value Chain Map Matrix.
2	To examine the governance influence on value chain actors	Percentage analysis.
3	To evaluate the producer farmer's linkages with other value chain actors	Percentage analysis
4	To analyze the opportunities and constraints faced by different value actors in the chain	Index method, Standard deviation and Arithmetic mean, Kruskal Wallis Test

#### 3.9.1 Descriptive statistics

Averages and percentages were estimated to understand the general characteristics of farmers such as age, educational status, size of operational holdings and production and marketing of black pepper in the study area.

#### 3.9.2 Percentage analysis

Percentage analysis were used to know the distribution pattern of respondents according to variables. It is used for standardization of samples by calculating the number of individuals that would be the under the given category.

### 3.9.3 Arithmetic mean (AM)

It is defined as the sum of all the observations divided by the total number of observations. Symbolically it is represented as  $\bar{X}$ .

$$\text{Arithmetic mean}(\bar{X}) = \frac{\sum_{i=1}^n X_i}{n}$$

Where,

$$\bar{X} = \text{Arithmetic Mean}$$

$$\sum_{i=1}^n X_i = \text{Sum of all the } n \text{ observations}$$

n = Total number of observations

### 3.9.4 Index method

Indices were calculated based on Likert Scale of summated rating.

$$\text{Index} = \frac{\sum_i \sum_j S_{ij} * 100}{\sum_j \max S_j}$$

i= Respondents

j= Factors

S<sub>j</sub>= Score of the jth factor

S<sub>ij</sub>= Total score for the jth factor of the i<sup>th</sup> respondent

Max S<sub>j</sub>= Maximum score for the j<sup>th</sup> factor.

### 3.9.5 Standard deviation (SD)

It is positive square root of the mean of the squared deviations taken from arithmetic mean. It is represented by the symbol ( $\sigma$ )

$$\text{Standard Deviation } (\sigma) = \sqrt{\frac{1}{n} \left[ \sum X_i^2 - \frac{(\sum X_i)^2}{n} \right]}$$

Where,

$\sum X_i^2$  = Total sum of squares of the observations

$(\sum X_i)^2$  = Square of sum of observations

n = number of observations

### 3.9.6 Kruskal wallis test

The Kruskal Wallis test statistic H was computed using formula:

$$H = \left[ \frac{12}{n(n+1)} \sum_{j=1}^c \frac{T_j^2}{n_j} \right] - 3(n+1)$$

Where,

n = number of sample sizes for all samples,

c = number of samples,

$T_j$  = sum of ranks in the  $j^{\text{th}}$  sample,

$n_j$  = size of the  $j^{\text{th}}$  sample

The Kruskal Wallis test was employed to identify whether the sample farmers included in the study from Idukki and Wayanad districts agree to the different constraints in a similar way or not.

### 3.9.7 Marketing cost

Marketing Cost refer to cost incurred by producer-seller from point of production up to sale. The marketing cost per kilogram was worked out by adding different components included in the cost.



### **3.9.8 Price spread**

Price spread is the difference between price received by the producer and the price paid by the consumer.

$$\text{Price Spread (Ps)} = P_p - P_f,$$

$P_p$  = price paid by the ultimate consumer

$P_f$  = price received by the producer-seller

### **3.9.10 Marketing margin**

It is the difference between the total payments (purchase price + cost) and receipts (sale price) of the middlemen.

### **3.9.11 Modified marketing efficiency**

According to Acharya and Agarwal (1987), it is a ratio of price received by the farmer to marketing cost and marketing margin.

$$\text{Modified Marketing Efficiency (MME)} = P_f / MC + MM,$$

Where,  $P_f$  = Price received by the farmer

$MC$  = Marketing Cost and

$MM$  = Marketing Margin

### **3.9.12 Calculation of cost of cultivation**

Establishment cost and the maintenance cost incurred by the black pepper farmers were calculated by obtaining the total material cost and labour cost incurred by them.

Weighted mean was computed for the different yielding stages of black pepper by assigning weightage to each of the yielding stages on the basis of the number of farmers belongs to that particular yielding stage, has included in the survey. For computing the total cost of cultivation of black pepper, the total establishment cost was amortized and equally added to each year in the entire life span of the crop, by using the following formula,

$$Ai = [i(1+i)^n ]/[(1+i)^n -1]$$

where,

i = rate of interest

n =life span of black pepper

It was then added to annual maintenance cost and interest on working capital at seven percent to obtain the total cost of cultivation of black pepper.

Based on the concepts and methods mentioned in this chapter, the objectives of the study were analysed and the results obtained are presented in Chapter IV.

# *Results and Discussions*

## **CHAPTER IV**

### **RESULTS AND DISCUSSIONS**

After conducting the survey of the black pepper farmers and other stakeholders in the black pepper value chain, the data collected were analysed in the context of specific objectives of the research study. The results obtained were presented and discussed in different sections in this chapter.

Value chain analysis is reasonably flexible and the value chain can be analysed from the point of view of any one of the large number of actors in the chain. In this study, the entry point of value chain of black pepper is fixed as agricultural producers i.e. black pepper farmers. The entry point into the value chain is normally decided by the primary research interest of the study. The mapping of the value chain included backward linkage to input suppliers and forward linkage to hill produce dealers, wholesalers, exporters and to retailers, who facilitates the final consumption. Thus, in a narrow sense, value chain can be explained as a series of activities performed within a firm to produce an output, where the producers to consumers are interconnected and each activity contributes an additional value to the end product. Unlike the former view, value chain in a broad sense, which is described as a complex series of actions of interrelated actors like producers, traders, exporters, service providers etc. who are engaged in trading, processing, exporting and to add proportional value to the final product (ADB, 2008).

In short, value chain analysis included the players or actors along a value chain, costs incurred, value addition at each stage, secondary services vital to each stage, business relationships or linkages of each actor, their critical constraints and opportunities, and so on. The value chain analysis performed in black pepper in Kerala is presented in the following sub headings:

4. (A) Mapping of value chain of black pepper in Kerala,
4. (B) Governance influence on value chain actors,

- 4. (C) Farmer's linkages with other value chain actors,
- 4. (D) Constraints and opportunities faced by value chain actors,
- 4. (E) Strategies to upgrade the performance of value chain actors of black pepper.

#### **4. (A) Mapping of value chain of black pepper in Kerala**

The earlier concepts in value chains like Porter's Framework (1985) and the filiere approach (Durufle and Fabre, 1988), has revitalized to global value chains approach by Gereffi (1994) and Kaplinsky (1999). At present, global value chain approach is considered as an inclusive method to conduct a value chain analysis. It helps to portray the various maps of all elements at diverse levels in the value chain. Furthermore, its looks into the governance factor, the linkages or business relationships between the actors, constraints and the opportunities of the actors in the chain. Mapping a value chain illustrates a clear understanding of the range of operations, the participants and their relationships within the value chain. (UNIDO, 2009). Thus, value chain maps are a schematic snapshot of the major value chain actors, and a structure which illustrates the flow of product and information through the chain at a given point in time (Haggblade *et al*, 2012).

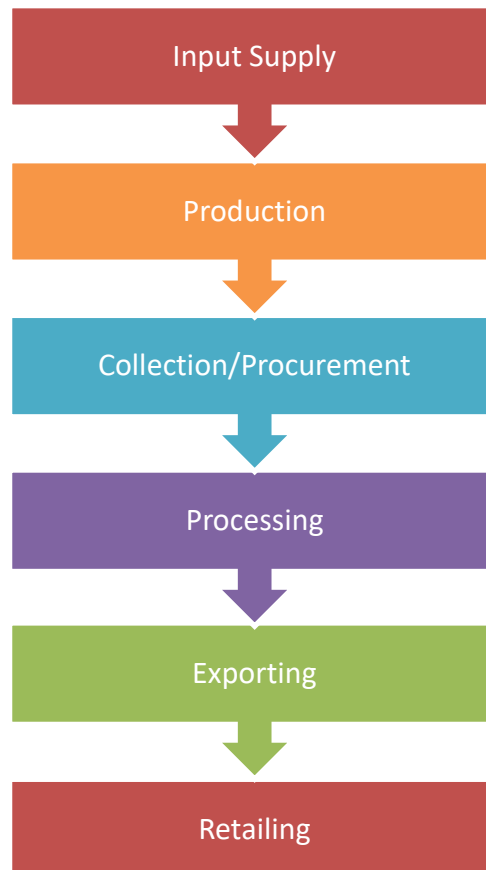
For mapping the value chain of black pepper in Kerala the following aspects were looked into:

- Mapping the core processes in value chain,
- Mapping the main actors involved in the value chain,
- Mapping of flows and volume of products,
- Mapping knowledge and flows of information,
- Mapping the value at different levels of the value chain,
- Mapping of the geographical flow of products,
- Mapping relationships and linkages between value chain actors,
- Mapping services that feed into the value chain,
- Mapping constraints in the value chain.
- Value chain map matrix.

#### 4.1 Mapping the core processes in value chain

The entry point for the agriculture value chain of black pepper was fixed as black pepper farms, and in that way, core processes in black pepper value chain starts from production at the farm level. Black pepper, being an important agricultural commodity of trade among the spices, requires adequate rainfall and humidity for cultivation and is normally grown from stem or terminal cuttings. Black pepper cultivation is commonly found in Kerala as “extensive homestead cultivation”, along with several other crops. The core processes of black pepper value chain are presented in Fig. 4.1.

**Fig. 4.1 Core processes of black pepper value chain**



After harvest from the farm, the black pepper reaches the next actors level in the value chain either as dried pepper or as fresh raw pepper. The identified collectors from black pepper farmers were hill produce dealers, exporters (under NGOs), marketing cooperatives, farmer producer company and other registered

companies in Idukki and Wayanad districts. From the hill produce dealers the black pepper was transferred to wholesalers. After procuring the black pepper from the farmers, the exporters (under NGOs) carried out the major value addition activities to convert the black pepper or fresh raw pepper to quality black pepper, white pepper and green pepper.

The core processes included in the black pepper value chain are discussed below in detail.

#### **4.1.1 Input Supply**

Agriculture inputs are those inputs which are necessary for the production of agriculture produce. The agriculture inputs needed for black pepper farmers includes planting materials, fertilizers, pesticides and organic manures for cultivation, and agriculture implements, machinery and technology, agriculture credit, labour etc. In the study area, planting materials were supplied by plant nurseries and NGOs, fertilizers, pesticides, organic manures, agricultural implements were supplied by private traders, NGOs, cooperatives, farmer producer company and other registered companies. Moreover, Krishi bhavan distributes various agricultural inputs under different schemes of Government of Kerala as agricultural subsidies. Public sector banks and cooperatives disburse agricultural credit to the farmers and the new cultivation practices were transferred to farmers through various service providers like Spices Board, Kerala Agricultural University and Research Stations and Krishi Vigyan Kendras.

#### **4.1.2 Production of black pepper, white pepper and green pepper**

It has been noticed that black pepper can be produced through scientific cultivation practices and organic cultivation. Organic production of black pepper was done by the certified organic farmers and the conventional farmers cultivated black pepper through scientific method using fertilizers and pesticides.

### **4.1.3 Collection or procurement**

Collection or procurement of black pepper from farmers were done by different agencies in Idukki and Wayanad district, which includes exporters (under NGOs), hill produce dealers, cooperatives, farmer producer company and other registered companies.

Exporters (under NGOs) and other registered companies collect black pepper from the organic certified farmers only, whereas, hill produce dealers, wholesalers, cooperatives and farmer producer company procure all type of black pepper irrespective of any certification or quality aspects.

#### **4.1.3.1 Wholesaling**

Wholesaling is a business activity in which goods can be sold to anyone other than the final consumer. Wholesalers of black pepper are actually the spices wholesalers who deal with different hill produces, like, pepper, cardamom, ginger, nutmeg etc. They have the latest update of the spices market and the price changes which they use it for the benefits of their business.

### **4.1.4 Processing**

As noticed from the study, black pepper was produced by both organic and conventional farmers, while none of the black pepper farmers were processing white pepper and green pepper at the farm level. Black pepper the dried form of green, unripe drupes of the pepper plant, was prepared at farmers premises by sun drying of green drupes to reduce the moisture content to the essential level for storing. After drying, it becomes the black peppercorn which is commonly known in the value chain as “black pepper”.

#### **4.1.4.1 Organic processing of black pepper, white pepper and green pepper**

Exporters (under NGOs) and other registered companies’ collected black pepper from the organic certified farmers either as black pepper, ripe pepper or unripe drupes of pepper. At processing, the ungarbled black pepper gets changed to garbled, steam sterilized and finally packed as per the buyers’ specifications.



The ripe pepper was graded and cleaned and undergoes the process of retting to remove flesh over the pepper seed. A process known as retting, removes the flesh over the pepper seed as it get softens and decomposes when soaked in water for about a week. After rubbing, the skin completely removes from the seed and the naked seed will be dried, steam sterilized and packed as per requirements of the buyer. Unlike black pepper and white pepper, the processing of green pepper is different, where the processing cost is high. Hence, Green pepper was the less produced value added product in the value chain of black pepper in Kerala.

#### **4.1.5 Exporting**

Exporting is a business activity in which goods and services are sold to customers in other countries, that is, producing goods and services in one country and send them to another, where it is in shortage or not available. Exporting business aims to capture new and potential market for the black pepper products. In the value chain of black pepper, exporters (under NGOs) and other registered companies did the exporting business and they have exported black pepper, white pepper and green pepper to different parts of the world.

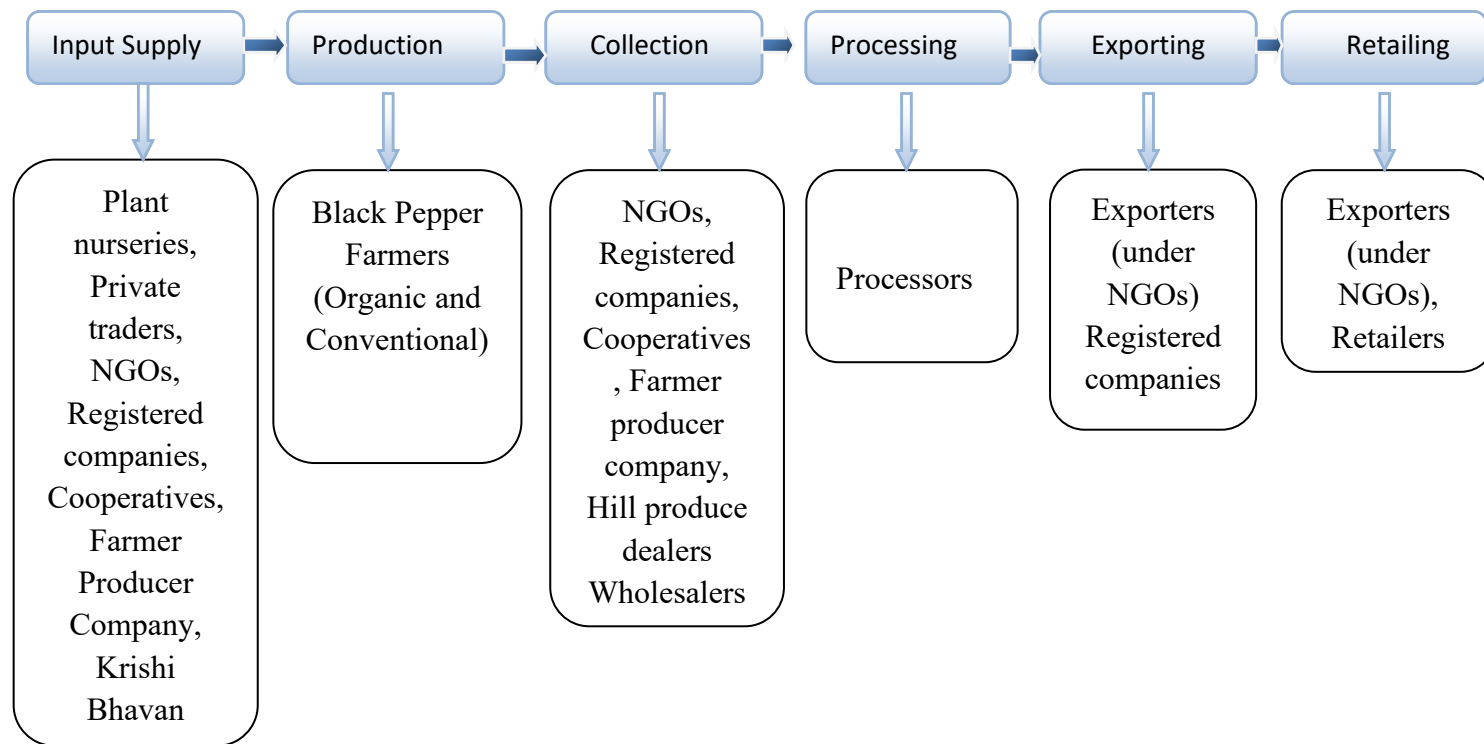
#### **4.1.6 Retailing**

Retailing is a distribution process, which includes all activities in selling of final goods to consumers for personal or household consumption. In black pepper value chain of Kerala, retailers also play their role in distributing the finished product to consumers. Idukki and Wayanad districts in Kerala are attractive tourist destinations and due to this reason, the retailers had a good opportunity in distributing all spices to the tourists, including black pepper and its value added products.

### **4.2 Mapping the main actors involved in the value chain**

Value chain actors are all the individuals or organizations, enterprises and public agencies related to a value chain, and are often associated with a particular value chain activity (Stein and Barron, 2017). Hence, an actor in a value chain of black pepper may be an individual, organization, enterprises or public agencies

associated with a value chain activity. Core actors in the value chain add value to the chain when the title of the product changes throughout the black pepper value chain. The main actors who actively participated in the value chain were input suppliers, black pepper farmers (including organic farmers and conventional farmers), hill produce dealers, wholesalers, marketing cooperatives, exporters (under NGOs), commission agent, farmer producer company, retailers and IPSTA (Indian Pepper and Spices Trade Association) brokers. The main actors involved in the core processes of black pepper value chain is depicted in Fig. 4.2.



**Fig. 4.2 Main actors involved in the black pepper value chain**

#### **4.2.1. Input suppliers**

An input supplier in agriculture is an entity that supplies agriculture inputs and services to farmers for agricultural production. Here, the input suppliers are categorized into seven such as,

- 1) Plant nurseries,
- 2) Private Traders,
- 3) Cooperatives,
- 4) NGOs,
- 5) Registered Companies,
- 6) Farmer producer company and
- 7) Krishi Bhavan

##### **4.2.1. (a) Plant nurseries**

A plant nursery nurture black pepper cuttings (planting material of black pepper) for black pepper propagation and retail sale. Nurseries grow plants in open fields or in green houses and pepper cuttings or planting materials are prepared mainly from runner shoots of black pepper.

##### **4.2.1. (b) Private traders**

Private traders distribute fertilizers, plant protection chemicals, organic manures, agricultural implements etc. for black pepper farmers in the study area.

##### **4.2.1. (c) Co-operatives**

Cooperatives in the study area provide agricultural inputs (including fertilizers, plant protection chemicals, agricultural implements etc) to black pepper farmers.

##### **4.2.1. (d) NGOs**

Non-Governmental Organizations in Idukki and Wayanad districts distributed organic inputs to organic certified black pepper production.

#### **4.2.1. (e) Registered companies**

One registered company distributed organic inputs for black pepper cultivation in the study area while the other registered company procured the products from the Eco development committee (EDC) in Vandiperiyar Panchayath only, after winning the tender to procure the black pepper.

#### **4.2.1.(f) Krishi bhavan**

Krishi Bhavan distributed agricultural inputs to the farmers under the locality of the krishi bhavan on the basis of different Government of Kerala schemes and packages for the districts of Idukki and Wayanad.

#### **4.2.2 Black pepper farmers**

The accepted entry level in the black pepper value chain begins with the farmer producer. As the black pepper farmers (60 farmers from each district) were selected for the study from two districts, it is inevitable to discuss the socio economic situation of the selected sample from the study area. Socio economic description about the surveyed farmers with regard to age, gender, education, experience in farming, family size, land holdings, annual income, source of income, etc. which is essential for general information about the farmers and the farms were presented in Table 4.1.

Majority of the black pepper farmers were male i.e. 89.2 percent of farmers were male and 10.8 percent were only female farmers. The number of female farmers were identified among the conventional farmers were five numbers each in both districts and the number of female organic farmers were comparatively less.

The details of age distribution of sample farmers can be inferred that majority of the farmers (41.7 percent) fell under the category of 51 to 60 years. All the sample farmers were literate and majority of them were under the educational category of Up to high school (54 percent) and the share of graduates among farmers were 12.5 percent. The family size is another prominent socio

economic variable, and 63.3 percent of farmers had a family size of 5 to 6 members, followed by a family size of 1 to 4 members with 25.8 percent of farmers.

**Table 4.1 Socio-economic profile of black pepper farmers in Idukki and Wayanad districts**

District Particulars	Idukki (N=60)		Wayanad (N=60)		Total (N=120)
	Organic farmers (N=26)	Conventional farmers (N=34)	Organic farmers (N=29)	Conventional farmers (N=31)	
<b>Gender</b>					
Male	25(96.2)	29(85.3)	27(93.1)	26(83.9)	107 (89.2)
Female	1(3.8)	5(14.7)	2(6.9)	5(16.1)	13 (10.8)
Total	26(100)	34(100)	29(100)	31(100)	120 (100)
<b>Age</b>					
31-40	3(11.5)	2(5.8)	-		5 (4.2)
41-50	3(11.5)	10(29.4)	9(31.1)	8(25.8)	30(25)
51-60	13(50)	12(35.3)	12(41.4)	13(41.9)	50(41.7)
61 & above	7(26.9)	10(29.4)	8(27.5)	10(32.3)	35(29.2)
Total	26(100)	34(100)	29(100)	31(100)	120(100)
<b>Education</b>					
Primary	3(15)	6(17.6)	6(20.7)	5(16.7)	20(16.7)
Up to High School	13(51.7)	18(52.9)	10(34.5)	13(38.3)	54(45)
Higher Secondary	6(23.3)	8(23.5)	7(24.1)	10(28.3)	31(25.8)
Graduation	4(10)	2(5.9)	6(20.7)	3(15)	15(12.5)
Total	26(100)	34(100)	29(100)	31(100)	120(100)
<b>Family size</b>					
1-4	6(23.1)	6(17.6)	9(31.0)	10(32.3)	31(25.8)
5-6	16(61.5)	24(70.6)	17(58.7)	19(61.3)	76(63.3)
7 & above	4(15.4)	4(11.8)	3(10.3)	2(6.5)	13(10.8)
Total	26(100)	34(100)	29(100)	31(100)	120(100)
<b>Income</b>					
Upto 75000	16(61.5)	18(52.9)	13(44.8)	16(51.6)	63(52.5)
75001- 150000	8(30.8)	12(35.3)	10(34.5)	12(38.7)	42(35)
150001- 300000	2(7.7)	3(8.8)	6(20.7)	2(6.5)	13(10.83)
Above 300001	-	1(2.9)	-	1(3.2)	2(1.67)
Total	26(100)	34(100)	29(100)	31(100)	120(100)

Note: Figures in parenthesis indicate percent to totalx

Source: compiled from primary data

Agriculture was the primary occupation among the farmers in the study area and they have disclosed their income from agriculture, in which 52.5 percent of farmers had an income below ₹75,000.00 and 35 percent of farmers had an income between ₹75,001.00 to ₹150,000.00. The remaining 15 percent had an income above ₹150,000.00.

Another major classification of farmers has been identified on the basis of method of cultivation practiced by them, that is, organic black pepper farmers and conventional black pepper farmers. Out of the 120 farmers from the two districts (Idukki and Wayanad), 55 (45.83 percent) farmers were certified organic farmers and 65 (54.17 percent) farmers were conventional farmers.

**i) Organic farmers**

Black pepper farmers who have adopted organic farming practices for black pepper production can be called as organic black pepper farmers. Organic farming, a substitute farming method to the scientific cultivation practices (with fertilizers and pesticides), uses compost manure, green manure, bone meal etc. with biological pest and disease control. Internationally, organic farming methods are legally enforced and regulated based on the standards fixed by International Federation of Organic Agriculture Movements (IFOAM) since 1972. They have an international guideline for certification criteria and the authorized certification agencies in different countries accredit the farms as organic farms, if the farming practices of the farms fell under the IFOAM certification criteria.

Table.4.2 gives the details about the type of organic certification and the promoting organization of the organic black pepper farmers in Idukki and Wayanad districts.

**Table. 4.2 Details of Organic Certifications in Idukki and Wayanad districts**

Sl.No	Organic certification	Promoting organization	Idukki district (N=26)	Wayanad district (N=29)	Total(N=55)
1	Lacon Certification, Thiruvalla	Peermade Development Society	15(57.7)	-	15(27.3)
2	Athidhi Certification, Bangalore	Suminter Organic Spices	6(23.1)	-	6(10.9)
3	Lacon Certification, Thiruvalla	Eco Development Committee	5(19.2)	-	5(9.1)
4	Lacon Certification, Thiruvalla	Wayanad Social Service Society	-	24(82.8)	24(43.6)
5	Indocert , Aluva	Vanamoolika Herbals Ltd	-	5(17.2)	5(9.1)
	Total		26(100)	29(100)	55(100)

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data

It is obvious from the table that eighty percent of the organic black pepper farmers in the study area was certified under Lacon Certification in Thiruvalla, 10.9 percent of farmers were certified by Athidhi Certification in Bangalore and 9.1 percent had Indocert Certification of Aluva, Ernakulum.

#### **4.2.2.1 Experience in farming**

When farmers were more experienced in farming activities, they might have faced different constraints and opportunities in the farming. The sample farmers were divided into three categories based on their experience in farming, such as having less than 10 years of experience, 10 to 30 years of experience and an experience of having more than 30 years.

The results related with farming experience of farmers are presented in Table 4.3, which shows the maximum share of farmers under the category of 10 to 30 years of farming experience were confirmed with 72.5 per cent of the farmers selected for the study (which included 40 farmers from Idukki district and 47 farmers from Wayanad district).



**Table 4.3 Distribution of sample respondents according to farming experience**

Sl No	Years of experience	Idukki (N=60)		Wayanad (N=60)		Total (N=120)
		Organic Farmers (N=26)	Conventional Farmers (N=34)	Organic Farmers (N=29)	Conventional Farmers (N=31)	
1	Less than 10	2(7.7)	3(26.5)	4(13.8)	3(9.7)	12(10)
2	10-30	15(57.7)	25(73.5)	23(79.3)	24(77.4)	87(72.5)
3	Greater than 30	9(34.6)	6(17.6)	2(6.9)	4(12.9)	21(17.5)
	Total	26(100)	34(100)	29(100)	31(100)	120(100)

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data

It is clear that 17.5 percent of farmers having more than 30 years of experience in farming and 10 percent of farmers only had experience less than 10 years. Almost same pattern has been noticed among the organic and conventional farmers in Idukki and Wayanad districts.

#### **4.2.2.2 Size of Land Holding**

When the size of land holding is large for the farmers, naturally it affects the the cropping pattern in the farm, the use of inputs and ultimately, the total cost of cultivation in the farm. The distributions of black pepper farmers according to size of land holding are given in Table 4.4.

The results revealed that irrespective of the type of farming method adopted by the farmers, majority of the farmers (77.5 percent) were having land holding below one hectare, which indicated marginal holdings size among the black pepper farmers. (73.3 percent in Idukki district and 81.7 percent in Wayanad district). However, altogether 22.4 per cent of the farmers were having land holdings above one hectare (small farmers), which includes 20 farmers

having land holding size of 1 to 2 ha and seven farmers (5.8 percent) were having land size above 2 ha (large farmers).

**Table 4.4 Distribution of farmers according to size of land holding**

Sl No	Area in hectares	Idukki (N=60)		Wayanad (N=60)		Total (N=120)
		Organic farmers (N=26)	Conventional farmers (N=34)	Organic farmers (N=29)	Conventional farmers (N=31)	
1	Marginal farmers	21(80.7)	23(67.6)	28(96.5)	21(67.7)	93(77.5)
2	Small farmers	5(19.2)	6(17.6)	1(3.4)	8(25.8)	20(16.6)
3	Large farmers	-	5(14.7)	-	2(6.5)	7(5.8)
	Total	26(100)	34(100)	29(100)	31(100)	120(100)

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data

#### **4.2.3 Hill produce dealers**

A person engaged in buying and selling of agriculture produces like spices, coffee, ginger etc. in districts of Idukki and Wayanad are considered as hill produce dealers. Hill produce dealers procure black pepper directly from farmers and sell it to wholesalers after taking their share of margin in the business. Mostly, black pepper farmers prefer to sell to the hill produce dealers in their locality than to the wholesaler at a distant place. They do not separate the black pepper into organic or inorganic, instead they procured the black pepper from all type of farmers who were willing to sell the black pepper to them.

The numbers of hill produce dealers included in the study from the selected districts are given as follows:

<b>Hill produce dealers (38)</b>			
<b>Idukki district</b>		<b>Wayanad district</b>	
Rajakkad (5) Rajakumary(6)	Vandiperiyar (5) Peruvanthanam(2) Kumily(4)	Vellamunda(2) Pulpally (5) Panamaram(4)	Mullenkolly (5)

**Table 4.5 Profile of hill produce dealers**

<b>Particulars</b>	<b>Idukki (N=22)</b>	<b>Wayanad (N=16)</b>	<b>Total (N=38)</b>
<b>Year of starting business</b>			
Less than 25 years	4 (18.2)	7(43.8)	11(34.4)
Above 25 to 50 years	17(77.2)	9(56.2)	26(81.3)
Above 50 years	1(4.6)	-	1(3.2)
<b>Type of ownership</b>			
Sole proprietorship	22(100)	16 (100)	32(100)
<b>Type of black pepper product</b>			
Black Pepper	22(100)	16(100)	38(100)
Volume of black pepper (kg)	42650	58450	144300

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data

The profile of the hill produce dealers included in the study are presented in Table 4.5 and it shows that majority of the hill produce dealers were doing dealer business of agricultural produce for more than 25 years to 50 years. All of them are doing the business by registering it as a sole proprietorship. Black pepper was the only product they procure from the farmers and none of the farmers in the locality were producing white pepper and green pepper, as they don't have the facilities to process these products. Hill produce dealers of Idukki and Wayanad were engaged in hill produce trade only i.e. the buying and selling of the hill produce and they were not doing any processing activities of black pepper.

#### **4.2.4 Wholesalers**

A person engaged in buying and selling of agriculture produce in large quantities, have more information about the spice market and the change in

prices. Wholesalers are located mostly in the town area and it became less accessible for the farmers. They assess the demand of black pepper in the market, through their contacts with brokers and other players in the chain and are well networked.

<b>Wholesalers (32)</b>			
<b>Idukki District</b>	<b>Kottayam District</b>	<b>Wayanad District</b>	
Nedumkandam(3) Kattappana(2) Vandiperiyar (2) Peruvanthanam(2) Kumily(4)	Mundakayam(2) Thodupuzha (4)	Manathavady(3) Sulthan Bathery(3)	Sulthan Bathery(3) Panamaram(4)

Table. 4.6 explains the profiles of wholesalers in Idukki and Wayanad districts. It is evident that majority of the wholesalers in Idukki and wayanad districts were doing wholesaling business of spices for more than 25 years to 50 years and 90.63 percent of the wholesalers had registered their business under sole proprietorship and the remaining 9.37 percent were undertaking the business with a partnership registration.

**Table 4.6 Profile of wholesalers**

<b>Particulars</b>	<b>Idukki district (N= 13)</b>	<b>Kottayam district (N=6)</b>	<b>Wayanad district (N=13)</b>	<b>Total (N=32)</b>
<b>Year of establishment</b>				
Less than 25 years	-		2(15.4)	2(6.3)
25 to 50 years	13(100)	6(100)	11(84.6)	30(93.7)
Above 50 years				
<b>Type of ownership</b>				
Sole proprietorship	12(92.30)	6(100)	11(84.61)	29(90.63)
Partnership	1(7.7)		2(15.39)	3(9.37)
<b>Type of pepper product</b>				
Black pepper	13(100)	6(100)	13(100)	32(100)
Volume of black pepper (Kg)	215000	90000	155500	460500

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data

The spice wholesalers procured black pepper from the hill produce dealers and here also, black pepper was the only pepper product that passes through the chain. It is obvious that the white pepper and green pepper was not traded with wholesalers of spices.

It has been informed that the wholesalers can identify the quality of the product by taking the pepper berries in their palm. Some wholesalers revealed that the imported pepper is available in different parts of Idukki district at a rate of ₹210 per kg to ₹220 per kg, when the market price of black pepper in Kochi market is ₹345 per kg. The berries of imported pepper are big and weightless compared to black pepper produced in Kerala. According to them, the mixing of imported pepper with the black pepper in Kerala was one of the major reason for the decreasing black pepper price in the market.

#### **4.2.5 Marketing cooperatives**

Marketing cooperatives are registered by farmers as members, to undertake transportation, packaging, distribution and marketing of farm produce. In addition to these functions, they also supplies agricultural inputs to the farmers and an inevitable actor in the black pepper value chain. There were two marketing cooperatives which had actively participated in the black pepper value chain in the study area were, 1) The Peermade Marketing Cooperative Society, Kumily, Idukki and 2) Rubber and Agricultural Marketing Cooperative Society, Mullenkolly, Wayanad.

##### **4.2.5.1 Peermade marketing cooperative society (PMCS), Kumily**

The Peermade Marketing Cooperative Society, Kumily in Azhutha block of Idukki district, was registered in 1989 as a marketing cooperative society under Kerala Cooperative Societies Act, 1969. Their main function are spices collection, packing, grading and marketing. The marketing society owns a fertilizer and organic manures producing factory at 65<sup>th</sup> mile in Idukki and distributes fertilizer and organic manures through its five outlets in their area of operation. They procures an average of 25,000 kg to 30,000 kg of black pepper

per year from the member and non-member farmers. They sell these products after cleaning and grading to buyers at Kochi and earned a comparatively high price for the black pepper.

#### **4.2.5.2 Rubber and agricultural marketing cooperative society, Mullenkolly**

Rubber and Agricultural Marketing Cooperative Society, Mullenkolly was established in 1994, under Kerala Cooperative Societies Act, 1969. This marketing society with 1,450 members, has obtained GST (Goods and services tax) license and they procure pepper, rubber and coffee from their area of operation. The quantity of ungarbled black pepper procured by the marketing cooperative society in 2016 was 9,000 kg, was reduced to 8,000 kg in 2017. Due to the reduced profit in black pepper business and to avoid the loss in business, they have procured only 400 kg of black pepper in 2018.

They ensure the quality of the black pepper by cleaning the berries and by removing pollu from the good berries. They sell the collected black pepper to wholesalers for a reasonable margin. A fertilizer and pesticides depot is successfully running under the society, and they sell cattle feed and agricultural implements to farmer members also. The payments to farmers for their produce were made after the bulk selling of the procured items to wholesalers. In general, rubber and black pepper trade was in loss since 2018, because of decreasing black pepper and rubber price, and now they find coffee trade is the only profitable business.

#### **4.2.6 Non-governmental organizations (NGOs)**

A non-profit organization or a voluntary citizen's group that operates independently of any government and their drive is to address a social or political issue. Their role in the production of organic pepper and other agriculture products cannot be ignored, and in one way the NGOs play a greater role in the state to popularize and commercialize organic farming by giving adequate assistance in the form of supplying agriculture inputs and advisory services. It is understood that NGOs like Peermade Development Society (PDS), Wayanad

Social Service Society (WSSS) and Wayanad Vanamoolika Samrakshana Sangham had an inevitable role in promoting the organic farming in the districts of Idukki and Wayanad.

#### **4.2.6.1 Peermade development society (PDS), Kumily**

Peermade Development Society (PDS), is registered as a non-governmental organization in 1980, under the Catholic diocese of Kanjirappally, intended for the sustainable development of the people in the locality which includes tribals, rural poor, marginal farmers, women and children through developing various indigenous, community based and people participatory programmes.

##### **4.2.6.1.1 PDS and organic farming**

PDS has more than 2,500 organic certified farmers, and they procured 90 percent of their black pepper after harvest in January every year. PDS collected the black pepper through their collection centres, processed and transformed into different products in their registered factory under the name “PDS Organic Spices”. PDS has taken a leading role in Idukki in the promotion of organic farming and has been promoting it through their efficient internal control system with the support of efficient staffs.

PDS established Soil Testing Lab to offer the service of soil testing to farmers, distribution of seedlings of various crops from their own nursery, distribution of organic manures such as organic NPK, copper sulphate etc. Member farmers were divided into a group of 300 farmers under internal control officers of PDS.

#### **4.2.6.2 Wayanad Social Service Society (WSSS)**

Wayanad Social Service Society (WSSS) is a registered charitable society which is established in 1974, as a social work organization under the Catholic Diocese of Mananthavady. The main objective of the organisation is the socio-economic empowerment of the rural group in the Wayanad districts such as

tribals, women and children and small and marginal farmers through participatory development interventions. WSSS owns a processing and exporting company, Biowin Agro Research Ltd in Mananthavady. They help the needy population through various schemes like Housing grant (2 year project), through which they have distributed to the member farmers a maximum of ₹ 1,00,000.00 per member and through this project a total amount of ₹1.5 crores were distributed for the housing purpose and irrigation facility, construction of bore well, renovation of pond etc.

#### **4.2.6.2.1 WSSS and organic farming**

Similar to PDS in Idukki, WSSS also promoted the organic farming in Wayanad through their well-trained staffs under the internal control system. They collected the black pepper from small and marginal farmers at a pre fixed price, immediately after the harvest in each year. The collected black pepper were processed and value added and exported to different countries.

#### **4.2.6.3 Wayanad Vanamoolika Samrakshana Sangham**

Wayanad Vanamoolika Samrakshana Sangham, a registered, secular and apolitical charitable organization founded by a socially committed group, for the socio-economic development of the marginal and small farmer communities in the neighbourhood. They constructed a residential centre to provide accommodation of students, guests and volunteers who visits the charitable organisation.

In 1990, Joseph Chittur started Vanamoolika by grouping together housewives from Wayanad and later, the group was registered under charitable societies Act for protection of medicinal plants through the house wives. They conducted exhibitions and trainings for protecting medicinal plants in Wayanad and the preparation of herbal medicines. Now, Wayanad Vanamoolika Samrakshana Sangham constitutes of nine board governing body and the number of members increased to 25 self-help groups with 375 families from fifteen members in 1991.



Vanamoolika is providing technical guidance and acts as a marketing channel to the marginal and small farmers, who are willing to cultivate medicinal plants as an agriculture crop. They provides trainings and services at free of cost for achieving their mission.

#### **4.2.6.3.1 Vanamoolika and organic farming**

Vanamoolika became advocates of organic farming in Wayanad and started certification process for organic farming in 2003. One year later, Vanamoolika accepted a project from MS Swaminathan Foundation for spreading organic farming in Wayanad. As a result, Organic Wayanad entity came into existence, a charitable society with around 2,500 farmers now, in which, in the initial stage only 106 farmers get certified as organic farmers and in 2007, 1,200 farmers get certified. Over 1,700 small and marginal farmers in the district availed help to get organic certification of their products, which benefitted them economically and ultimately helped to develop their family's standard of living and the overall community health situations. However, due to the loss incurred in adopting the organic farming practices (due to reduced productivity) 1,250 farmers drop out from Organic Wayanad entity. In 2012-2013, the number of farmers were reduced to 250 farmers. As an outcome Organic Wayanad stopped admitting new members on their request and the board takes decision on the entry of the new farmers to Vanamoolika. Currently, the membership has increased to 430 farmers. Vanamoolika has exported their products through Indian Organic Farmers Producer Company at Aluva, Ernakulam initially and later they registered Vanamoolika Herbals Ltd. to export their own organic products to international market.

#### **4.2.7 Eco Development Committee (EDC)**

The Participatory Forest Management (FPM) was started in December, 1996 and seventy two Eco-Development Committees (EDCs) were constituted in the East West Forest Division. Accordingly, EDC was formed in Vanchivayil Tribal Colony within Periyar Tiger Reserve East Division, Thekkedy under Vallakkadavu, Range Section, Thondiyar (Vandiperiyar Grama Panchayath 10<sup>th</sup>

Ward). The reasons for starting Eco-Development Committee (EDC) in 1997 was, 1) to reduce the dependency of tribal people on forest resources, 2) to change the negative dependency of tribal people in forest to positive dependency, especially to reduce their dependency on hunting and shift them to agriculture.

In the beginning, “Adivasi Oorali Group” of Vanchivayil consisted of forty three families. Peermade Development Society served them and took responsibility of their social life. They constructed 30 houses for tribal families and dug trenches and boundary walls around their houses to protect them from wild animals. Earlier, tribal people were cultivating paddy and tapioca only. PDS helped them to start cultivating plantation crops like small cardamom for getting more income to tribal farmers and later, the NGO realized that without fertilizers and pesticides cardamom cultivation cannot be viable. Moreover, tribal people practices natural farming and they were not willing to use fertilizers and pesticides in their land. To tackle this situation, they were advised to shift to other crops like black pepper.

Currently, there are seventy three families under Vanchivayil EDC and each family can represent a member to EDC. Two members from a family can attend the general body of EDC (in which one member must be a female), where in any circumstances two male from a family cannot be permitted to attend the general body meeting. The Executive committee of EDC consists of nine members with three female members. One President, Vice president and a Treasurer is elected by the general body and EDC’s bank account is jointly operated by the President and the Treasurer. EDC’s price fixing committee meets before every harvest season and invites tenders from various companies to sell the black pepper.

#### **4.2.7.1 EDC and natural farming**

Natural farming is a system where no human supplied inputs will be used for production while the system takes advantage of the local environment. Fresh matured pepper berries will be collected from farm gate and supplied to the company which has won the tender each year. The tender for procuring the black

pepper from EDC was won by Plantrich AgriTech Ltd. Kottayam in 2016 and they procured 26 MT of black pepper from the Vanchivayil tribal farmers. Richabel Biofoods, Ernakulam has got the tender in 2017 and 2018 and they have collected 32 MT and 30 MT of black pepper respectively in these years.

EDC tribal farmers do natural farming and they had organic certification from Lacon Quality Private Limited, Thiruvalla and EDC is trying to certify these farmers under Demeter certification from Germany.

#### **4.2.8 Farmer producer company**

A company registered with a minimum of ten or more primary producers or by two or more producer institutions or by a contribution of both, considered as a hybrid between cooperative societies and private limited companies. They also supplies agriculture inputs to farmers through their fertilizer outlet.

##### **4.2.8.1 GreenVivo Agro Producer Company Ltd. Poopara, Idukki**

GreenVivo Agro Producer Company was formed in 2016, with 117 marginal farmers of four panchayats of Idukki district. Currently, the company has 152 shareholders and the value of one share is ₹1,000.00. Minimum amount of shares needed to be a member in Greenvivo is ₹25,000 per member. To become an eligible shareholder of the company each farmers should have a minimum possession of 2.5 acre of own or leased land. In the beginning, twenty two members from a self-help group were the initial members of the company, and now the company is committed to facilitate maximum services to the shareholders as well as other farmers in the locality.

Greenvivo Company started with the marketing and processing of cardamom initially, later, they added the procurement and marketing of black pepper. They are successful in handling the marketing task to avert the brokers in the hill produce trade field to an extent. They have acclaimed as the best farmer producer company by receiving the Government of Kerala Award in 2017, on the basis of turnover, increase in shareholders and dividend distributed to shareholders.

All activities of Greenvivo Company were managed and controlled by the Chief executive officer and eight permanent staffs in the company. The company runs a Fertiliser and pesticides depot for supplying inputs for cardamom cultivation. They installed a machinery worth rupees three lakhs for cardamom drying and charge the farmer with ₹10 per kg of for drying cardamom. As informed by the company officials, the black pepper production has reduced in Idukki district by 60 percent, as the farmers shifted from black pepper to cardamom cultivation. A part of black pepper procured in 2019, is lying in their store and they are expecting that the price of black pepper may increase in future, otherwise, the decreasing price of black pepper is escalating the loss of the company.

#### **4.2.9 Commission Agent**

An expert middlemen between the buyers and sellers of black pepper who provides valuable service to their clients and an expert in negotiating the price with the sellers and buyers can be a commission agent. Commission agents in agriculture commodities purchase and sell items on behalf of a company. They are responsible to provide the required quality and quantity of material within the agreed price of purchase by the company. Some agents represent more than one principal also.

#### **4.2.10 Exporters**

A person/persons or company that sells overseas black pepper and its value added products can be considered as an exporter. Registered companies are also a convincing player in the value chain which process and sells the value added products like black pepper, white pepper and green pepper.

##### **4.2.10.1 PDS Organic Spices Limited**

In 2002, the Organic Agri-Products and Exports Division of Peermade Development Society (PDS) initiated the construction of a processing centre at Valanjanganam, near Kuttikkanam and the name was changed to “PDS Organic Spices” and hence, a new registered company started working under PDS. The

company became the topmost exporter of organic spices from India. It exported certified organic spices to countries like USA, Japan, Germany, U.K, The Netherlands, France, Belgium, Australia, Korea, Egypt, Austria etc. They work with the small and marginal farmers and tribal population who inhabit in the villages of Idukki, Kottayam and Pathanamthitta districts of Kerala.

PDS organic spices conducted the sample testing of the black pepper collected from the farmers, the moisture content and pesticide analysis were done to find out the presence of restricted substance in the black pepper procured from the farmers. After receiving a positive result of the analysis, the collected black pepper were graded into Tellicherry Garbled Extra Bold (TGEB) (from 4.25 mm to 4.75 mm) and Tellicherry Garbled Superior Extra Bold (TGSEB) (from 4.75mm above to 6 mm). The light berries will be removed and the size above 6mm is considered as oversized berries. The processing activities were undertaken as per the order received in each year. Steam sterilization of black pepper happens at 105° C for five minutes and the company has one tonne capacity per hour for doing steam sterilisation. “Trubio Organic Spices” the brand name of PDS Organic Spices have a good market value internationally for their products including black pepper, white pepper and green pepper and powdered products of black pepper and white pepper. PDS exports these products, especially to USA, European countries, Middle East countries, Japan and Korea and had their presence in northern part of India through their liaison with north Indian partners.

#### **4.2.10.2 Biowin Agro research Limited**

Biowin Agro Research Ltd. is a company established in 2013, with an intention to upgrade the organic certification programme of Wayanad Social Service Society (WSSS) and to enhance the business share of organically grown Indian spices, fruits and coffee of Wayanad. Biowin Company is owned and managed by the WSSS and registered under Section 8 of The Company’s Act, with APEDA license. The company established a modern processing centre with the help of Spices Board in 2002 and it has 1,000 kg cleaning capacity of black

pepper per day, which help them to meet the required quality requirements for their products. WSSS claims that through these processing and exporting activities, they were able to offer a better market price for the agricultural produce of the farmers.

In 1990, Wayanad social service society formed a group of 30 to 75 conventional farmers and form a club, gradually, increased the number of clubs to 50. Now, twenty five group village farmer clubs sends a person to apex body, thus twenty five leaders of the clubs to apex body forms a regional farmers club, and forms a cluster of 800 group village farmer clubs. Thus, WSSS has 40 clusters, with a total of 16,000 farmers as members from Nilgiri, Wayanad, Kannur and Kozhikode districts and every year around 1,000 farmers joins WSSS.

Under WSSS, farmers land or farm were certified through Lacon certification and controlled the organic standards through effective Internal Control System (ICS). Sample products were collected from the farmers for getting accredited organic label through quality testing, for which farmers have to bear the cost of testing and this amount will be later reimbursed to farmers after getting a positive result for their sample. Biowin Agro Research normally does bulk marketing to get more benefits to farmers and exports mainly to Europe and US. All payments were given to farmers through bank account, and after harvest, procurement of the produce were done by WSSS through their collection centres. Member farmers will be informed about the delays in payment, and if any delay occurs in collection of the farm produce also. Procurement price will be agreed before harvest in consultation with the farmer groups. The average production of the company each year was five containers (where one container varies from 13,500 kg to 15,000 kg) in which four containers of black pepper and one container of white pepper and other products will be send to different part of the world.

According to Biowin Company, in one kilogram of black pepper, 30 to 50 percent of the black pepper can be of high quality, around twenty percent of

spikes, lower grade berries included five to ten percent, and a maximum of ten percent has to be considered as wastage. For quality control, the company distributes drying sheet for black pepper, organic manures, printed book with all standards to be followed by the farmers etc. and conducts training on compost preparation, Good Agriculture Practices (GAP), pre-harvest and post-harvest activities, weed control. Financial support of ₹10000 per black pepper farmer for cultivating varieties like Panniyur 2, Panniyur 3 and Karimunda. Ministry of Commerce subsidy was received in 2015 for processing plant expansion and has taken term loan to start first processing plant in Dwaraka, Idukki (established with Spices Board assistance). Future plans of the company included the production of standard products to all, extraction unit to increase the number of value added products (by adding processing of oil and oleoresin), own quantity testing lab and steam sterilization plant.

#### **4.2.10.3 Vanamoolika Herbals Limited**

Vanamoolika Herbals Ltd. established a large-scale production unit, with APEDA license to process and export herbal healthcare, nutraceuticals, food products, ayurvedic medicines and cosmetic products. They are producing about 180 organic ayurvedic medicines and food products, complying with HACCP (Hazard Analysis and Critical Control Point) standards.

They process quality black pepper, white pepper and green pepper depends on the order received from different countries. Blanching of organically produced black pepper, drying of black pepper in poly house under shade net are the common practices in the company to meet quality standards.

Buyers from other countries visits Vanamoolika's factory every year from Germany, US, UK, France and Switzerland to see and convince themselves about the organic production of black pepper products. Their aim of visit is to see the processing activities in the factory in Pulpally, Wayanad and to confirm the quality standards. Vanamoolika produces 30 MT of products every year including coffee (18 MT), turmeric powder, black pepper, drumstick leaf powder, cocoa, thondi rice etc. Grading was strictly followed to country-wise buyer's

requirement and no consignment of vanamoolika herbals was rejected by any country due to quality issues. Recently, they got an order for a single variety of black pepper “Wayanadan” from France and Germany.

The major black pepper product of Vanamoolika included the different grades of black pepper, black pepper crushed (white ground and black ground) and separate variety black pepper.

#### **4.2.11 Registered Companies**

##### **4.2.11.1 Richabel Biofoods (India) Private Limited**

Richabel Biofoods (India) Pvt. Ltd. is a Kochi based company, founded in 2010 to offer extremely high quality products to the buyers, including value added organic herbs and spices. Richabel Company helps small farmers in India to improve their production and processing methods as per the international quality requirement. Richabel Biofoods Ltd. collected the black pepper from the tribal farmers in Vanchivayil tribal colony through Eco development committee (EDC) and export it to European countries.

The role of Richabel Biofoods (India) Pvt. Ltd in the black pepper value chain was limited to the procurement of fresh black pepper from EDC, after winning the tender called by EDC. They processed fresh black pepper to different value added products in their own factory.

##### **4.2.11.2 Suminter India Organic Private Limited**

Suminter India Organics Private Limited, established in Mumbai, Maharashtra, produced high quality natural and organic products. More than 20,000 farmers were associated with the company and they were offering organic certification and training to the member farmers. The company processed the procured agricultural produce and undertook the marketing of products in a new business model. Through the different certified agencies and their ground level staff in different states, they guaranteed a market chain of quality organic products.



#### **4.2.11.2.1 Suminter and organic farming**

Suminter India Organics Company has a distribution and collection centre in Adimaly for the distribution of agricultural inputs and the procurement of black pepper, nutmeg, ginger, clove etc. Adimali collection centre of Suminter company collected information of the likely yield in November every year and started collection of black pepper from January after the harvesting of the black pepper. The company entered into an agreement (not contract farming) with farmers for three years for supplying agriculture produce of their farm, whereas the farmers had the freedom to sell their produce to anybody. Assigned field staffs of the company distributed planting materials, and arranged materials for controlling pest and diseases. After procurement, black pepper get transferred to Mumbai by road in trucks, and get processed in the Mumbai factory before exporting to different countries.

The Company claimed that they paid farmer with premium price over market price and subsequently, makes agriculture a viable option for the farmers. They guaranteed ₹20.00 more than the market price based on the organic certification. The quantity of black pepper collected by Adimali collection centre in Idukki was 70 MT in 2017 and 2018 and 48 MT in 2019. Onecert certification agency in Rajasthan, Ecocert certification in Mumbai, Adithi certification in Bangalore and Lacon certification in Thiruvalla are the different certifying agencies for organic certification under Suminter India Organic Private Ltd.

#### **4.2.12 Retailers**

A person or business that sells goods to the public in relatively small quantities for use or consumption rather than for resale can be referred as a retailer. They are the link to the consumers and they trade in relatively small quantities with different quality. Retailers who distributes black pepper in the study area were exclusive spice outlets and the grocery or village shops in the panchayats. Exclusive spice outlets supplies black pepper to consumers in the

packets of 100gms, 200gms and 500gms within the districts of Idukki and Wayanad, especially for the tourists. A brief profile of the retailers (including exclusive spice outlets and grocery shops) are given in table 4.7.

These spice outlets were not the exclusive outlets for black pepper, they sell different spices and other hill produce specific products available in Idukki and Wayanad districts. Similarly, the grocery shops in the locality give black pepper according to the requirement of the customer.

**Table 4.7 Profile about the retailers**

<b>Particulars</b>	<b>Idukki (N=3)</b>	<b>Wayanad(N=3)</b>	<b>Total (6)</b>
<b>Year of establishment</b>			
Less than 10 years	1	2	3
10 to 20 years	1	1	2
Above 20 years	1	-	1
<b>Type of ownership</b>			
Sole proprietorship	1	1	2
Partnership	2	2	4
<b>Type of black pepper product</b>			
Black Pepper	3	3	6
Volume of Black Pepper (kg)	300	250	550

Source: compiled from primary data

Type of ownership of the grocery shops were sole proprietorship, while the ownership of exclusive spice outlets were in partnership. Altogether these outlets distribute an average of 300 kilograms of black pepper in Idukki district and 250 kilograms of black pepper in Wayanad district.

#### **4.2.13 Indian Pepper and Spices Trade Association (IPSTA) Brokers**

Registered brokers under Indian Pepper and Spices Trade Association (IPSTA), were the brokers actively participated in black pepper trade before the suspension of black pepper futures contracts in 2012-2013. Brokers act as middlemen between the wholesalers and the major spice buyers in Kochi market, by charging brokerage fees. Table 4.8 gives a brief profile about the IPSTA brokers.

**Table 4. 8 Profile about the IPSTA brokers**

<b>Particulars</b>	<b>Total (4)</b>
<b>Year of establishment</b>	-
Less than 25 years	-
25 to 50 years	4(100)
Above 50 years	
<b>Type of ownership</b>	
Partnership	4(100)
<b>Type of black pepper product</b>	
Black Pepper	4(100)

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data

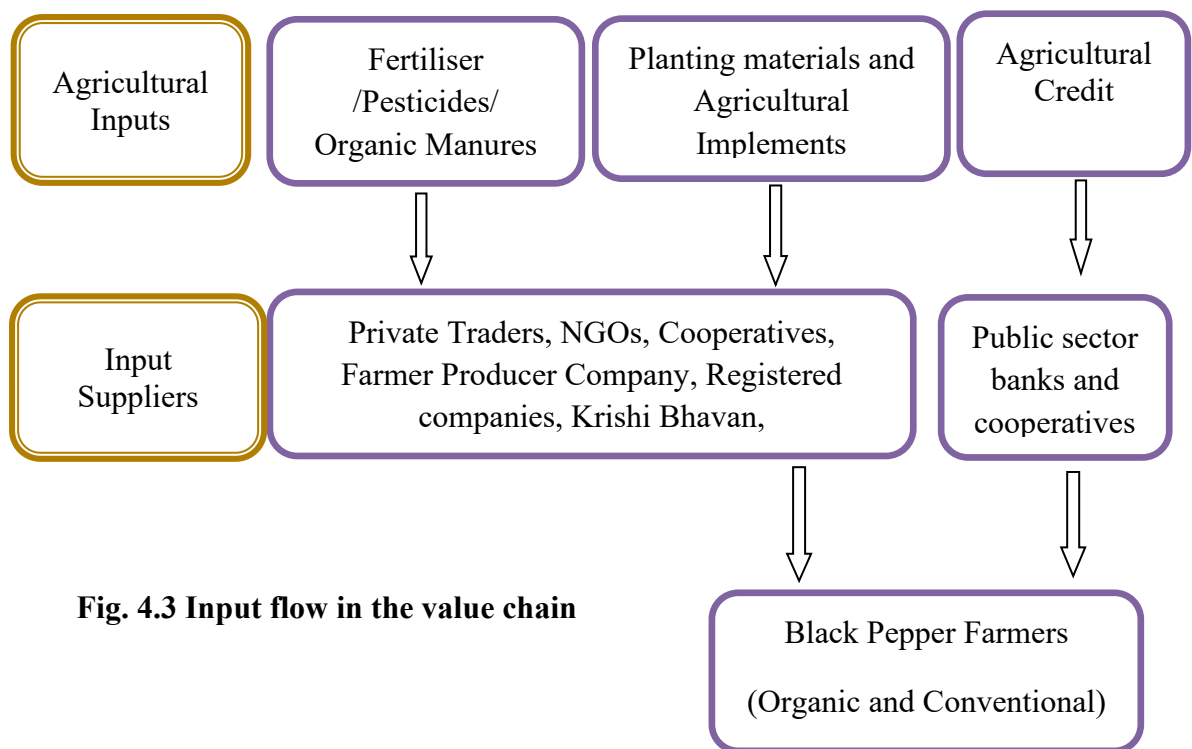
At present, the brokers are working independently as a negotiator between the sellers and buyers in Kochi. IPSTA published the daily market price of black pepper (garbled and ungarbled) through newspapers and radio. When the future trading stopped in IPSTA, they formed a price fixing committee to fix and publish the market price of black pepper in Kochi market. The price fixing committee includes IPSTA members, registered brokers under IPSTA and the buyers. It was felt that market price of black pepper should be fixed in a more transparent way.

### **4.3 Mapping of flows of products**

Value chain analysis involves identifying the products at each stage of the process as they transformed from inputs to final products. Here, the black pepper farmers produce fresh raw pepper and dried berries of black pepper at the production stage and in the collection or procurement stage. Wholesalers deals only in the black pepper, which finally reaches the exporters and the retailers. Another portion of black pepper and fresh raw pepper reaches the NGOs and exporters, get value added and became graded black pepper, white pepper and green pepper.

#### **4.3.1 Input flow in the value chain**

The inputs for black pepper production flows from the manufacturers of agricultural inputs to the distributors and finally it reaches the farmers. The map of input flows in the value chain of black pepper is presented in Fig. 4.3.



**Fig. 4.3 Input flow in the value chain**

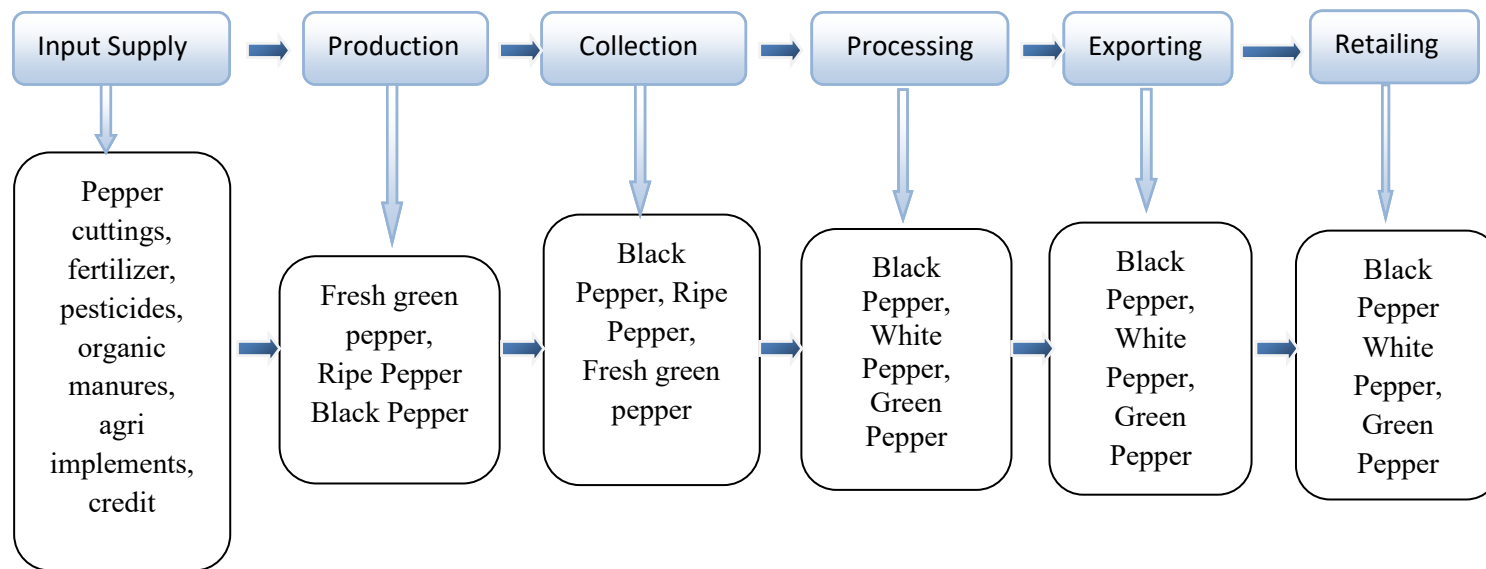
Agriculture inputs required for the black pepper farmers includes materials like planting materials, fertilisers, pesticides, organic manures for crop production and protection through plant nurseries, private traders, NGOs, marketing co-operatives, farmer producer company, Krishi bhavan etc. Agriculture implements required for the production of black pepper were supplied by private traders, co-operatives, farmer producer company etc. Public sector banks and the co-operative banks in the locality disbursed agricultural credit for the farmers.

#### **4.3.2 Flow of Black Pepper, White Pepper and Green Pepper**

The black pepper and its value added products selected for the study included black pepper, white pepper and green pepper and it flowed through different actors in the value chain. Black pepper, a common product that flowed through almost all actors in the value chain (irrespective of being organic or not) while white pepper and green pepper passed through the organic chain of black pepper only, that is, from farmer to exporters, where the exporter does all the processing and value adding activities.

Figure 4.4 presents the map that shows the flow of black pepper, white pepper and green pepper in the value chain. After harvest, the fresh green pepper (collected from the tribal farmers in Vanchivayil), ripe black pepper for producing white pepper (collected from the organic farmers under NGOs and other registered companies) and the black pepper (collected from both type of farmers by all collectors) moved along the value chain.

Exporters (under NGOs) converted the black pepper collected from farmers to the required quality products, process the white pepper and green pepper according to different international standards. These value added products were distributed to the consumers in domestic and international market. Black pepper collected from the farmers by the hill produce dealers and wholesalers were sold in the Kochi market through the IPSTA brokers. The retailers collected the black pepper from hill produce dealers, get cleaned, graded, packed and distributed to the consumers.



**Fig 4.4 Flow of black pepper, white pepper and green pepper in the value chain**

#### **4.4 Mapping of knowledge and flows of information**

Knowledge and flows of information is considered as an intangible quality of value chains, by mapping knowledge and information flows between actors at each stages helps to give a clear picture of the accessibility of the information to the main actors. The key information transmitted through the value chain included the required quantity of agricultural inputs (from farmer to input suppliers and vice versa), price of different grade of black pepper and quality requirement of each grade (from traders to black pepper farmers), international standards for product quality and demand of different type of value added products (from processors or exporters to traders or farmers), price of value added products in the domestic market and its quality requirements (from retailers to processors and to farmers) etc. The map of key information transferred to farmers in black pepper value chain is depicted in Fig. 4.5.

Information and knowledge sources for the black pepper farmers were private organizations like input suppliers, hill produce dealers, wholesalers, exporters, registered companies, NGOs, cooperatives etc. and the government institutions such as Krishi Bhavans, Spices Board, Kerala Agricultural University and Research Stations, Krishi Vigyan Kendras, Panchayats etc.

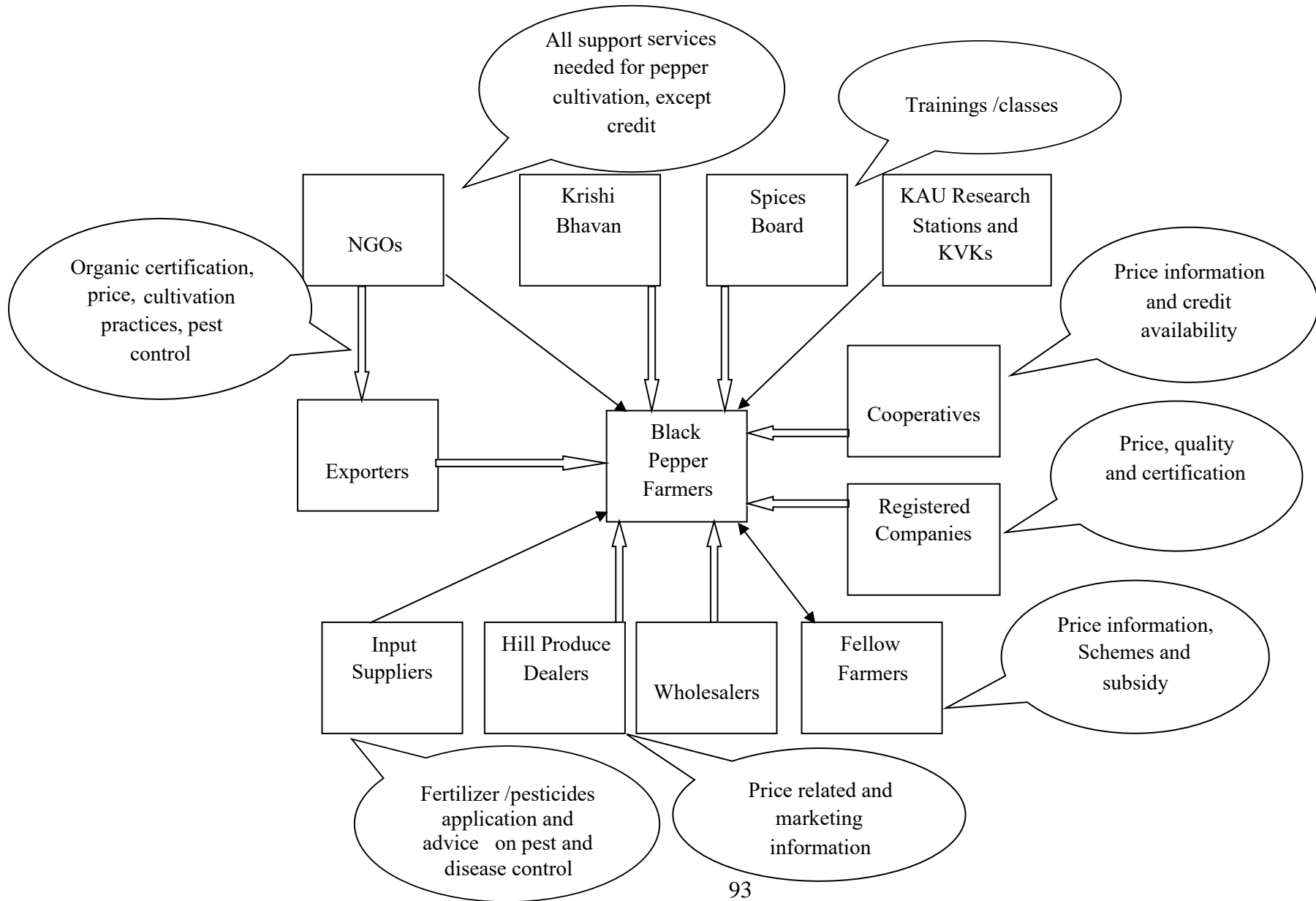
The required information for the black pepper farmers were price related or marketing information, information about black pepper related schemes and subsidy, information about fertilizer and pesticides application, information about new cultivation practices, pest and disease control, value addition in black pepper, increasing quality of black pepper, availability of credit and organic production and the certification procedures. The information and knowledge source disclosed by the black pepper farmers are presented in Table. 4.9.

The black pepper farmers from Idukki and Wayanad districts received price related or marketing information from hill produce dealers (100 percent) and fellow farmers (100 percent), followed by NGOs (45.83 percent), exporters (45.83 percent), marketing cooperatives (20.83 percent) and a comparative lesser percent (13.33 percent) from wholesalers. Five percent of black pepper farmers

were in relation with the registered company through their collection centre and has received information and knowledge from them. Krishi bhavan stood first in disseminating the information related with subsidies and schemes of black pepper in the area, and similarly, farmers also get information from the fellow farmers. NGOs (45.83 percent) and registered companies (5 percent) considered as an information source by the farmers related to subsidies and schemes of black pepper.



**Fig. 4.5 Map of information and knowledge sources**



**Table 4.9 Information and knowledge sources**

Sl No	Information source	Type of information (N=120)								
		Price related/ marketing information	Black pepper related schemes/ subsidy	Fertilizer/ pesticides application	Information about new cultivation practices	Advice on pest and disease control	About value Additionof pepper	About how to increase quality of pepper	Availability of credit	Organic production and certification
1	Fellow farmer	120(100)	120(100)	10(8.33)	15(12.5)	43(35.83)	15(12.5)	15(12.5)	7(5.83)	15(12.5)
2	Input suppliers	-	-	65(54.16)	-	70(58.33)	-	-	-	-
3	Hill produce dealers	120(100)	-	-	-	-	-	-	-	-
4	Wholesalers	16(13.33)	-	-	-	-	-	-	-	-
6	Exporters	55(45.83)	-	-	-	-	-	55(45.83)	-	55(45.83)
8	Krishi bhavan	-	120(100)	120(100)	120(100)	120(100)	120(100)	120(100)	-	120(100)
9	Spices board	11(9.17)	-	-	-	-	11(9.17)	11(9.17)	-	-
10	KAU research stations/KVKs	14(11.67)	-	-	-	-	-	-	-	14(11.67)
11	NGOs	55(45.83)	55(45.83)	55(45.83)	55(45.83)	55(45.83)	-	55(45.83)	-	55(45.83)
12	Registered companies	6(5)	6(5)	-	-	-	-	6(5)	-	6(5)
13	Cooperatives	25(20.83)	-	3(2.5)	-	17(14.16)	-	17(14.16)	111(92.5)	-

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data

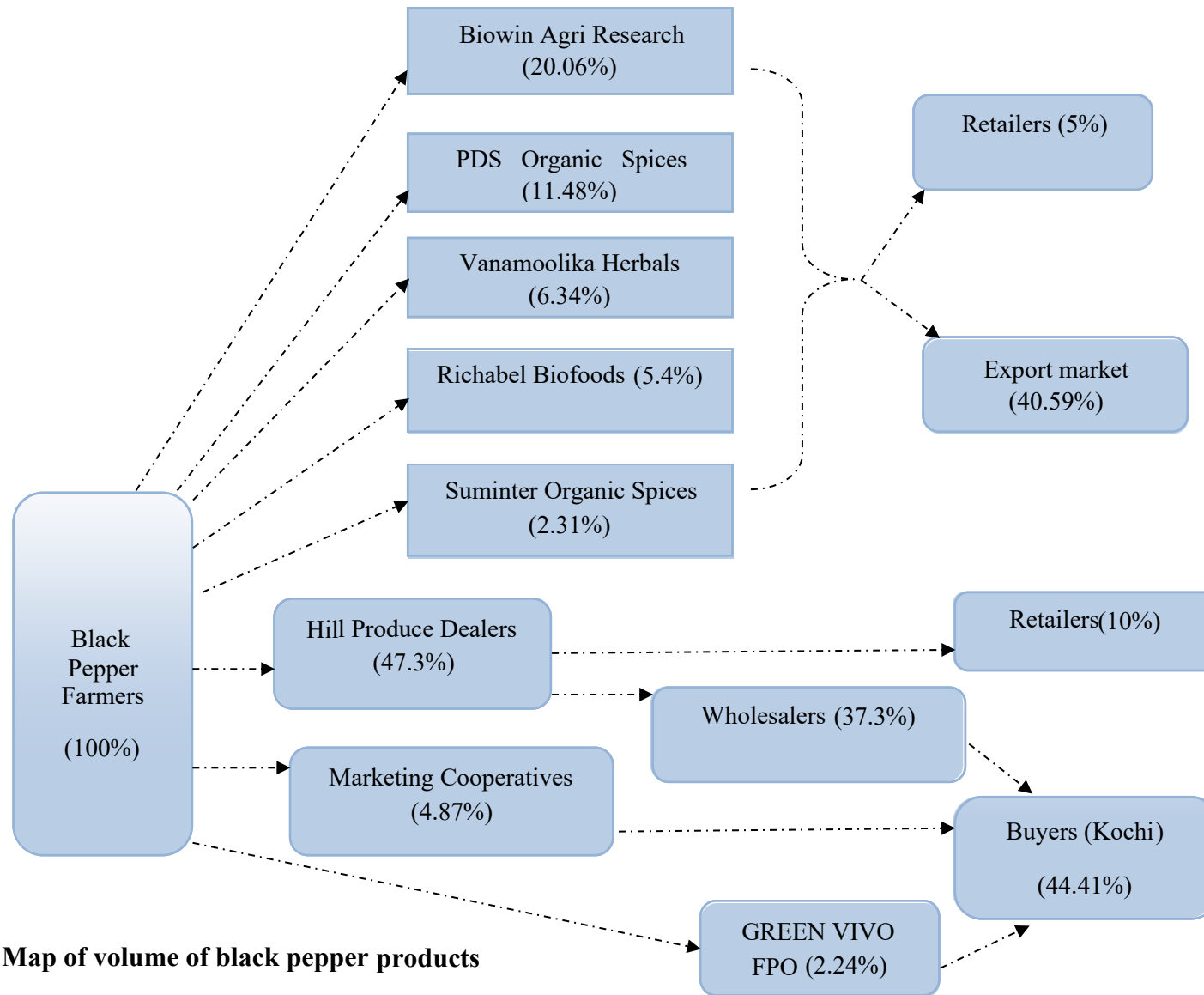
#### **4.5 Mapping the volume of products**

Krishi bhavan (100 percent), NGOs (45.83 percent) and input suppliers (54.16 percent) were giving advices on fertilizer and pesticides application for the farmers. Information related to new cultivation practices, pest and disease control, organic production and certification were properly informed by Krishi bhavan (100 percent) and NGOs (45.83 percent). Moreover, Krishi bhavan takes an inevitable responsibility in value addition of black pepper and to increase the quality of black pepper. Almost all other information sources were keen on disseminating the information to increase the quality of black pepper. Cooperatives (92.5 percent) extended their support to farmers by informing their willingness to offer credit facilities.

The volume of the black pepper products passes from one actor to another actor and the share of volume handled by the actors were mapped in Fig. 4.6. Unlike the previous dimensions in the value chain analysis, mapping of the volume of products can be quantified. By quantifying the total volume of products transferred through different actors in the value chain helps to compute an overview of the size of different channels within the black pepper value chain.

The black pepper farmers in the sample included both organically certified farmers (55 nos) and conventional farmers (65 nos), the black pepper produced organically was procured by exporters (NGOs) like PDS Organic spices (Idukki), Biowin Agri Research and Vanamoolika Herbals (Wayanad). Similarly, other registered companies like Richabel Biofoods Ltd. and Suminter India Organics Ltd. also collected organic pepper from the black pepper farmers and they process the black pepper outside the state.

However, the conventional farmers were selling their produce to hill produce dealers and from hill produce dealers the black pepper were moving to the wholesalers and finally, it reached the Kochi market. Black pepper from Marketing cooperatives and FPOs reached the Kochi market without including the hill produce dealers and wholesalers in the flow of product to Kochi market.



**Fig. 4.6 Map of volume of black pepper products**

## **4.6 Mapping the value at different levels of the value chain**

The available information about the value at different stages of the value chain is only cost and price at each process level and hence, this stage helps to map the monetary value added to black pepper throughout the chain. Value addition practices in black pepper such as drying and cleaning were done by the farmers, while cleaning and packing were done by the hill produce dealers, wholesalers, marketing societies, farmer producer company etc. The exporters performed activities like processing and marketing of white pepper and green pepper.

The assessment of value addition in the black pepper starts with cost of cultivation incurred by the farmers to produce one kilogram of organic and inorganic black pepper.

### **4.6.1 Cost incurred for black pepper production**

Black pepper, a perennial crop which starts bearing black pepper from the 4<sup>th</sup> year onwards and the economic life span of black pepper is expected to be 25 years. The cost of cultivation and cost of production of black pepper are computed using the concepts of establishment cost and maintenance cost. Therefore, the crop in the farms of sample farmers included in the study were classified according to the age of black pepper i) establishment phase (1<sup>st</sup> to 3<sup>rd</sup> year), ii) yield increasing phase (4<sup>th</sup> to 7<sup>th</sup> year), iii) yield stabilising phase (8<sup>th</sup> to 20<sup>th</sup> year) and (iv) yield declining phase (20 to 25<sup>th</sup> year).

The expenses incurred by the black pepper farmer during the first to third year of planting of black pepper in the farms such as the expenditure on land preparation, digging and filling pits, planting material, manures and fertilisers, plant protection chemicals, irrigation and weeding are considered as establishment cost. The maintenance cost of black pepper are computed from the 4<sup>th</sup> year to the 25<sup>th</sup> year, which included the expenditure on farm yard and organic manures, fertilisers, plant protection chemicals, other organic materials and its application in the farms and the various farm operations such as weeding,

harvesting and drying. The establishment cost and maintenance cost incurred by the two category of farmers, i.e. organic farmers and conventional farmers in Idukki and Wayanad districts are calculated separately.

#### **4.6.1.1 Establishment cost of organic black pepper in Idukki and Wayanad district**

The total establishment cost per acre of organic black pepper in Idukki district was calculated as ₹1,04,525, and the cost incurred during the first year, second year and third year of establishment were ₹48,425, ₹28,400 and ₹27,700 respectively (Table 4.10). Likewise, the total establishment cost of organic black pepper per acre in Wayanad district was estimated as ₹1,07,175. The cost incurred from first year to the third year of black pepper cultivation was ₹ 49,975, ₹32,300 and ₹24,900 respectively in Wayanad district.

In both districts the high cost was incurred in the first year because planting activity like land preparation and pit formation and the purchase of the planting materials were the obvious reasons for that. The major aspect noticed is that the cost for human labour contributed the major share in the establishment cost, i.e. 37.79 percent of total establishment cost in Idukki district and 41.31 percent of total establishment cost in Wayanad district. The total material cost accounted for 62.21 percent of the establishment cost in Idukki districts which included pepper cuttings or planting materials, farm yard manure, organic manure and other organic materials and in Wayanad district it was 58.69 percent of the total establishment cost per acre.

**Table 4.10 Establishment cost of black pepper (organic cultivation) (Rs/acre)**

I.	Material Cost	Idukki District				Wayanad District			
		First Year	Second Year	Third Year	Total	First Year	Second Year	Third Year	Total
1.	Pepper Cuttings/Planting Material	4500	375	150	5025	4000	450	150	4600
2.	Farm yard manure	6500	3500	3500	13500	6500	5000	4500	16000
3.	Organic manure	8500	6000	6000	20500	6800	6500	6000	19300
4.	Other organic materials	6000	6500	6500	19000	7500	3500	3500	14500
5.	Miscellaneous	2000	2500	2500	7000	3500	2500	2500	8500
	Total	27500 (56.79)	18875 (66.46)	18650 (67.32)	65025 (62.21)	28300 (56.63)	17950 (55.57)	16650 (66.87)	62900 (58.69)
II.	Labour Cost								
1.	Land Preparation	6375	850	425	7650	5775	500	250	6525
2.	Application of Farm yard manure	4250	2125	2125	8500	4500	2200	2000	8700
3.	Application of Organic manure	3400	1700	1700	6800	3200	3000	1500	7700
4.	Application of other organic materials	2200	2000	2000	6200	2100	2000	1000	5100
5.	Vine protection	1200	850	800	2850	1100	1250	500	2850
6.	Weeding	1700	850	850	3400	1800	2100	1500	5400
7.	Irrigation	1800	1150	1150	4100	3200	3300	1500	8000
	Total	20925 (43.21)	9525 (33.54)	9050 (32.68)	39500 (37.79)	21675 (43.37)	14350 (44.43)	8250 (33.13)	44275 (41.31)
	Grand Total	48425 (100)	28400 (100)	27700 (100)	104525 (100)	49975 (100)	32300 (100)	24900 (100)	107175 (100)

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data

**Table 4.11 Establishment cost of black pepper (inorganic cultivation) (Rs/acre)**

I.	Material Cost	Idukki District				Wayanad District			
		First Year	Second Year	Third Year	Total	First Year	Second Year	Third Year	Total
1.	Pepper Cuttings/Planting Material	3000	250	100	3350	3200	300	150	3650
2.	Farm yard manure	5500	4750	4500	14750	5225	5500	5500	16225
3.	Organic manure	2000	1750	1500	5250	3000	1250	1250	5500
4.	Fertilisers	8700	8500	8250	25450	8400	6350	6700	21450
5.	Plant protection chemicals	2500	1500	1500	5500	2750	2250	2500	7500
6.	Miscellaneous	1000	1200	850	3050	1500	1250	1500	4250
	Sub total	22700 (52)	17950 (60.64)	16700 (60.29)	57350 (56.81)	24075 (55)	16900 (57.58)	17600 (59.17)	58575 (56.94)
II.	Labour Cost								
1.	Land Preparation	6700	500	500	7700	7100	425	425	7950
2.	Application of farm yard manure	4750	2750	2500	10000	4700	4725	4800	14225
3.	Application of organic manure	1000	500	350	1850	1200	1250	1300	3750
4.	Application of fertilisers	3500	3500	3150	10150	3200	2650	2770	8620
5.	Application of plant protection chemicals	1250	1050	1050	3350	2000	2100	1500	5600
6.	Weeding	1850	1500	1650	5000	750	650	675	2075
7.	Irrigation	1900	1850	1800	5550	750	650	675	2075
	Sub total	20950 (48)	11650 (39.36)	11000 (39.71)	43600 (43.18)	19700 (45)	12450 (42.42)	12145 (40.83)	44295 (43.06)
	Total cost	43650 (100)	29600 (100)	27700 (100)	100950 (100)	43775 (100)	29350 (100)	29745 (100)	102870 (100)

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data



#### **4.6.1.2 Establishment cost of inorganic black pepper in Idukki and Wayanad district**

It was estimated that the total establishment cost per acre incurred by the conventional black pepper farmers in Idukki district and Wayanad districts were ₹1,00,950 and ₹1,02,870 respectively (Table. 4.11). In Idukki district, the establishment cost incurred by the farmers in first, second and third year were ₹43,650, ₹29,600 and ₹27,700 respectively, whereas in Wayanad district it was ₹43,775, ₹29,350 and ₹29,745 respectively. Similar to organic black pepper cultivation, inorganic black pepper cultivation also have the major share of establishment cost contributed by the cost of human labour and it accounted for 43.18 percent of the total establishment cost in Idukki district and 43.06 percent in Wayanad district. The total material cost incurred by conventional farmers in Idukki district was ₹57,350 (56.81 percent of the establishment cost per acre) and a comparatively higher cost was incurred by conventional farmers in Wayanad district with ₹58,575 (56.94 percent of the establishment cost per acre).

#### **4.6.1.3 Maintenance cost incurred during the yielding phase of organic black pepper**

The cost incurred by the organic farmers during the yielding phase (i.e. yield increasing phase, yield stabilising phase and yield declining phase) were calculated and is presented in Table. 4.12. The major inputs required for the maintenance of organic black pepper cultivation was human labour, farm yard manure, organic manure, organic plant protection materials and harvesting bags. The total annual maintenance cost per acre incurred by organic black pepper farmers in Idukki and Wayanad district was ₹80,540.38 and ₹76,822.07 respectively.

In Idukki district, it is obvious that the cost structure was found high in yield increasing phase (₹85,875), followed by yield stabilising phase (₹84,175). The quantity of inputs used in yield declining stage was found comparatively low and hence, the cost of human labour was also found less.

While in Wayanad district, the total annual maintenance cost incurred per acre was ₹82,310 during yield increasing phase, ₹78,950 during yield stabilising phase and ₹32,975 during yield declining phase. It should be noted that in all phases the major share of the annual maintenance cost was contributed by the human labour.

**Table.4.12 Maintenance cost of black pepper (organic cultivation) (Rs/acre)**

I.	Material Cost	Idukki District				Wayanad District			
		Yield increasing phase	Yield stabilising phase	Yield declining phase	Weighted mean	Yield increasing phase	Yield stabilising phase	Yield declining phase	Weighted mean
1.	Farm yard manure	14500	12000	5000	12230.77	13450	12000	4500	11932.76
2.	Organic manure	8500	7500	2500	7423.08	9500	8000	2500	8086.21
3.	Organic plant protection materials	7500	8000	1000	7307.69	5500	5400	1500	5162.07
4.	Miscellaneous	1500	2000	1000	1769.23	1500	2000	1750	1827.59
5.	Harvesting bags	100	150	150	134.62	150	125	125	132.76
	Sub total	32100 (37.38)	29650 (35.22)	9650 (32.03)	28865.38 (35.84)	30100 (36.57)	27525 (34.86)	10375 (31.46)	27141.38 (35.33)
II.	Labour Cost								
1.	Application of farm yard manure	5500	5500	1000	5153.85	6500	5200	1200	5327.59
2.	Application of organic manure	5500	5500	1000	5153.85	5500	5600	1200	5265.52
3.	Application of plant protection materials	3000	2500	550	2503.85	3000	2900	600	2772.41
4.	Tying vines	2750	2750	550	2580.77	3000	3000	500	2827.59
5.	Other farm activities like mulching	5000	5000	1000	4692.31	5000	4500	900	4406.90
6.	Harvesting	29000	30250	15000	28692.31	26000	27000	16500	25965.52
7.	Pepper drying	2750	2750	1100	2623.08	3000	3000	1500	2896.55
8.	Transportation	275	275	275	275	210	225	200	218.62
	Sub total	53775 (62.62)	54525 (64.78)	20475 (67.97)	51675 (64.16)	52210 (63.43)	51425 (65.14)	22600 (68.54)	49680.69 (64.67)
	Total Cost	85875 (100)	84175 (100)	30125 (100)	80540.38 (100)	82310 (100)	78950 (100)	32975 (100)	76822.07 (100)

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data

**Table. 4.13 Maintenance cost of black pepper (inorganic cultivation) (Rs/acre)**

I.	Material Cost	Idukki District				Wayanad District			
		Yield increasing phase	Yield stabilising phase	Yield declining phase	Weighted mean	Yield increasing phase	Yield stabilising phase	Yield declining phase	Weighted mean
1.	Farm yard manure	12000	11500	8000	11161.76	10500	11300	5500	10345.16
2.	Organic manure	1500	2000	1000	1676.47	2850	1750	1500	1743.55
3.	Fertilisers	9000	8500	6000	8308.82	7700	8000	5500	7600
4.	Plant protection chemicals	2000	2500	1500	2176.47	2500	2300	2250	2345.16
5.	Miscellaneous	2000	2500	1470	2172.06	2500	2500	1750	2403.23
6.	Harvesting bags	125	150	125	137.50	135	125	125	127.58
	Sub total	27875 (36.97)	28360 (36.33)	16770 (33.30)	26484.41 (36.26)	26185 (35.89)	25975 (33.78)	16625 (31.52)	24822.74 (34.12)
II.	Labour Cost								
1.	Application of farm yard manure	6000	6200	4500	5879.41	5500	5800	4700	5580.65
2.	Application of fertilisers	6500	6250	3500	5933.82	5500	6500	3500	5854.84
3.	Application of plant protection chemicals	2500	2500	1000	2279.41	2250	3000	1500	2612.90
4.	Tying vines	2500	2500	500	2205.88	3000	3200	2100	3006.45
5.	Other farm activities like mulching	2750	2800	500	2444.12	2750	2800	2500	2748.39
6.	Harvesting	24500	26150	21000	24810.29	24750	26750	19500	25298.39
7.	Pepper drying	2500	3000	2350	2727.94	2750	2650	2100	2604.84
8.	Transportation	275	300	236	281.76	275	225	225	237.90
	Sub total	47525 (63.03)	49700 (63.67)	33586 (66.70)	46562.65 (63.74)	46775 (64.11)	50925 (66.22)	36125 (68.48)	47944.35 (65.88)
	Total cost	75400 (100)	78060 (100)	50356 (100)	73047.06 (100)	72960 (100)	76900 (100)	52750 (100)	72767.10 (100)

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data

#### **4.6.1.4 Maintenance cost incurred during the yielding phase of inorganic black pepper**

The main inputs required for the maintenance of inorganic black pepper was farm yard manure, organic manure, fertilizers, plant protection chemicals, harvesting bags and human labour. The annual maintenance cost of inorganic black pepper per acre was computed as ₹73,047.06 for Idukki district and ₹72,767.10 for Wayanad district (Table 4.13).

In both districts, the higher cost was incurred in yield stabilising phase, ie, ₹78,060 in Idukki district and ₹76,900 in Wayanad district. Among the components of the annual maintenance cost of inorganic black pepper, the maximum share was taken by the cost of human labour (63.74 percent in Idukki district and 65.88 percent in Wayanad district).

#### **4.6.1.5 Cost of cultivation of black pepper**

The cost of cultivation, which means the total expenditure incurred by the farmers for cultivating one acre of black pepper are computed separately for the organic farmers and conventional farmers in Idukki and Wayanad districts.

The computation of establishment cost of the cultivation per acre and the annual average maintenance per acre revealed that the establishment cost was found higher than the annual maintenance cost. For calculating the actual cost of cultivation of black pepper per acre for the farmer, the total establishment cost per acre for organic and inorganic cultivation are amortised separately to per acre per year. It was then added to total annual maintenance cost and the interest on working capital at seven percent, so that the total cost of cultivation incurred by the farmers can be obtained.

The cost of cultivation of organic black pepper in Idukki and Wayanad districts are presented in Table 4.14 and the cost of cultivation of inorganic black pepper in Idukki and Wayanad districts are presented in Table 4.15.

**Table 4.14 Cost of cultivation of organic black pepper in Idukki and Wayanad districts**

Sl No	Particulars	Idukki district	Wayanad district
		Cost (Rs./acre)	Cost (Rs./acre)
1	Establishment cost	1,04,525	1,07,175
2	Amortised value	11,916.90	12,219.02
3	Annual maintenance cost	80,540.38	76,822.07
4	Interest on working capital @7%	5,637.83	5,377.54
5	Total cost	98,095.11	94,418.63

In case of the cost of cultivation of organic black pepper (per acre) in the study area, the black pepper farmers in Idukki district incurred a higher cost (₹98,095.11) than the black pepper farmers in Wayanad district (₹94,418.63). It should be noted that the annual maintenance cost per acre was computed higher in Idukki district (₹80,540.38) while in Wayanad district it was only ₹76,822.90.

**Table 4.15 Cost of cultivation of inorganic black pepper in Idukki and Wayanad districts**

Sl No	Particulars	Idukki district	Wayanad district
		Cost (Rs./acre)	Cost (Rs./acre)
1	Establishment cost	1,00,950	1,02,870
2	Amortised value	11,509.31	11,728.21
3	Annual maintenance cost	73,047.06	72,767.10
4	Interest on working capital @7%	5,113.29	5,093.70
5	Total cost	89,669.66	89,589.01

The cost of cultivation of inorganic black pepper per acre in Idukki and Wayanad districts were found nearly equal, ie. ₹89,669.66 in Idukki district and ₹ 89,589.01 in Wayanad district. It is evident that the cost of cultivation of organic black pepper was higher when compared to the inorganic black pepper in these districts.

#### 4.6.1.6. Cost of production of black pepper

The cost of organic and inorganic production of black pepper per kilogram for the districts of Idukki and Wayanad are calculated by dividing the total cost of cultivation per acre by the average productivity of the black pepper per acre. The cost of production of organic and inorganic black pepper was computed separately for Idukki district (Table.4.16) and Wayanad district (Table. 4.17).

The total cost of production of organic black pepper was arrived at ₹344.50 per kilogram (kg) in Idukki district with a comparatively less cost of ₹337.00 per kg in Wayanad district. However, the total cost of production per kg of inorganic black pepper was worked out as lower than the cost of production of organic black pepper in both districts. The cost of production of inorganic black pepper in Idukki district was ₹311.00 per kg and in Wayanad district it was ₹ 309.00 per kg.

The black pepper farmers revealed the price received by them for one kg of black pepper. Accordingly, the average price received by organic farmers (₹378.50/kg) in Idukki district was comparatively high than the average price received by organic farmers (₹370.70/kg) in Wayanad district. The conventional farmers received an average price of ₹332.80/kg in Idukki district, followed by ₹328.60/kg in Wayanad district. Thus, it is clear that the farmers in Idukki and Wayanad district received profitable returns for their black pepper.

Sneha (2012), Anju (2016) and Sreejith (2016) reported black pepper production was highly remunerative for the farmers due to the high market price of black pepper. Thankamani *et al* (2012) and Yogesh (2017) observed that black pepper cultivation has given good returns for the farmers. Currently, the market price of black pepper for the farmers fluctuates on daily basis and it affects the farmer on a large level and always a concern for the marginal and small farmers as they are compelled to satisfy with an irregular income.

**Table 4.16 Cost of production of organic black pepper in Idukki and Wayanad districts**

Sl No	Particulars	Idukki District				Wayanad District			
		Yield increasing phase	Yield stabilising phase	Yield declining phase	Average	Yield increasing phase	Yield stabilising phase	Yield declining phase	Average
1	Establishment cost(Rs./acre)	-	-	-	1,04,525	-	-	-	1,07,175
2	Amortised value(Rs./acre)	11,916.90	11,916.90	11,916.90	11,916.90	12,219.02	12,219.02	12,219.02	12,219.02
3	Annual maintenance cost (Rs./acre)	85,875.00	84,175.00	30,125.00	80,540.38	82,310.00	78,950.00	32,975.00	76,822.07
4	Interest on annual maintenance cost (Rs./acre)	6,011.25	5,892.25	2,108.75	5,637.83	5761.70	5,526.50	2308.25	5,377.54
5	Total cost (Rs./acre)	1,03,803.15	1,01,984.15	44,150.65	98,095.11	1,00,290.72	96,695.52	47,502.27	94,418.63
6	Average productivity (Kg/acre)	294	312	250	285	291	299	250	280
7	Cost of production (Rs/Kg)	353.07	326.87	176.60	344.50	344.64	323.40	190.01	337.00



**Table 4.17 Cost of production of inorganic black pepper in Idukki and Wayanad districts**

Sl No	Particulars	Idukki district				Wayanad district			
		Yield increasing phase	Yield stabilising phase	Yield declining phase	Average	Yield increasing phase	Yield stabilising phase	Yield declining phase	Average
1	Establishment cost(Rs./acre)	-	-	-	1,00,950	-	-	-	1,02,870
2	Amortised value(Rs./acre)	11,509.31	11,509.31	11,509.31	11,509.31	11,728.21	11,728.21	11,728.21	11,728.21
3	Annual maintenance cost (Rs./acre)	75,400.00	78,060.00	50,356.00	73,047.06	72,960.00	76,900.00	52,750.00	72767.10
4	Interest on annual maintenance cost (Rs./acre)	5,278.00	5,464.20	3,524.92	5,113.29	5,107.20	5,383.00	3,692.50	5,093.70
5	Total cost (Rs./acre)	92,191.35	95,037.55	65,394.27	89,673.70	89,799.52	94,015.32	68,174.82	89,593.12
6	Average productivity (Kg/acre)	285	306	275	288.5	289	315	265	290
7	Cost of production (Rs/Kg)	323.48	310.58	237.80	311.00	310.72	298.46	257.26	309.00

#### **4.6.2 Value addition**

Value addition in agriculture, mostly refers to the manufacturing or processing activities that add value to the primary agricultural commodities which in due course results in an augmented economic value for a commodity. Otherwise, it can be explained as the process that transforms the raw agricultural product into quality added product through packaging, processing, extracting etc. so that the sale proceeds can be geographically expanded to across the borders.

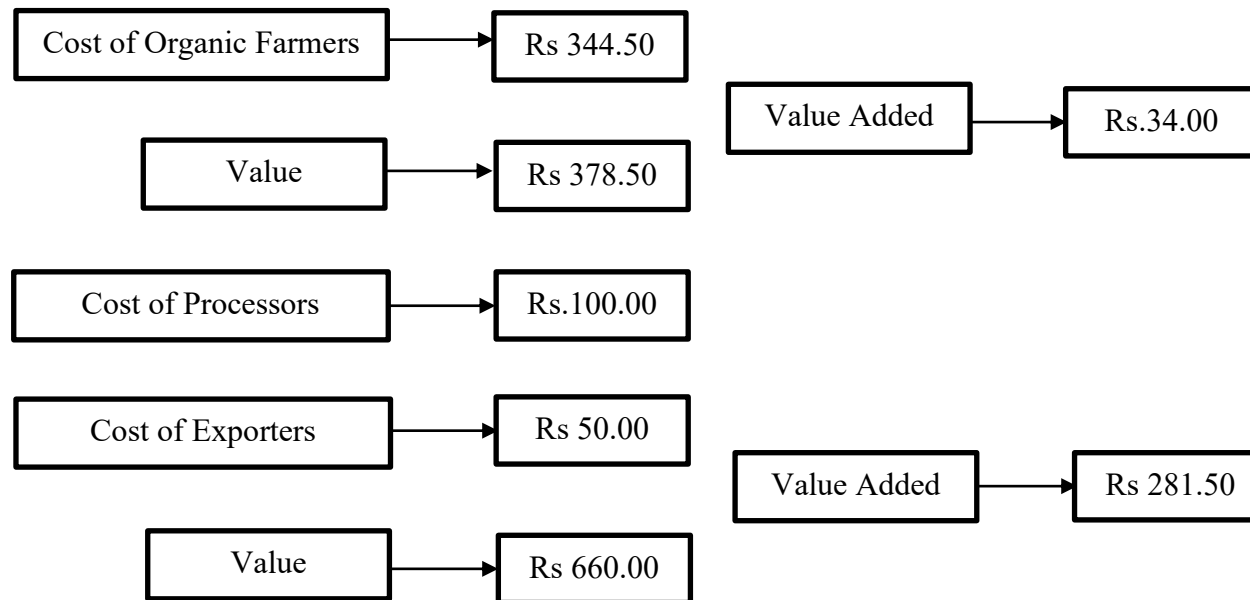
As mentioned before, the major black pepper products selected for the study includes black pepper, white pepper and green pepper, hence, mapping the value of these products at different levels of the value chain has been calculated separately and presented under different heads. Value is the price in rupees at which the product is sold to the next actor, where the value added includes the cost incurred by the actors and the margin obtained by the actor in the value chain.

##### **4.6.2.1 Value addition of black pepper**

At farmer level, the cost incurred by the farmers for producing one kilogram of black pepper are calculated and the margin received by the farmers in selling the black pepper are obtained from the primary data collected from the farmers. The market price offered to farmers per kilogram of black pepper by the procuring agencies like hill produce dealers, marketing cooperatives, farmer producer company and the exporters in Idukki and Wayanad districts were identified. The detailed calculation of cost incurred by each actor and the margin obtained by the actors are presented later in section 4.12 in this chapter.

##### **4.6.2.1.1 Value addition of black pepper (organic) in Idukki district**

The value addition of black pepper to quality value added black pepper in the organic value chain materialised only at the exporters' level. The exporters procures the black pepper from the farmers through the collection centres of NGOs. After that, the procured black pepper was processed and get value added in the factory of the exporter. Thus, quality black pepper was produced and exported. The value addition happened at each nodes in the value chain of organic black pepper in Idukki district was computed and presented in Fig.4.7.

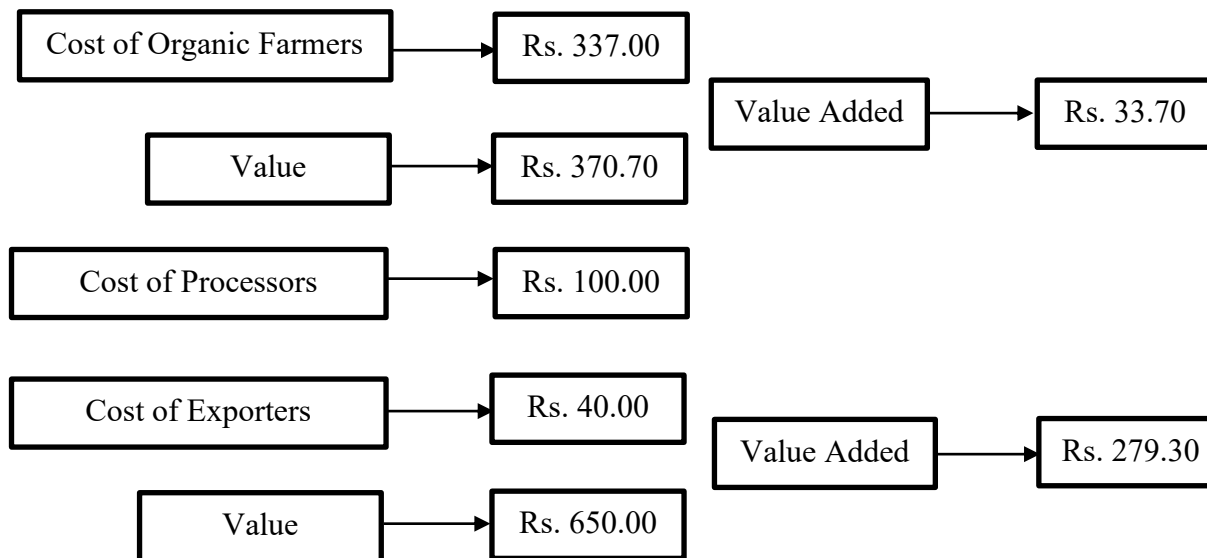


**Fig 4.7 Value addition of black pepper (organic) in Idukki district**

The cost of production, selling price and the value added for the organic black pepper in Idukki district was ₹344.50 per kg, ₹378.50 per kg and ₹34.00 per kg respectively. The processor-cum-exporters in Idukki district processed black pepper by incurring a cost of ₹528.50 per kg (which included a processing cost of ₹100.00 per kg and an exporter level cost of ₹50.00 per kg) and the value added was ₹281.50 per kg of organic black pepper.

#### **4.6.2.1.2 Value addition of black pepper (organic) in Wayanad district**

It is revealed that organic farmers in Wayanad district received a comparatively lesser price for black pepper than the price received by the organic farmers in Idukki district. Hence, the share of margin available for the organic farmers in Wayanad district was ₹33.70 per kg of black pepper. Processor-cum-exporter in Wayanad district has added a value of ₹279.30 per kilogram of organic black pepper by incurring a processing cost of ₹100.00 per kg and an exporter level cost of ₹40.00 per kg (Fig.4.8). Relatively less value was added for one kilogram of organic black pepper by the exporters in Wayanad district than the exporter in Idukki district.



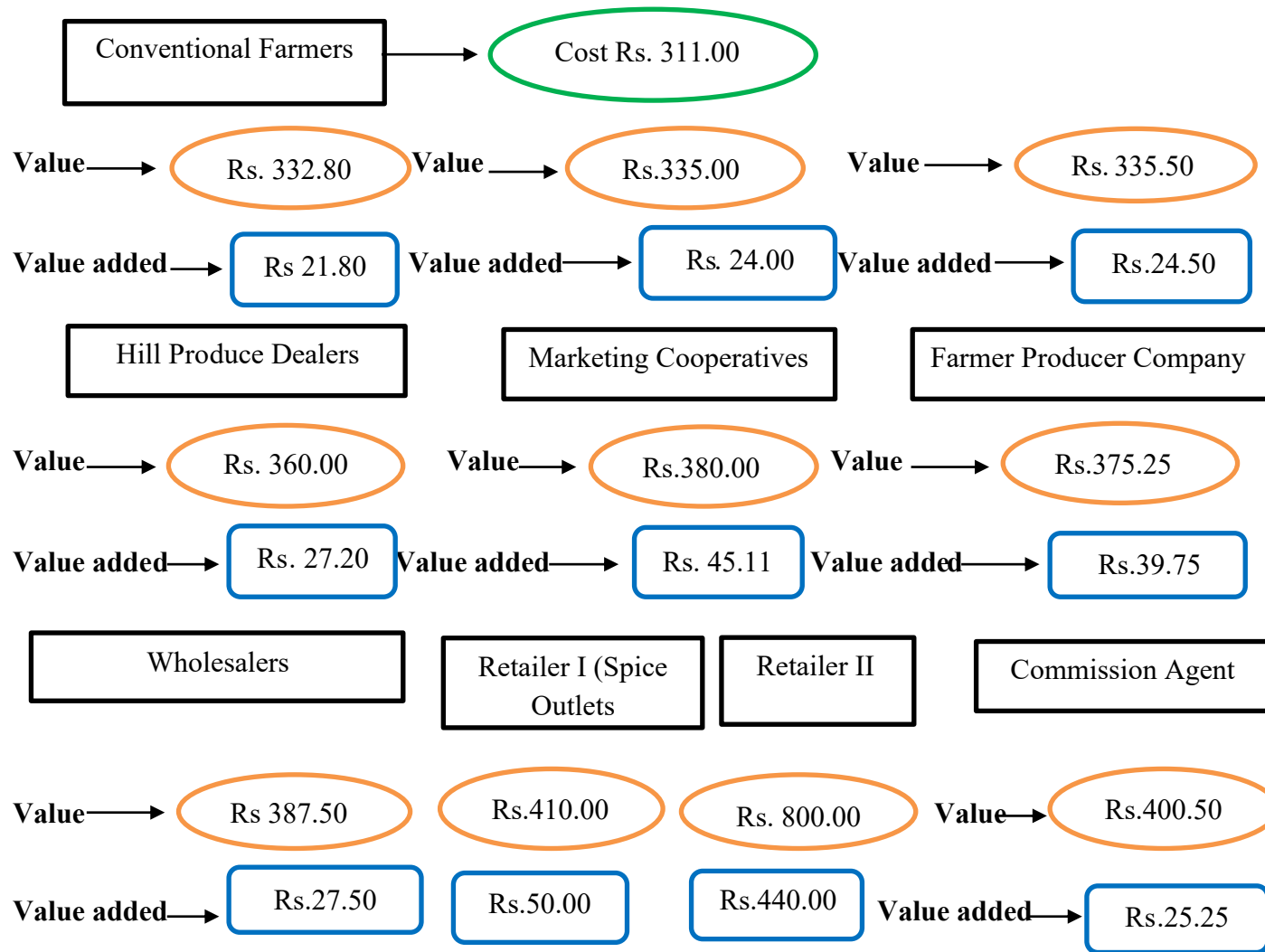
**Fig 4.8 Value addition of black pepper (organic) in Wayanad district**

#### 4.6.2.1.3 Value addition of black pepper (inorganic) in Idukki district

In Idukki district, the value added to black pepper at different levels, as the farmer sold the black pepper to three different procuring agencies such as hill produce dealers, marketing cooperatives and farmer producer company (FPC).

Fig. 4.9 depicts the cost incurred by the black pepper farmer and the value received by him for one kilogram of black pepper (inorganic) and the value added to black pepper by each actor in the value chain. At farmer level, the highest value for one kilogram of black pepper was offered to farmers by the farmer producer company (FPC) at a rate of ₹335.50 per kg of black pepper, followed by the marketing cooperative i.e. ₹335.00 per kilogram of black pepper and the lowest value (₹332.80/kg) was offered by hill produce dealers in Idukki district. Hence, the farmers who were the shareholders of FPC has received the highest value compared with the other conventional farmers in Idukki district. The FPC supplied the black pepper to commission agent by adding a value of ₹39.75/kg and he sold the commodity to the buyers in Kochi with an added value of ₹25.25/kg. Most of the farmers chose to sell the black pepper to hill produce dealers in their locality due to proximity to the trader. Furthermore, farmers sold other farm produces also to the same hill produce dealers in the locality.

Marketing cooperative in Idukki district sold the black pepper to different wholesalers (those who offered the highest value for black pepper for their produce) and added an average value of ₹45.00 per kilogram of inorganic black pepper and thus, the value became ₹380.00/kg. Likewise, the hill produce dealers also sold black pepper to wholesalers by adding a value of ₹27.20/kg.



**Fig 4.9 Value addition of black pepper (inorganic) in Idukki district**

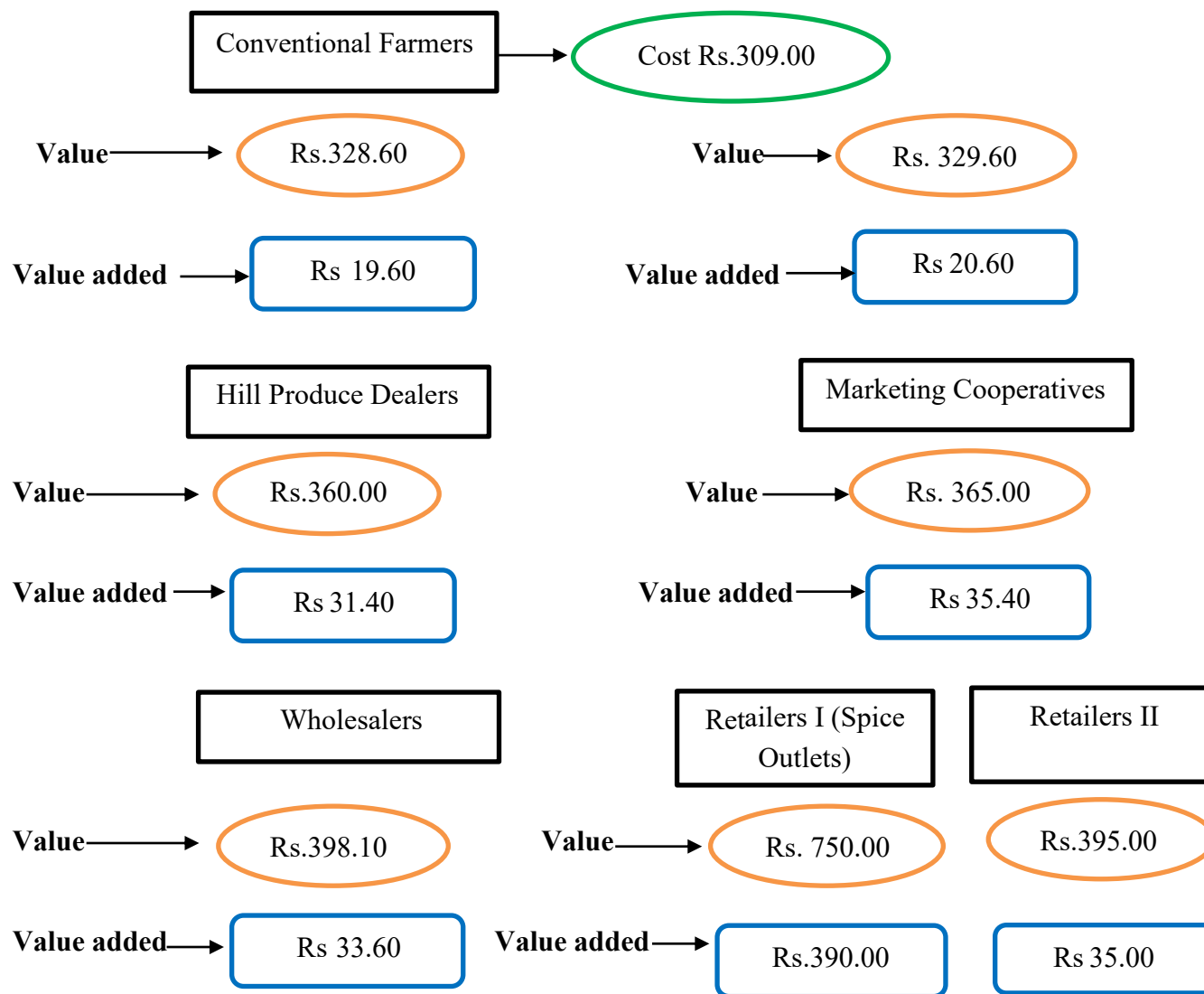
The retailers in Idukki districts are of two types, the exclusive spice outlets and the village retailers. However, the black pepper quantity required for their sales were very less. Retailers procured the black pepper from the hill produce dealers in Idukki district at a price of ₹360.00 per kilogram. Among the retailers, the exclusive spice outlets increased the value (₹800 per kilogram) of the black pepper by incurring a high cost (₹81.00 per kilogram) for cleaning and packaging. But, the village retailer incurred a very less cost (₹3.50 per kilogram) and sold the black pepper at a comparatively less value. The exclusive spice outlets sold the cleaned black pepper in quality packing to the tourists at a high rate during the tourist season in Idukki.

The wholesalers procured black pepper from hill produce dealers in the Idukki district and they sold the black pepper at a rate of ₹387.50 per kilogram by adding a value of ₹27.50 per kilogram. The value of the black pepper sold by commission agent was ₹400.50 per kilogram where the value added by him was ₹25.25 per kg.

#### **4.6.2.1.4 Value addition of black pepper (inorganic) in Wayanad district**

The actors involved in the value addition of black pepper (inorganic) in Wayanad district were almost similar to that of Idukki district, except the absence of a farmer producer company and a commission agent. The value obtained and added for one kilogram of black pepper at different nodes of the value chain in Wayanad district is illustrated in Fig. 4.10.





**Fig 4.10 Value addition of black pepper (inorganic) in Wayanad district**

The value obtained by the conventional farmers for one kilogram of inorganic black pepper in Wayanad district was different based on the agency where they sell the black pepper. The farmers who sold black pepper to marketing cooperative got a value of ₹329.60 per kilogram and the farmers who sold black pepper to hill produce dealers received a value at a rate of ₹328.60 per kilogram. It was obvious that the marketing cooperative valued the black pepper of the farmers by one rupees more per kilogram than the hill produce dealers. When the black pepper transferred from marketing cooperative to wholesalers, the marketing cooperative added a value of ₹35.40 per kg of black pepper and the value added by hill produce dealers were relatively less than the marketing cooperative (₹31.40 per kg).

Wholesalers collected the black pepper from both hill produce dealers and marketing cooperative and sold the commodity to the buyers in Kochi market at a value of ₹398.50 per kg of black pepper by adding a value of ₹33.50 per kg.

Similar to Idukki district, the hill produce dealers supplied a meagre amount of black pepper to retailers (including exclusive spice outlets and village retailers) in Wayanad district. The exclusive spice outlets distributed the product in attractive packs to the tourists in Wayanad district by adding a comparatively high value to the product ie. ₹390 per kilogram of black pepper. They did cleaning and grading of black pepper and packed it in attractive packets with their brand name and sold the product to tourists at a rate of ₹750 per kilogram.

#### **4.6.2.2 Value addition of white pepper**

As explained in the section earlier (under core processes in the value chain), the value addition in black pepper to white pepper happened only at the exporters' level. The exporters procure the black pepper through the collection centres of NGOs. The exporters included in the study collected the black pepper from the organic farmers only in both the districts. White pepper is the seed of the black pepper plant after removing the coloured skin of the pepper fruit. A process known as retting, removes the flesh over the pepper seed, when get softs and decompose after soaked in water for about a week. After rubbing the skin, it

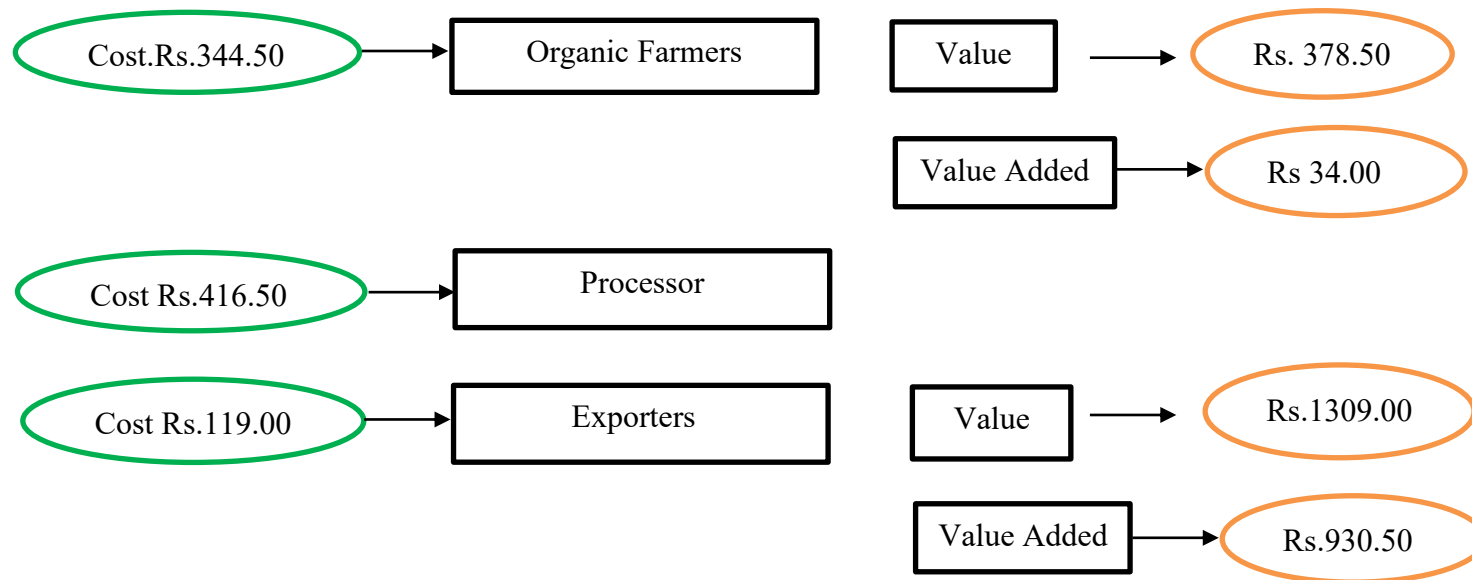
completely removes the flesh over the seed and the naked seed get dried. Thus, white pepper was produced in the factory and is exported according to the demand from different countries.

#### **4.6.2.2.1 Value addition of white pepper in Idukki district**

The exporter in Idukki district undertakes different activities to produce the white pepper in the factory by incurring separate cost on processing and exporting and during these process the value get added to the product, when it get converted to white pepper. The Fig. 4.11 shows the value of one kilogram of white pepper and its added value at the different levels in the value chain.

It is obvious that the cost of organic production of black pepper in Idukki district was ₹344.50 per kilogram and the selling price of the farmers were ₹378.50 per kilogram of black pepper, by adding a value of ₹34.00 per kilogram at the farmer level.

The processor cum exporter in Idukki district fixed the value for one kilogram of white pepper as ₹1309 per kg by adding a value of ₹930.50 per kg, whereas the advantage of value addition was enjoyed by the exporters only (by incurring a high cost on the processing of white pepper).

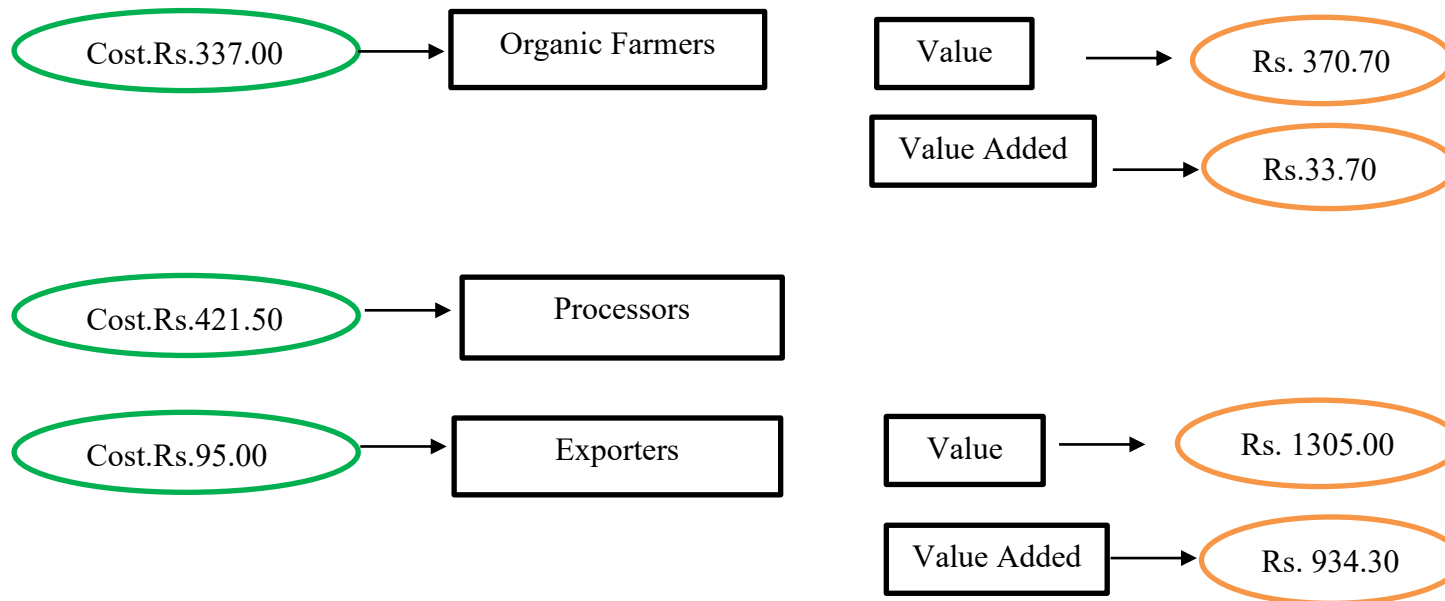


**Fig. 4.11 Value addition of white pepper in Idukki district**

#### **4.6.2.2.2 Value addition of white pepper in Wayanad district**

Similar to the exporter in Idukki district, the exporters in Wayanad district also undertakes processing and exporting activities of the white pepper and eventually adds value to the product, white pepper. Fig 4.12 depicts the value and the value added by the different actors included in the processing and exporting of white pepper in Wayanad district.

Comparing with Idukki district a high value (₹934.30/kg) was added to the white pepper by the exporters in Wayanad, whereas the selling price of the organic farmers in Wayanad district was only ₹370.70 per kilogram of black pepper. The exporters incurred a reasonable cost in processing and exporting of white pepper and as a result, they gained the maximum benefit out of the value addition.



**Fig. 4.12 Value addition of white pepper in Wayanad district**

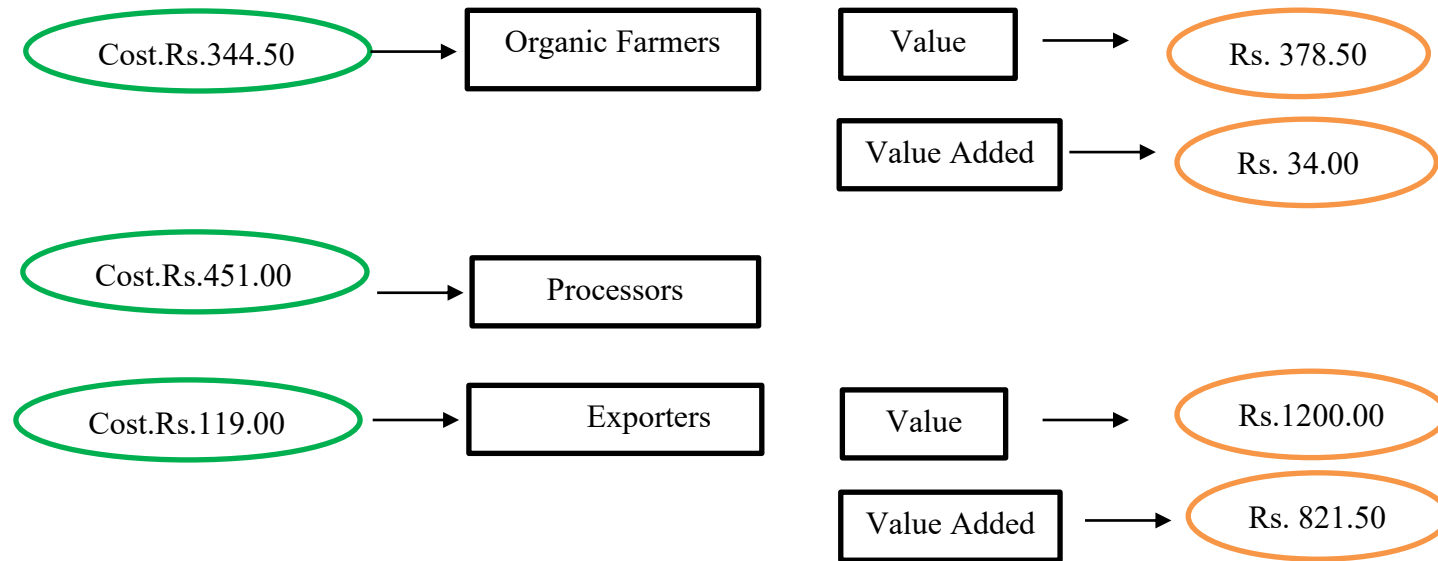
### **4.6.2.3 Value addition of green pepper**

Green Pepper, a value added product of black pepper, made from the unripe drupes, dried green peppercorns, which are treated in a way to retain the green colour, such as treatment with sulphur dioxide, canning or freeze-drying. The processing of black pepper to green pepper was done by the exporters only. The exporters procure the fresh green pepper through the collection centres of NGOs. The exporters collected the fresh green pepper from the organic black pepper farmers in Idukki and Wayanad districts.

#### **4.6.2.3.1 Value addition of green pepper in Idukki district**

The exporter in Idukki district process the green pepper in their factory by incurring a separate cost on processing and exporting and in the process the value gets added to the product, when it get converted to green pepper. The Fig. 4.13 illustrates the value and value added in the value chain of green pepper in Idukki district.

As revealed by the exporter, the processing cost and storage cost of green pepper is much higher than the white pepper, due to these reasons the exporter processes the green pepper in large quantity for a bulk order only. The value fixed by the exporter for one kilogram of green pepper was ₹1200.00 by adding a value of ₹821.50 per kg.



**Fig. 4.13 Value addition of green pepper in Idukki district**

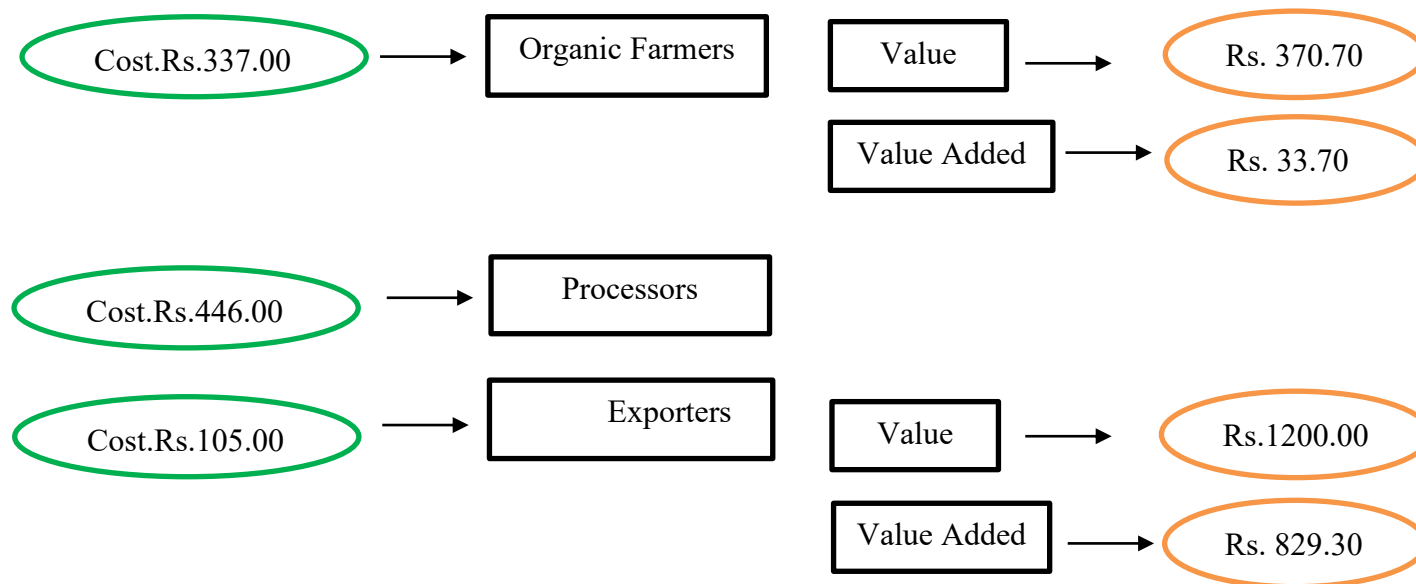


#### **4.6.2.3.2 Value addition of green pepper in Wayanad district**

The exporters in Wayanad district collected the fresh green pepper from the organic farmers in the district through the collection centres of NGOs. The procured product was then processed to green pepper in the factory of exporters, then packed and get ready for export.

The Fig. 4.14 reveals the cost incurred by the actors such as farmers (₹337.00) and exporters for processing and exporting (₹446.00 and ₹105.00) for the production of one kilogram of green pepper. The value of one kilogram of green pepper was ₹1200.00 where the actors added a value of ₹829.30 per kg of green pepper.

Among the products of black pepper, the white pepper and green pepper has the shortest chain, i.e. the value chain of white pepper and green pepper consist of the organic black pepper farmers and the processor cum exporter only. Hence, the processor-cum-exporter gets the maximum profit from the value addition.



**Fig. 4.14 Value addition of green pepper in Wayanad district**

#### **4.7 Mapping of the geographical flow of products**

Mapping of the geographical flow of products starts with the place of origin of the product, that is, the place where it is cultivated and also to show the places through which the product travels from the farmer to the traders, farmers to exporters, traders to retailers and so on. Geographical flow of black pepper, white pepper and green pepper has to be mapped separately as they flow separately. In this study, dried black pepper is the consistent product of pepper that passes through all actors in the value chain and white pepper and green pepper has included only in the organic value chain of black pepper.

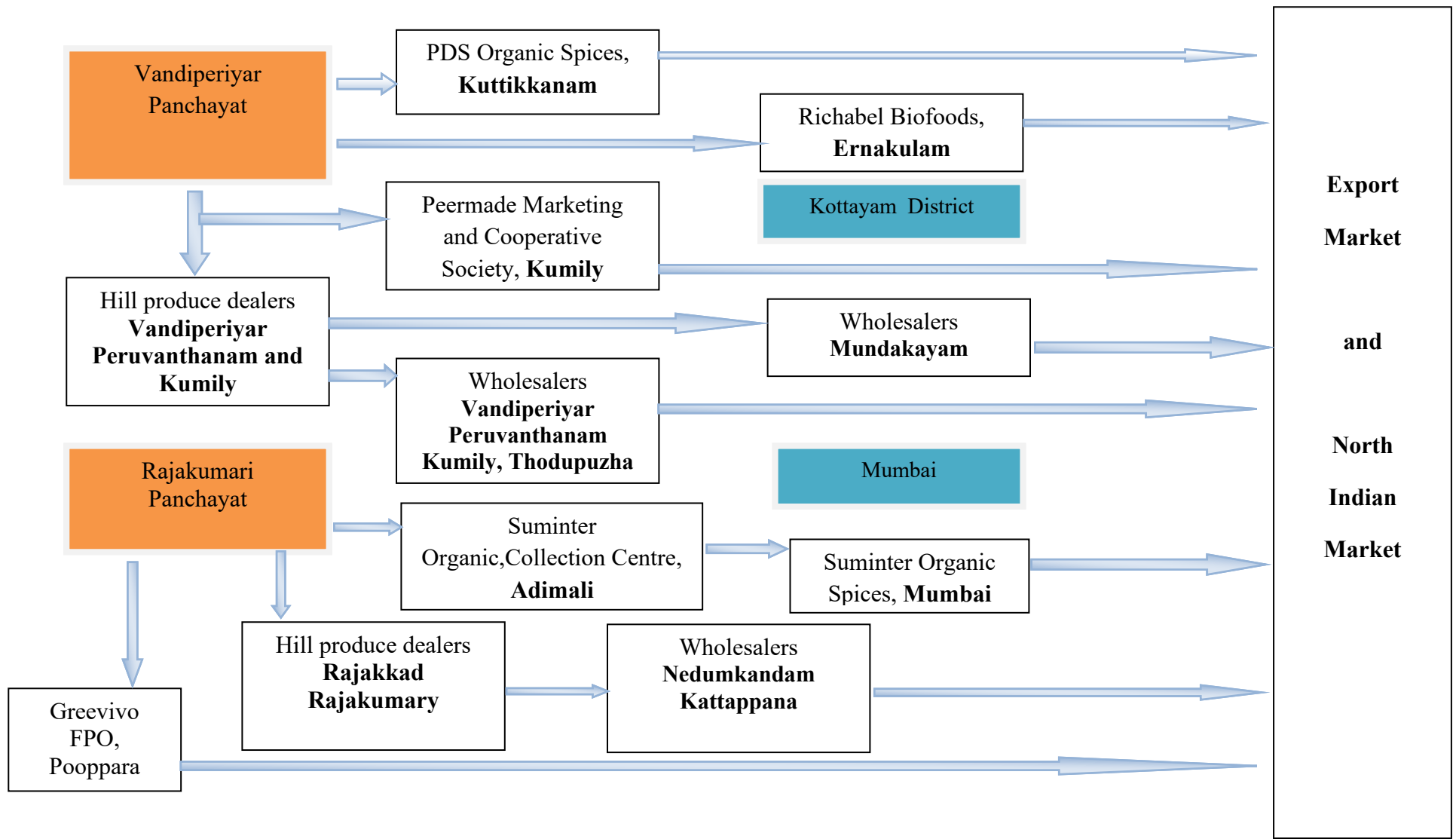
Black pepper, has identified in the study area both as an organic product and an inorganic product in Idukki and Wayanad district, thus the geographical flow of black pepper has reflected the inclusion of both type of product. Black pepper moved from Vandiperiyar and Rajakumary panchayats of Idukki District to north Indian market and export market through different actors, similarly, black pepper moved from Vellamunda panchayath and Mullenkolly panchayat of Wayanad district to north Indian market and export market through different actors.

##### **4.7.1 Mapping of the geographical flow of black pepper in Idukki district**

In Idukki district, black pepper moved from Vandiperiyar panchayat to Kochi through various actors in different districts before it reach the final market at Kochi. PDS Organic Spices, in Idukki, processed the value added products at their factory in Kuttikkanam and export it to international market. Another exporter, Richabel Biofoods Pvt.Ltd, Ernakulam bought the black pepper from tribal farmers under Eco Development Committee and carried the black pepper to Ernakulam, processed and exported the products to foreign countries. Black pepper procured by Peermade Marketing and Cooperative Society, Kumily, transported it to wholesalers in Kochi and finally, it showed up in the north Indian market and international market. While, hill produce dealers in Vandiperiyar, Peruvanthanam and Kumily send the black pepper through the wholesalers in

Vandiperiyar, Peruvanthanam, Kumily and Thodupuzha in Idukki district and the wholesalers in Mundakayam, Kottayam district to its final destination in Kochi.

In Rajakumary panchayat, the commodity (black pepper) from the farm level moved to different locations where the collector was located, including Suminter India Organic Pvt Ltd, collection centre in Adimali, Greenvivo Farmer Producer Company, Pooppara, hill produce dealers in Rajakkad and Rajakumary. Suminter India Organic Pvt. Ltd. sent the black pepper to Mumbai by truck from their collection centre in Adimali and the processed value added products get exported to different countries. The hill produce dealers in Rajakkad and Rajakumary transported the black pepper to wholesalers in Nedumkandam and Kattappana and at the end, it reached to the Kochi market. Green vivo Farmer Producer Company in Pooppara handed over the black pepper to commission agent and they transported the black pepper to the required location in Kochi (Fig 4.15).



**Fig. 4.15 Map of geographical flow of black pepper (Idukki District)**

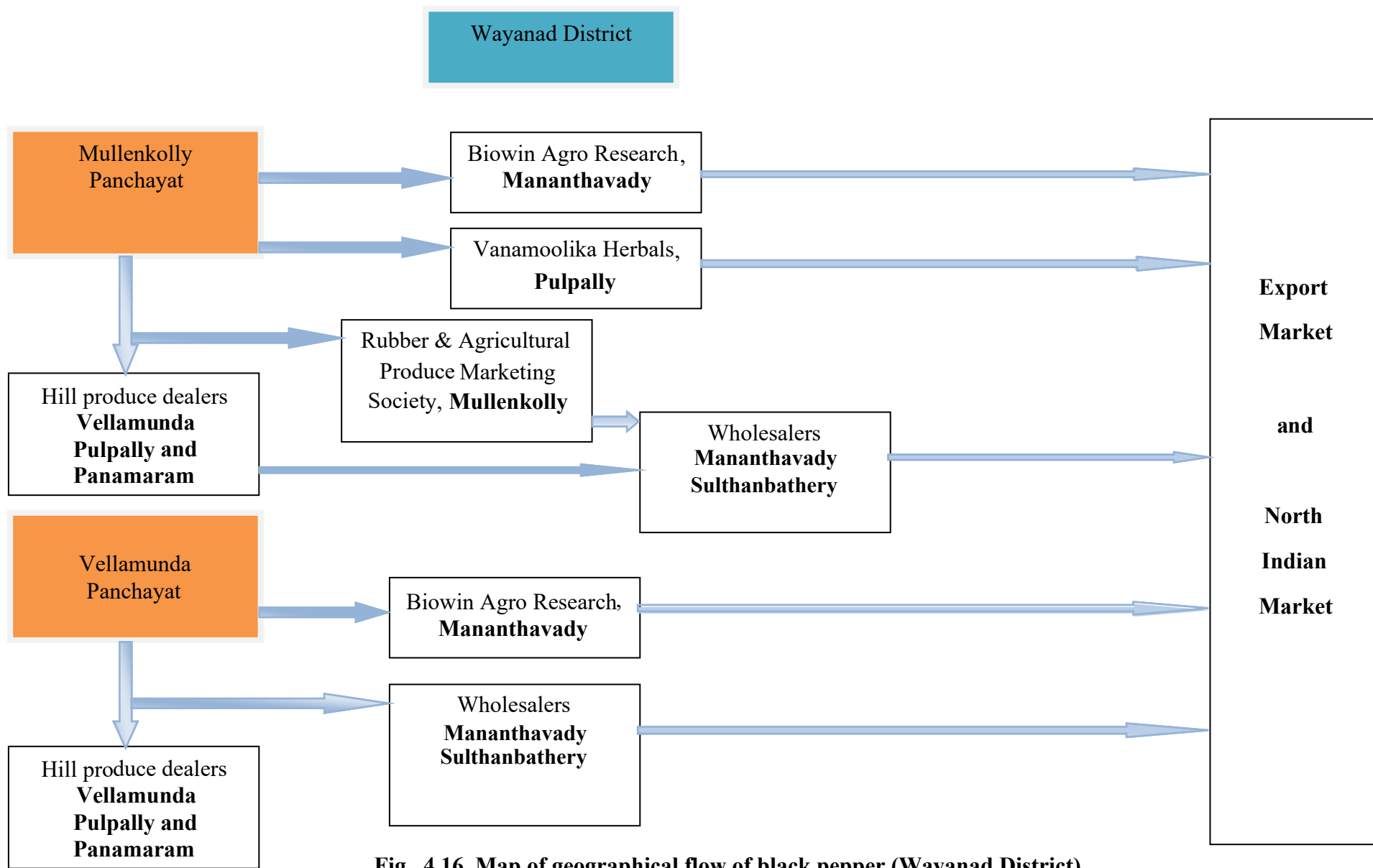


Fig. 4.16 Map of geographical flow of black pepper (Wayanad District)

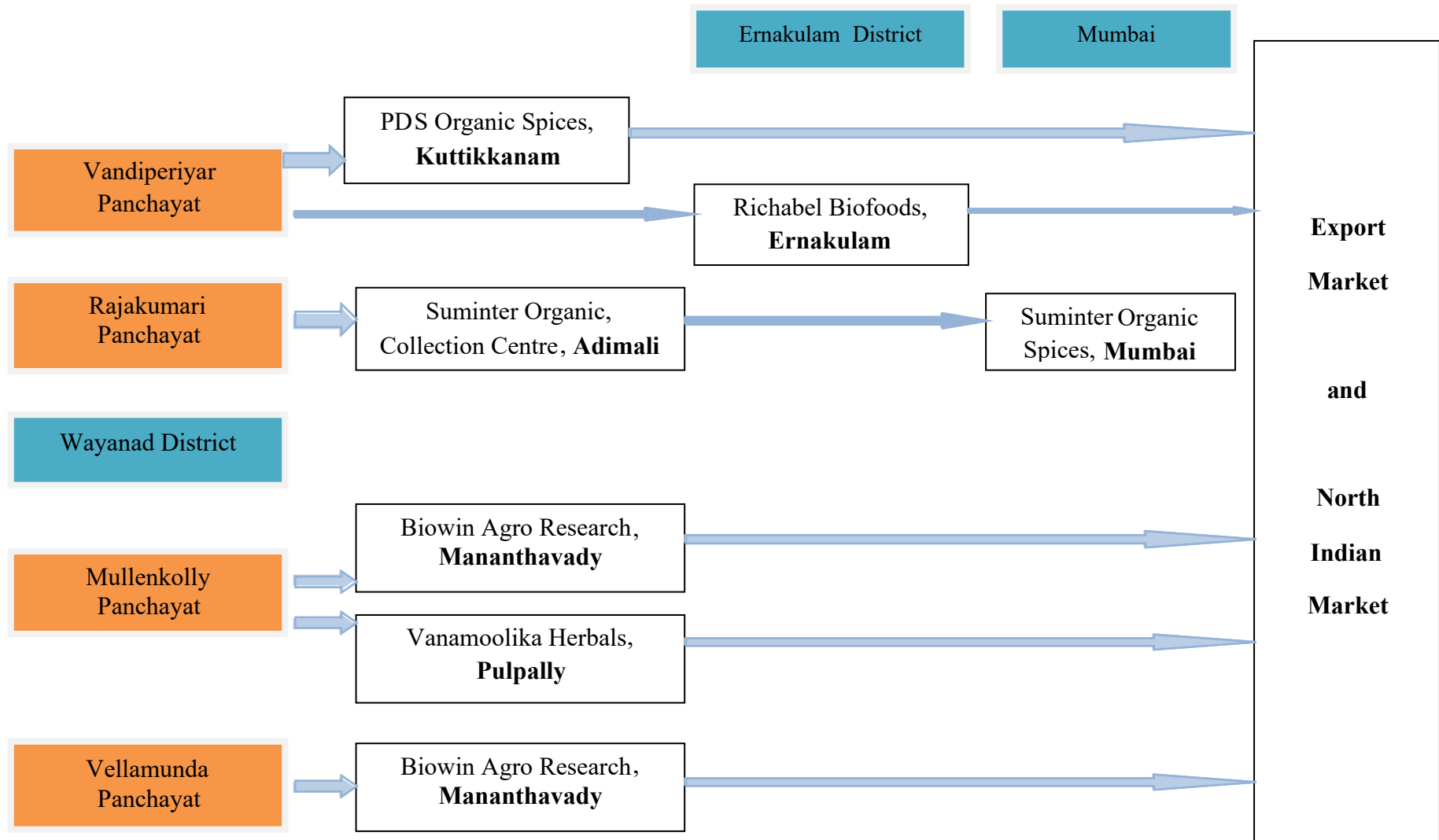
#### **4.7.2 Mapping of the geographical flow of black pepper in Wayanad district**

In case of Wayanad district, both the panchayats, Vellamunda and Mullenkolly had a similar geographical flow in case of black pepper. The black pepper produced in Vellamunda Panchayat and Mullenkolly Panchayat moved to Mananthavady (Biowin Agro Research) and Pulpally (Vanamoolika Herbals), where the value addition happened through processing and then it is sent to domestic and international markets. Rubber and Agriculture Produce Marketing Society in Mullenkolly and hill produce dealers in Vellamunda, Pulpally and Panamaram also transported the black pepper to wholesalers in Mananthavady and Sulthanbathery and from the wholesalers the commodity reached the final destination at Kochi market, as depicted in Fig. 4.16.

#### **4.7.3 Mapping of the geographical flow of white pepper and green pepper**

It is true that the map of geographical flow of white pepper and green pepper were the organic white pepper and organic green pepper only, and these value added products of black pepper were produced by the exporters (under NGOs) and other registered companies in the value chain.

In Idukki district, PDS Organic Spices Ltd, Richabel Biofoods Pvt.Ltd and Suminter India Organic Pvt. Ltd. were collecting the organic black pepper from the certified organic farmers. PDS Organic Spices Ltd. processed the white pepper and green pepper in their factory in Kuttikkanam, Idukki and exported the products to international market while, Richabel Biofoods Pvt.Ltd has done the value addition of black pepper to white pepper and green pepper in different locations in the country and distributed their products globally. In case of Suminter India Organic Pvt Ltd., the black pepper from the organic farms were moved to Mumbai for the value addition of black pepper into white pepper and green pepper, through their collection centre in Adimali, Idukki. Organic farmers in Wayanad district transferred their black pepper to Biowin Agro Research Ltd. in Mananthavady and to Vanamoolika Herbals Ltd. in Pulpally. After the processing of these products, they exported the white pepper and green pepper to various countries. The geographical flow of white pepper and green pepper has illustrated in Fig. 4.17.

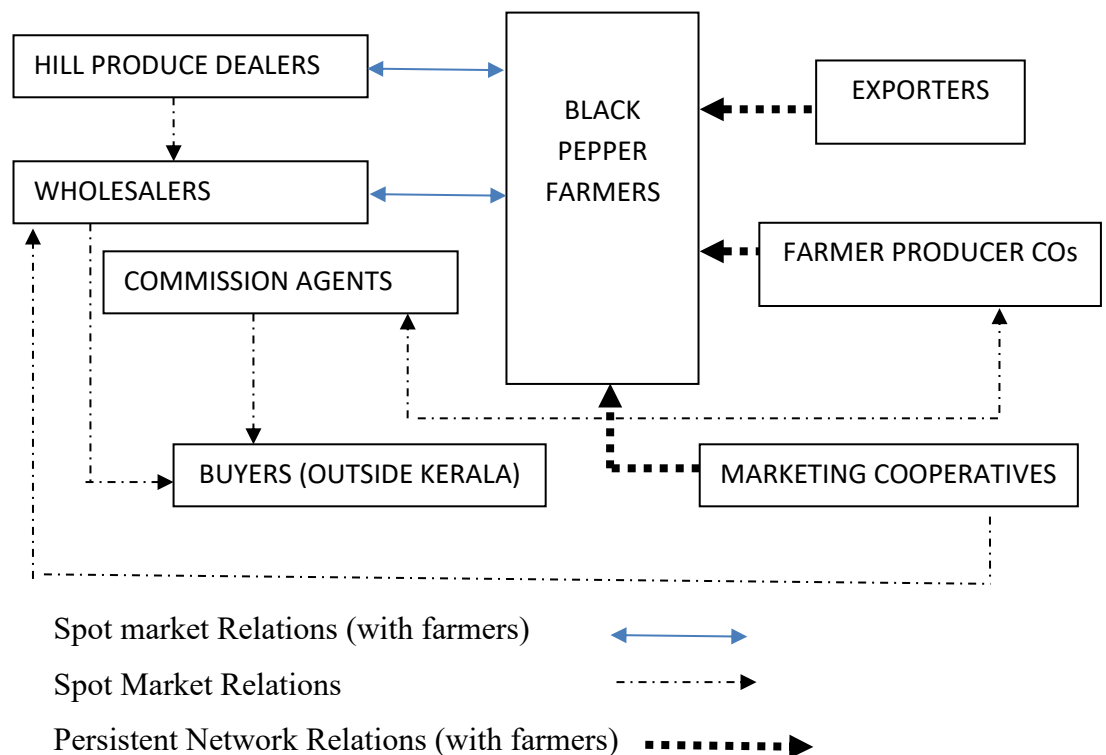


**Fig 4.17 Geographical flow of white pepper and green pepper**



#### 4.8 Mapping relationships and linkages between value chain actors

Mapping relationships and linkages between value chain actors enables to analyse what kind of relationship actors in a value chain have in between. Relationship and linkages can exist between different nodes in the chain, like between farmers to hill produce dealers, farmers to wholesalers, farmers to exporters, farmers to farmer producer company, farmers to marketing cooperatives and between other different actors existed in the chain.



**Fig 4.18 Relationships and linkages in black pepper value chain**

Value chains links together as a result of relationships or linkages between value chain actors and these relationships or linkages can be mapped on the basis of three categories according to DFID (2008). These categories of relationships are:

- 1) Spot market relations, represents those relations shaped quickly on the spot. The buyers and sellers meet, aim to make a transaction, buyers

execute bargaining power to arrive at an impressive price, volume and other requirements, and these relations are otherwise known as arm's length relationships.

- 2) Persistent network relations, actors in the value chain prefer to transact with other actors repeatedly, appear with a level of trust and a limited level of interdependence within the relationship. This type of relationships appears with the support of contracts and such contracts are not compulsory.

DFID (2008) has classified the relationships into three, an attempt has done here to map the relationships and linkages between value chain actors in black pepper value chain (Fig. 4.18). It is evident that the relationship of farmers with hill produce dealers and wholesalers were spot market relations and that is, the buyers and sellers encounter each other and execute a transaction with an agreed price, volume and other requirements.

No contract relationship or persistent relationship were found between hill produce dealers and wholesalers with farmers in the study. While the farmers had persistent network relationship with marketing cooperatives, farmer producer company and the exporters because the farmers entered into a relationship with these organizations in a way by obtaining a membership in cooperatives or as a shareholder in farmer producer company or a certified organic farmer under the NGOs and a supplier for the registered companies.

The business relationship between other actors in the chain were spot market relations, that is, there exist no relationship between marketing cooperatives and wholesalers, farmer producer company and commission agents with the buyer in Kochi and their suppliers etc. were purely on spot based and an arm's length relationship. The third type of relation that is, horizontal integration was not found between any of the value chain actors.

#### 4.9 Mapping services that feed into the value chain

Mapping of the services that feed into the value chain may give an overview of the vital information that could be helpful for the actors in the value chain. These necessary services were disseminated through various supporting actors or enablers in the value chain and the essential services offered by them includes supply of agriculture inputs, training and extension, information or knowledge, financial help etc. The different type of services that feed into the value chain are presented in Table. 4.18 and Fig 4.19.

In Kerala, the support services were given to black pepper farmers through Krishi bhavan in each Panchayat (under State Department of Agriculture), Krishi Vigyan Kendras (KVKs), Spices Board, Kerala Agricultural University and its Research Stations, Non-Governmental Organisations (NGOs), Public Sector Banks, Cooperative Banks, NABARD, Local administration bodies, State Department of Cooperation, Regulatory bodies like GST Tax Council etc.

**Table 4.18 Major services that feed into the value chain**

Sl No	Support Service Providers	Type of Services	Services Provided
1	Krishi Bhavan (State Department of Agriculture)	1) Training to Farmers 2) Extension Services	Services including training and extension to farmers through Krishi Bhavans in each Panchayat
2	Krishi Vigyan Kendras(KVKs)	1) Agricultural research 2) Advisory Services 3) Technology Transfer	On-farm testing Frontline demonstrations Capacity building
3	Spices Board	1) Develop, promote and regulate export of spices	Grant certificate for export of spices Quality techniques for grading and packaging

Sl No	Support Service Providers	Type of Services	Services Provided
		2) Introduce suitable quality standards for spices	
4	Kerala Agricultural University and Research Stations,	1) Agriculture Research 2) Training to Farmers 3) Extension Services	Crop production, sustainable development of agriculture and to solve location specific problems in major crops in Kerala
5	Cooperative Banks & Public sector Banks	1) Provides agriculture credit to farmers 2) Marketing of agriculture produces	Disburse short term and long term loans to farmers and procurement of farmer produce.
6	Non-Governmental Organisations (NGOs)	1) Training to Farmers 2) Extension Services 3) Marketing of agriculture produces	Help and support services to farmers through NGOs staffs for the betterment of the livelihood of the rural community.
7	National Bank for Agriculture and Rural Development	Incorporation of farmer producer companies	Support to farmer producer companies
8	Local Administration Bodies	Records and disburse information about different actors	Gives licenses and permission to carry out business activities
	State Department of Cooperation	Performs actions under Kerala Cooperative Societies Act, 1969	Help and support the operation of different cooperatives registered
9	Regulatory Bodies - GST Tax Council	Tax rates, rules and regulations	Helps to submit tax returns and payment of GST

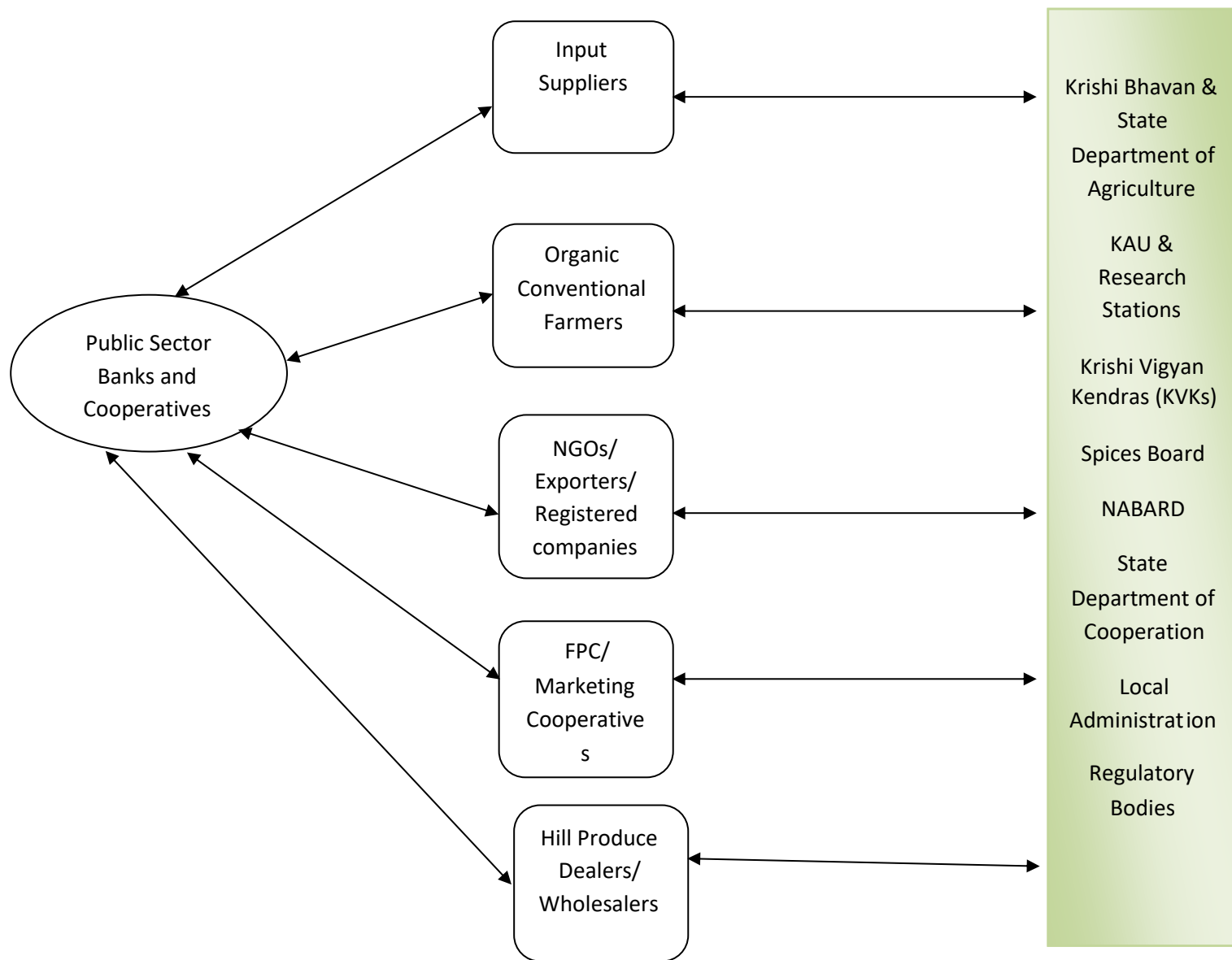
Krishi bhavan offered advisory services and training to farmers for crop production and protection. The services of Krishi bhavan includes guidance on cultivation practices, integrated pest and disease management, grafting, bush

pepper cultivation etc, Krishi Vigyan Kendra (KVK) conducts agricultural research, helps in technology transfer, and advice the farmers on crop production and pest and disease control. The important service of KVK includes soil testing, capacity building, frontline demonstrations and trainings to farmers on farm practices. Spices board develop, promote and regulate export of spices, fix quality standards for spices including black pepper. Spices board issues certificate for export of spices and tests the quality of spices in its own laboratory and helps in grading and packaging of spices.

Kerala Agricultural University and the Research Stations extend training and extension services to farmers about crop production and protection through the published package and practices for the cultivation of all crops in Kerala, conducts research to increase the productivity of crops and to identify solution for the farmers problems associated with the farm practices, processing and marketing.

NGOs organise the farmers, provide training to farmers for organic farming, marketing of agriculture produce etc. to increase the livelihood of the rural people in Idukki and Wayanad districts. NABARD helps and support the incorporation and the running of farmer producer companies (FPCs) in the state. Public sector banks and cooperative banks disbursed agricultural credit to farmers and some cooperative bank distributes agricultural inputs and undertakes marketing of selected agricultural commodities.

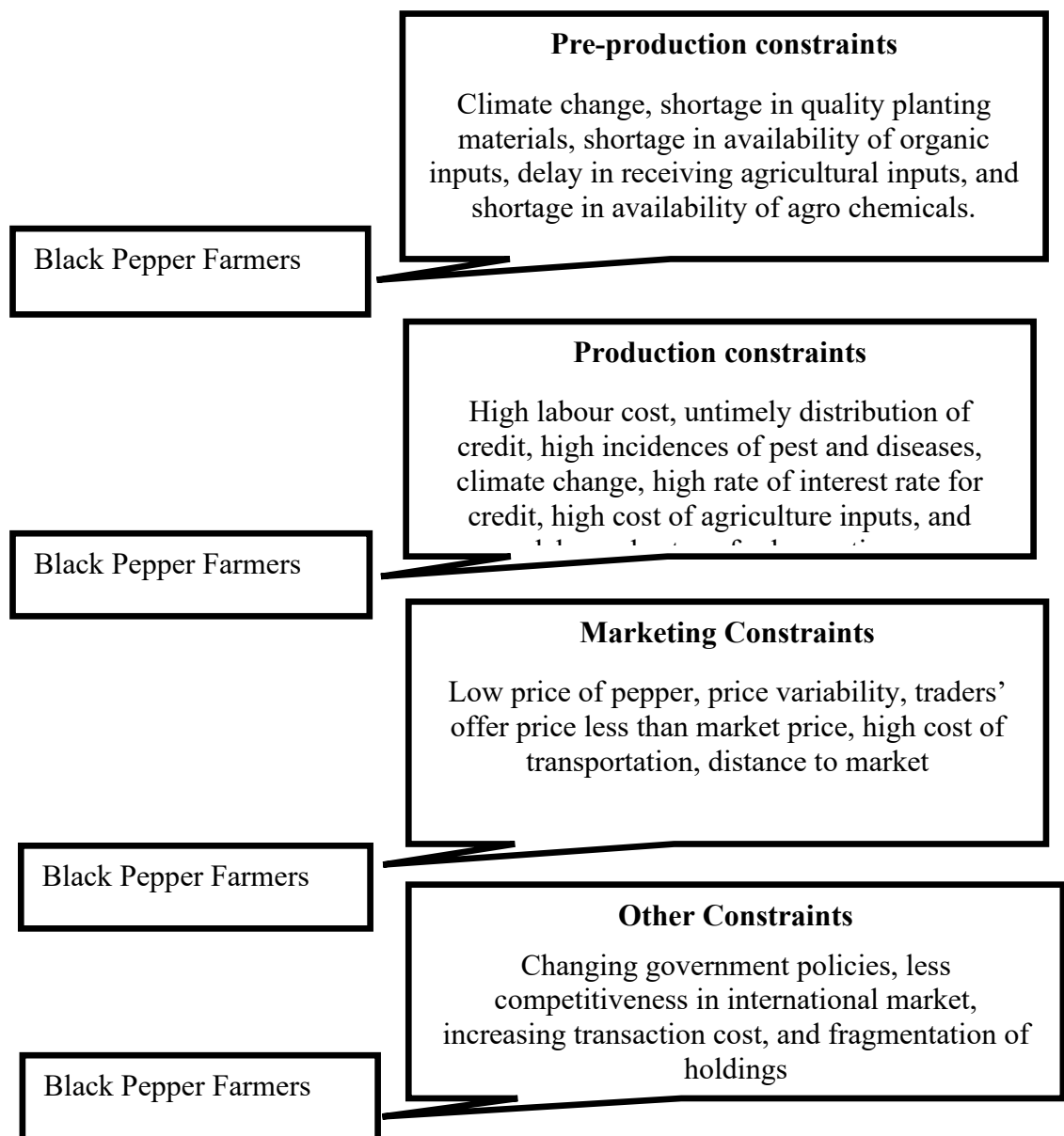
Local administration bodies includes the different bodies entrusted and engaged in the recording and disbursing of information about different actors in the black pepper value chain at panchayath level, taluk level and district level. State Department of Cooperation and it administrative machineries at state level and taluk level helps and support the smooth functioning of marketing cooperatives and cooperative banks in the value chain. Goods and Services Taxes (GST) Council is a regulatory body constituted to collect GST from the different actors in the value chain and they are authorised to collect the taxes as per the rules and regulations.



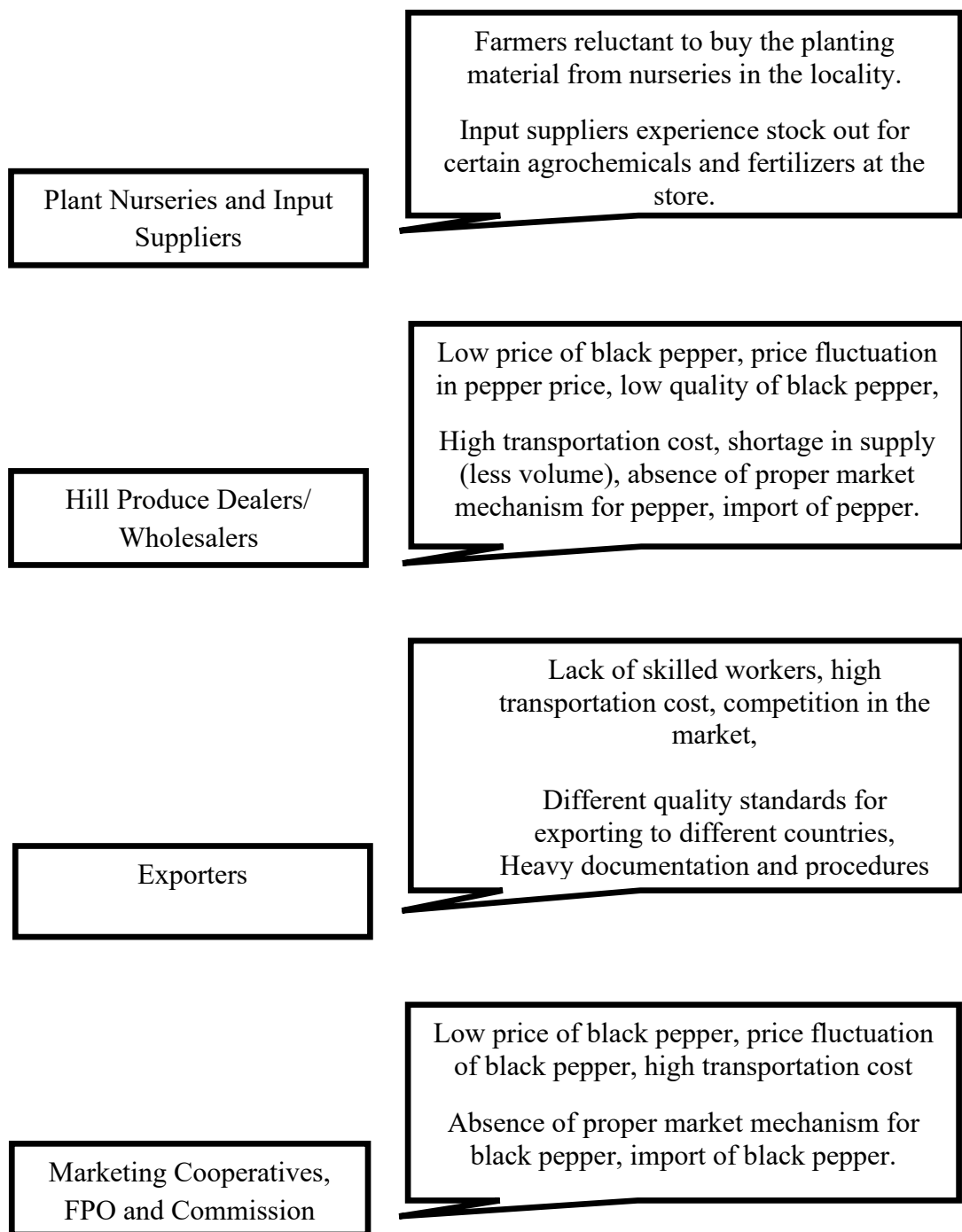
**Fig. 4.19** Map of services that feed into the value chain

#### 4.10 Mapping constraints in the value chain

Constraints exist in all process levels in the value chain and all actors in the value chain also face different constraints. Early identification and suitable solution for the constraints is the biggest challenge for the value chain actors. The map of constraints faced by black pepper farmers and the other actors in the value chain are depicted separately in Fig. 4.20 and Fig. 4.21. These constraints were identified from 120 black pepper farmers and other actors included in the study (analysis of constraints were presented in detail in Section IV of this chapter).



**Fig. 4.20 Constraints faced by black pepper farmers in the value chain**



**Fig 4.21 Constraints faced by other actors in the value chain**



#### **4.11 Value chain map matrix**

When all the value chain aspects were complete, the value chain mapping can be summarized by giving the vital information of the value chain in one table in a matrix form. Value chain map matrix may help to understand the details of the value chain in an easy format. The value chain map matrix of the black pepper in Kerala and a summary of actors and their functions in the value chain of black pepper is given in Table 4.19 and Table 4.20 respectively.

**Table 4.19 Value chain map matrix**

	<b>Input</b>	<b>Black Pepper Production</b>	<b>Procurement</b>	<b>Processing &amp; Exporting</b>	<b>Retailing</b>
<b>Input</b>		Planting material, fertilizers, plant protection chemicals, organic manures, agricultural implements and agricultural credit	Black pepper, ripe pepper, fresh green pepper	Black pepper, white pepper and green pepper	Selling black pepper and its products to the market
<b>Activities</b>	Supply of inputs	Planting of black pepper crop management harvesting, drying and cleaning	Black pepper, fresh green pepper and ripe pepper collection	Grading and cleaning of black pepper and processing and exporting of white pepper and green pepper	Selling pepper products to the market
<b>Outputs</b>		Black pepper	Black pepper	Black pepper, white pepper and green pepper	Black pepper, white pepper and green pepper
<b>Actors</b>	Input suppliers Extension officers	Black pepper farmers	Hill produce dealers wholesalers, NGOs, cooperative society, farmer producer company	Processors and exporters	Retailers
<b>Knowledge and information</b>		Krishi bhavan, NGOs, Co-operative society, Registered companies	NGOs, Cooperative society, Registered companies, Hill produce dealers	Spices board and other government agencies	Retailers
<b>Geographical flow</b>		Idukki District: Vandiperiyar Panchayat and Rajakumari Panchayat Wayanad District: Vellamunda	Idukki District: Vandiperiyar Panchayat and Rajakumari Panchayat Wayanad	Kuttikkanam, Ernakulam and Mumbai Mananthavady, Pulpally	Domestic market and export market

	<b>Input</b>	<b>Black Pepper Production</b>	<b>Procurement</b>	<b>Processing &amp; Exporting</b>	<b>Retailing</b>
		panchayat and Mullenkolly panchayat	District:Vellamunda panchayat and Mullenkolly panchayat		
<b>Value addition</b>		Black pepper	Idukki district:Black pepper Wayanad district:Black pepper	Idukki district: Black pepperWhite pepper Green pepperWayanad district: Black pepperWhite pepper Green pepper	Idukki district:Black pepperWhite pepper Green pepper
<b>Constraints</b>		Shortage in availability of quality planting materials, High labour cost, Increased incidences of pest and diseases.Climate change Price variability of the black pepper Traders offer less price than market price.	Low price of black pepper, High transportation cost, absence of proper market mechanism for pepper and import of pepper from other countries	Stringent rules and regulations, high wage rate of labourers, different quality standards for exporting to different countries,possible rejection of export materials, high investment needed for value addition	Low price of black pepper,
<b>Location and Participation of farmers</b>	Input suppliersin Idukki and Wayanad	Black pepper farmers in Idukki and Wayanad districts	Black pepper farmers in Idukki and Wayanad districts	No participation of farmer	No participation of farmer
<b>Location</b>	Idukki andWayanad	Idukki and Wayanad	Idukki andWayanad	Idukki and Wayanad to different countries	Idukki and Wayanad

**Table. 4.20 Summary of actors and functions in the black pepper value chain**

<b>Segment</b>	<b>Actors</b>	<b>Functions</b>	<b>Activities</b>	<b>Linkages</b>
Input Supply	Nurseries	Supply of planting materials	Sell planting materials	Farmers
	Input suppliers	Supply inputs for black pepper production	Sell fertilizers, plant protection chemicals and organic manures	Fertilizer companies & Farmers
	NGOs	Supply inputs for organic black pepper production	Provide organic inputs like planting material, organic manures etc.	Farmers, organic manure suppliers or producers
	Registered companies	Supply inputs for organic black pepper production	Provide organic manures	Farmers, organic manure suppliers or producers
	Marketing co-operatives	Supply inputs for black pepper production	Sell fertilizers, plant protection chemicals and organic manures	Farmers, fertilizer companies and organic manure suppliers
	Farmer producer companies	Supply inputs for black pepper production	Sell fertilizers, plant protection chemicals and organic manures	Farmers, fertilizer companies and organic manure suppliers
	Farmers	Production of Black Pepper	General crop management	NGOs, State Department of Agriculture, support service agencies farmers,
	NGOs	Facilitators	Technical assistance to farmers like inspecting and assuring quality, advisory services Technical assistance to farmers like	

<b>Segment</b>	<b>Actors</b>	<b>Functions</b>	<b>Activities</b>	<b>Linkages</b>
Production	Registered Companies  Marketing Cooperatives  State Department of Agriculture	Facilitators  Facilitators  Coordination of extension services	inspecting and assuring quality, advisory services  Technical assistance to farmers through their qualified staffs  Technical assistance to farmers through extension services Distribution of agriculture subsidies	Farmers, support service agencies  Farmers, support service agencies  Farmers, NGOs
Collection	Hill produce dealers  NGOs  Registered companies  Farmer Producer Cos.  Marketing co-operatives	Procuring black pepper from farmers  Procuring black pepper from farmers  Procuring black pepper from farmers  Procuring black pepper from farmers  Procuring black pepper from farmers	Buy black pepper from farmers and sell black pepper to Wholesalers Buy black pepper from farmers  Buy black pepper from farmers  Buy black pepper from farmers  Buy black pepper from farmers	Farmers, wholesalers  Farmers  Farmers  Farmers, commission agents  Farmers, wholesalers
Wholesaling	Wholesalers	Procuring black pepper from farmers and hill produce dealers	Selling to buyers(Kochi) through brokers	Hill produce dealers, other wholesalers, Brokers(Kochi), Buyers (Kochi)

<b>Segment</b>	<b>Actors</b>	<b>Functions</b>	<b>Activities</b>	<b>Linkages</b>
Exporting	Exporters	Processing and Exporting of Black pepper and its value added products	Processing of value added products, Selling of value added products, Exporting of value added products	Importers in other countries, Brokers
Retailing	Retailers	Selling the final products to consumers	Buying black pepper and selling to consumers	Hill produce dealers, Consumers

#### **4.12 Marketing channels in the value chain of black pepper**

Marketing channels are the chain of channel members through whom the agricultural commodity transfers from the producer level to the final point of consumption. The inclusion of an intermediary in the channel depends on how the commodity get moved through the channel, the quantity of commodity moved, demand of the commodity in the market etc.

Compared with other major spices, black pepper is a commodity that can be stored, while the farmers prefer to sell the commodity immediately after the harvest. In the black pepper value chain, it is necessary to identify the chains or the channels through which the black pepper moves to different locations and also to compute the value added and distributed between the actors in the chain. Here, the identified marketing channels are different for organic black pepper and the inorganic black pepper. The marketing channel of the organic black pepper transferred organic products only and the inorganic black pepper moved through a different marketing channel. Five marketing channels were identified in the value chain for the three selected products in the study such as, black pepper, white pepper and green pepper are as follows:

Marketing channels in the value chain of black pepper:

- 1) Marketing Channel I (MC-I)      Farmers → Exporters (Organic )
- 2) Marketing Channel II (MC-II)      Farmers → Marketing cooperatives → Buyers in Kochi (Inorganic)
- 3) Marketing Channel III (MC-III)      Farmers → Farmer Producer Company → Commission Agent → Buyers in Kochi  
(Inorganic)
- 4) Marketing Channel IV (MC-IV)      Farmers → Hill Produce Dealers → Wholesalers → Buyers in Kochi (Inorganic)
- 5) Marketing Channel V (MC-V)      Farmers → Hill Produce Dealers → Retailers (Inorganic)



It should be noted that the Marketing Channel I (MC-I) is the organic channel which transfers the organic black pepper, white pepper and green pepper, whereas the other four marketing channels (MC-II, MC-III, MC-IV and MC-V) transfers the inorganic black pepper. MC-I is the shortest marketing channel which includes two channel members, black pepper farmers who organically produced the black pepper and the exporters, who process and export the value added products to the needed locations. MC-II has started with the black pepper farmers, who were the members of marketing cooperatives and the marketing cooperative bought and sold the black pepper after cleaning and grading it to the buyers in Kochi market.

MC-III has shown the presence only in Idukki district where, the black pepper farmers were the members of a Farmer producer company (FPC), extended the channel with commission agent and the buyers in Kochi market. This became an efficient channel for black pepper marketing for the farmers in the locality. MC-IV included hill produce dealers and wholesalers (both group bought and sold the black pepper without any value addition to the product) and the wholesalers sold the black pepper to the buyers in Kochi market, through the IPSTA brokers.

MC-V included with hill produce dealers and retailers, retailer provides black pepper to consumers in the packets of 100gm, 200gm and 500gm within the districts of Idukki and Wayanad districts, especially during tourist and pilgrimage seasons. These retailers were not the exclusive outlets for black pepper only, while they sold different spices and other high range products available in Idukki and Wayanad districts. Here also, value addition happened with black pepper at retailer level, they earned high profit, while the percentage of sales was very less compared with other channels.

#### **4.12.1 Marketing Cost**

Marketing cost refers to the cost incurred by the chain actors while selling the black pepper to the successive actors in the value chain and the marketing cost per kilogram of black pepper is worked out by adding different components

included in the cost. Marketing cost of black pepper farmers included the packing material cost and transportation cost. However, for the other actors in the value chain the cost components were the packing material cost and transportation cost, weighing, loading and unloading cost, storage cost, grading and cleaning cost, wastage loss, commission (if any) etc.

Table 4.21 and 4.22 indicates the marketing cost incurred by the different channels for one kilogram of black pepper in Idukki and Wayanad districts separately. It is clear from the table that in both districts, the marketing cost incurred by the exporters in the production of value added organic products were very high compared to the marketing cost incurred by the other channel members in the marketing of inorganic black pepper.

In the value chain of black pepper in Idukki district the highest marketing cost was found in the channel which permits the movement of value added organic black pepper, white pepper and green pepper. The total marketing cost incurred in Channel I for black pepper was ₹151.41/kg, while for white pepper was ₹536.91 per kg and for green pepper was ₹571.41 per kg. Among the inorganic black pepper channels, Channel V (including exclusive spice outlets) incurred the highest marketing cost (₹89.12) and the lowest marketing cost was incurred by Channel V (₹11.62 per kg of black pepper), by the village retailers.

While examining the marketing cost in different channels in Wayanad district, the total marketing cost calculated in Channel I was ₹141.54 per kg of black pepper, ₹518.04 per kg for white pepper and ₹552.54 per kg for green pepper. In the marketing channel of inorganic black pepper, the highest marketing cost (₹80.85 per kilogram of black pepper) was incurred by Channel V with exclusive spice outlets as retailers and the lowest marketing cost (₹12.35/kg of black pepper) was incurred by another type of retailer (village retailers) in the same channel. .

**Table 4.21 Marketing cost in different marketing channels of black pepper (Idukki district)**

Market Functionaries	Items	Channel I			Channel II (Rs/Kg)	Channel III(Rs/Kg)	Channel IV(Rs/Kg)	Channel V(Rs/Kg)
		Black Pepper (Rs/Kg)	White Pepper (Rs/Kg)	Green Pepper (Rs/Kg)				
Farmers	1. Packing Material cost	0.53	0.53	0.53	0.56	0.56	0.56	0.56
	2. Transportation cost	0.88	0.88	0.88	0.93	0.93	0.93	0.93
	Total	1.41	1.41	1.41	1.49	1.49	1.49	1.49
Processor /Exporter	1. Cleaning and grading cost	25.00	71.50	50.00				
	2. Garbling cost	25.00	25.00					
	3. Steam sterilization	25.00	25.00	25.00				
	4. Retail packing cost	25.00						
	5. Cleaning loss		33.00	54.50				
	6. Processing cost		80.00	191.50				
	7. Drying cost		29.00					
	8. Cleaning cost of dried white pepper		29.00					
	9. Retail packing cost		62.00	65.00				
	10. Bulk packing cost	50.00	62.00	65.00				
	11. Logistics and documentation	150.00	119.00	119.00				
Total		535.50	570.00					
Hill Produce Dealers	1.Packing Material Cost						0.83	0.83
	2. Transportation Cost						1.50	1.50
	3. Weighing, Loading and Unloading						0.50	0.50
	4. Storage Cost						3.96	3.80
Total						6.79	6.63	
FPOs	1.Packing Material Cost					0.90		
	2. Grading and cleaning cost					0.75		
	3. Weighing, Loading and Unloading					0.55		

	4. Storage Cost 5. Commission (2%) 6. Wastage loss (1%) Total					1.00 6.90 3.45 13.55		
Commission Agents	1. Transportation Cost 2. Other Cost Total					3.50 3.40 6.90		
Marketing Cooperatives	1.Packing Material Cost 2.Transportation Cost 3.Weighing, Loading and Unloading 4.Storage Cost 5.Grading & cleaning cost 6. Wastage loss (2%) Total				1.35 2.00 0.75 1.50 1.00 6.30 12.90			
Wholesalers	1.Packing Material Cost 2. Transportation Cost 3. Weighing, Loading and Unloading 4.Grading and cleaning cost 5. Storage Cost 6. Commission Total						1.35 3.50 1.25 0.50 3.00 3.50 13.10	
Retailer I (Exclusive spice outlets) &	1.Packing Material Cost 2. Cleaning Cost 3. Storage Cost Total							70.00 10.00 1.00 81.00
Retailer II	1.Loading & Unloading 2. Cleaning Cost 3. Storage Cost Total							0.50 1.50 1.50 3.50
	Total cost	151.41	536.91	571.41	14.39	21.94	21.38	89.12 & 11.62

Source: compiled from primary data

**Table 4.22 Marketing cost in different marketing channels of black pepper (Wayanad district)**

Market Functionaries	Items	Channel I			Channel II (Rs/Kg)	Channel IV (Rs/Kg)	Channel V (Rs/Kg)
		Black Pepper (Rs/Kg)	White Pepper (Rs/Kg)	Green Pepper (Rs/Kg)			
Farmers	1.Packing Material Cost	0.58	0.58	0.58	0.54	0.54	0.54
	2. Transportation Cost	0.96	0.96	0.96	0.91	0.91	0.91
	Total	1.54	1.54	1.54	1.45	1.45	1.45
Exporters	1. Cleaning and grading cost	25.00	71.50	50.00			
	2. Garbling cost	25.00	25.00				
	3. Steam sterilization	25.00	25.00	20.00			
	4. Retail packing cost	25.00					
	5. Cleaning loss		33.00	54.50			
	6. Processing cost		80.00	191.50			
	7. Drying cost		29.00				
	8. Cleaning cost of dried white pepper		29.00				
	9. Retail packing cost		62.00	60.00			
	10. Bulk packing cost		67.00	70.00			
	11. Logistics and documentation	40.00	95.00	105.00			
Total	140.00	516.50	551.00				
Hill Produce Dealers	1.Packing Material Cost					0.72	0.72
	2. Transportation Cost					1.80	1.80
	3. Weighing, Loading and Unloading					0.40	0.40
	4. Storage Cost					3.50	3.50
	5. Commission					1.73	1.73
Total					8.15	8.15	

Marketing Cooperatives	1.Packing Material Cost				0.90		
	2. Transportation Cost				2.50		
	3. Weighing, Loading and Unloading				0.85		
	4. Storage Cost				1.50		
	Total				5.75		
Wholesalers	1.Packing Material Cost				1.10	1.10	
	2.Transportation Cost				4.00	4.00	
	3.Weighing, Loading and Unloading				1.00	1.00	
	4.Grading and cleaning cost				0.50	0.50	
	5. Storage Cost				2.50	2.50	
	6. Commission				3.50	3.50	
	Total				12.6	12.6	
Retailer I (Exclusive spice outlets)	1.Packing Material Cost						55.00
	2. Cleaning Cost						5.00
	3. Storage Cost						0.75
	4. Wastage Loss (3%)						10.5
	Total						71.25
Retailer II	1.Loading & Unloading						0.75
	2. Cleaning Cost						1.00
	3. Storage Cost						1.00
	Total						2.75
	Total cost	141.54	518.04	552.54	19.80	22.20	80.85 & 12.35

Source: compiled from primary data

#### 4.12.2 Marketing margin

Marketing margin is the actual or net income obtained by the actor in the value chain, that is, the difference between the price at which an actor purchase a product in the value chain and the price at which an actor sells the product in the value chain minus the cost incurred by the actor. When the market price of the black pepper changes the marketing margin also varies and as a result, the value chain actor's income from the marketing activity was also not stable. The calculated marketing margin in different marketing channels for one kilogram of black pepper in the value chain in Idukki and Wayanad districts are presented in Table 4.23 and Table 4.24 respectively.

While examining the marketing margins in different channels, it was exposed that in both districts, the farmer got highest price in the marketing channel with shortest length, i.e. farmer to exporter. In Idukki district, the farmers who are supplying black pepper to exporters were registered organic certified farmers and their black pepper fetch ₹378.50 per kilogram. The total marketing margin of Channel I was ₹131.50 per kg for black pepper, ₹395.00 per kg (highest margin) for white pepper and ₹251.50 per kg for green pepper. While in Channel V, the retailer (exclusive spice outlets) captured the highest margin of ₹379.41 per kilogram of black pepper and the lowest margin was obtained by Channel II (₹32.21/kg).

Among the different marketing channels in Wayanad districts, the certified organic farmers got highest price (₹370.70 per kg) in the marketing channel of organic black pepper. The total marketing margin computed for each product in Channel I was ₹139.30 per kg of black pepper, ₹417.80 per kg of white pepper and ₹278.30 per kg of green pepper. In the marketing channel of inorganic black pepper, the highest marketing margin was obtained by Channel V (₹342.00 per kg of black pepper) and the lowest marketing margin was obtained by Channel III (₹44.25 per kg of black pepper).

**Table 4.23 Marketing margin at different marketing channels (Idukki district)**

Sl No	Particulars	Channel I			Channel II	Channel III	Channel IV	Channel V
		Black Pepper	White Pepper	Green Pepper				
1.	Farmer's Selling Price	378.50	378.50	378.50	335.00	335.50	332.8	332.8
	Marketing Cost	1.41	1.41	1.41	1.49	1.49	1.49	1.49
2.	Hill produce dealers selling price						360.00	360.00
	Marketing Cost						6.79	6.63
	Marketing margin						20.41	20.57
3.	Wholesaler's selling price						387.50	
	Marketing Cost						13.10	
	Marketing margin						14.40	
4.	Marketing Cooperative's selling price				380.00			
	Marketing Cost				12.90			
	Marketing margin				32.21			
5.	FPO's selling price					375.25		
	Marketing Cost					13.55		
	Marketing margin					26.20		
6.	Comm. Agent's selling price					400.50		
	Marketing Cost					6.90		
	Marketing margin					18.35		
7.	Retailer I selling price							800.00
	Marketing Cost							81.00
	Marketing margin							359.00
8.	Retailer II selling price							450.00
	Marketing Cost							3.50
	Marketing margin							86.50
9.	Exporters Selling Price	660.00	1309.00	1200.00				
	Marketing Cost	150.00	535.50	570.00				
	Marketing margin	131.50	395.00	251.50				
10.	Consumer's Purchase Price	660.00	1309.00	1200.00	450.00	450.00	450.00	800.00 & 450
Total Marketing Cost		151.41	536.91	571.41	14.39	21.94	21.38	89.12 & 11.62
Total Marketing Margin		131.50	395.00	251.50	32.21	44.55	34.81	379.41 & 107.07

Source: compiled from primary data



**Table 4.24 Marketing margin at different marketing channels (Wayanad district)**

Sl No	Particulars	Channel I			Channel II	Channel IV	Channel V
		Black Pepper	White Pepper	Green Pepper			
1.	Farmer's Selling Price	370.70	370.70	370.70	329.60	328.60	328.60
	Marketing Cost	1.54	1.54	1.54	1.45	1.45	1.45
2.	Hill produce dealers selling price					360.00	360.00
	Marketing Cost					8.15	8.15
	Marketing margin					23.25	23.25
3.	Wholesaler's selling price				396.10	396.10	
	Marketing Cost				12.6	12.6	
	Marketing margin				21.00	21.00	
4.	Marketing Cooperative's selling price				365.00		
	Marketing Cost				5.75		
	Marketing margin				29.65		
5.	Comm. Agent's selling price						
	Marketing Cost						
	Marketing margin						
6.	Retailer I selling price						750.00
	Marketing Cost						71.25
	Marketing margin						318.75
7.	Retailer II selling price						435.00
	Marketing Cost						2.75
	Marketing margin						72.25
8.	Exporters Selling Price	650.00	1305.00	1200.00			
	Marketing Cost	140.00	516.50	551.00			
	Marketing margin	139.30	417.80	278.30			
9.	Consumer's Purchase Price	660.00	1305.00	1200.00	435.00	435.00	750.00 & 435
Total Marketing Cost		141.54	518.04	552.54	19.80	22.20	80.85 & 12.35
Total Marketing Margin		139.30	417.80	278.30	50.65	44.25	342.00 & 95.50

Source: compiled from primary data

#### 4.12.3 Price spread and marketing efficiency at different marketing channels

Price spread analysis was done to find out the share of different actors in the consumer rupee and it helps to understand the relative efficiency of the different channels of marketing. Here, the price spread was obtained by employing the concurrent margin method, which is the difference between price of the black pepper products offered to the ultimate consumer and the price received by the black pepper farmer. Marketing efficiency of the different channels was examined by using the Acharya's modified marketing efficiency ratio and the common aspect noticed in the value chain of black pepper is that whichever the actors engaged in value addition of black pepper, that actor earned high profit in the pepper trade.

Similar to the calculation of marketing cost and marketing margin, price spread and marketing efficiency of the channels were identified separately for Idukki and Wayanad district and is presented in Table.4.25 and Table 4.26.

In Idukki district, the producer's share in the consumer rupee was found high in Channel III (74.44 percent), Channel II (74.11 percent) and Channel IV and Channel V (73.96 percent), followed by Channel I (57.35 percent for black pepper). As a result, the marketing efficiency was found high in Channel II (a ratio of 7.19) with a lowest marketing cost of ₹14.39 per kg and the lowest ratio of marketing efficiency (0.41) was found in Channel I for the product white pepper, where the marketing cost (₹536.91 per kg) was high. It clearly shows that when the marketing cost increases the efficiency of the channel decreases.

In Channel I, the producer of value added black pepper, white pepper and green pepper, i.e. exporters, received highest marketing margin after incurring the highest marketing cost, but the marketing efficiency was found low for this channel for value added black pepper, white pepper and green pepper with 1.34, 0.41 and 0.46 respectively.

On the contrary, very less value addition happened in the inorganic black pepper channels and the marketing efficiency of Channel II, Channel III and

Channel IV were high with a ratio of 7.19, 5.05 and 5.92 respectively, where the marketing cost and margin were found very meagre.

**Table 4.25 Price spread and marketing efficiency at different marketing channels (Idukki district)**

Sl No	Particulars	Channel I			Channel II	Channel III	Channel IV	Channel V
		Black Pepper	White Pepper	Green Pepper				
1.	Price received by farmer	378.50	378.50	378.50	335.00	335.50	332.80	332.80
2.	Price paid by the consumer	660.00	1309.00	1200.00	450.00	450.00	450.00	800.00 & 450
3.	Producer's share in consumer's rupee (%)	57.35	28.92	31.54	74.11	74.44	73.96	41.60 & 73.96
4	Price spread (Rs./Kg)	281.50	930.50	821.50	115.00	114.50	117.20	467.20 & 117.20
5.	Marketing Cost	151.41	536.91	571.41	14.39	21.94	21.38	89.12 & 11.62
4.	Marketing margin	131.50	395.00	251.50	32.21	44.55	34.81	379.41 & 107.07
5.	Marketing Efficiency	1.34	0.41	0.46	7.19	5.05	5.92	0.71 & 2.80

Source: compiled from primary data

The producer's share in the consumer rupee was found high in Channel II with 75.77 percent in Wayanad district. Channel IV and Channel V had a share of 75.54 percent, followed by Channel I with 57.03 percent for black pepper. As an outcome, the marketing efficiency was found high in Channel IV (a ratio of 4.95) with a lowest marketing cost (₹22.20 per kg of black pepper) and the lowest ratio of marketing efficiency (0.40) was found in Channel I for the product white

pepper, where the marketing cost (₹518.04 per kg) was high. In agreement with Idukki district, here also, it clearly shows that when the marketing cost increases the efficiency of the channel decreases.

The exporters marketing channel (Channel I) received highest marketing margin after incurring the highest marketing cost, but the marketing efficiency was found low for the value added black pepper, white pepper and green pepper with a ratio of 1.27, 0.43 and 0.66 respectively. Even though, very less value addition happened in the inorganic black pepper marketing channels like Channel II and Channel IV, the marketing efficiency of these channels were high with a ratio of 4.65 and 4.95 respectively.

**Table 4.26 Price spread and marketing efficiency at different marketing channels (Wayanad district)**

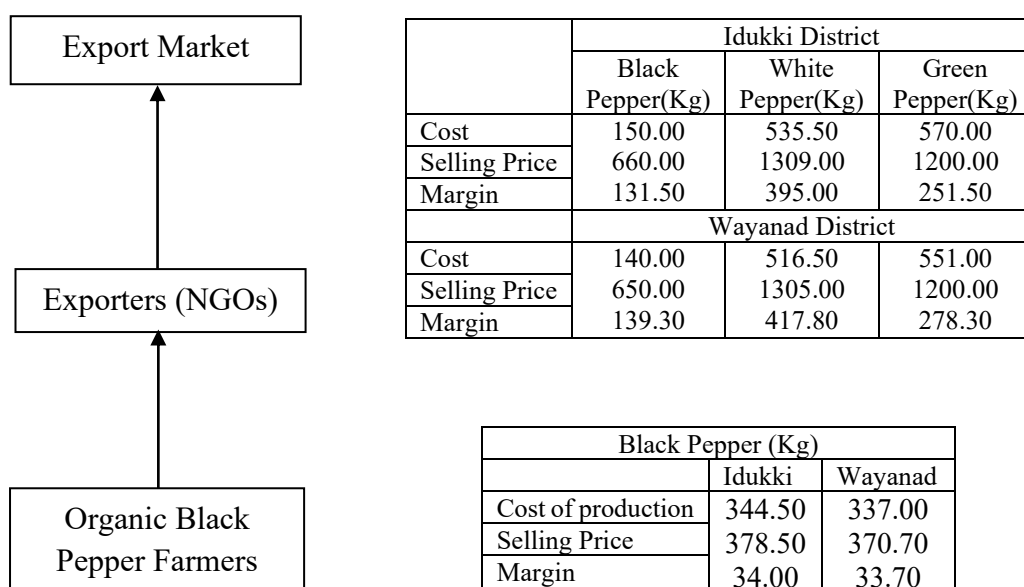
Sl No	Particulars	Channel I			Channel II	Channel IV	Channel V
		Black Pepper	White Pepper	Green Pepper			
1.	Price received by farmer	370.70	370.70	370.70	329.60	328.60	328.60
2.	Price paid by the consumer	650.00	1305.00	1200.00	435.00	435.00	750.00 & 435.00
3.	Producer's share in consumer's rupee (%)	57.03	28.41	30.89	75.77	75.54	43.81 & 75.54
4	Price spread (Rs./kg)	279.30	934.30	829.30	105.40	106.40	421.40 & 106.40
5.	Marketing Cost	141.54	518.04	552.54	19.80	22.20	80.85 & 12.35
4.	Marketing margin	139.30	417.80	278.30	50.65	44.25	342.00 & 95.50
5.	Marketing Efficiency	1.32	0.40	0.45	4.65	4.95	0.78 & 3.04

Source: compiled from primary data

### 4.13 Value chain of black pepper in Idukki and Wayanad district

This session gives the final illustration of the black pepper value chain (organic and inorganic) in the districts of Idukki and Wayanad in Kerala, where the actual cost, margin (cost and margin together is the value added at each actor) and the selling price of the black pepper products in the value chain are included in Fig 4.22, Fig 4.23 and Fig 4.24.

#### 4.13.1 Organic value chain of black pepper in Idukki and Wayanad district



**Fig. 4.22 Organic value chain of black pepper in Idukki and Wayanad district.**

#### 4.13.2 Inorganic value chain of black pepper in Idukki district

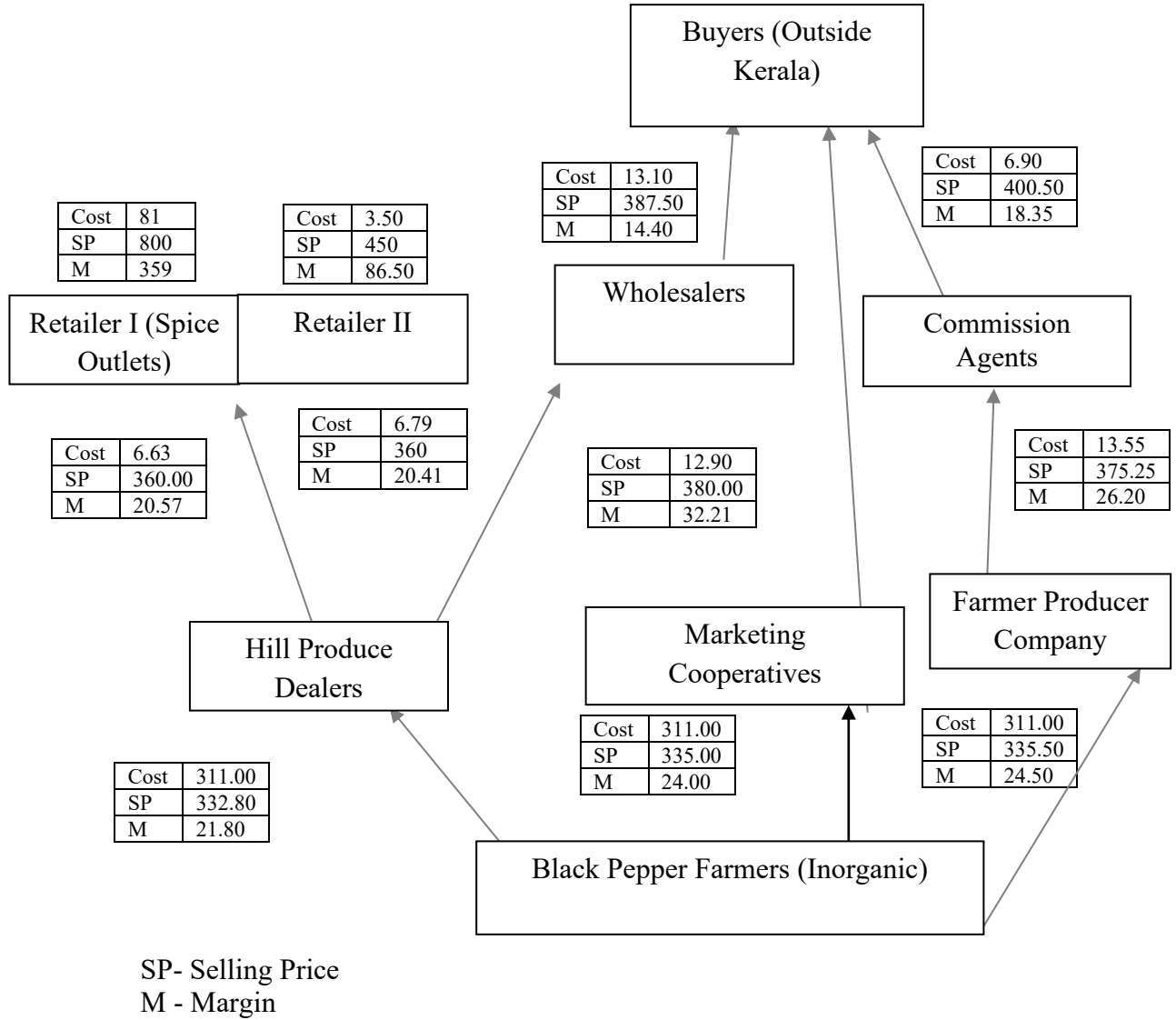
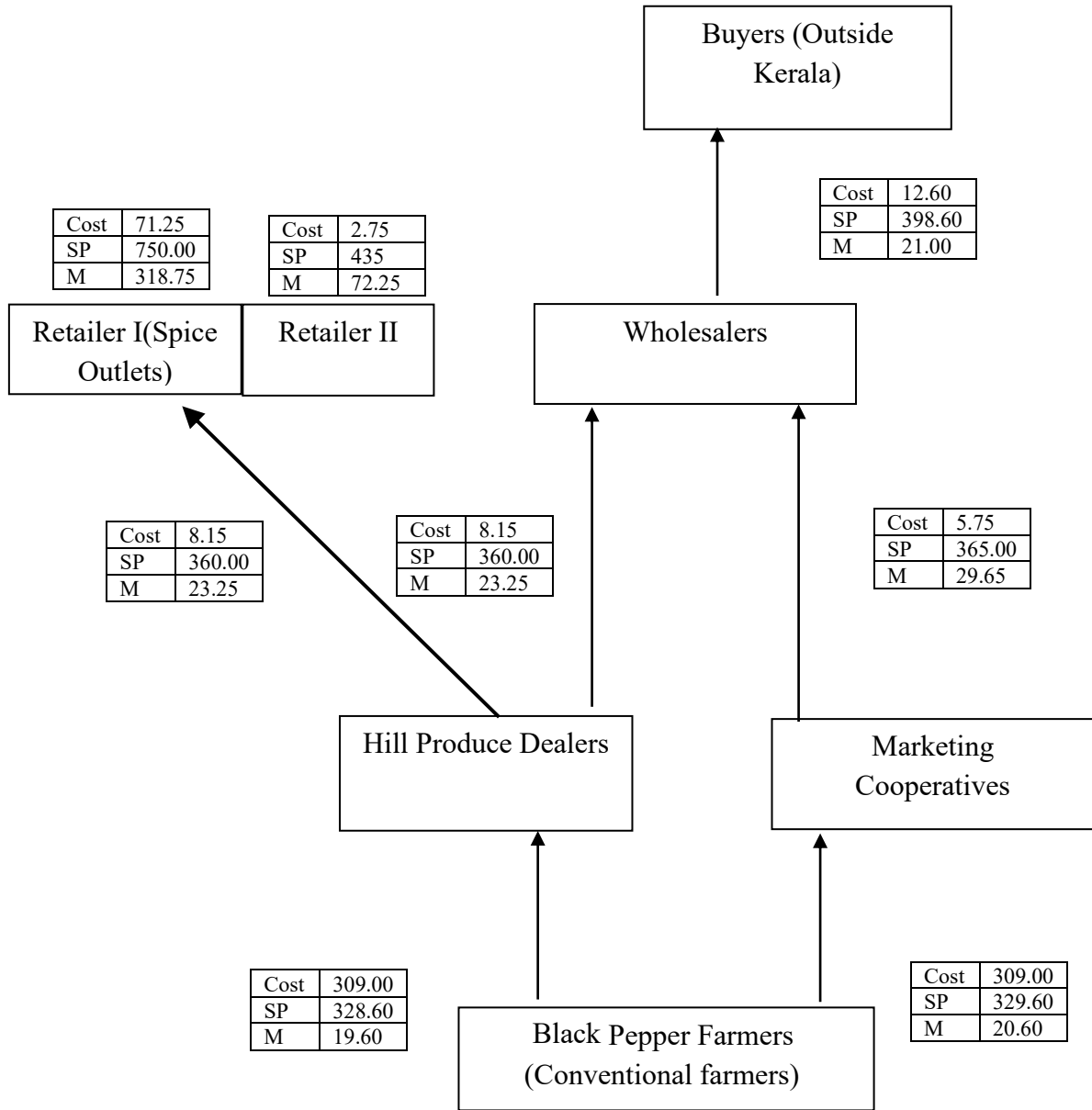


Fig. 4.23 Inorganic value chain of black pepper in Idukki district

### 4.13.3 Inorganic value chain of black pepper in Wayanad district



SP- Selling Price  
M - Margin

**Fig. 4.24 Inorganic value chain of black pepper Wayanad district**

## **Conclusion**

It is obvious from mapping the value chain of black pepper that the transparency and the flow of information through the channels especially about the market price was not enough. In case of market price of the black pepper, the farmers were not able to reach the export market directly as they are bounded by the extended value chain actors. It should be noted that there is limited possibility available in value addition of black pepper at farmers' level in Idukki and Wayanad district, especially related with the production of export oriented products like white pepper and green pepper. This situation made the black pepper farmers position weak and thus, unable to capture the export market.



## SECTION II

### **4(B) Value Chain Governance on Value Chain Actors**

The Global Value Chain (GVC) approach highlighted the concept of ‘governance’, the value chain operations are performed by the producers in the developing country, where the parameters for the products and processes are stipulated by the buyers’ right throughout the chain. Government agencies and international organizations are bound to meet the compliance in quality, labour and environmental standards (Humphrey and Schmitz, 2000).

In brief, value chain governance is about power and the ability to exert control along the chain, where the rule setting authority or firms sets rules and enforces parameters under which others in the chain operates. That is, actors within the chain set parameters, monitor parameters and facilitates compliance with rules related to parameters. Besides, different actors may exert more or less influence, as the actor moves from local to global markets.

For identifying the value chain governance in black pepper value chain, data and opinions were collected from the black pepper farmers, furthermore, discussions were held with 70 traders (including 38 hill produce dealers and 32 wholesalers) and interviews were conducted with key informants in the value chain like Spices board Officers, NABARD Officers, four Agriculture Officers in the selected Krishi bhavans, Secretaries of the Marketing cooperative societies, Directors and staffs of NGOs, Staffs of Panchayats, Officials of exporting companies, Commission agent, Secretary, IPSTA Office-Mattancherry, IPSTA brokers in Mattancherry, and other service providers.

#### **4.2.1 Formal and Informal rules for Value chain actors in Black pepper value chain**

Value chain actors must comply with certain rules and regulations in the value chain. Rules and regulations can be either formal or informal. Formal rules are decided and implemented with official and legislative power and decisions, while informal rules are determined by the powerful parties in the value chain

over the weak parties. Rules like voluntary standards are for products with specific standards in agriculture, like organic products. Certain informal rules were also found imposed over the actors in the value chain of black pepper especially, for farmers. Other value chain actors revealed certain dominant informal rules in relation with selling and buying of black pepper in the market. The important formal rules that the value chain actors must comply being an actor in the black pepper value chain were identified and presented in this section.

#### 4.2.1.1 Formal rules for Exporters.

The formal rules and regulations were enforced over the exporters by the Central and State Governments of India and the Governments of importing countries, international agencies etc. and were implemented and monitored through different government agencies. Table. 4.27 presents the formal rules and regulations to be complied by the exporters in the value chain of black pepper.

**Table 4.27 Formal rules for exporters**

<b>Sl No.</b>	<b>Formal Rules and Regulations</b>	<b>Rule Setting Agency/Firm</b>
1	Import Export Code (IEC)	Directorate General of Foreign Trade
2	Certificate of Registration as Exporter of Spices (CRES)	Spices Board of India
3	Factory Registration (under Factories Act, 1948)	District Governing Authority
4	Guidelines for Quality Improvement (2014),	Spices Board of India
5	Quality Testing through Quality Evaluation Laboratory (QEL)	Spices Board of India
6	Spice House Certification to Spice Processing Establishments	Spices Board of India
7	Food Safety and Standards Act 2006	Government of India
8	Quality Standards required for black pepper export	Standards set by different countries and organisations

Import Export Code (IEC), is a mandatory license and a prerequisite for importing or exporting from India. It is a ten digit identification number issued by the Directorate General of Foreign Trade to start business that deals with

export or import. Certificate of Registration as Exporter of Spices (CRES) is issued by Spices Board of India, under Section II of the Spices Board Act, 1986. Application should be submitted to Spices Board, with registration fee, GST registration certificate, bank certificate, PAN Card etc. In Kerala, factory registration is mandatory as per the provision of the Factory Act, 1948, to ensure that a factory complies with the stipulated rules and safety guidelines.

Spices Board's guidelines for the quality improvement of spices (especially for black pepper) includes limit of contaminants stipulated by importing countries, permitted level of pesticides residue, steps to be taken in harvesting, processing and storage of black pepper, the control of moisture content, hygiene- environmental and personal etc. Quality Evaluation Laboratory (QEL) was established by Spices Board in 1989, provides analytical services to the spice industry, monitors the quality of spices produced and processed in the country. The Laboratory in Kochi is certified by British Standards Institution, UK, accredited under NABL (National Accreditation Board for Testing & Calibration of Laboratories). Processing Units of Spices should obtain Spice House Certification also from Spices Board.

Food Safety and Standard Authority of India (FSSAI) regulates the food sector by laid down the guidelines and standards to be followed by the food producers, under Food Safety and Standard Act 2006. Good Agricultural Practices (GAP) are approved by American Spice Trade Association (ASTA) and recommended by Spices Board of India suggests various standards to achieve food safety. Sanitary and Phyto sanitary measures are World Trade Organisation (WTO) standards set by three organisations: i) Codex Alimentarius Commission (Codex) ii) World Organisation for Animal Health (OIE) and iii) International Plant Protection Convention (IPPC). In addition to the above explained regulations, certifications and standards, each importing country has their own standards separate for organic and inorganic products.

It is noticed that exporters included in the study complied with the above mentioned formal rules and regulations and it is presented in Table. 4.28.

The formal rules from 1 to 7 given in the table were compulsory rules, therefore, complied by all the exporters (PDS Organic Spices, Biowin Agri Research and Vanamoolika Herbals), while all exporters were not registered or certified for all quality standards required by various agencies in different countries. Certificate of National Programme for Organic Production (NPOP) in India notified under the Foreign Trade (Development and Regulation Act), 1992, United States Department of Agriculture National Organic Programme (USDA NOP) and Fairtrade (FLO ID-21286) were the quality Standards certified by all exporters included in the value chain.

**Table 4.28 Formal rules and regulations complied by the exporters**

<b>Sl No.</b>	<b>Formal Rules (Registrations /License/Standards)</b>	<b>Exporters (N=3)</b>
1	Import Export Code (IEC)	3 (100)
2	Certificate of Registration as Exporter of Spices (CRES)	3 (100)
3	Factory Registration (under Factories Act, 1948)	3 (100)
4	Guidelines for Quality Improvement (2014),	3 (100)
5	Quality Testing through Quality Evaluation Laboratory (QEL)	3 (100)
6	Spice House Certification to Spice Processing Establishments	3 (100)
7	Food Safety and Standards Act 2006 and the Rules 2011	3 (100)
8	Quality Standards by different institutions	
	1. Japanese Agricultural and Organic Standards	1(33.33)
	2. Korea Organic	1(33.33)
	3. BIOSUISSE-Switzerland	1(33.33)
	4. EU Regulations	2(66.66)
	5. National Programme for Organic Production India(NPOP)	3 (100)
	6. United States Department of Agriculture National Organic Programme (USDA NOP)	3 (100)
	7. Demeter standards for bio-dynamic farming	2(66.66)
	8. Naturland standards, Germany	2(66.66)
	9. Naturland Fair, Germany	2(66.66)
	10. Fairtrade (FLO ID-21286)	3 (100)
	11. ISO 22000:2005 by Bureau Veritas	2(66.66)
	12. ISO 9001:2008 14001 :2004	2(66.66)
	13. BRC Grade AA by Bureau Veritas	2(66.66)

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data

Japanese Agricultural and Organic Standards of Japan, Korea Organic standards, BIOSUISSE-Switzerland standards, Demeter standards for bio-dynamic farming, Naturland standards, Germany, Naturland Fair, Germany, Fairtrade (FLO ID-21286), ISO 22000:2005 by Bureau Veritas, ISO 9001:2008 14001 :2004 and BRC Grade AA by Bureau Veritas were the major quality standards for exporting the black pepper to different countries. Exporters who fulfilled the pre-fixed criteria of the certifying agencies has got the certifications. Only one Exporter (PDS Organic Spices) had the maximum number of quality certification and registrations and that is the reason PDS Organic Spices exports their products to majority of countries.

#### 4.2.1.2 Formal rules for Wholesalers/Hill Produce Dealers

The buying and selling of agriculture produces including all spices producing in the districts of Idukki and Wayanad were carried out by the wholesalers and hill produce dealers. They were liable to obey the following formal rules to start the business and to run their business in the locality. Table 4.29 gives an idea about the formal rules under which wholesalers and hill produce dealers were running their business.

**Table 4.29 Formal rules for wholesalers and hill produce dealers**

Sl No.	Formal Rules	Rule Setting Agency	Hill Produce Dealers (N=38)	Wholesalers (N=32)
1	Certificate of Registration (Kerala Shops and Establishments Act, 1960)	GOK	38 (100)	13(40.62)
2	Trade License Registration from Municipal Corporations, (Kerala Municipality Amendment Act 1996)	GOK	-	19(59.38)
3	GST Registration	GOI	38(100)	32(100)
4	Lease Agreement under Kerala Buildings (Lease and Rent Control) Act, 1965	GOK	33(86.84)	31(96.88)

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data

Those establishments which is not registered under the Factories Act, should be register under Certificate of Registration (Kerala Shops and Establishments Act, 1960) irrespective of the number of workers. The fees has to be remitted to the nearest Office of Assistant Labour Officer, that is, 60 days before the date of commencement of business and the application for renewal of registration should be submitted 30 days before the expiry of the registration.

Trade License Registration under Kerala Municipality Amendment Act 1996, became mandatory for doing dealer or wholesaler business by the amendment of the same act in 2014, where the Kerala trade license is a document of authorisation issued by the state government for granting permission to regulate and carry out any form of business from a particular locality. Goods and Services Tax (GST) Registration started in July 1<sup>st</sup> 2017, gives all business a unique Goods and Services Tax Identification Number (GSTIN) after registration which aimed to replaced many indirect taxes and changed into a comprehensive, multistage, destination based tax that is levied on every value addition.

Cent percent of the hill produce dealers were having certificate of registration from the Panchayat and forty seven percent of the wholesalers also were registered under the Panchayat. While a remaining 53 percent of wholesalers were having trade license from the concerned municipality in the locality. It should be noted that all the wholesalers and hill produce dealers had the new GST registration for the payment of goods and services tax. Lease or rent agreement was signed by 86.84 percent of hill produce dealers and 96.88 percent of wholesalers, as majority of the hill produce dealers and wholesalers were on rented shops, and the lease agreement was prepared under Kerala Buildings (Lease and Rent Control) Act, 1965.

#### **4.2.1.3 Formal rules for black pepper farmers**

The black pepper farmers (120 farmers from Idukki and Wayanad districts) were classified into certified organic farmers (45.83 percent) and conventional farmers (54.17 percent). For this reason, the formal rules which were liable to comply by both type of farmers were different. The formal rules

applicable to certified organic farmers and conventional farmers were listed in Table 4.30.

Out of the 120 farmers, 45.83 percent of the total farmers (55 certified organic farmers) has complied with the rules set by the organic certifying agencies and the NGOs. The NGOs and the organic certifying agencies checks and assures the compliance of organic farmers in the study area. The conventional farmers (54.17 per cent) gets advice and recommendations from Krishi Bhavan and other research institutes.

The formal rules complied by the certified organic farmers and conventional farmers are presented in 4.31. Prohibition of cultivation in the forest land, eligibility to receive subsidy (under agriculture schemes and packages) and credit availability and the rate of interest were the other formal rules that the all the black pepper farmers are agreed to.

**Table. 4.30 Formal rules for black pepper farmers**

<b>Type of Farmers</b>	<b>Formal Rules</b>	<b>Rule Setting Agency/Firm</b>
Organic Farmers	Crop management in the farm according to certifying agency (permitted organic pest control and organic manures only) Post-harvest handling of black pepper Maintain organic quality (to avoid rejection of produce after quality testing)	Organic Certifying Agency NGO (Promotes organic farming)
Conventional Farmers	Crop management in the farm (advice from Krishi Bhavan) Post-harvest handling of black pepper Maintain quality (to avoid rejection of produce after quality testing)	State Department of Agriculture Kerala Agricultural University
Organic and Conventional Farmers	Phyto sanitary measures a. tolerance limit for residues, b. restricted use of substances, c. labeling requirements related to food safety, d. hygienic requirements	World Trade Organisation
	Prohibition of cultivation in forest land (under Forest Conservation Act, 1980)  Right of ownership and self-cultivation of forest land, access to collect, use and dispose of minor forest produce - under The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.  Credit availability & rate of interest  Eligibility to receive subsidy (Under Agriculture schemes and Packages)	Government of India  Government of India  Reserve Bank of India, Public and Private sector Banks  State Department of Agriculture



The tribal farmers (5 percent) has the right of ownership and self-cultivation of forest land, access to collect, use and dispose of minor forest produce under The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. The phyto sanitary measures adopted by WTO such as tolerance limit for residues, restricted use of substances, labeling requirements related to food safety and hygienic requirements does not have any influence over the farmers directly.

**Table 4.31 Formal rules and regulations complied by black pepper farmers**

<b>Type of Farmers</b>	<b>Formal Rules</b>	<b>Rule Setting Authority</b>	<b>Black Pepper Farmers (N=120)</b>
Organic Farmers	Crop management in the farm according to certifying agency (permitted organic pest control and organic manures only) Post-harvest handling of black pepper Maintain organic quality (to avoid rejection of produce after quality testing)	Organic Certifying Agency NGO (Promotes organic farming)	55 (45.83 )
Conventional Farmers	Crop management in the farm (advice from Krishi Bhavan) Post-harvest handling of black pepper Maintain quality (to avoid rejection of produce after quality testing)	State Department of Agriculture Kerala Agricultural University, Krishi Vigyan Kendra	65 (54.17 )
Organic and Conventional Farmers	Phytosanitary measures a. tolerance limit for residues, b. restricted use of substances, c. labeling requirements related to food safety, d. hygienic requirements	World Trade Organisation	–
	Prohibition of cultivation in forest land (under Forest Conservation Act, 1980)	Government of India	120 (100)
	Right of ownership and self-cultivation of forest land, access to collect, use and dispose of minor forest produce - under The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. Credit availability & rate of interest	Government of India	6 (5)
	Eligibility to receive subsidy (Under Agriculture schemes and Packages)	Reserve Bank of India, Public and Private sector Banks State Department of Agriculture	120 (100) 120 (100)

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data

#### 4.2.1.4 Formal rules for marketing cooperatives

All cooperative societies in the state are liable to accept the formal rules and regulations under Kerala Cooperative Societies Act, 1969. Additionally, marketing societies have to comply with the GST registration as well. The formal rules that are complied by the marketing cooperatives are given in Table. 4.32.

**Table 4.32 Formal rules for marketing cooperatives**

Sl No.	Formal Rules	Rule Setting Agency/Firm
1	Registration of Cooperative Societies (under Kerala Cooperative Societies Act, 1969)	Government of Kerala
2	GST Registration	Government of India

It has identified that the marketing cooperatives included as actors in the value chain ie, Peermade Marketing Cooperative society, Kumily and Rubber and Agricultural Marketing Cooperative Society, Mullenkolly were registered cooperatives under Kerala Cooperative Societies Act, 1969 and moreover, both cooperatives had GST registration.

Watabaji *et al* (2016) conducted a study on value chain governance of malt barley value chain in Ethiopia and revealed that the farmers are highly dependent on cooperatives for agricultural input distribution and on traders for the marketing.

#### 4.2.1.5 Formal rules for farmer producer company

Farmer producer company are those registered with a minimum of ten or more primary producers or by two or more producer institutions or by a contribution of both, considered as a hybrid between cooperative societies and private limited companies. The formal rules that are complying by the farmer producer company are given in Table.4.33.

In similarity with marketing cooperatives, farmer producer company were also registered, but under Companies Act, 1969 and it also had GST registration for paying goods and services tax.

**Table 4.33 Formal rules for farmer producer company**

<b>Sl No.</b>	<b>Formal Rules</b>	<b>Rule Setting Agency/Firm</b>
1	Registration of Farmer Producer Company (under Companies Act, 1969)	Government of India
2	GST Registration	Government of India

**4.1.1.6 Formal rules for IPSTA brokers**

At present, there is no pepper trading taking place under Indian Pepper and Spices Trade Association, Kochi, while the registered brokers under IPSTA acts as a broker between sellers and buyers in Kochi outside the premises of IPSTA in Mattancherry, Kochi.

In 2012, the stock of black pepper was found adulterated with mineral oil in National Commodity and Derivatives Exchange Limited (NCDEX) accredited warehouse in Kerala. Food Safety and Standards Authority of India (FSSAI), the apex food regulator, along with NCDEX and Spices Board tested and convinced about the adulteration in the black pepper stock in the warehouse, after receiving complaints from the buyers. As a result 6,400 MT of pepper stocks were sealed due to adulteration.

**Table 4.34 Formal rules for IPSTA brokers**

<b>Sl No.</b>	<b>Formal Rules</b>	<b>Rule Setting Agency/Firm</b>
1	Registration with IPSTA (as broker)	IPSTA regulation

The brokers who were working in Mattancherry were the registered brokers (Table 4.34) under IPSTA and they continue to perform as a broker in spices marketing, even though IPSTA has stopped trading in black pepper. The four brokers included in the value chain as service providers to facilitate black pepper trade were the registered IPSTA brokers.

#### 4.1.1.7 Formal rules for input suppliers

An input supplier in agriculture is an entity that supplies agriculture inputs and services to black pepper farmers for agricultural production. Private traders, normally supplies inputs in the panchayat areas.

**Table 4.35 Formal rules for input suppliers**

Sl No.	Formal Rules	Rule Setting Agency/Firm
1	License should be obtained from the Office of Principal Agriculture Officer (forwarded to them through the Krishi bhavan in the locality)	Government of Kerala

Three input suppliers from Idukki and four input suppliers from Wayanad got licensed from the concerned Principal Agriculture Office of the locality (Table 4.35). It has identified that there exist no contractual arrangement or relationship between farmers and nurseries/private input suppliers, while the farmers relationship with cooperatives were on the basis of their membership in the cooperative society and the farmers relationship with NGOs were recognized as a certified organic farmers' membership with NGOs. Registered Company also have their own farmers in the study area, to whom they distribute organic inputs for black pepper cultivation.

#### 4.1.1.8 Informal rules for exporters

The exporters included in the study mentioned about the unnecessary delay at Government offices as an important informal rule that affects their exporting business. Due to the high competition among the spice exporters in the

country the exporters in the value chain keep secrecy of their export businesses and contacts abroad, to avoid losing business with foreign clients.

#### 4.1.1.9 Informal rules for black pepper farmers

It has been noticed that farmers were highly affected by the informal rules in the value chain as the black pepper value chain is a buyer driven value chain. The identified informal rules for the black pepper farmers were downgrading of the product by the buyers and buyers offer price less than the market price are presented in Table 4.36.

**Table. 4.36 Informal rules for black pepper farmers**

SI No.	Informal Rules	Rule Setting Agency/Firm	Organic Farmers (55)	Conventional Farmers(65)
1	Downgrading of the product by the buyer	NGOs/Hill Produce Dealers	10(18.18)	65 (100)
2	Price offered less than the market price	NGOs/Hill Produce Dealers	-	65 (100)

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data

Cent per cent of the conventional farmers felt down grading of the black pepper to reduce the price purposefully by the dealers and they revealed that were mostly offering price less than the market price, so that they can ensure a better margin for their business. Certain buyers encourage the farmers for advance payment from the traders, for their marketable surplus even before the harvest season, while the farmers in the study area denied such a practice.

The organic farmers expressed that they were experiencing a delay in payment of black pepper from the NGOs for last two years, due to different reasons informed by NGOs, while none of the farmers has reported that the hill Produce Dealers or NGOs were encouraging advance payment for their produce.

#### **4.1.1.10 Informal rules for wholesalers and hill produce dealers**

They informed that it's not possible to pinpoint the informal rules exists in the value chain, but they agreed that there exist certain practices prevailing in the business connected with cleaning and drying of pepper, handling of produce, storage related practices, transportation practices and loading and unloading.

At the same time they revealed that, the important informal rule they follows were compromise over the price and the profit in order to keep relationship between the hill produce dealers and the wholesalers. Though they deal in different hill produce everybody play safe to avoid loss in the business. When price of the black pepper was high the profits for the traders were high and when the price came down, their profit also reduced.

#### **4.1.1.11 Informal rules for marketing cooperatives and farmer producer company**

Similar to wholesalers and hill produce dealers, marketing cooperatives and farmer producer company also play safe to avoid loss in the business. They also go for compromises in the price if situation demands.

### **4.2 Value chain governance structure**

After identifying the formal and informal rules prevailed in the different nodes of the value chain, an attempt has made here to examine the chain governance and its structure in the value chain. The chain governance can be largely accounted with three variables: the complexity of information that the manufacture of a product entails (design and process); the ability to codify or systematize the transfer of knowledge to suppliers; and the capabilities of existing suppliers to efficiently and reliably produce the product. Additional influences on the governance structure include the quality, stability, and power of the business enabling environment and institutions, as well as producers and the buyers. Value chain governance by Gereffi *et al* (2005) identified three variables and are given as follows.

**a. Information complexity**

Information complexity refers to the difficulty in transferring the information and knowledge that is must to ensure a particular transaction. While working with suppliers on complicated product and process specifications, the more complex the information will be, more costly will be the effort to control and coordinate production.

**b. Information codification**

Information codification is the extent to which lead firms can convert tacit, implied information and knowledge into explicit, concrete and situation-specific information and transmit it to producers effectively, efficiently and at minimal cost. It is absolutely critical for lead firms to tell suppliers exactly what they want and how it should be made, if suppliers do not understand what buyers want, they cannot produce to specification and meet standards, and buyers run the risk of losing their customers.

**c. Supplier capability**

Supplier capability refers to the ability of suppliers to meet all transaction requirements. These may include quantity and quality specifications, on-time delivery, and environmental, labor and safety standards. One aspect of supplier capability is often the accessibility of appropriate support services, such as input supply, equipment maintenance, transportation, certification and assistance with documentation and licenses.

Further, Gereffi *et al* (2005) proposed five basic types of value chain governance derived from empirical observations on the basis of the identified variables, and classified it into markets, modular, relational, captive and hierarchical governance types. Gereffi and Lee (2012) found that the power of the buyer over the supplier diminishes as the value chain moves from hierarchy to market and the features of governance structures are presented in Table. 4.37.



**Table. 4.37 Features of different governance types in value chain**

<b>Governance Type</b>				
<b>Market</b>	<b>Modular</b>	<b>Relational</b>	<b>Captive</b>	<b>Hierarchy</b>
Simple transactions	Products are supplied on specifications from the buyers	Complex interactions between buyers and sellers.	Small suppliers are dependent on a few buyers.	Vertical integration and managerial control within a set of lead firms that develops and manufactures products in-house.
Information on product easily transmitted	Maintain full responsibility for the technology used.	Transfer of information based on mutual dependence regulated through reputation spatial proximity, family and ethnic ties and the like.	High degree of monitoring and control by lead firm.	Manufacturing products in-house, product specifications not be codified, products are complex, or competent suppliers cannot found.
No formal cooperation between participants	Stronger integration and reliability in transfer of knowhow.	Ability to codify information are low	High switching cost and producers are less qualified.	Provide regular employment, guarantee quality and build producer capacity.
Cost of switching to new partner is low for producers and buyers	Producer's go for additional capital investment on behalf of buyers.	Implicit knowledge exchange, not easily transmitted	Suppliers are dependent on the lead firm for complementary activities such as design, logistics, component purchasing, and process technology upgrading	Less tangible social benefits, influential business people offer protection to society, by providing schools, health facilities or consumer credit which

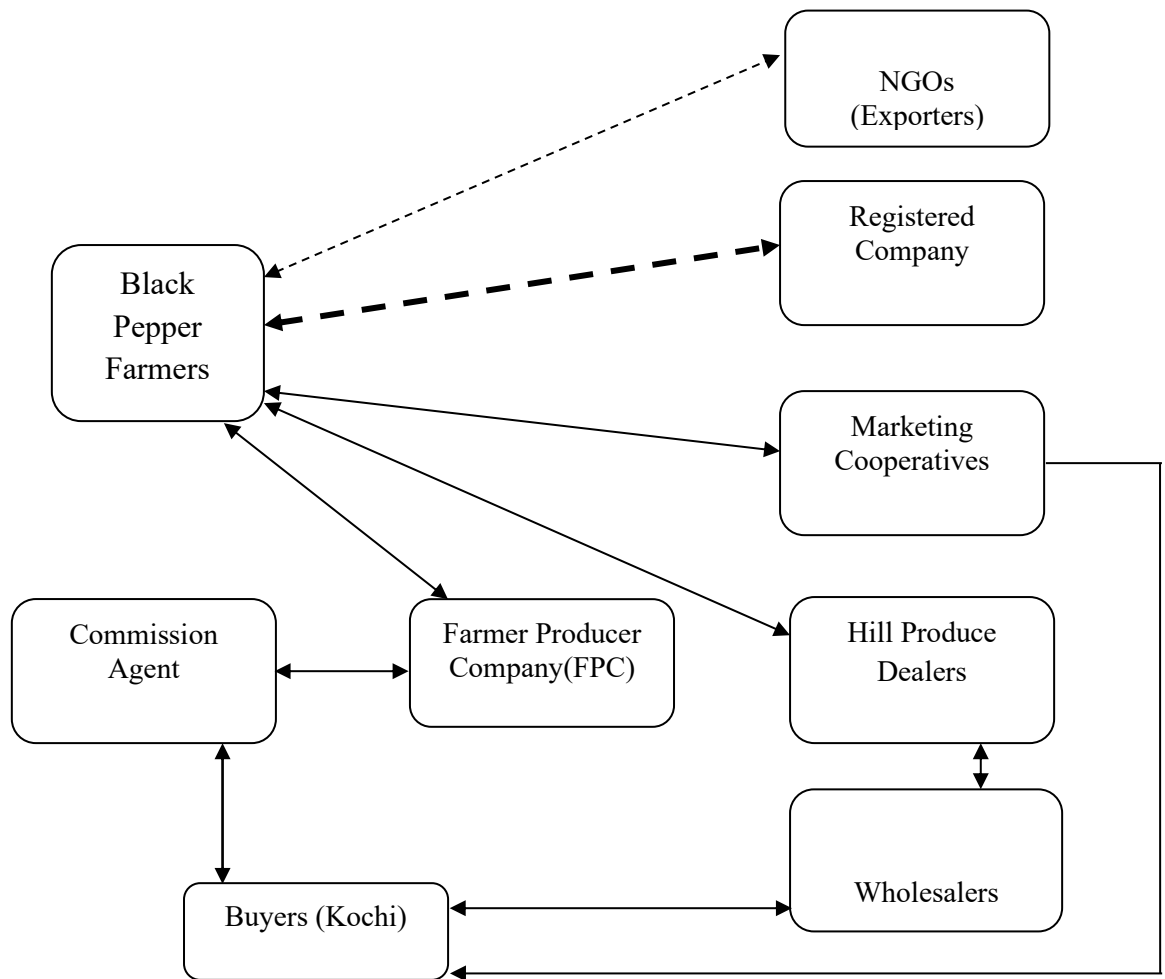
				benefits the livelihood of the vulnerable.
No interest or control in production by buyer		Cost of shifting to new partners are high	Lose their independence and have a low standing in captive value chains that limit their benefits	
Sets a few standards if any		Lead firm specifies what it needs, controls the valued activities in the chain, thus having the ability to exert more control over the producer.		
No information provides to producers on what the market wants and how to produce.		Supply of products based on quality, origin or other desirable characteristics		
Price remains the central of governance mechanism				

Source: Gereffi et al (2005)

#### 4.2.1 Governance type along the different nodes of black pepper value chain

The type of governance structure identified in different nodes of the black pepper value chain is observed on the basis of conditions set by Gereffi (2003) and Gereffi *et al* (2005) and it is presented in Fig 4.25. The different nodes

included in the value chain structures were farmers to NGOs, farmers to registered company, farmers to marketing cooperatives, farmers to hill produce dealers, farmers to wholesalers, farmers to farmer producer company, marketing cooperatives to buyers in Kochi, wholesalers to buyers in Kochi, farmer producer company to commission agent and commission agent to buyers in Kochi.



**Types of Value Chain Governance**

- Market**            ←————→
- Modular**        ←-----→
- Relational**      ←- - - ->

**(No Captive and Hierarchical types identified in the chain)**

**Fig. 4.25 Types of value chain governance**

#### 4.2.2 Governance structures influence in the value chain actors

It is observed that different types of governance coordination has been spotted in the different value chain nodes, accordingly different governance structures were identified in the black pepper value chain. The most important aspect of the black pepper value chain is that it is a buyer driven chain where the buyers exerts power over the producers. The identified governance structures are presented in Table 4.38.

**Table 4.38 Governance structures between value chain actors**

<b>Sl. No</b>	<b>Value chain nodes</b>	<b>Type of governance structure</b>
1.	Between black pepper farmers and hill produce dealers	Market type
2.	Between black pepper farmers and NGOs	Modular type
3.	Between black pepper farmers and registered company	Relational type
4.	Between black pepper farmers and marketing cooperatives	Market type
5.	Between black pepper farmers and farmer producer company	Market type
6.	Between hill produce dealers and wholesalers	Market type
7.	Between farmer producer company and commission agent	Market type
8.	Between commission agent and buyers (Kochi)	Market type
9.	Between wholesalers and buyers (Kochi)	Market type
10.	Between marketing cooperatives and buyers (Kochi)	Market type

##### 4.2.2.1 Market type of governance structure

After the examination of governance in the black pepper value chain, it was found that the “market” type coordination was existed between the black

pepper farmers and hill produce dealers after identifying the presence of following features:

- a) The transactions between the farmers and hill produce dealers are simple, hence the complexity in the information are very low,
- b) There is no formal cooperation between participants,
- c) No interest or control in production by buyer,
- d) No information provides to producers on what the market wants and how to produce,
- e) Cost of switching to new partner is low for producers and buyers,
- f) Price remains the central of governance mechanism.

Similar governance features has identified between black pepper farmers and marketing cooperatives, between black pepper farmers and farmer producer company, between hill produce dealers and wholesalers, between farmer producer company and commission agent, between commission agent and buyers (Kochi), between wholesalers and buyers (Kochi) and between marketing cooperatives and buyers (Kochi).

This result was supported by Gereffi and Fernandez-Stark (2016), i.e. in the spot market, the goods are exchanged between multiple buyers and sellers at a period of time with price being the main factor for the transaction. A study on value chain governance in the fishery sector was conducted in Kerala by Somasekharan *et al* (2015) and they also indicated that “market” form of governance was predominant between the auctioneer and the export agents in fishery sector where the price remains the main factor of business transactions as the product was sold to the highest bidder.

#### **4.2.2.2 Modular type of governance structure**

Transactions at the interface between black pepper farmers and NGOs were controlled through “modular” type of governance, where the black pepper were supplied by farmers to NGOs as per their product specifications( organic

black pepper), which satisfies the first feature of modular type, i.e. “products are supplied on specifications from the buyers”.

Moreover, NGOs included in the value chain of black pepper of Idukki and Wayanad such as Peermade Development Society (PDS), Wayanad Social Service Society (WSSS) and Wayanad Vanamoolika Samrakshana Sangham were the advocates of organic farming in Idukki and Wayanad districts and assisted the farmers in the certification process for their farms with organic certification. They promote organic farming and ensure the organic production of farm produce through their efficient internal control system and other ways of ensuring organic production in the farm include soil testing in soil testing lab, distribution of seedlings of various crops from NGOs own nursery, distribution of organic manures such as organic NPK, copper sulphate etc. and procurement of produce from farms through their field officers. Thus, NGOs maintain full responsibility for the technology used and stronger integration and reliability in transfer of knowledge. Organic farmers in Idukki and Wayanad districts informed that they had increased the cultivation of black pepper depends on the requisite from the NGOs and it shows that producers' had gone for additional capital investment on behalf of buyers.

It should be noted that the information complexity was found high, ability to codify information were high (NGOs have managed it through their own extension officers) and the farmers had the capability in supplying the required and specified quality product to NGOs (farmers capabilities were high in supplying the quality product, being certified organic farmers). These farmers had the capability of adopting improved techniques with proper training from the NGOs. Furthermore, the exporting of value added pepper products were carried out by the registered exporters under the NGOs, where the risk of rejection of consignment to different countries were bear by the exporters itself. Somasekharan *et al* (2015) stated that the “modular” type of governance was identified between exporters and export agents of seafood in Kerala, where the exporters bear the risk of consignment rejection from the importing countries.

#### **4.2.2.3 Relational type of governance structure**

In “relational” form of governance structure, the interaction between sellers and buyers were complex, transfer of information is based on mutual dependence, ability to codify information are low, and implicit knowledge exchange between the participants. While the lead firm specifies what it needs and controls the value activities in the chain, thus the firms have the ability to exert more control over the producer and they assures the supply of desired products based on quality and other characteristics from the farmers. For these reasons, the form of governance structure between black pepper farmers and other registered company (i.e. exporter not under NGOs) was found “relational” where the cost of shifting to new partners are high.

Somasekharan *et al* (2015) reported that peeling units of fish in Kerala carry out partial processing activities and supply the product to export houses and the export houses provide financial support for upgrading peeling sheds and processing activities. As a result, a “relational” form of governance evolved in the value chain node.

In general, the value chains and its actors, their functions, their relationships and linkages in the chain, governance pattern imposed cannot be fixed for a period, indeed, it keeps on changing year after year. That is, it fluctuates according to the transformations in organization, modifications in governance types and linkages with changes in markets and competition (Pietrobelli and Staritz, 2013). Thus, no governance type can remain stable in any value chain, the change in governance type may occur according to the changes in formal and informal rules related with the value chain.

#### **4.3 Conclusion**

After examining the value chain governance and the value chain structures in the black pepper value chain, it was obvious that the price of the black pepper remains as a significant factor that decides the “market type” governance structure of the value chain. Hence the conventional farmers in the

value chain and their chain actors fell under the market type structure. Modular type has identified between the farmers and the NGOs, where the farmers supplied the required product to the NGOs by using the technology and knowledge which has transferred from the NGOs to the farmers and further, they have encouraged farmers to undertake additional investment in agriculture. Relational governance structure were observed between the farmers and registered company where the interaction between farmer and buyer were complex, but the mutual dependence existed between them and the firm collected the desired quality product from the black pepper farmers. Being a buyer-driven value chain, the black pepper value chain also have the notion of safeguarding the farmers' interest will be always unstable, for which the farmer has to be more organised and united to overcome the exploitation from other value chain actors.



## SECTION III

### 4(C) Linkages in Value Chain

FAO (2007) observed that agricultural production in emerging economies does not reach consumers directly from the farm and the agricultural producers are integrated into value chains with forward linkages and backward linkages. Later, this observation was supported by UNIDO (2011) and stated that emerging economies are certainly linked to agro-processors and buyers through market transactions which may ultimately lessen the farmer rewards or increase the risks of producers, who have low bargaining power and skills.

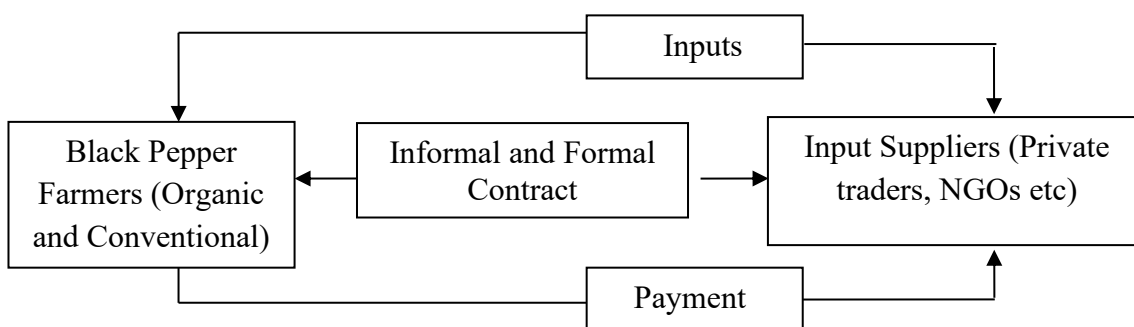
In the study an effort was made to identify the producer farmer's linkages with other actors in the value chain and to establish the motives for their business relationships. In most cases the actors intentionally connected together to gain benefits from linkages. That's why, it became inevitable to identify reasons for linkages, the formality of linkages and the level of trust among the value chain participants in linkages. Generally, linkages are of two types: vertical linkages and horizontal linkages. A vertical linkage explains the relationships between actors in the value chain in different levels and the horizontal linkages clarify the linkages among the actors at the same level of value chain.

#### 4.1.1 Vertical Linkages

##### i) Linkages between farmers and input suppliers

It was identified that there exist a linkage between black pepper farmers and input suppliers in the value chain through informal and formal contract. The inputs such as pepper cuttings or planting materials, fertilizers and plant protection chemicals, organic manures were supplied through the input suppliers and they received cash payment for the inputs supplied to farmers. These linkages were found as simple, informal and loose (Fig. 4.26).

**Fig 4.26. Linkages between farmers and input suppliers**



**ii. Linkages between farmers and exporters (under NGOs)**

The linkages between black pepper farmers with NGOs were formal and to an extent it was found well documented by the NGOs officials. The prices for black pepper were offered to farmers on the basis of membership and the duration of their membership with the NGOs.

**iii. Linkages between farmers and marketing co-operatives**

Farmers has to submit an application to obtain membership from the marketing society, and so the relationship between farmers and the marketing society has identified as formal and all services accessible and offered to members were well documented.

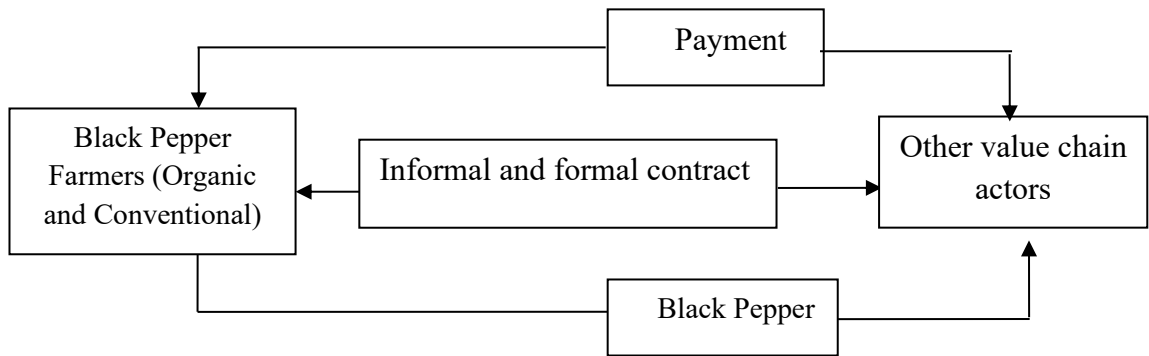
**iv. Linkages between farmers and farmer producer company**

Shareholders (farmers) of the companies have a formal relationship with the companies, and the benefits and services enjoyed by the farmers were recorded and audited properly.

**v. Linkages between farmers and other value chain actors**

Similar to the linkages between farmers and the input suppliers, the linkage between farmers and other value chain actors (Fig. 4.27) were found informal and formal, where the black pepper transmit from the farmers to other value chain actors and in return the payment for equivalent value of the black pepper were received by the farmers. Mostly, the payments were done in cash only.

**Fig 4.27 Linkages between farmers and other value chain actors**

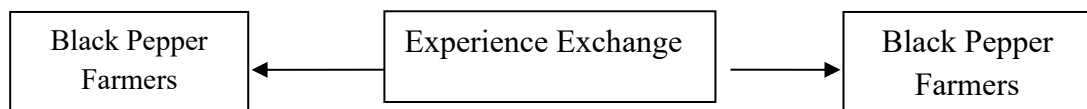


#### 4.1.2 Horizontal Linkages

##### i) Linkages between black pepper farmers

In the black pepper value chain, the farmers accounted for performing the most important role that created original product in the value chain. In addition to vertical linkages between the farmers and input suppliers/hill produce dealers/wholesalers and exporters, there were horizontal linkages among farmers, mainly for the exchange and sharing of experiences of black pepper cultivation, farm management, harvesting and marketing (Fig 4.28).

**Fig 4.28. Linkages between black pepper farmers**



#### 4.1.3 Farmer's linkages with other value actors

In addition to the vertical and horizontal linkages, the linkages in production can be classified into backward linkages and forward linkages or another classification as upstream and downstream linkages. Backward linkages in the black pepper value chain refers to linkages of the farm to the non-farm sector which supplies agricultural inputs like planting materials, agrochemicals, organic inputs etc. for production in farm. Forward linkages represent the non-farm sector which has the linkages in distribution and processing of agricultural

outputs. When the relationship between the seller and buyer in a value chain shaped quickly when they meet on the spot, aims to make a transaction or to give or take a benefit can be considered as a short term linkage, whereas actors in the value chain prefer to transact with other actors repeatedly for a long time is considered as long term linkage.

The Table 4.39 depicts a clear picture about the farmer's linkages with other value chain actors. Among the identified value chain actors in the value chain, the input suppliers represented the important backward linkage of farmers, while the hill produce dealers, wholesalers, exporters, etc were having the forward linkages to farmers. The business relationship of the two parties in a value chain, the reason or purpose of the linkage, level of formality in linkages and level of trust in linkages were obtained from the black pepper farmers.

**Table 4.39 Farmer's linkages with other value chain actors**

Sl No	Actors in value chain	Purpose in Linkage	Idukki (n=60)			Wayanad(n=60)		
			Linkage with actors	Period of Linkage		Linkage with actors	Period of Linkage	
				Short Term Linkage	Long Term Linkage		Short Term	Long Term
1	Input Suppliers	Supply of Inputs	44(73.3)	-	44(100)	53(88.3)	-	53(100)
2	Hill Produce Dealers	Procures Black Pepper	60(100)	27(45)	33(55)	60(100)	13(21.6)	47(78.3)
3	Wholesalers	Procures Black Pepper	16(26.7)	-	16(100)	-	-	-
4	Exporters	Procures, process and export black pepper	26(33.3)	-	26(100)	29(48.3)		29(100)
6	Krishi Bhavan	Input supply and advisory services	60(100)	-	60(100)	60(100)	-	60(100)
7	Spices Board	Advisory services	11(18.3)	11(100)	-	-	-	-
8	KAU Research Station/KVKs	Advisory services	4(6.7)	4(100)	-	10(16.6)	10(100)	-

SI No	Actors in value chain	Purpose in Linkage	Idukki (n=60)			Wayanad(n=60)		
			Linkage with actors	Period of Linkage		Linkage with actors	Period of Linkage	
				Short Term Linkage	Long Term Linkage		Short Term	Long Term
9	NGOs	Input supply, procurement, process and export black pepper and advisory services	26(33.3)	-	26(100)	29(48.3)	-	29(100)
10	Registered Companies	Input supply, procurement, process and export black pepper and advisory services	6(10)	-	6(100)	-	-	-
11	Fellow farmers	Experience exchange for better crop management and marketing of black pepper	60(100)	-	60(100)	60(100)	-	60(100)
12	Cooperatives	Input supply, procures and sell black pepper and advisory services	51(85)	-	51(100)	60(100)	-	60(100)
13	Commercial Banks	Bank account, agricultural credit and other credits	60(100)	-	60(100)	60(100)	-	60(100)
14	Government Administration Panchayath	Records and documentation of agriculture activities of the area	60(100)	-	60(100)	60(100)	-	60(100)

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data

Input suppliers in the study area supplies both fertilizers, pesticides and organic manures to black pepper cultivation and 73.3 percent of farmers in Idukki had long term relationship with input suppliers and 88.3 percent of farmers in Wayanad district had long term relationship with input suppliers.

Cent percent of farmers in Idukki and Wayanad districts were linked with hill produce dealers, while a 45 percent of farmers in Idukki district and 21.6 percent of farmers in Wayanad district were having short term linkages with hill produce dealers and the remaining farmers agreed that their period of linkage was long term. Being one of the major actor who procures black pepper directly from farmers and sells it to wholesalers after taking their share of margin in the business, majority of conventional farmers in these districts prefer to sell their black pepper to the hill produce dealers in their locality than to the wholesaler at a distant place. Wholesalers are located mostly in the town area and it became less accessible for the farmers in rural area. The farmers from Idukki district alone had linkage with wholesalers directly.

The role of non-profit organizations or voluntary citizen's group in the production of organic pepper and other agriculture products cannot be ignored in the study. In Idukki and Wayanad district the presence of NGOs are very prominent in popularising organic farming by giving adequate support by providing agriculture inputs and advisory services. Farmers in Idukki district (56.7 percent) and farmers in Wayanad district (48.3 percent) has long term direct linkage with NGOs. Exporters were the convincing player in the value chain who sold black pepper and processed value added products like white pepper and green pepper. Here, 33.3 percent of farmers in Idukki district and 48.3 percent of farmers in Wayanad district has long term direct linkage with exporters, through the NGOs.

Registered company carried out spice trade including black pepper, supplies agriculture inputs and advisory services to farmers, process and export value added products. Long term relationship was found between six black pepper farmers and registered company in Idukki district.

Cooperatives in the study area were not limited to marketing cooperatives alone, cooperative banks were also engaged in supplying agricultural inputs to the farmers other than agricultural credit and an inevitable role in the black pepper value chain. Farmers had a long term relationship with cooperatives and they enter into a contract for becoming a member in cooperatives. Secondly, 85 percent of the farmers in Idukki district and cent percent farmers in Wayanad district had linkage with cooperatives in the locality, where the linkages of farmers with Spices Board and KAU Research Station and KVKs were found very little.

The analysis exhibited that there exist cent percent linkage between farmers and fellow farmers, farmers and hill produce dealers, farmers and commercial banks, farmers and krishi bhavan and farmers and local administration.

#### **4.1.4 Level of formality and level of trust in linkages**

Three factors were identified to obtain the level of formality in the linkages are informal, verbal arrangement and formal written contract. Informal linkages are direct, person-to-person contacts and it is on the basis of need or requirements between two parties. A verbal arrangement does not have any legal support, but the two parties may have discussed about an issue and agreed upon verbally. The last one, formal written contract is an offer made by one party to another party in exchange of goods or services and its basic requirements includes an offer, an acceptance, legal capacity to contract for both parties, lawful subject matter, obligation to fulfill and consideration (DFID, 2008). Accordingly, business linkages or relationships can be formal or informal and on these basis, formality in linkages between farmers and other actors in the value chain were identified.

Trust and linkages are interconnected within a value chain, and linkages creates trust in the relationships. Two parties cannot have or no reason to have trust between them, if they are without linkages. Normally, the linkages without trust are considered as weak linkages and linkages with more trust are considered

as strong linkages. Level of trust in linkages were obtained among farmers, and the level of trust is divided into distrust, no trust, little trust, some trust and full trust (DFID, 2008).

The level of formality in linkages (Table 4.40) and the level of trust (Table 4.41) between the linked actors were checked and observed that whether it has affected on the black pepper value chain or not.

**Table 4.40 Level of formality in linkages**

Idukki District (n=60)				Wayanad District (n=60)			
Linkages	Informal	Verbal Arrangement	Formal written contract	Linkages	Informal	Verbal Arrangement	Formal written contract
Input Suppliers(44)	10 (22.7)	34 (77.3)	-	Input Suppliers (53)	12 (22.6)	41 (77.4)	-
Local traders(60)	-	60 (100)	-	Local traders(60)	-	60 (100)	-
Wholesalers (16)	-	16 (100)	-	Wholesalers(0)	-	-	-
Exporters(34)	-	-	20 (100)	Exporters (29)	-	-	29 (100)
Krishi Bhavan(60)	-	-	60 (100)	Krishi Bhavan(60)	-	-	60 (100)
Spices Board(11)	11 (100)	-	-	Spices Board	-	-	-
KAU, Research Station and KVKs(4)	-	4 (100)	-	KAU, Research Station and KVKs (10)	-	10(100)	-
NGOs (34)	-	-	20 (100)	NGOs (29)	-	-	29 (100)
Registered Companies (6)	-	-	6 (100)	Registered Companies	-	-	-
Fellow farmers(60)	60 (100)	-	-	Fellow farmers(60)	60 (100)	-	-
Cooperatives(51)	-	-	51 (100)	Cooperatives(60)	-	-	60 (100)
Commercial Banks(60)	-	-	60 (100)	Commercial Banks(60)	-	-	60 (100)
Government Administration – Panchayath(60)	-	-	60 (100)	Government Administration – Panchayath(60)	-	-	60 (100)

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data



**Table 4.41 Level of trust in linkages**

Actors	Idukki District (n=60)				Actors	Wayanad District(n=60)				Total (n=120)			
	No Trust	Little Trust	Some Trust	Full Trust		No Trust	Little Trust	Some Trust	Full Trust	No Trust	Little Trust	Some Trust	Full Trust
Input Suppliers (44)	21 (47.7)	23 (52.3)	-	-	Input Suppliers (53)	23 (43.4)	30 (56.6)	-	-	44 (45.4)	53 (54.6)		-
Hill produce dealers (60)	46 (76.7)	14 (23.3)	-	-	Hill produce dealers (60)	31 (51.7)	25 (41.7)	4 (6.7)		77 (64.2)	39 (32.5)	4 (3.33)	-
Wholesalers(16)	2 (12.5)	4(25)	10 (62.5)	-	Wholesalers	-	-	-	-	2 (12.5)	4(25)	10(62.5)	
Exporters(20)	-	1(5)	18(90)	1(5)	Exporters(29)	-	-	21 (72.4)	8 (27.6)	-	1(2)	39(79.6)	9(18.4)
Krishi Bhavan(60)	-	-	55 (91.7)	5(8.3)	Krishi Bhavan(60)	-		23 (38.3)	37 (61.7)	-		78(65)	42(35)
Spices Board(11)	-	11 (18.3)	-	-	Spices Board	-	-	-	-	-	11(9.2)	-	-
KAU Research Station/KVKs (4)	-	4(6.7)	-	-	KAU Research Station/KVKs (10)	-	6	4	-	-	10(8.3)	4(3.3)	-
NGOs(20)	-	-	18(90)	2(10)	NGOs(29)	-	-	11(18.3)	18(30)	-	-	29(24.2)	20(16.7)
Registered Companies(6)	-	3(5)	3(5)	-	Registered Companies	-	-	-	-	-	3(2.5)	3(2.5)	-
Fellow farmers(60)	-	6(10)	41 (68.3)	13 (21.7)	Fellow farmers(60)	-	10 (16.6)	32 (53.3)	18 (30)	-	16 (13.3)	73(60.8)	31(25.8)
Cooperatives (51)	-	13 (21.6)	36 (60)	2(10)	Cooperatives (60)	-	7 (11.6)	39(65)	14 (23.3)	-	20 (16.7)	75(62.5)	16(13.3)
Commercial Banks(60)	43 (71.7)	12(20)	5(8.3)	-	Commercial Banks(60)	35 (58.3)	21(35)	4(6.7)	-	78(65)	33 (27.5)	9(7.5)	-
Government Administration (60)			55 (91.7)	5(8.3)	Government Administration (60)		8 (13.3)	42(70)	10 (6.7)		8(6.7)	97(80.8)	15(12.5)

Note: Figures in parenthesis indicate percent to total

Source: compiled from primary data

The level of formality in linkages and the level of trust in linkages between the farmers and other value chain actors are presented in this section.

### **1. Input Suppliers**

The level of formality perceived in the linkage included both informal (22.7 per cent) and verbal arrangements (77.3 per cent) and there is no formal written contract between input suppliers and the farmers. Levels of trust in linkages were obtained among farmers who had linkages with input suppliers, that is, 45.36 percent of farmers has no trust with input suppliers and 54.64 percent had a little trust with them.

### **2. Hill Produce Dealers**

The black pepper farmers and hill produce dealers had verbal arrangements in buying and selling of black pepper and a check on trust maintained in their relationship showed that majority of the farmers (64.2 per cent) from the two districts has no trust over them. Nobody had full trust over the hill produce dealers while a meager per cent (3.33) had some trust and 32.5 per cent of farmers had a little trust with hill produce dealers.

### **3. Wholesalers**

Sixteen farmers from Idukki district sold black pepper to wholesalers and the level of formality in transactions between them was agreed verbally and among the farmers two of them has no trust with wholesalers, four has little trust and ten has some trust.

### **4. Exporter**

The level of formality between the black pepper farmers and the exporters were neither informal nor verbal arrangements. They enjoyed the relationship with formal written contracts where 77.8 percent of the farmers who had linkages with exporters agreed to have some trust in exporters, 19.05 percent have full trust and a 3.2 percent have a little trust in relationship with exporters.

## **5. Registered Companies**

The business relationship between the black pepper farmers and the registered companies were formal written contract, where three farmers had a little trust with registered companies and the remaining three has some trust in the linkage with registered companies.

## **6. Krishi Bhavan**

Agriculture Officer and other krishi bhavan staffs in each panchayat provides agricultural inputs as subsidies, and all other help and support for the farmers to carry out the farm activities. Because of this reason, all the farmers had long term relationship with Krishi bhavan. All farmers were listed in the records in Krishi bhavan and hence the formality is considered as a formal contract. Out of the total farmers, 35 percent expressed that they trust krishi bhavan fully and the rest 65 percent has some trust on them.

## **7. Spices Board**

Spices board, a central government organization for the development and promotion of Indian spices, offers quality testing of spices, guidance to farmers on getting higher and better quality yields and providing infrastructure for processing and value addition. For all these activities spices board organizes farmer meetings to give help and support to farmers. Eleven farmers (18.33 per cent) in Idukki has attended a meeting with spices board on value addition of spices and they considered it as a short term linkage, informal in nature and the farmers expressed a little trust on them.

## **8. Kerala Agricultural University and Research Stations and Krishi Vigyan Kendra**

Kerala Agricultural University (KAU) entrusted to carry out education and research on agriculture in the state and also providing extension services to farmers. In Idukki and Wayanad districts, four farmers (6.66 per cent) and ten farmers (16.66 per cent) respectively had a verbal arrangements with KAU and

research stations and Krishi Vigyan Kendra. Among the total farmers in both districts 8.33 per cent had a little trust in KAU and Research Stations/ Krishi Vigyan Kendra, while the rest four farmers (3.33 per cent) expressed some trust in KAU and Research Stations / Krishi Vigyan Kendra.

## **9. NGOs**

A non-profit organization, voluntary citizen's group and their role in the production of organic pepper and other agriculture products cannot be ignored. In Idukki and Wayanad district the presence of NGOs are very prominent, in popularising organic farming by giving adequate support in providing agriculture inputs and advisory services. Farmers in Idukki district (56.7 percent) and farmers in Wayanad district (48.3 percent) has long term direct linkage with NGOs, where the formality between them are in formal written contracts. 44.4 percent of black pepper farmers fully trusted NGOs and a majority of 55.6 percent have some trust in them and they had benefitted from the relationship with NGOs.

## **10. Fellow farmers**

The relationship between fellow farmers are always informal and lifelong and on the basis of friendship, all the sample farmers in Idukki and Wayanad district were members in the "Pepper samithis" under each krishi bhavan. Majority of the farmers were using smart phones, and they exchange queries and explanations related to farm issues through "Whatsapp" on a daily basis. Majority of farmers (60.8 percent) agreed that they have some trust on the fellow farmers, 25.8 percent had full trust and a less per cent of 13.3 percent had little trust over their friends.

## **11. Cooperatives**

Cooperatives in the study area were not limited to marketing cooperatives alone, Cooperative banks were also engaged in supplying agricultural inputs to the farmers other than agricultural credit and an inevitable actor in the black pepper value chain. Farmers had a long term relationship with cooperatives and they enter into a contract for becoming a member in cooperatives. The

observation on trust maintained in the relationship between farmers and cooperatives showed that majority of the farmers (67.6 per cent) from the two districts had some trust over the cooperatives followed by 14.4 percent had full trust and 18 percent had a little trust in the relationship with cooperatives.

## **12. Commercial Banks**

Even though farmers were reluctant in disclosing their financial liabilities with the banks and only a small percent committed that they have outstanding loans with the banks. But they agreed that they operate active bank accounts with the banks which is contractual in nature, provided long term services, and through a valid agreement between bank and the black pepper farmers. Surprisingly, among the total farmers, 65 percent of the farmers have no trust in commercial banks followed by 27.5 per cent had a little trust and a small per cent of (7.5) has some trust with them.

## **13. Government Administration**

The local government administration recorded and documented the details of land and properties in a Panchayat, including the agriculture activities of that area. Cent percent of farmers in the study area expressed that they had repeated contacts with local administration on a formal and long term basis. Their trust with local administration was expressed as, 12.5 per cent with full trust, 80.8 per cent with some trust and 6.7 per cent with a little trust over the Panchayat.

## **4.2 Conclusion**

The linkages of the black pepper farmers with different actors in the value chain were identified, including the vertical and horizontal linkages and the forward and backward linkages of the black pepper farmers. It is exposed that the formality and trust existed in the linkages is on the basis of the type of business relationship between the actors. The farmers revealed that they trust Krishi bhavan, NGOs, fellow farmers, cooperatives, and government administration and it showed that black pepper farmers had comparatively high trust with the supporting actors in the value chain than the major chain actors.

## SECTION IV

### **4 (D) Constraints and opportunities faced by value chain actors**

Constraints will exist in all stages in the value chain and the identification of the constraints at all levels will help the black pepper value chain to become more efficient and will ultimately help all actors to improve the chain and to utilize all the opportunities for upgrading the value chain within their limits. For the research purpose, the major constraints experienced by farmers and other actors in black pepper cultivation and marketing were collected and analysed and included in this section.

#### **4.1.1 Constraints of black pepper farmers**

The organic black pepper farmers and conventional black pepper farmers experienced numerous constraints, in which the major constraints faced by the black pepper farmers in Idukki and Wayanad districts were classified into pre-production constraints, production constraints, marketing constraints and other constraints.

##### **4.1.1.1 Pre-production constraints of black pepper farmers in Idukki and Wayanad districts**

Pre-production constraints are considered as those constraints the black pepper farmers normally face before the starting of farm activities in the farm. Shortage in the availability of quality planting materials, shortage in availability of agro chemicals, shortage in availability of organic inputs, delay in receiving agricultural inputs and climate change (untimely rain) were found as the major pre-production constraints of black pepper farmers and the responses collected from Idukki and Wayanad districts from the black pepper farmers were analysed and presented in Table. 4.42.

Five statements were identified as pre-production constraints and the agreement of black pepper farmers were obtained in the 5-point likert scale of summated rating with weightages ranging from 5 to 1 (strongly agree to strongly

disagree) and the interpretation of the index score was prepared based on standard deviation and mean.

Categories	Category I	Category II	Total
Strongly disagree	Less than 23	Less than 23	Less than 23
Disagree	Between 23 - 39	Between 23 – 40.5	Between 23 - 40
Moderately agree	Between 39 - 72	Between 40.5 - 76	Between 40 - 74
Agree	Between 72 - 89	Between 76 - 94	Between 74 - 91
Strongly agree	Greater than 89	Greater than 94	Greater than 91
	Standard deviation= 16.45 Mean= 55.93	Standard deviation= 17.67 Mean= 58.40	Standard deviation= 17.06 Mean= 57.17

**Table 4.42 Pre-production constraints of black pepper farmers in Idukki and Wayanad districts**

Sl.No	Pre-production constraints	Idukki district (n=60)		Wayanad district (n=60)		Total (n=120)		K-Wallis test	
		Score	Index	Score	Index	Score	Index	H value	Sig.
1	Shortage in availability of quality planting materials.	218	<b>72.67</b>	224	<b>74.67</b>	442	<b>73.67</b>		
2	Shortage in availability of agro chemicals.	116	38.67	111	37.00	227	37.83		
3	Shortage in availability of organic inputs.	171	57.00	109	36.33	280	46.67	54.12	.001
4	Delay in receiving agricultural inputs.	79	26.33	152	50.67	231	38.50	54.26	.001
5	Climate change	255	<b>85.00</b>	280	<b>94.33</b>	535	<b>89.16</b>	11.59	.001
Composite Score and Index		839	55.93	876	58.40	1715	57.17		

Source: compiled from primary data

In Idukki district, climate change (85) and “shortage in availability of quality planting materials” (72.67) were reported as major constraints agreed by the black pepper farmers. At the same time, black pepper farmers of Wayanad district were also agreed to a similar pattern of result, while in case of climate change (93.33) were strongly agreed by the farmers. As a whole, the composite index of Idukki (55.93) and Wayanad district (58.40) shows that pre-production constraints are moderately agreed by the farmers. Thus, the overall composite index of 57.17 shows that pre-production constraints are moderately agreed by all the black pepper farmers.

After performing the Kruskal Wallis test on the pre-production constraints, it is revealed that the two variables, “shortage in availability of quality planting materials” and “shortage in availability of agro chemicals” were not found significant. So the null hypothesis assumed for the test has to be accepted, that is, there is no significant difference between the responses of farmers from Idukki and Wayanad districts with respect to the above mentioned pre-production constraints. However, statistically significant difference was shown in “shortage in availability of organic inputs” between the two locations (Idukki and Wayanad),  $H(2) = 54.118, p=.001$ , with a mean rank score of 81.73 for Idukki and 39.28 for Wayanad.

Likewise, “delay in receiving agricultural inputs” was also indicated a statistically significant difference in Idukki and Wayanad,  $H(2) = 54.256, p=.001$ , with a mean rank score of 38.93 for Idukki and 82.08 for Wayanad. Climate change became a severe constraint for farmers and showed a comparatively small difference in the farmers opinion in Idukki and Wayanad with,  $H(2) = 11.589, p=.001$ , with a mean rank score of 50.98 for Idukki and 70.02 for Wayanad. Hence, the null hypothesis has to be rejected.

#### **4.1.1.2 Pre-Production constraints of organic and conventional farmers**

As pointed out earlier in the study, black pepper farmers included both organic farmers and conventional farmers. Thus, an effort was made to find out



pre-production constraints felt by the organic black pepper farmers and conventional black pepper farmers in Idukki and Wayanad districts.

Categories	Category I	Category II	Total
Strongly Disagree	Less than 21	Less than 26	Less than 23
Disagree	Between 21 - 37	Between 26 – 43	Between 23 - 40
Moderately Agree	Between 37 - 70	Between 43 - 78	Between 40 - 74
Agree	Between 70 - 87	Between 78 - 95	Between 74 - 91
Strongly Agree	Greater than 87	Greater than 95	Greater than 91
	Standard deviation= 15.66 Mean= 51.93	Standard deviation= 18.47 Mean= 62.40	Standard deviation= 17.06 Mean= 57.17

Five statements were identified as pre-production constraints and the agreement of black pepper farmers were obtained in the 5-point likert scale of summated rating with weightages ranging from 5 to 1 (Strongly agree to strongly disagree) and the interpretation of the index score was prepared based on standard deviation and mean.

**Table 4.43 Pre-production constraints of organic and conventional farmers**

Sl.No	Pre-production constraints	Organic farmers (n=55)		Conventional farmers (n=65)		Total (n=120)	
		Score	Index	Score	Index	Score	Index
1	Shortage in availability of quality planting materials.	199	<b>66.33</b>	243	<b>81.00</b>	442	<b>73.67</b>
2	Shortage in availability of agro chemicals.	103	34.00	124	41.33	227	37.83
3	Shortage in availability of organic inputs.	127	42.33	153	51.00	280	46.67
4	Delay in receiving agricultural inputs.	108	36.00	123	41.00	231	38.50
5	Climate change	242	<b>80.67</b>	293	<b>97.67</b>	535	<b>89.16</b>
Composite Score and Index		779	51.93	936	62.40	1715	57.17

Source: compiled from primary data

The result shows that shortage in availability of quality planting materials were moderately agreed (66.33) by the organic farmers and fully agreed (81) by the conventional farmers. The effect of climate change was considered as a threat for organic farmers (80.67) while the conventional farmers strongly agreed it as a constraint. The analysis done on the basis of organic farmers (55) and conventional farmers (65) were also showed a similar result when compared with the results on the basis of farmers in two districts.

Jacob (2015) identified lack of quality planting materials as a vital problem for black pepper farmers in Wayanad and Idukki districts in Kerala, while Bhai and Eapen (2017) expressed it as huge demand for good quality planting material in Kerala. Likewise, Rageena (2016) stated that good quality planting materials of high yielding varieties of black pepper is not adequate in supply in the state and the suitable variety for black pepper farmers in Kerala is shade tolerant high yielding varieties.

Yogesh (2017) suggested that better planting material developed through biotechnology is required for black pepper farmers in Kodagu district of Karnataka. Further, he pinpointed heavy rainfall as a constraint for the black pepper farmers in the state.

#### **4.1.1.3 Production constraints of black pepper farmers in Idukki and Wayanad districts**

Production constraints includes both physical and technical constraints in a farm (Jacob, 2015), production problems were identified and the intensity felt by the black pepper farmers are presented in Table. 4.44. Eight statements were identified as production constraints and the response of farmers were collected in the 5-point likert scale of summated rating (with weightages ranging from 5 to 1 for strongly agree to strongly disagree). Total score and index were computed for each constraint and standard deviation and mean were used for the interpretation of the computed index score.

Categories	Category I	Category II	Total
Strongly disagree	Less than 43	Less than 45	Less than 44
Disagree	Between 43 - 55	Between 45 - 57	Between 44 - 56
Moderately agree	Between 55 - 81	Between 57 - 83	Between 56 - 82
Agree	Between 81 -93	Between 83 - 94.5	Between 82 - 94
Strongly agree	Greater than 93	Greater than 94.5	Greater than 94
	Standard deviation= 12 Mean= 64.13	Standard deviation= 15 Mean= 77.21	Standard deviation=13.5 Mean= 70.67

Black pepper farmers in Idukki and Wayanad districts experienced production constraints like high labour cost, increased incidences of pest and diseases, change in climate/unreliable rainfall, untimely distribution of credit etc. In both districts, high labour cost was strongly agreed as a constraint by the farmers and increased incidences of pest and diseases and change in climate was moderately agreed by the farmers. Untimely distribution of credit was moderately agreed by the farmers in Idukki district and completely agreed by the farmers in Wayanad district. While shortage in agriculture credit (87) and high interest rate for credit (74.67) were highly felt by the farmers in Wayanad district contrast to that of farmers in Idukki district and labour shortage for farm activities were strongly disagreed (43.67 in Idukki and 40.00 in Wayanad) by the farmers in both districts. Harvesting problems like labour shortage for harvesting and post-harvest losses were less affected by the black pepper farmers in Idukki (63 and 32) and Wayanad district (44.33 and 34.33). The overall composite index of 70.67 shows that the listed production constraints are moderately agreed by the farmers in the study area.

**Table 4.44 Production constraints of black pepper farmers in Idukki and Wayanad districts**

Sl.No	Production constraints	Idukki district (n=60)		Wayanad district (n=60)		Total (n=120)		K Wallis test	
		Score	Index	Score	Index	Score	Index	H value	Sig.
1	Labour shortage for farm activities.	131	43.67	120	40.00	251	41.83	12.01	.001
2	High labour cost	288	<b>96.00</b>	285	<b>95.00</b>	573	<b>95.50</b>		
3	Increased incidences of pest and diseases.	240	<b>80.00</b>	242	<b>80.67</b>	482	<b>80.33</b>		
4	Change in climate	229	<b>76.33</b>	246	<b>82.00</b>	475	<b>79.16</b>		
5	Shortage in agricultural credit	111	37.00	261	87.00	372	62.00	95.38	.001
6	High cost of agriculture inputs	169	56.33	206	68.66	375	62.50	12.85	.001
7	High interest rate for credit	153	51.00	224	74.67	377	62.83	52.10	.001
8	Untimely distribution of credit	218	<b>72.67</b>	269	<b>89.66</b>	487	<b>81.17</b>	32.67	.001
9	Labour shortage for harvesting	189	63.00	133	44.33	322	53.67	34.90	.001
10	High post-harvest losses.	96	32.00	103	34.33	199	33.16		
<b>Composite Score and Index</b>		1824	64.13	2089	77.21	3913	70.67		

Source: compiled from primary data

Among the accepted production constraints by the farmers, high labour cost, change in climate or unreliable rainfall and increased incidences of pest and diseases were found not significant, as the farmers from both the districts has responded these variables without a significant difference in Kruskal-wallis H test. The results of the statistically significant variables are given below:

1. Labour shortage for farm activities  
 $H(2) = 12.009, p=.001$ , with a mean rank score of 65 for Idukki and 55 for Wayanad.
2. Shortage in agricultural credit  
 $H(2) = 95.381, p=.001$ , with a mean rank score of 30.50 for Idukki and 90.50 for Wayanad.
3. High cost of agriculture inputs

$H(2) = 12.851, p=.001$ , with a mean rank score of 49.78 for Idukki and 71.22 for Wayanad.

4. High interest rate for credit

$H(2) = 52.102, p=.001$ , with a mean rank score of 39.38 for Idukki and 81.62 for Wayanad.

5. Untimely distribution of credit

$H(2) = 32.673, p=.001$ , with a mean rank score of 43.39 for Idukki and 77.61 for Wayanad.

6. Labour shortage for harvesting

$H(2) = 34.903, p=.001$ , with a mean rank score of 77.76 for Idukki and 43.24 for Wayanad.

So the null hypothesis assumed for the test (that is, there is no significant difference between the responses of farmers towards the test statistic in the two locations) has to be accepted. In case of the above listed statistically significant test statistic, the null hypothesis has to be rejected. Thus, on the basis of the above test result it can be concluded that high labour cost, increased incidences of pest and diseases, change in climate and high post-harvest losses were the major production constraints equally accepted among the farmers in the study area.

#### **4.1.1.4 Production constraints of organic and conventional farmers**

Similar to classification of black pepper farmers into Idukki and Wayanad districts, eight statements were identified as production constraints and the response of farmers were collected in the 5-point likert scale of summated rating (with weightages ranging from 5 to 1 for strongly agree to strongly disagree). Total score and index were computed for each constraint and standard deviation and mean were used for the interpretation of the computed index score.

Major production constraints faced by the organic and conventional farmers in the study area are presented in Table 4.45. The organic and conventional farmers' responses towards the constraints were almost similar to the constraints of the black pepper farmers classified on the basis of Idukki and Wayanad district.

Categories	Category I	Category II	Total
Strongly Disagree	Less than 41	Less than 47	Less than 44
Disagree	Between 41 - 53	Between 47 - 59	Between 44 - 56
Moderately Agree	Between 53 - 79	Between 59 - 84	Between 56 - 82
Agree	Between 79 -91	Between 84 - 96	Between 82 - 94
Strongly Agree	Greater than 91	Greater than 96	Greater than 94
	Standard deviation= 11.5 Mean= 62.63	Standard deviation= 15.5 Mean= 78.71	Standard deviation=13.5 Mean= 70.67

**Table 4.45 Production constraints of organic and conventional farmers**

Sl. No	Production constraints	Organic farmers (n=55)		Conventional farmers (n=65)		Total (n=120)	
		Score	Index	Score	Index	Score	Index
1	Labour shortage for farm activities.	113	41.09	138	42.46	251	41.83
2	High labour cost	260	<b>94.55</b>	313	<b>96.31</b>	573	<b>95.50</b>
3	Increased incidences of pest and diseases.	235	<b>85.45</b>	247	<b>76.00</b>	482	<b>80.33</b>
4	Change in climate/unreliable rainfall	232	<b>84.36</b>	243	<b>74.77</b>	475	<b>79.16</b>
5	Shortage in agricultural credit	180	65.45	192	59.08	372	62.00
6	High cost of agriculture inputs	171	62.18	204	62.77	375	62.50
7	High interest rate for credit	172	62.55	205	63.08	377	62.83
8	Untimely distribution of credit	221	<b>80.36</b>	266	<b>81.85</b>	487	<b>81.17</b>
9	Labour shortage for harvesting	144	52.36	178	54.77	322	53.67
10	High post-harvest losses.	84	30.55	115	35.38	199	33.16
	<b>Composite Index</b>	1812	62.63	2101	78.71	3913	70.67

Source: compiled from primary data

High labour cost was strongly agreed as a constraint by the organic and conventional farmers and increased incidences of pest and diseases and change in climate and untimely distribution of credit was agreed by organic farmers while moderately agreed by the conventional farmers. The major difference was noticed in the constraint ‘shortage in agricultural credit’ showed a higher index among the organic farmers (65.45) compared to the conventional farmers (59.08).

According to Jacob (2015), Sabu (2015) and Sreejith (2016) labour shortage is one of the major problem in black pepper production in Kerala. Incidence of pest and diseases was a severe constraint for the black pepper farmers in Idukki and Wayanad districts (Jacob, 2015; Sabu, 2015). Similarly, high wage rate or labour cost for black pepper production was also strongly agreed as a constraint for farmers by Jacob (2015) and Sabu (2015) in their studies.

#### **4.1.1.5 Marketing constraints of black pepper farmers in Idukki and Wayanad districts**

Marketing constraints means difficulties faced by the black pepper farmers in the practice of marketing of black pepper. Seven major marketing constraints were identified and the opinion of farmers towards these issues were collected in the 5-point likert scale of summated rating (with weightages ranging from 5 to 1 for strongly agree to strongly disagree). After computing the total score and index for each constraint, standard deviation and mean were used for the interpretation of the computed index score. The respondent farmers expressed their agreement to each constraint and the analyzed results are illustrated in Table 4.46.

Categories	Category I	Category II	Total
Strongly disagree	Less than 40	Less than 37	Less than 38.5
Disagree	Between 40 - 54	Between 37 - 49	Between 38.5 - 52
Moderately agree	Between 54 - 83	Between 49 - 74	Between 52 - 78
Agree	Between 83 - 97	Between 74 - 85	Between 78 - 91
Strongly agree	Greater than 97	Greater than 85	Greater than 91
	Standard deviation= 14 Mean=68.44	Standard deviation= 12 Mean=61.56	Standard deviation= 13 Mean= 65

The important marketing constraints identified and were generally affected by the black pepper farmers in both districts includes price variability of the black pepper, low price of black pepper, traders offer price is less than market

price etc. Constraints like long distance to market and high cost of transportation were highly affected by the farmers in Idukki and relatively less affected by the farmers in Wayanad district.

Accordingly, in Idukki district low price of black pepper (95.33), price variability of the black pepper (88.67), high cost of transportation (86.33), traders offer less price to market price (85.67) and long distance to market (84) were the major problems agreed by the farmers. At the same time, Wayanad district also showed a similar pattern of result except in case of long distance to market (55) which has moderately agreed by the farmers. Further, the overall composite index of 65 shows that the listed out marketing constraints were moderately agreed by the farmers in the study area.

**Table 4.46 Marketing constraints of black pepper farmers in Idukki and Wayanad districts**

Sl. No	Marketing constraints	Idukki District (n=60)		Wayanad District(n=60)		Total(n=120)		K WallisTest	
		Score	Index	Score	Index	Score	Index	H Value	Sig.
1	Price variability of the black pepper	266	<b>88.67</b>	257	<b>85.67</b>	523	<b>87.17</b>		
2	Long distance to market	252	<b>84.00</b>	165	55.00	417	69.50	54.81	.001
3	High cost of transportation.	259	<b>86.33</b>	191	<b>63.67</b>	450	<b>75.00</b>	58.12	.001
4	Low price of black pepper	286	<b>95.33</b>	292	<b>97.33</b>	578	<b>96.33</b>		
5	Difficulty in storing black pepper	130	43.33	143	47.67	273	45.50		
6	High cost for storage facilities.	113	37.67	116	38.67	229	38.17		
7	Traders offer less price than market price	257	<b>85.67</b>	262	<b>87.33</b>	519	<b>86.50</b>		
Composite Score and Index		1563	68.44	1426	61.56	2989	65.00		

Source: compiled from primary data



As an outcome of Kruskal-Wallis H test, two test statistics were found significant among the variables identified under marketing constraints ie, long distance to market and high cost of transportation and the significant levels of the test statistic are as follows:

1. Long distance to market

$H(2) = 54.813, p=.001$ , with a mean rank score of 83.17 for Idukki and 37.83 for Wayanad.

2. High cost of transportation

$H(2) = 58.155, p=.001$ , with a mean rank score of 83.01 for Idukki and 37.99 for Wayanad.

Other variables opted by the farmers as constraints were equally affected by the farmers in Idukki and Wayanad districts such as price variability of the black pepper, low price of black pepper, difficulty in storing black pepper, high cost for storage facilities and traders offer price is less than market price. Hence, the Kruskal-Wallis H test did not show difference at 1% significance level for these variables.

#### **4.1.1.6 Marketing constraints of organic and conventional farmers**

Here, the marketing constraints are classified on the basis of method of cultivation of black pepper farmers, i.e. organic or conventional. Seven major marketing constraints were identified and the opinion of two category of black pepper farmers towards these issues were collected in the 5-point likert scale of summated rating (with weightages ranging from 5 to 1 for strongly agree to strongly disagree). After computing the total score and index for each constraint, standard deviation and mean were used for the interpretation of the computed index score.

Categories	Category I	Category II	Total
Strongly disagree	Less than 39	Less than 40	Less than 38.5
Disagree	Between 39 - 52	Between 40 - 51	Between 38.5 - 52
Moderately agree	Between 52 - 81	Between 51 - 76	Between 52 - 78
Agree	Between 81 - 95	Between 76- 87	Between 78 - 91
Strongly agree	Greater than 95	Greater than 87	Greater than 91
	Standard deviation= 12.5 Mean=63	Standard deviation= 13.5 Mean=67	Standard deviation= 13 Mean= 65

Constraints faced by the organic farmers and conventional farmers in Idukki and Wayanad districts were presented in Table. 4.47.

Major marketing constraints faced by the organic and conventional farmers in Idukki and Wayanad districts were found almost equal. As expected, low price of black pepper was a severe constraint faced by both group of farmers, organic (97.09) and conventional (95.69) and were least affected by post-harvest losses. Traders offer less price than market price and price variability of the black pepper was agreed as marketing constraints by both group of farmers.

**Table.4.47 Marketing constraints of organic and conventional farmers**

Sl. No	Marketing constraints	Organic farmers (n=55)		Conventional farmers (n=65)		Total (n=120)	
		Score	Index	Score	Index	Score	Index
1	Price variability of the black pepper	238	<b>86.55</b>	285	<b>87.69</b>	523	<b>87.17</b>
2	Long distance to market	178	64.73	239	73.54	417	69.50
3	High cost of transportation.	201	73.09	249	76.62	450	75.00
4	Low price of black pepper	267	<b>97.09</b>	311	<b>95.69</b>	578	<b>96.33</b>
5	Difficulty in storing black pepper.	124	45.09	149	45.85	273	45.50
6	High cost for storage facilities.	104	37.82	125	38.46	229	38.17
7	Traders offer less price than market price	238	<b>86.55</b>	281	<b>86.46</b>	519	<b>86.50</b>
Composite Score and Index		1350	63.00	1639	67.00	2989	65.00

Source: compiled from primary data

Moreover, the study pinpointed the major point of concern for the farmers as price related and it can be substantiated with the fact that the first three constraints (low price of black pepper, price variability of black pepper, and traders offer less price than market price) pointed out by the farmers were related to the price of black pepper in the market. This result of the study is in agreement with Sabu (2015) on price variability of black pepper, while Jacob (2016) agrees with low selling price of black pepper and distance to the market for the farmers in Idukki district.

#### **4.1.1.7 Other Constraints faced by black pepper farmers in Idukki and Wayanad districts**

Four statements were identified in the category of other constraints of black pepper farmers and the agreement of farmers were obtained in the 5-point likert scale of summated rating (with weightages ranging from 5 to 1 for strongly agree to strongly disagree), the interpretation of the index score was prepared based on standard deviation and mean. The results are presented in Table 4.48. In addition to the pre-production, production and the marketing constraints, the farmers experience other constraints such as fragmentation of holdings, changing government policies, less competitiveness of black pepper in international market and increasing transaction cost.

Categories	Category I	Category II	Total
Strongly disagree	Less than 31	Less than 27	Less than 29
Disagree	Between 40-52	Between 37 -51	Between 29- 38.5
Moderately agree	Between 52 - 67	Between 51- 65	Between 38.5 - 66.5
Agree	Between 67 - 87	Between 65 - 86	Between 66.5 – 89.5
Strongly agree	Greater than 87	Greater than 86	Greater than 89.5
	Standard deviation=13 Mean=69.83	Standard deviation=11 Mean= 67.25	Standard deviation=12 Mean= 68.54

**Table 4.48 Other constraints faced by black pepper farmers in Idukki and Wayanad districts**

Sl.No	Other Constraints	Idukki district (n=60)		Wayanad district(n=60)		Total(n=120)		K Wallistest	
		Score	Index	Score	Index	Score	Index	H value	Sig.
1	Fragmentation of holdings.	158	52.70	204	68.00	362	60.33	15.09	.001
2	Changing government policies.	225	<b>75.00</b>	243	<b>81.00</b>	465	<b>77.50</b>		
3	Less competitiveness in international market	227	<b>75.70</b>	200	<b>66.70</b>	427	<b>71.17</b>	12.03	.001
4	Increasing transaction cost	228	<b>76.00</b>	160	53.30	388	64.67	26.69	.001
Composite Score and Index		838	69.83	807	67.25	1645	68.54		

Source: compiled from primary data

Indian pepper failed to meet the quality standards of the importing countries and the competitiveness were lost in international market. Consequently, it is obvious that lost competitiveness in international market and changing government policies were the major constraints agreed by the farmers in both districts and they moderately agreed that fragmentation of the holdings was also a constraint. At the same time, increasing transaction cost was agreed as a constraint among Idukki farmers and was moderately agreed by Wayanad farmers. The composite index (68.54) of all black pepper farmers shows that the farmers had fully agreed to the all statements in the other constraints category.

K-W H test disclosed that changing government policies were not found significant between two districts, while all other test statistic were found significant among the category of other constraints faced by the farmers in Idukki and Wayanad districts. The results of K-W H test performed are as follows:

1. Fragmentation of holdings

$H(2) = 15.092, p=.001$ , with a mean rank score of 48.62 for Idukki and 72.38 for Wayanad.

2. Less competitiveness in international market

$H(2) = 12.103, p=.001$ , with a mean rank score of 83.17 for Idukki and 37.83 for Wayanad.

3. Increasing transaction cost

$H(2) = 26.690, p=.001$ , with a mean rank score of 75.07 for Idukki and 45.93 for Wayanad

#### **4.1.1.7 Other constraints faced by organic and conventional farmers**

Four statements were identified in the category of other constraints of black pepper farmers and the agreement of farmers were obtained in the 5-point likert scale of summated rating (with weightages ranging from 5 to 1 for strongly agree to strongly disagree), the interpretation of the index score was prepared based on standard deviation and mean. After categorizing the farmers into organic and conventional farmers, the result shows that changing government policies, and lost competitiveness in international market were identified as the major constraint felt by the farmers in the study area.

Table 4.49 shows that fragmentation of holdings, changing government policies, lost competitiveness in international market and increasing transaction cost was moderately agreed by organic farmers while conventional farmers moderately agreed to fragmentation of holdings and increasing transaction cost and agreed to changing government policies and lost competitiveness in international market.

Categories	Category I	Category II	Total
Strongly Disagree	Less than 30	Less than 27	Less than 29
Disagree	Between 30 - 40	Between 27 - 37	Between 29 - 38.5
Moderately Agree	Between 40 - 68	Between 37 - 65	Between 38.5 - 66.5
Agree	Between 68 - 91	Between 65 - 88	Between 66.5 - 89.5
Strongly Agree	Greater than 91	Greater than 88	Greater than 89.5
	Standard deviation=13 Mean=69.02	Standard deviation=11 Mean= 68.06	Standard deviation=12 Mean= 68.54

**Table. 4.49 Other constraints faced by organic and conventional farmers**

Sl.No	Other Constraints	Organic farmers (n=55)		Conventional farmers (n=65)		Total (n=120)	
		Score	Index	Score	Index	Score	Index
1	Fragmentation of holdings.	160	49.23	202	62.15	362	60.33
2	Changing government policies.	213	<b>65.54</b>	255	<b>78.46</b>	468	<b>77.50</b>
3	Lost competitiveness in international market	199	<b>61.23</b>	228	<b>70.15</b>	427	<b>71.17</b>
4	Increasing transaction cost	187	57.54	201	61.85	388	64.67
Composite Index		759	69.02	886	68.06	1645	68.54

Source: compiled from primary data

Nagoor (2010) recognised that India is losing export competitiveness in international market due to the emergence of low cost black pepper producers like Vietnam and the entry of European countries in selling value added products. Changing government policies was one of his apprehension i.e. mainly related with duty free black pepper imports to the country. While the majority of the farmers in this study expressed their concern over the import of black pepper to India.

#### 4.1.2 Reasons for not producing value added products of black pepper

An attempt was made to identify the reasons from black pepper farmers for not producing any value added products of black pepper at the farm level. Majority of farmers revealed that they knew about the value added products like white pepper and green pepper. Fifty percent of the farmers in Idukki district and sixty percent of farmers in Wayanad district heard about the other value added products of black pepper like pepper oil and pepper oleoresin.

Four reasons were identified by the black pepper farmers as the reasons for not producing value added products of black pepper (Table 4.50) and 5-point likert scale of summated rating was employed to record the agreement of farmers to these reasons and the interpretation of the index score was prepared based on standard deviation and mean. The weightages for strongly agree to strongly disagree was ranging from 5 to 1.

Categories	Category I	Category II	Total
Strongly disagree	Less than 29	Less than 34	Less than 29
Disagree	Between 29 - 42	Between 34 - 55	Between 29 - 38.5
Moderately agree	Between 42 - 67	Between 55 - 74	Between 38.5 - 66.5
Agree	Between 67 - 93	Between 74 - 95	Between 66.5 - 89.5
Strongly agree	Greater than 93	Greater than 95	Greater than 89.5
	Standard deviation = 9 Mean= 60.25	Standard deviation=11 Mean= 65.83	Standard deviation=10 Mean= 63.04

In Idukki district, a notable reason identified by the farmers were low motivation for value addition in black pepper (90), followed by high investment required for value addition (77) in black pepper. It is true that, producing value added products of pepper were not practical for the farmers to carry out it individually at the farm level, because it requires high investment. Otherwise, the farmers should concentrate on the value addition possible at farm level like improving the quality of black pepper. In Wayanad district, the farmers identified reasons like low motivation for value addition in black pepper (93.67), followed by high investment required for value addition (70.67) in black pepper. The overall composite index of 63.04 shows that the reasons for not producing value added products of black pepper are moderately agreed by the farmers in the study area.

**Table 4.50 Reasons for not producing value added products of black pepper**

Sl.No	Reasons	Idukki District (n=60)		Wayanad District (n=60)		Total (n=120)	
		Score	Index	Score	Index	Score	Index
1	High investment required for value addition in black pepper	231	<b>77.00</b>	212	<b>70.67</b>	443	<b>73.83</b>
2	High risk associated with value addition of black pepper	112	37.33	167	55.67	279	46.50
3	Low motivation for value addition in black pepper.	270	<b>90.00</b>	281	<b>93.67</b>	551	<b>91.83</b>
4	Shortage in training to farmers for value addition	110	36.67	130	43.33	240	40.00
Composite Score and Index		723	60.25	790	65.83	1513	63.04

Source: compiled from primary data

Earlier Rageena (2016) suggested the need for proper awareness to black pepper farmers on post-harvest handling and value addition of black pepper which can help them to get better income for the farmers. Similar to the situation in Kerala, Ganapathy *et al* (2014) identified that no grading of black pepper, value



addition and certification was done at the farm gate and none of the farmers were producing white pepper in Karnataka.

#### 4.1.3 Constraints faced by Hill Produce Dealers/Wholesalers

The total number of hill produce dealers and wholesalers included in the study were 38 (22 from Idukki district and 16 from Wayanad district) and 32 (19 from Idukki district and 13 from Wayanad district) respectively.

The constraints mentioned by both hill produce dealers and wholesalers (Table 4.51) were similar but the difference was noticed in their agreements for each statements. Eight constraints were pointed out by the hill produce dealers and wholesalers and 5-point likert scale of summated rating was employed to record the agreement of these actors to the eight constraints and the interpretation of the index score was prepared based on standard deviation and mean. The weightages for strongly agree to strongly disagree was ranging from 5 to 1.

Categories	Category I	Category II
Strongly disagree	Less than 35	Less than 47
Disagree	Between 35 - 54	Between 47 - 59
Moderately agree	Between 54 - 70	Between 59 - 84
Agree	Between 70 - 88	Between 84 - 96
Strongly agree	Greater than 88	Greater than 96
	Standard deviation=8.9 Mean= 89.34	Standard deviation= 8.95 Mean= 76.62

For hill produce dealers, the major constraints identified were low price of black pepper, price fluctuation in black pepper, low quality of black pepper, high transportation cost, shortage in supply (less volume), absence of proper market mechanism for black pepper, and import of black pepper from other countries and stringent rules and regulations in black pepper trade.

**Table 4.51 Constraints faced by hill produce dealers and wholesalers**

Sl.No	Traders constraints	Hill produce dealers(n=38)		Wholesalers (n=32)	
		Score	Index	Score	Index
1	Price fluctuation in black pepper	104	91.23	88	91.67
2	Low price of pepper	92	80.70	80	83.33
3	Shortage in supply (less volume)	86	75.44	73	76.04
4	Low quality of black pepper	97	85.09	84	87.50
5	High transportation cost	93	81.58	80	83.33
6	Stringent rules and regulations in pepper trade	70	61.43	60	62.50
7	Absence of proper market mechanism for black pepper	90	78.95	76	79.17
8	Import of black pepper from other countries	83	72.81	72	75.00
	Composite Score and Index	715	89.34	613	76.62

Source: compiled from primary data

The wholesalers were highly influenced by the constraints like low price of black pepper, price fluctuation in black pepper, high transportation cost, and low quality of black pepper and shortage in supply (less volume). The composite index for hill produce dealers (89.34) shows that they strongly agree all the constraints listed out and the composite index for wholesalers is 76.62, which shows that they moderately agree to the constraints.

#### 4.1.4 Constraints faced by Exporters

As the number of exporters included in the study was only three (one exporter from Idukki district and two exporter from Wayanad district), due to this reason no statistical analysis was possible other than indicating the exporter's responses in percentages. The important constraints faced by exporters are presented in Table 4.52.

**Table 4.52 Constraints faced by exporters**

<b>Sl.No</b>	<b>Exporters constraints</b>	<b>Exporters response (N=3)</b>
1	Stringent rules and regulations for licensing/registration	3(100)
2	Difficulty in getting credit	2(66.66)
3	Lack of skilled workers	3(100)
4	High transportation cost	3(100)
5	High wage rate of labourers	3(100)
6	High investment needed for technology for value addition	3(100)
7	High processing cost	2(66.66)
8	High promotion cost	1(33.33)
9	Competition in the market	3(100)
10	Different quality standards for exporting to different countries	3(100)
11	Heavy documentation & procedures to be followed for exports	3(100)
12	Possible rejection of export materials	3(100)
13	Changing Government policies	2(66.66)

Source: compiled from primary data

Stringent rules and regulations for licensing or registration of a company, lack of skilled workers, high transportation cost, high wage rate of labourers, competition in the market, different quality standards for exporting to different countries, high investment needed for technology for value addition, heavy documentation and procedures to be followed for exports and possible rejection of export materials were the common export related problems faced by all the three exporters included in the study. Difficulty in getting credit, high processing cost and changing government policies were identified as constraints by two out of three exporters and one exporter mentioned high promotion cost was also a problem.

#### **4.1.5 Constraints faced by nurseries and input suppliers**

The major problems faced by nurseries were farmer tends to shift from black pepper cultivation to cardamom cultivation and the farmers were reluctant to buy the planting material of black pepper from Kerala(as they were buying nurseries in Karnataka). Input suppliers reported that sometimes stock out occurs for certain agrochemicals or fertilizers at the store.

#### **4.1.6 Constraints faced by marketing cooperatives/FPOs/commission agents**

Most of the constraints of the value chain actors of black pepper were common to all these actors, like marketing cooperatives, FPOs, commission agents etc. were also expressed the constraints like the low price of black pepper, price fluctuation of black pepper, high transportation cost, absence of proper market mechanism for black pepper and import of black pepper from other countries.

#### **4.1.7 Opportunities of black pepper farmers in Idukki and Wayanad districts**

The black pepper farmers and other value chain actors of the value chain has different opportunities to increase their returns from black pepper, such as by increasing the quality of the black pepper and to adopt organic farming. Seven major opportunities were identified and the opinion of farmers towards these opportunities were collected in the 5-point likert scale of summated rating (with weightages ranging from 5 to 1 for strongly agree to strongly disagree). After computing the total score and index for each opportunities, standard deviation and mean were used for the interpretation of the computed index score.

The important opportunities identified by the black pepper farmers in Idukki and Wayanad districts are presented in Table 4.53. It has to be noted that direct selling to processors or exporters, to improve quality of the black pepper and to produce value added products of pepper were identified as the major opportunities by the farmer. To produce value added products of black pepper, to improve quality of the black pepper, direct selling to processors or exporters were

the opportunities agreed by the farmers in Idukki and Wayanad districts. They were less agreed to opportunities to start own processing unit for black pepper and to start a farmer producer company in these areas.

Categories	Category I	Category II	Total
Strongly disagree	Less than 29	Less than 25	Less than 27
Disagree	Between 29 - 53	Between 25 - 49	Between 27 - 51
Moderately agree	Between 53 - 81	Between 49 - 76	Between 51 - 75
Agree	Between 81 - 95	Between 76 - 91	Between 75 - 90
Strongly agree	Greater than 95	Greater than 91	Greater than 90
	Standard deviation= 9.5 Mean=60.38	Standard deviation= 8 Mean=57.95	Standard deviation= 8.75 Mean= 59.17

**Table. 4.53 Opportunities of black pepper farmers in Idukki and Wayanad districts**

Sl.No	Opportunities of farmers	Idukki district(n=60)		Wayanad district(n=60)		Total (n=120)	
		Score	Index	Score	Index	Score	Index
1	Produce value added products of black pepper	245	<b>81.67</b>	224	<b>74.67</b>	469	<b>78.17</b>
2	To improve quality of the black pepper	262	<b>87.33</b>	254	<b>84.67</b>	516	<b>86.00</b>
3	Direct selling to processors or exporters	258	<b>86.00</b>	251	<b>83.67</b>	509	<b>84.83</b>
4	To start own processing unit for black pepper	141	47.00	139	46.33	280	46.67
5	To start a farmer producer company	176	58.67	173	57.67	349	58.17
6	To change to organic farming practices	100	33.33	93	31	193	32.17
7	To obtain organic certification	86	28.66	83	27.67	169	28.17
<b>Composite Index</b>		1268	60.38	1217	57.95	2485	59.17

Source: compiled from primary data

Seven major opportunities were classified on the basis of organic farmers and conventional farmers and the opinion of farmers towards these opportunities were collected in the 5-point likert scale of summated rating (with weightages ranging from 5 to 1 for strongly agree to strongly disagree). Among the one hundred twenty farmers from Idukki and Wayanad districts, only 55 farmers were certified organic farmers and the remaining 65 were conventional farmers. The opportunities of organic farmers and conventional farmers in Idukki and Wayanad districts are presented in Table 4.54.

**Table 4.54 Opportunities of organic and conventional farmers**

Sl.No	Opportunities of farmers	Organic farmers (n=55)		Conventional farmers (n=65)		Total (n=120)	
		Score	Index	Score	Index	Score	Index
1	Produce value added products of black pepper	203	<b>73.82</b>	266	<b>81.85</b>	469	<b>78.17</b>
2	To improve quality of the black pepper	232	<b>84.36</b>	284	<b>87.38</b>	516	<b>86.00</b>
3	Direct selling to processors or exporters	227	<b>82.55</b>	282	<b>86.77</b>	509	<b>84.83</b>
4	To start own processing unit for black pepper	128	46.55	152	46.77	280	46.67
5	To start a farmer producer company	162	58.91	187	57.54	349	58.17
6	To change to organic farming practices	-	-	103	31.69	-	-
7	To obtain organic certification	-	-	95	29.23	-	-

Source: compiled from primary data

There is an opportunity for the conventional farmers to shift to organic farming practices and to become a certified organic farmer after three years, but the result revealed that conventional farmers were not interested to shift to organic farming. Because most of the conventional farmers cultivates cardamom in their farms, and according to them organic cultivation of cardamom and some

other crops will not be practical and profitable. The high cost of production in organic farming and low productivity of black pepper under organic farming is also a matter of concern for the farmers.

## **4.2 Conclusion**

Black pepper value chain is predominantly a buyer driven value chain, hence the black pepper farmers have less price negotiation power. Furthermore, the farmers were exposed to different type of constraints in various activities included in the value chain, like pre-production constraints, production constraints and marketing constraints. While the constraints related to the marketing of farmers were extended to other actors in the value chain too. Generally, constraints like low price of black pepper, price fluctuations of black pepper in the market, low quality of black pepper, import of black pepper from other countries were reported as severe constraints by the majority of the actors involved in the black pepper value chain. There is an opportunity for the conventional farmers to shift to organic farming practices and to become a certified organic farmer after adopting organic farming for three years, but conventional farmers revealed that they were not interested to shift to organic farming because of high production cost and less productivity in organic farming.

## SECTION V

### 4. (E) Strategies to upgrade the performance of value chain actors of black pepper

#### 4.1 Major concerns identified in the value chain

After carrying out the value chain analysis of the black pepper in Kerala, i.e. after mapping the value chain of black pepper, after detecting the governance type in the value chain and evaluating the different type of linkages in the chain, and analysing the constraints and opportunities of the value chain actors, it was identified that there exist certain apprehensions that should be taken into consideration while adopting an upgrading strategy for the entire value chain of black pepper in Kerala. The concerns which were found prominent at farmer level and at other value chain actors level in the value chain is presented here.

##### At farmers level

1. Shortage in quality planting materials,
2. Climate change,
3. High incidences of pest and diseases
4. Labour shortage
5. High labour cost,
6. Price variability of black pepper,
7. Traders' offer price less than market price,
8. Changing government policies (import of black pepper)
  - Low productivity
  - High cost of organic farming
  - No value addition at farm level
    1. High investment required
    2. Low motivation for value addition

##### At other actors level

1. Low price of black pepper,
2. Price fluctuation in black pepper price,
3. Low quality of black pepper,
4. High transportation cost,
5. Absence of proper market mechanism for pepper,
6. Import of black pepper
7. Role of marketing cooperatives in value addition is negligible (PMCS undertakes value addition and gain better price for their black pepper (dried black pepper)
8. Exporters under NGOs only produce value added products like white pepper and green pepper.
  - No value addition at hill produce dealers and wholesalers
  - Commingling of domestic pepper with imported pepper



## **4.2 Strategies to upgrade the performance of value chain actors**

Value Chain development can be defined as “*a positive or desirable change in a value chain to extend or improve productive operations and generate social benefits: poverty reduction, income and employment generation, economic growth, environmental performance, gender equity and other development goals*” (UNIDO, 2011). They have identified value chain analysis and its management as a hope for the farmers which can eventually accomplish the poverty reduction and food security in developing countries, whereas failure in achieving the goals like better market system and effective governance may restrict the poor smallholder farmers from the international markets.

### **4.2.1 Increasing the productivity of black pepper**

Jacob (2015) and Sreejith (2016) reported the low productivity of black pepper in Kerala and Kumar and Swarupa (2017) observed that productivity of black pepper in South India were less. Thus, it became necessary to increase productivity of black pepper to the desired level to give better returns for the black pepper farmers. Further, it is noticed that farmers’ caring and attention to black pepper was closely related with the market price of black pepper. When the price of black pepper was high (Rs.700 per kg) in 2016-2017, the farmers were highly interested in planting black pepper in their farms and they gave proper caring to their pepper plants (Sabu, 2015). Currently, the price of black pepper has reduced to less than Rs 300 per kg (2020) and it has seen as a tough task to improve the productivity of black pepper in the state.

As evolved from the results of the study, in brief, black pepper farmers in Kerala need pest and disease resistant, climate change tolerant high yielding varieties of black pepper, supported by Rageena (2016) and Yogesh (2017) also (i.e. to develop better quality planting material through biotechnology).

#### **4.2.2 Need of producer organizations for producing value added products of black pepper**

The farmers in the study area has disclosed that no value addition of black pepper happens at the farm level and none of the farmers produces the value added products like white pepper and green pepper. The major reasons revealed by the farmers for not producing value added products were high investment required for value addition and lack of motivation for the farmers. It is noticed that the presence of only one farmer producer company (Green Vivo Farmer Producer Company, Pooppara, Idukki) was found in the study area, which has added quality and value to the black pepper from the study area. It is true that the investment for the value addition of black pepper is high and may not be viable without getting export orders from US or European countries. That was the reason why the exporters in the chain undertakes the value addition of black pepper.

The role of marketing cooperatives in value addition was found negligible among the actors in Idukki and Wayanad districts, that is, only Peermade Marketing Cooperative Society, Kumily carried out the value addition of dried black pepper and obtain better price for their products. Even then they are not processing any value added product of black pepper. Efforts are required to rejuvenate the existing cooperative organizations and to restore the confidence of its members.

Keeping in view of the situation of black pepper farmers in the study area and the activities of other value chain actors, the circumstances demands the requirement of organizations which can undertake the value addition of black pepper and those organizations can be a farmer producer company or a marketing/processing cooperative society. Further, the advice, help and support from the government machineries should not be limited with the black pepper farmers, which means, the support and proper business relationships along with the entire actors in the value chain is necessary to make the concept of producer organization successful in value addition of black pepper.

### **4.3 Upgrading of black pepper value chain**

McDermott (2007) defined upgrading as “*the shift from lower-value to higher-value economic activities by using local innovative capacities to make continuous improvements in processes, products and functions*”. The different types of probable upgrading to increase the competitiveness of the participants in the value chain were identified as 1) process upgrading, 2) product upgrading, 3) functional upgrading and 4) inter-chain or sectoral upgrading (Humphrey and Schmitz, 2002).

Black pepper value chain is a buyer driven value chain and in such a value chain there is less scope for upgrading for the small farmers. The high investment requirement for value addition in black pepper creates a barrier for the small farmers to move into higher value adding activities in a large scale. The market power of the exporters and other actors might push back the farmers to the position where they were before. Hence, the upgrading of the farmers activities forms a major concern. The concept of upgrading means the ability of farmers to create and manage the value added activities and help them to attain the production of quality black pepper, white pepper and green pepper with various quality attributes that acquires them a better market price.

#### **4.3.1 Product upgrading**

Product upgrading of black pepper has already happened when the exporters (under NGOs) in Idukki and Wayanad district and the other registered companies in India started exporting organic black pepper, white pepper and green pepper to international market. Vanamoolika Herbals Company in Wayanad has reported that European countries have started demanding separate variety of black pepper, hence it can be considered an opportunity for the black pepper farmers to produce variety wise black pepper (eg. Wayanadan variety). This will ultimately results in product differentiation for the black pepper in the export market and the farmer can earn better prices for their product.

Product upgrading will help to improve the intrinsic quality of black pepper, allow the farmers to join and capture the niche markets. Increased quality for black pepper may fetch good price for the product. It's already very late to position a brand name in the international market for the black pepper from Idukki and Wayanad. Supplies of organic and inorganic black pepper, supply of variety wise black pepper are the possible products that can be produced by the value chain. Thus, this product upgraded strategy can be adopted by the farmers and other actors in the value chain.

#### **4.3.2 Process upgrading**

Advance technology which is affordable and low cost for value addition should be made available to black pepper farmers for value addition of black pepper like drying, cleaning and processing of value added products. The possible upgrading in the farm level can be achieved by giving proper training to farmers through extension officers in the area. It is true that hygienic handling, cleaning and drying of black pepper was only possible at farm level while the other value addition activities is not possible at the individual farms. On the other side, it was perceived that the relationship between the black pepper farmer and final buyer in Kerala is loose and indirect. For a successful value chain, the transfer of knowledge, skills and services should pass down to the producer farmers from the buyers and hence the share of farmer in the final consumer price can be increased. To an extent, the situations of certified organic farmers under NGOs were comparatively better than the unorganized conventional farmers. As an opportunity to organize the farmers, the farmers associations, self-help groups and the cooperatives should make efforts to transfer the knowledge and skills and services in an effective way to upgrade the processes in the value chain.

#### **4.4 Need to change export import policies**

Black pepper farmers and the other actors in the value chain such as hill produce dealers, wholesalers, exporters, cooperatives etc were unanimously criticized the government policy of allowing the import of black pepper from Sri Lanka, which brings in the huge quantity of Vietnam pepper in to the state and

get mixed with black pepper produced from Kerala in Kochi market, which drastically reduces the price of black pepper in Kochi market. All actors engaged in the production and marketing of black pepper in Kerala has requested to amend the government policy for agricultural produces, especially for black pepper. Vietnam black pepper is less priced due to its less piperine content, in contrast with black pepper in Kerala. When these imported low piperine content black pepper berries get mixed with the domestic black pepper at different nodes of the value chain, it results in the reduction of the final value of black pepper at Kochi market. Hence, the commingling of domestic pepper with imported black pepper should be avoided and it may help to guard and retain the competitiveness of the Indian pepper in international market.

#### **4.5 SWOC Matrix**

SWOC matrix was used to list out strengths, weaknesses, opportunities and challenges of a firm, product and competition, by using different performance variables. The strength theoretically denotes the internal positive factors (IPFs), weakness denotes the internal negative factors (INFs), opportunities denotes the external positive factors (EPFs) and the challenges denote the external negative factors (ENFs).

The major strengths of black pepper in Kerala is its superior intrinsic quality, high domestic demand and intercrop cultivation and the weaknesses are low production and productivity, lack of quality planting material, production highly depended on weather conditions and high labour cost. The increased global demand for spices, production of value added products and variety wise production of black pepper are the opportunities in the value chain and the major challenges facing includes high production and high productivity in other countries, lack of stable price and climate change.

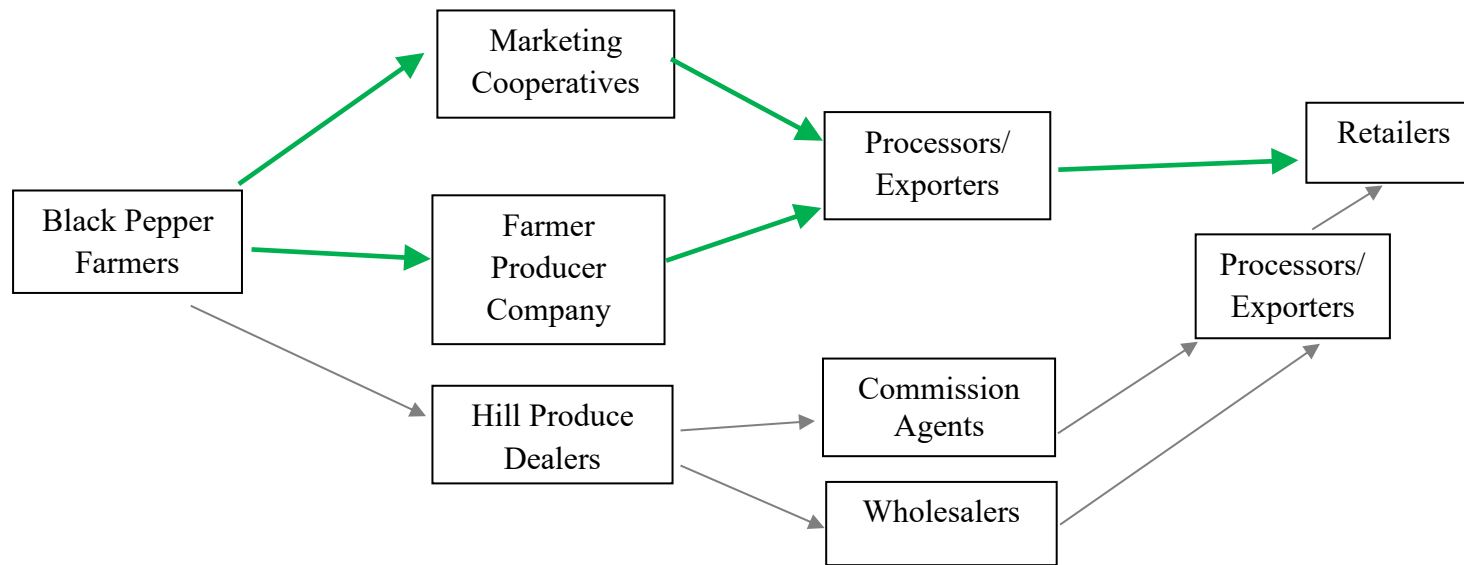
An attempt was made to illustrate the SWOC items for the black pepper value chain in the matrix form and is depicted in Table. 4.55.

**Table 4 .55 SWOC matrix of black pepper in Kerala**

	<b>Helpful</b>	<b>Harmful</b>
<b>Internal</b>	<b>Strengths</b> Superior intrinsic quality of the pepper High domestic demand Intercrop cultivation	<b>Weaknesses</b> Low productivity Lack of quality planting material Climate change High labour cost Lack of market mechanism for pepper
<b>External</b>	<b>Opportunities</b> Increased global demand for spices Production of value added products Variety wise production	<b>Challenges</b> High production and high productivity in other countries Lack of stable market price of black pepper

#### **4.6 Suggested value chain for black pepper farmers in Kerala**

As the price of black pepper is showing a decreasing trend from 2017 in the country and to get a reasonable income for the farmers from the black pepper cultivation they have to go for value addition activities. While in the current circumstances, a single farmer cannot undertake the production of value added products like white pepper and green pepper. Hence, the farmers has to group together to carry out these activities. Here is an effort to portray a value chain (Fig. 4.29) suitable for the black pepper farmers in Kerala to capitalize the opportunities ahead by taking into consideration of the actual constraints faced by them.



**Fig. 4.29 Suggested value chain for black pepper farmers in Kerala**

The institutional support machineries for enhancing the agriculture production in the state should focus on the registered farmers producer organisations or groups like marketing cooperatives or farmer producer companies depicted in the suggested value chain, so that a share of the noticeable profit grabbing by the actors who undertakes value addition of black pepper and the production of its value added products like white pepper and green pepper in the value chain can be transferred to the black pepper farmers.

#### **4.7 Conclusion**

The value chain analysis was carried out in black pepper in Kerala, and the different aspects of the value chain analysis such as map the value chain, governance that influenced the value chain, the linkages existed in the value chain, constraints faced by the actors in value chain and the possible opportunities are presented in this chapter.

Improving and increasing productivity of black pepper through pest and disease resistant, climate change tolerant high yielding varieties of black pepper, form farmer producer organizations for value addition activities, product and process upgrading of black pepper value chain, rejuvenate the role of co-operatives to help farmers and to change the export import policies in India etc. can be adopted as a strategy for the upgrading of the black pepper value chain. The summary of the results, findings and conclusions of the study is presented in the next chapter V.



# *Summary*

## **CHAPTER V**

### **SUMMARY**

The research work titled “Value chain analysis of black pepper in Kerala” was undertaken to map the value chain of black pepper in Kerala, to examine the governance influence on value chain actors, to evaluate the producer farmer’s linkages with other value chain actors, to analyze the opportunities and constraints faced by value chain actors and to suggest appropriate strategies to upgrade the performance of value chain actors of black pepper.

The study area selected was Idukki and Wayanad districts of Kerala State, since these districts accounted for the first and second position under the area of black pepper cultivated in Kerala. As per the sampling technique adopted, Vandiperiyar Panchayath from Azhutha block and Rajakumari Panchayat from Nedumkandam block has selected from Idukki district and Mullenkolly Panchayath from Panamaram block and Vellamunda Panchayat from Mananthavady block has selected from Wayanad district .Thirty black pepper farmers were selected from each panchayat at random and thus a total of 120 farmers were selected for the study from Idukki and Wayanad districts. The other value chain actors were identified using snowball technique and the size of the sample were limited to a maximum of hundred actors, included with input suppliers, hill produce dealers, wholesalers, retailers, exporters etc. The study included contacts and connections with different actors in the value chain and expert interviews were carried out with Officials in Spices Board, Agriculture Officers in Krishi Bhavans, Principal Agriculture Officer (District level), and NGOs etc.

Value chains comprise of all activities from production to consumption of a product. An agricultural value chain includes activities along specific inputs, production, collection, transformation, trade, export, wholesale and retail marketing and consumption (FaBe et al. 2009). Concepts in value chains like Porter’s Framework (1985) and the filiere approach (Durufle and Fabre, 1988), has revitalized to Global value chains approach by Gereffi *et al* (1994) and

Kaplinsky (1999). At present, global value chain approach is considered as an inclusive method to conduct a value chain analysis. Accordingly, for mapping the value chain of black pepper in Kerala the following aspects were analysed:

- Mapping the core processes in value chain,
- Mapping the main actors involved in the value chain,
- Mapping of flows and volume of products,
- Mapping knowledge and flows of information,
- Mapping the value at different levels of the value chain,
- Mapping of the geographical flow of products,
- Mapping relationships and linkages between value chain actors,
- Mapping services that feed into the value chain,
- Mapping constraints in the value chain.
- Value chain map matrix.

The major findings obtained from the study were presented in this part of the study in the order of the objectives of the study.

### **5.1 Value chain mapping of Black pepper in Kerala**

After conducting the value chain analysis of black pepper in Kerala the following findings were identified in the value chain mapping of black pepper in Idukki and Wayanad district.

1. The core processes of black pepper value chain in Idukki and Wayanad districts includes input supply, collection or procurement, processing, exporting and retailing.
2. The main actors participated in the value chain were input suppliers, black pepper farmers (including organic farmers and conventional farmers), hill produce dealers, wholesalers, marketing cooperatives, exporters (under NGOs), commission agent, farmer producer company, retailers (including exclusive spice outlets and village retailers) in the districts of Idukki and Wayanad and IPSTA brokers.

3. The entry level in the black pepper value chain begins with the farmer producer in both districts of Idukki and Wayanad.
4. Among the one hundred twenty farmers, majority of the pepper farmers were male *i.e.*, 89.2 per cent of farmers were male and only 10.8 per cent were female farmers. The number of female farmers were identified among the conventional farmers were 5 numbers each in both districts and the number of female organic farmers were comparatively less.
5. The socio economic characteristics of the farmers in Idukki and Wayanad districts were as follows:
  - Age distribution of sample farmers can be inferred that majority of the farmers (41.7 per cent) fell under the category of 51-60 years.
  - All the sample farmers were literate and majority of them were under the category Up to High School (54 percent) and the share of graduates among farmers were 12.5 percent.
  - The family size is another prominent socio economic variable and 63.3 per cent of farmers have a family size of 5 to 6 members, followed by a family size of 1–4 members with 25.8 per cent of farmers.
  - Agriculture was the primary occupation among the farmers in the study area and they have disclosed their income from agriculture, 52.5 per cent of farmers had income below Rs. 75000 and 35 per cent of farmers had an income between Rs. 75001 to Rs.150000. The remaining 15 per cent had an income above Rs.150000.
  - Another major classification of farmers has been identified on the basis of method of cultivation, that is, organic farmers and conventional farmers. Out of the 120 farmers from the two districts, 55 (45.83 percent) farmers were certified organic

farmers and 65 (54.17 percent) farmers were conventional farmers.

6. Eighty percent of the organic farmers in the study area had Lacon Certification, 10.90 percent of farmers had Athidhi Certification from Bangalore and 9.09 per cent had Indocert Certification of Aluva, Ernakulam.
7. The share of farmers under the category of 10 to 30 years of farming experience were confirmed with 72.5 per cent of the total farmers selected for the study, which included 40 farmers from Idukki district and 47 farmers from Wayanad district. The patterns of experience were found in Idukki and Wayanad districts were reasonably same.
8. Majority of the farmers (77.5 per cent) were having land holding below one hectare, which indicated marginal holdings size among the black pepper farmers. (73.3 percent in Idukki district and 81.7 percent in Wayanad district). However, altogether 22.4 per cent of the farmers were having land holdings above one hectare, which includes 20 farmers having land holding size of 1 to 2 ha and seven farmers (5.8 percent) were having land size above 2 ha.
9. Majority of the hill produce dealers were doing dealer business for agricultural produce for more than 25 years to 50 years and most of them were doing the business with sole proprietorship.
10. None of the hill produce dealers were doing any value adding activities of black pepper in their outlet.
11. As in the case of hill produce dealers, the spice wholesalers procures black pepper from the hill produce dealers and directly from farmers. But the product that passes through the chain was only black pepper. While the white pepper and green pepper was not traded with wholesalers of spices.
12. According to wholesalers, the mixing of imported pepper with the pepper in Kerala was one of the major reason for the decreasing black pepper price in the market.

13. The Peermade Marketing Cooperative Society, Kumily in Idukki district and Rubber and Agricultural Marketing Cooperative Society, Mullenkolly in Wayanad district were the two marketing cooperative societies included in the value chain
14. Presence of Non-governmental organisations (NGOs) such as Peermade Development Society (PDS), in Idukki, Wayanad Social Service Society (WSSS) in Wayanad, and Wayanad Vanamoolika Samrakshana Sangham in Wayanad were actively promoting organic farming in these districts. Their role in the production of organic pepper and other agriculture products cannot be ignored.
15. Green Vivo Agro Producer Company Ltd. Poopara, Idukki was the single farmer producer company gets included in the value chain of black pepper which did the procurement and marketing of black pepper.
16. One Commission agent was identified in the value chain of black pepper. They procured black pepper from Green Vivo Agro Producer Company and sold the black pepper in Kochi market to the buyers.
17. PDS Organic Spices, Kuttikkanam, Idukki, Biowin Agro research, Mananthavady, Wayanad and Vanamoolika Herbals Ltd, Pulpally, Wayanad were the Exporters (under NGOs) included in the value chain of black pepper.
18. Richabel Biofoods (India) Pvt.Ltd.Ernakulam and Suminter India Organic Pvt. Ltd., Mumbai, Maharashtra were the two other registered companies included in the value chain.
19. Retailers (including exclusive spice outlets and village retailers) in the black pepper value chain sells black pepper in loose and in packets of 100gm, 200gm and 500gm within the districts of Idukki and Wayanad, especially during tourist seasons. These retailers were not the exclusive outlets for black pepper alone, they sells different spices and other hill station specific products available in Idukki and Wayanad.

20. Registered brokers under Indian Pepper and Spices Trade Association, these brokers actively participate in black pepper trade even though the pepper futures contracts were suspended in 2012-2013. Brokers acts as middlemen between the wholesalers and the major spice buyers from Kochi, by charging brokerage fees.
21. Black pepper, a common product that flowed through almost all actors in the value chain irrespective of being organic or not, while white and green pepper flowed in the organic chain of black pepper only, that is from farmer to exporters, where the exporter does all processing activities.
22. Krishi bhavan (100 percent), NGOs (45.83 percent) and input suppliers (54.16 percent) played a major role in giving advices on fertilizer and pesticides application in the farm. Information related to new cultivation practices, pest and disease control, organic production and certification were properly informed by Krishi bhavan (100 percent) and NGOs( 45.83 per cent). Moreover, Krishi bhavan takes an inevitable responsibility in value addition of pepper and to increase the quality of black pepper. Almost all other information sources were keen on disseminating the information to increase the quality of black pepper. Cooperatives (92.5 per cent) extend their support to farmers by informing their willingness to offer credit facilities.
23. The black pepper produced organically was procured by exporters (under NGOs) like PDS organic spices (from Idukki) and Biowin Agri Research and Vanamoolika Herbals (from Wayanad). Equally, other registered companies like Richabel Biofoods and Suminter India Organics also collected organic pepper from the farmers.
24. Conventional farmers were selling their produce to hill produce dealers and from hill producers it moves to wholesalers, from marketing cooperatives and FPOs black pepper reaches the market without including the traders in the flow of product to Kochi market.

25. Value addition practices in black pepper such as drying, cleaning were done by the farmers and cleaning and packing were done by the hill produce dealers, wholesalers, marketing societies, farmer producer company etc. while exporters performed activities like processing of white pepper and green pepper.
26. Black pepper, a perennial crop which starts bearing from the 4<sup>th</sup> year and the economic life span of black pepper is expected as 25 years. The cost of cultivation and cost of production of black pepper were computed using the concepts of establishment cost and maintenance cost.
27. The expenses incurred by farmer during the first to third year of planting of black pepper in the farms such as the expenditure on land preparation, digging and filling pits, planting material, manures and fertilisers, plant protection chemicals, irrigation and weeding were considered as establishment cost. The maintenance cost of black pepper were computed from the fourth year to the 25<sup>th</sup> year, which included the expenditure on farm yard and organic manures, fertilisers, plant protection chemicals, other organic materials and its application in the farms and the various farm operations such as weeding, harvesting and drying.
28. The total establishment cost per acre of organic black pepper in Idukki district was calculated as ₹1,04,525 and the cost incurred during the first year, second year and third year of establishment were ₹48,425, ₹28,400 and ₹27,700 respectively. Likewise, the total establishment cost of organic black pepper per acre in Wayanad district was estimated as ₹1,07,175. The cost incurred from first year to the third year of black pepper were ₹49,975, ₹32,300 and ₹24,900 respectively in Wayanad district.
29. In both districts the high cost was incurred in the first year due to the planting activity like land preparation and pit formation and the purchase of the planting materials were the noticeable reason for that. The major aspect noticed is that the cost for human labour contributed the major share in the establishment cost, ie. 37.79 percent of total establishment cost in Idukki



district and 41.31 percent of total establishment cost in Wayanad district, whereas the total material cost accounted for 62.21 percent of the establishment cost in Idukki districts and in Wayanad district it was 58.69 percent of the total establishment cost per acre.

30. The total establishment cost per acre incurred by the conventional black pepper farmers in Idukki district and Wayanad districts were ₹1,00,950 and ₹1,02,870 respectively. In Idukki district, the establishment cost incurred by the farmers in first, second and third year were ₹43,650, ₹29,600 and ₹27,700 respectively whereas in Wayanad district it was ₹43,775, ₹29,350 and ₹29,745 respectively.
31. The major inputs required for the maintenance of organic black pepper in one acre was human labour, farm yard manure, organic manure, organic plant protection materials and harvesting bags. The total annual maintenance cost per acre incurred by organic black pepper farmers in Idukki and Wayanad district was ₹ 80,540.38 and ₹ 76,822.07 respectively.
32. The major inputs required for the maintenance of inorganic black pepper in one acre was human labour, farm yard manure, organic manure, fertilizers, plant protection chemicals and harvesting bags. The annual maintenance cost of inorganic black pepper per acre was computed as ₹73,047.06 for Idukki district and ₹72,767.10 for Wayanad district.
33. In case of the cost of cultivation of organic black pepper per acre, the farmers in Idukki district (₹ 98,177.42) incurred a higher cost than the farmers in Wayanad district (₹ 94,359.60). It is also noted that the annual maintenance cost per acre was computed as higher in Idukki district (₹80,617.31) while in Wayanad district it was only ₹76,766.90.
34. The cost of cultivation of inorganic black pepper per acre in Idukki and Wayanad districts were found nearly equal, ie. ₹ 89,669.66 in Idukki district and ₹ 89,589.01 in Wayanad district. It should be noted that the cost of

cultivation of organic black pepper was higher when compared to the inorganic black pepper in these districts.

35. The total cost of production of organic black pepper was arrived at ₹344.50 per kg in Idukki district with a comparatively less cost of ₹337 per kg in Wayanad district. However, the total cost of production per kilogram of inorganic black pepper was worked out as lower than the cost of production of organic black pepper in both districts. The cost of production of inorganic black pepper in Idukki district was ₹311 per kg and in Wayanad district it was ₹309 per kg.
36. The cost of production, selling price and the value added for the organic black pepper in Idukki district were ₹344.50 per kg, ₹378.50 per kg and ₹34.00 per kg respectively. Exporters in Idukki district processed black pepper by incurring a cost of ₹528.50 per kg (included a processing cost of ₹100 per kg and an exporter level cost of ₹50 per kg) and the value added was ₹ 281.50 per kg of organic black pepper.
37. Exporter in Wayanad district has added a value of ₹ 279.30 per kilogram of organic black pepper by incurring a processing cost of ₹100 per kg and an exporter's cost of ₹ 40 per kg (Fig.4.8). Relatively less value was added for one kilogram of organic black pepper by the exporters in Wayanad district than the exporter in Idukki district.
38. At farmer level, the highest value for one kilogram of black pepper was offered to farmers by the farmer producer company (FPC) at a rate of ₹335.50 per kg of black pepper, followed by the marketing cooperative ie. ₹335 per kilogram of black pepper and the lowest value (₹332.8 per kg) was offered by hill produce dealers in Idukki district. Hence, the farmers who were the shareholders of FPC has received the highest value compared with the other conventional farmers in Idukki district.
39. Retailers procured the black pepper from the hill produce dealers in Idukki district at a price of ₹360.00 per kilogram. Among the retailers, the exclusive spice outlets increased the value (₹800 per kg) of the black pepper by incurring a high cost (₹81 per kg) for cleaning and packaging, whereas the

village retailer incurred a very less cost (₹3.50 per kg) and sold the black pepper at a comparatively less value. The exclusive spice outlets sell the cleaned black pepper in quality packing to the tourists at a high rate during the tourist season in Idukki.

40. Wholesalers collected the black pepper from both hill produce dealers and marketing cooperative and sold the commodity to the buyers in Kochi market at a value of ₹ 398.50 per kg of black pepper by adding a value of ₹33.50 per kg.
41. The processor cum exporter in Idukki district fixed the value for one kilogram of white pepper as ₹1309 per kg by adding a value of ₹930.50 per kg, where the advantage of value addition were enjoyed by the exporters itself, though incurring a high cost on the processing of white pepper. Comparing with Idukki district a high value (₹934.30 per kg) was added to the white pepper by the exporters in Wayanad, whereas the selling price of the organic farmers in Wayanad district was only ₹370.70 per kilogram of black pepper. The exporters incurred a reasonable cost in processing and exporting of white pepper and as a result, they gained the maximum benefit out of the value addition.
42. As revealed by the exporter in Idukki district, the processing cost and storage cost of green pepper is much higher than the white pepper, due to these reasons the exporter processes the green pepper in large quantity for a bulk order. The value fixed by the exporter for one kilogram of green pepper was ₹1200.00 by adding a value of ₹821.50 per kg. In Wayanad district, among the products of black pepper, unlike black pepper, the white pepper and green pepper has the shortest chain, ie. the value chain of white pepper and green pepper consist of the organic farmers and the processor cum exporter only. Hence, the processor cum exporter holds the maximum profit from the value addition.
43. It is evident that the relationship of farmers with hill produce dealers and wholesalers were spot market relations and that is, the buyers and sellers encounter each other and execute a transaction with an agreed price.

Normally, no contract relationship or persistent relationship were found between hill produce dealers and wholesalers with farmers. While the farmers had persistent network relationship with marketing cooperatives, farmer producer company and the exporters because the farmers entered into a relationship with these organization by obtaining a membership in cooperatives or as a shareholder in farmer producer company or a certified organic farmer under the NGOs and a supplier for the registered companies.

44. Mapping of the services that feed into the value chain may give an overview of the vital information that could be helpful for the actors in the value chain. These necessary services were disseminated through various supporting actors or enablers in the value chain and the essential services were offered by them includes supply of agriculture inputs, training and extension, information or knowledge, financial help etc.

45. The identified marketing channels in the value chain for the three products selected in the study such as, black pepper, white pepper and green pepper are as follows:

- 1) Marketing Channel I (MC-I)      Farmers —→ Exporters (Organic )
- 2) Marketing Channel II (MC-II)      Farmers —→ Marketing  
Cooperatives      —→      Buyers in Kochi (Inorganic)
- 3) Marketing Channel III (MC-III)      Farmers —→ Farmer Producer  
Company —→ Commission Agent —→ Buyers in Kochi (Inorganic)
- 4) Marketing Channel IV (MC-IV)      Farmers —→ Hill Produce Dealers —→  
Wholesalers —→ Buyers in Kochi (Inorganic)
- 5) Marketing Channel V (MC-V)      Farmers —→ Hill Produce Dealers —→  
Retailers (Inorganic)

46. In both districts, the marketing cost incurred by the exporters in the production of value added organic products were very high compared to the marketing cost incurred by the other channel members in the marketing of inorganic black pepper.
47. It should be noted that the Marketing Channel I (MC-I) is the organic channel which transfers the organic black pepper, white pepper and green pepper, whereas the other four marketing channels (MC-II, MC-III, MC-IV and MC-V) transfers the inorganic black pepper. MC-I is the shortest marketing channel which includes two channel members, black pepper farmers who organically produced the black pepper and the exporters, who process and export the value added products to the needed locations. MC-II has started with the black pepper farmers, who were the members of marketing cooperatives and the marketing cooperative bought and sold the black pepper after cleaning and grading it to the buyers in Kochi market.
48. In the value chain of black pepper in Idukki district the highest marketing cost was found in the channel which permits the movement of value added organic black pepper, white pepper and green pepper. The total marketing cost incurred in Channel I for black pepper was ₹151.41/kg, while for white pepper was ₹536.91/kg and for green pepper was ₹571.41/kg. Among the inorganic black pepper channels, Channel V (including exclusive spice outlets) incurred the highest marketing cost was incurred by Channel V (₹89.12) and the lowest marketing cost was also incurred by Channel V (₹11.62/kg of black pepper), by the village retailers.
49. Among the different marketing channels in Wayanad districts, the farmer get highest price (₹370.70/kg) in the marketing channel of organic black pepper. The total marketing cost calculated in each channel is ₹141.54/kg of black pepper, ₹423.34/kg of white pepper and ₹279.84/kg of green pepper and the total marketing margin is ₹149.30/kg of black pepper, ₹421.80/kg of white pepper and ₹278.30/kg of green pepper.

50. In Idukki district, the producer's share in the consumer rupee was found high in Channel III (74.44 percent), Channel II (74.11 percent) and Channel IV (73.96 percent), followed by Channel I (57.35 percent for black pepper) and Channel V (36.98 percent). As a result, the marketing efficiency was found high in Channel II (a ratio of 7.2) with the lowest marketing cost (14.39/kg) and the lowest ratio of marketing efficiency (0.40) was found in Channel I (white pepper), where the marketing cost (₹536.91/kg) was high. It clearly shows that when the marketing cost increases the efficiency of the channel decreases.
51. While in Wayanad district, the total marketing cost calculated in Channel I was ₹ 141.54/kg for black pepper, ₹518.04/kg for white pepper and ₹552.54/kg for green pepper. In the marketing channel of inorganic black pepper, the highest marketing cost (₹80.85 per kilogram of black pepper) was incurred by Channel V with exclusive spice outlets as retailers and the lowest marketing cost (₹12.35/kg of black pepper) was incurred by another type of retailer (village retailers) in Channel V.
52. It was exposed that in both districts, the farmer got highest price in the marketing channel with shortest length, i.e. farmer to exporter. In Idukki district, the farmers who are supplying black pepper to exporters were registered organic certified farmers and the organic black pepper fetch ₹378.50 per kilogram. The total marketing margin of Channel I was ₹131.50/kg for black pepper, ₹395.00/kg (highest margin) for white pepper and ₹251.50/kg for green pepper. While in Channel V, the retailer (exclusive spice outlets) captured the highest margin of ₹379.41 per kilogram of black pepper and the lowest margin was obtained by Channel II (₹32.21/kg).
53. Among the different marketing channels in Wayanad districts, the farmers got highest price (₹370.70/kg) in the marketing channel of organic black pepper. The total marketing margin computed for each product in Channel I was ₹139.30 per kg of black pepper, ₹417.80 per kg of white pepper and ₹278.30 per kg of green pepper. In the marketing channel of inorganic black pepper,

the highest marketing margin was obtained by Channel V (₹342.00 per kg of black pepper) and the lowest marketing margin was obtained by Channel III (₹44.25 per kg of black pepper).

54. In Idukki district, the producer's share in the consumer rupee was found high in Channel III (74.44 percent), Channel II (74.11 percent) and Channel IV and Channel V (73.96 percent), followed by Channel I (57.35 percent for black pepper). As a result, the marketing efficiency was found high in Channel II (a ratio of 7.19) with a lowest marketing cost of ₹14.39/kg and the lowest ratio of marketing efficiency (0.41) was found in Channel I for the product white pepper, where the marketing cost (₹ 536.91/kg) was high. It clearly shows that when the marketing cost increases the efficiency of the channel decreases.
55. The producer's share in the consumer rupee was found high in Channel II with 75.77 percent in Wayanad district. Channel IV and Channel V had a share of 75.54 percent, followed by Channel I with 57.03 percent for black pepper. As an outcome, the marketing efficiency was found high in Channel IV (a ratio of 4.95) with a lowest marketing cost (₹22.20/kg of black pepper) and the lowest ratio of marketing efficiency (0.40) was found in Channel I for the product white pepper, where the marketing cost (₹518.04/kg) was high. In agreement with Idukki district, here also, it clearly shows that when the marketing cost increases the efficiency of the channel decreases.
56. In Idukki district, very less value addition happened in the inorganic black pepper channels and the marketing efficiency of Channel II, Channel III and Channel IV were high with a ratio of 7.19, 5.05 and 5.92 respectively, where the marketing cost and margin were found very meagre. While in Wayanad district, even though, very less value addition happened in the inorganic black pepper marketing channels like Channel II and Channel IV, the marketing efficiency of these channels were high with a ratio of 4.65 and 4.95 respectively.

## **5.2 Governance influence on value chain actors**

1. The important formal rules that the value chain actors must comply being an actor in the black pepper value chain were identified for the different actors, where the formal rules are decided and implemented with official and legislative power and decisions, while informal rules are determined by the powerful parties in the value chain over the weak parties. Rules like voluntary standards are for products with specific standards in agriculture, like organic products or fair trade products.
2. The formal rules and regulations were enforced over the exporters by the Central and State Governments of India and the Governments of importing countries, international agencies etc. and were implemented and monitored through different government agencies. Certificate of National Programme for Organic Production (NPOP) in India notified under the Foreign Trade (Development and Regulation Act), 1992, United States Department of Agriculture National Organic Programme (USDA NOP) and Fairtrade (FLO ID-21286) were the quality Standards certified by all exporters included in the value chain.
3. Wholesalers and hill produce dealers, if not registered under the Factories Act, should be register under Certificate of Registration (Kerala Shops and Establishments Act, 1960 (irrespective of the number of workers). The fees has to be remitted to the nearest Office of Assistant Labour Officer, that is, 60 days before the date of commencement of business and the application for renewal of registration should be submitted 30 days before the expiry of the registration.
4. Cent percent of the hill produce dealers were having certificate of registration from the Panchayat and forty seven percent of the wholesalers also were registered under the Panchayat. While a remaining fifty three percent of wholesalers were having trade license from the concerned municipality in the locality. It should be noted that all the wholesalers and hill produce dealers had the new GST registration for the payment of goods and services tax.



Lease or rent agreement was signed by 86.84 percent of hill produce dealers and 96.88 percent of wholesalers as majority of the hill produce dealers and wholesalers were on rented shops, and the lease agreement was prepared under Kerala Buildings (Lease and Rent Control) Act, 1965.

5. Out of the 120 farmers, 45.83 percent of the total farmers (55 certified organic farmers) has complied with the rules set by the organic certifying agencies and the NGOs. The NGOs and the organic certifying agencies checks and assures the compliance of organic farmers in the study area. The conventional farmers (54.17 per cent) gets advice and recommendations from Krishi Bhavan and other research institutes.
6. The tribal farmers (5 per cent) has the right of ownership and self-cultivation of forest land, access to collect, use and dispose of minor forest produce under The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. The phyto sanitary measures adopted by WTO such as tolerance limit for residues, restricted use of substances, labeling requirements related to food safety and hygienic requirements does not have any influence over the farmers directly.
7. It has identified that the marketing cooperatives included as actors in the value chain ie, Peermade Marketing Cooperative society, Kumily and Rubber and Agricultural Marketing Cooperative Society, Mullenkolly were registered cooperatives under Kerala Cooperative Societies Act, 1969 and moreover, both cooperatives had GST registration. In similarity with marketing cooperatives, farmer producer company were also registered, but under Companies Act, 1969 and it also had GST registration for paying goods and services tax.
8. Currently, there is no black pepper trading taking place under Indian Pepper and Spices Trade Association (IPSTA), Kochi, while the registered brokers under IPSTA acts as a broker between sellers and buyers in Kochi outside the premises of IPSTA in Mattancherry, Kochi. The IPSTA brokers continued to perform as a broker in spices marketing, even though IPSTA has stopped

trading in pepper. The four brokers included in the value chain as service providers to facilitate pepper trade were the registered IPSTA brokers.

9. Three input suppliers from Idukki and four input suppliers from Wayanad got licensed from the concerned Principal Agriculture Office of the locality and there exist no contractual arrangement or relationship between farmers and nurseries/private input suppliers, while the farmers relationship with cooperatives were on the basis of their membership in the cooperative society and the farmers relationship with NGOs were recognized as a certified organic farmers' membership with NGOs. Registered Company also have their own farmers in the study area, to whom they distribute organic inputs for black pepper cultivation.
10. The exporters included in the study mentioned about the unnecessary delay at Government offices as an important informal rule that affects their exporting business. Due to the high competition among the spice exporters in the country the exporters in the value chain keep secrecy of their export businesses and contacts abroad, to avoid losing business with foreign clients.
11. The identified informal rules for the black pepper farmers were downgrading of the product by the buyers and buyers offer price less than the market price. Cent per cent of the conventional farmers felt down grading of the black pepper to reduce the price purposefully by the dealers and they revealed that were mostly offering price less than the market price, so that they can ensure a better margin for their business. Certain buyers encourage the farmers for advance payment from the traders, for their marketable surplus even before the harvest season, while the farmers in the study area denied such a practice.
12. Wholesalers and hill produce dealers informed that it's not possible to pinpoint the informal rules exists in the value chain, but they agreed that there exist certain practices prevailing in the business connected with cleaning and drying of pepper, handling of produce, storage related practices, transportation practices and loading and unloading. At the same time they revealed that, the important informal rule they follows were compromise over

the price and the profit in order to keep relationship between the hill produce dealers and the wholesalers.

13. Similar to Wholesalers/Hill Produce Dealers, Marketing cooperatives and Farmer Producer Company also play safe to avoid loss in the business. They also go for compromises in the price if situation demands.
14. The different nodes included in the value chain governance structures were farmers to NGOs, farmers to registered company, farmers to marketing cooperatives, farmers to hill produce dealers, farmers to wholesalers, farmers to farmer producer company, marketing cooperatives to buyers in Kochi, wholesalers to buyers in Kochi, farmer producer company to commission agent and commission agent to buyers in Kochi. It is observed that different types of governance coordination has been spotted in the different value chain nodes, accordingly different governance structures were identified in the black pepper value chain. The most important aspect of the black pepper value chain is that it is a buyer driven chain where the buyers exerts power over the producers.
15. After the examination of governance in the black pepper value chain, it was found that the “market” type coordination was existed between the black pepper farmers and hill produce dealers after identifying the presence of following features:
  - The transactions between the farmers and hill produce dealers are simple, hence the complexity in the information are very low,
  - There is no formal cooperation between participants,
  - No interest or control in production by buyer,
  - No information provides to producers on what the market wants and how to produce,
  - Cost of switching to new partner is low for producers and buyers,

- Price remains the central of governance mechanism.
16. Transactions at the interface between black pepper farmers and NGOs were controlled through “modular” type of governance, where the black pepper were supplied by farmers to NGOs as per their product specifications( organic black pepper), which satisfies the first feature of modular type, i.e. “products are supplied on specifications from the buyers”.
  17. In “relational” form of governance structure, the interaction between sellers and buyers were complex, transfer of information is based on mutual dependence, ability to codify information are low, and implicit knowledge exchange between the participants. While the lead firm specifies what it needs and controls the value activities in the chain, thus the firms have the ability to exert more control over the producer and they assures the supply of desired products based on quality and other characteristics from the farmers. For these reasons, the form of governance structure between black pepper farmers and other registered company (i.e. exporter not under NGOs) was found “relational” where the cost of shifting to new partners are high.
  18. Being a buyer-driven value chain, the black pepper value chain also have the notion of safeguarding the farmers’ interest will be always unstable, for which the farmer has to be more organised and united to overcome the exploitation from other value chain actors.

### **5.3 Producer farmer’s linkages with other value chain actors**

1. The linkages between black pepper farmers with NGOs were formal and to an extent it was found well documented by the NGOs officials.
2. Farmers has to submit an application to obtain membership from the marketing society, and so the relationship between farmers and the marketing society has identified as formal and were well documented.
3. Shareholders (farmers) of the companies have a formal relationship with the companies, and were recorded and audited properly.

4. The linkage between farmers and hill produce dealers were informal and oral contract, and mostly the payments for black pepper were done in cash only.
5. There exist cent percent linkage between farmers and fellow farmers, farmers and hill produce dealers, farmers and commercial banks, farmers and krishi bhavan and farmers and local administration. Secondly, 85 percent of the farmers in Idukki district and cent per cent farmers in Wayanad district had linkage with cooperatives in the locality, where the linkages of farmers with Spices Board and KAU Research Station/KVKs were found very little.
6. The level of formality perceived in the linkage included both informal (22.7%) and verbal arrangements (77.3%) and there is no formal written contract between input suppliers and the farmers. Out of the total 97 input suppliers in Idukki (44 nos) and Wayanad (53 nos) districts, 43.36 percent of farmers has no trust with input suppliers and 54.64 percent had a little trust with them.
7. The level of formality between farmers and hill produce dealers were verbal arrangement and a check on trust maintained in their relationship showed that majority of the farmers (64.2 %) from the two districts has no trust over them. Nobody had full trust over the hill produce dealers while a meager percent (3.33) had some trust and 32.5 percent of farmers had a little trust with hill produce dealers.
8. Sixteen farmers from idukki district sold black pepper to wholesalers and the level of formality in transactions between them was agreed verbally and among the farmers two of them has no trust with wholesalers, four has little trust and ten has some trust.
9. 33.3 percent of farmers in Idukki district and 48.3 percent of farmers in Wayanad district has long term direct linkage with exporters, where the formality between them was neither informal nor verbal arrangements. They enjoyed the relationship with formal written contracts where 77.8 percent of the farmers who had linkages with exporters agreed to have some trust in

exporters, 19.05 percent have full trust and a 3.2 percent have a little trust in relationship with exporters.

10. Long term relationship was found between farmers and registered companies in Idukki district, with only six farmers under formal written contract with the companies and three farmers have a little trust and the remaining three has some trust in the linkage.
11. All farmers were listed in the records in Krishi bhavan and hence the formality is considered as formal contract. Out of the total farmers, 35 percent expressed that they trust krishi bhavan fully and the rest 65 percent has some trust on them.
12. Spices board organizes farmer meetings to give help and support to farmers. Eleven farmers in Idukki has attended a meeting with spices board on value addition of spices and they considered it as a short term linkage, informal in nature and the farmers uttered a little trust on them.
13. In Idukki and Wayanad districts, four and ten farmers respectively had relationship with KAU and research stations, a short term relationship with four farmer from Idukki and six farmer from Wayanad, had a little trust in KAU, while the rest four from Wayanad has expressed some trust in KAU.
14. Farmers in Idukki district (56.7 percent) and farmers in Wayanad district (48.3 percent) has long term direct linkage with NGOs, where the formality between them are in formal written contracts. The farmers benefitted from the relationship with 44.4 percent of farmers fully trusted NGOs and a majority of 55.6 percent has some trust in them.
15. The relationship between fellow farmers are always informal and lifelong and on the basis of friendship, all the sample farmers in Idukki and Wayanad district were members in the “Pepper samithis” under each krishi bhavan. Majority of farmers (60.8 percent) agreed that they have some trust on the fellow farmers, 25.8 percent had full trust and a meager 13.3 percent had little trust over their friends.

16. Farmers had a long term relationship with cooperatives and they enter into a contract for becoming a member in cooperatives. The examination on trust maintained in their relationship showed that majority of the farmers (67.6 %) from the two districts has some trust over the cooperatives. 14.4 percent had full trust over the cooperatives and 18 percent had a little trust with cooperatives.
17. Farmers agreed that they have active bank accounts with the banks which is contractual in nature, long term, and a valid agreement between bank and its customer. Surprisingly, 65 percent of the farmers have no trust in commercial banks followed by 27.5 percent have a little trust and a small percent of (7.5) has some trust with them.
18. Cent percent of farmers in the study area expressed that they had repeated contacts with local administration on a formal and long term basis. Their trust with local administration was articulated as, 12.5 percent with full trust, 80.8 percent with some trust and 6.7 percent with a little trust over the Panchayat.
19. It is exposed that the formality and trust existed in the linkages is on the basis of the type of business relationship between the actors. The farmers revealed that they trust krishi bhavan, NGOs, fellow farmers, cooperatives, and government administration and it shows that farmers had comparatively high trust with the supporting actors in the value chain than the major chain actors.

#### **5.4 Constraints and opportunities faced by value chain actors**

1. The constraints faced by farmers were classified into pre-production constraints, production constraints, harvesting and marketing constraints and other constraints.
2. As a result of the analysis, in Idukki district, climate change (85 percent) and “shortage in availability of quality planting materials” (72.67 percent) were reported as major constraints agreed by the farmers. At the same time, farmers of Wayanad district were also agreed to a similar pattern of

result, while in case of climate change (93.33 percent) were strongly agreed by the farmers.

3. “Shortage in availability of quality planting materials” and “shortage in availability of agro chemicals” were not found significant, that is, there is no significant difference between the responses of farmers from Idukki and Wayanad districts with respect to the above mentioned pre-production constraints.
4. High labour cost, increased incidences of pest and diseases, change in climate/unreliable rainfall and untimely distribution of credit were the common constraints experienced by the farmers in Idukki and Wayanad districts. While shortage in agriculture credit and high interest rate for credit are highly felt by the farmers in Wayanad district contrast to those in Idukki district and labour shortage for farm activities were moderately felt by the farmers in both districts.
5. Among the accepted production constraints by the farmers, high labour cost, change in climate/unreliable rainfall and increased incidences of pest and diseases were found not significant, as the farmers from both the districts has responded without a significant difference in Kruskal-wallis H test. So the null hypothesis assumed for the test (that is, there is no significant difference between the responses of farmers towards the test statistic in the two locations) has to be accepted.
6. Harvesting problems like labour shortage for harvesting and post-harvest losses were less affected by the black pepper farmers in Idukki and Wayanad district. The important marketing problems identified and which are generally affected by the farmers in both districts include price variability of the black pepper, low price of black pepper and traders offer price is less than market price. Constraints like long distance to market and high cost of transportation were highly affected by the farmers in Idukki and relatively less affected by the farmers in Wayanad district.



7. Accordingly, in Idukki district low price of black pepper (95.33 percent), price variability of the black pepper (88.67 percent), high cost of transportation (86.33 per cent), traders offer less price than market price (85.67 percent) and long distance to market (84 per cent) were the major problems agreed by the farmers. At the same time, Wayanad district also showed a similar pattern of result except in case of long distance to market which has moderately agreed by the farmers. (55 percent).
8. Lost competitiveness in international market and changing government policies were the two problems agreed by the farmers in both districts and they moderately agreed with fragmentation of the holdings. At the same time, increasing transaction cost considered as a major constraint among Idukki farmers and moderately agreed to it by Wayanad farmers.
9. A notable reason identified by the farmers was low motivation for value addition in black pepper, followed by high investment required for value addition in black pepper. It is true that to produce value added products of pepper were not practical for the farmers to carry out it individually, as the high investment is needed or otherwise, the farmers should concentrate on the value addition possible at farm level like improving the quality of black pepper.
10. For hill produce dealers, the major constraints identified were low price of pepper, price fluctuation in pepper price, low quality of black pepper, high transportation cost, shortage in supply (less volume), absence of proper market mechanism for pepper, and import of pepper from other countries and stringent rules and regulations in pepper trade. While for wholesalers the highly influenced constraints were low price of pepper, price fluctuation in pepper price, high transportation cost, and low quality of black pepper and shortage in supply (less volume).
11. The major problems faced by nurseries were, farmer tends to shift from pepper cultivation to cardamom cultivation and farmers are reluctant to

buy the planting material of pepper from the nurseries available in their locality.

12. Wayanad farmers have started ordering planting materials of pepper from nurseries in Karnataka. Input suppliers reported that sometimes stock out occurs for certain chemicals or fertilizer at the store.
13. Most of the constraints of the value chain actors of pepper were common to all actors, like the low price of pepper, price fluctuation, high transportation cost, and absence of proper market mechanism for black pepper and import of black pepper from other countries.
14. The black pepper farmers and other value chain actors of the value chain has different opportunities to increase their returns from pepper by increasing the quality of the black pepper and also to adopt organic farming. Among the one hundred twenty farmers from these districts, only 55 farmers were certified organic farmers and the remaining 65 farmers had an opportunity to shift to organic farming. It is obvious from the result that the conventional farmers were not interested to shift to organic farming because most of the farmers cultivates Cardamom in their farms, and according to them organic cultivation of cardamom will not be practical and profitable.

### **5.5 Strategies to upgrade the performance of value chain actors of black pepper**

1. It became necessary to increase productivity of black pepper to the desired level to give better returns for the farmers. Further, it is noticed that farmers' caring and attention to pepper was closely related with the price of pepper. When the price of pepper was high (Rs.700 per kg) in 2016-2017, the black farmers were highly interested in planting pepper in their farms and they gave proper caring to the pepper plants. Currently, the price of black pepper has reduced to less than Rs 300 per kg (2020) and

so it is seen as a tough task to improve the productivity of black pepper in the state.

2. The role of marketing cooperatives in value addition was found negligible among the actors in Idukki and Wayanad districts, that is, only Peermade Marketing Cooperative Society, Kumily carried out the value addition of dried black pepper and obtain better price for their produce. Even then they are not processing any value added product of black pepper. Efforts are required to rejuvenate the existing cooperative organizations and to restore the confidence of its members.
3. The circumstances in the two districts demands the requirement of an organization which can undertake the value addition of black pepper. That organization can be a Farmer Producer Company or a marketing/processing cooperative society. Furthermore, the advice, help and support from the government machineries should not be limited with the black pepper farmers, which means, the support and proper business relationships along with the entire actors in the value chain is necessary to make the concept of producer organization successful in value addition of black pepper.
4. The concept of upgrading means the ability of farmers to create and manage the value added activities and help them to attain the production of quality black pepper, white pepper and green pepper with various quality attributes that brings them a better market price. The different types of probable upgrading to increase the competitiveness of the participants in the value chain were identified as 1) process upgrading, 2) product upgrading, 3) functional upgrading and 4) inter-chain or sectoral upgrading.
5. Product upgrading will helps to improve the intrinsic quality of black pepper, allow the farmers to join and capture the niche markets. Increased quality for black pepper may fetch good price for the product. It's already very late to position a brand name in the international market for the black

pepper from Idukki and Wayanad. Supplies of organic and inorganic black pepper, supply of variety wise black pepper are the possible products that can be produced by the value chain. Thus, this product upgraded strategy can be adopted by the farmers and other actors in the value chain.

6. Advance technology which is affordable and low cost for value addition should be made available to black pepper farmers for value addition of black pepper like drying, cleaning and processing of value added products. The possible upgrading in the farm level can be achieved by giving proper training to farmers through extension officers in the area. It is true that hygienic handling, cleaning and drying of black pepper was only possible at farm level while the other value addition activities is not possible at the individual farms. On the other side, it was perceived that the relationship between the black pepper farmer and final buyer in Kerala is loose and indirect. For a successful value chain, the transfer of knowledge, skills and services should pass down to the producer farmers from the buyers and hence the share of farmer in the final consumer price can be increased.
7. All actors engaged in the production and marketing of black pepper in Kerala has requested to amend the government policy for agricultural produces, especially for black pepper. Vietnam pepper is less priced due to its less piperine content, in contrast with pepper in Kerala and when it get mixed with Kerala pepper at different node of the value chain, it reduces the final value in the Kochi market. Hence, the market should avoid the commingling of domestic pepper with imported pepper and thus, will help to guard and retain the competitiveness of the Indian pepper in international market the pepper.
8. The major strengths of black pepper in Kerala is its superior intrinsic quality, high domestic demand and intercrop cultivation and the weaknesses are low production and productivity, lack of quality planting

material, production highly depended on weather conditions and high labour cost. The increased global demand for spices, production of value added products and variety wise production of black pepper are the opportunities in the value chain and the major challenges facing includes high production and high productivity in other countries, lack of stable price and climate change.

9. A single farmer cannot undertake the production of value added products like white pepper and green pepper. Hence, the farmers has to group together to carry out these activities. A value chain suitable for the black pepper farmers in Kerala to capitalize the opportunities ahead by taking into consideration of the actual constraints faced by them is suggested in the section. The institutional support machineries for enhancing the agriculture production in the state should focus on the registered farmers producer organizations or groups like marketing cooperatives or farmer producer companies in the suggested value chain, so that a share of the noticeable profit grabbing by the actors who undertakes value addition of black pepper and its value added products like white pepper and green pepper in the value chain can be transferred to the black pepper farmers.

### **5.6 Thrust on Future Research**

1. Marketing Channel and flow of imported black pepper,
2. Export marketing strategies of black pepper.

### **5.7 Conclusion**

The study revealed that the competitiveness of black pepper from Kerala in the international market is diminishing day by day and the market price of black pepper is not stable since 2017, due to this reason, the black pepper farmers has to compromise on their income from the farm and cultivation. Other backlash is changing government policies, especially, the import of black pepper to the country at reduced import duty, which the farmers and the majority of the actors believe that it was the main reason for reduction in the market price of black

pepper in Kerala. Hence, the identified strategies should be implemented to guard the market price of black pepper produced from Kerala and also to commence the activities of value addition at farmer level to retain the competitiveness of the Indian black pepper in international market.

Furthermore, the Government of India has passed three new farmer bills in Parliament amidst of the Opposition parties protest. In which i) Farmers' Produce Trade and Commerce (Promotion and Facilitation) Bill, 2020, allows the farmers to sell their agricultural produce outside the Agricultural Produce Marketing Committee (APMC) without paying any sort of taxes at state level, ii) The Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Bill, 2020, facilitates contract farming and direct marketing and iii) The Essential Commodities (Amendment) Bill, 2020 deregulates the production, storage, movement and sale of major foodstuffs, including cereals, pulses, edible oils and onion, except in case of extraordinary circumstances. With these reforms central government expects the new laws will provide farmers with more choice, with competition leading to better prices as well as results in private investment in agricultural marketing, processing and value addition and infrastructure facilities. Black pepper, a major crop falls under the spices category under Ministry of Commerce and Industry can have a better market opportunity, if the production is market oriented by meeting specific quality requirements, then the Indian black pepper can be competitive in the market. Though a lot of apprehensions exist on these changes imposed upon the farmers, the effectiveness of these amendments can be assessed only in future.

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## APPENDIX I

### KERALA AGRICULTURAL UNIVERSITY COLLEGE OF COOPERATION, BANKING AND MANAGEMENT

#### *DEPARTMENT OF RURAL MARKETING MANAGEMENT*

#### *Value Chain Analysis of Black Pepper in Kerala*

#### **Interview schedule for black pepper producers**

- | District:  | Block | Panchayat: |
|--|-------|------------|
| 1. Name of the Farmer  |       |            |
| 2. Address   |       |            |
| 3. Mob/phone No:   |       |            |
| 4. Age:  |       |            |
| 5. Education:  |       |            |
| a. Primary b. Secondary c. Higher Secondary d. Graduation e. Post-Graduation |       |            |
| 6. Occupation:   |       |            |
| a. Agriculture b. Govt. Employee c. Pvt. Employee d. Self employed           |       |            |
| 7. What is your major means of annual income?                                |       |            |
| a. Income from agriculture: Rs.  |       |            |
| b. Other source of Income: Rs.   |       |            |
| 8. Number of members engaged in agriculture : Fulltime (Nos) Part time (Nos) |       |            |
| 9. Details of the land holding   |       |            |

Total Land Holding (in ha)	Operational Holding	Land ( in ha)

#### 10. Black Pepper Cultivation

Sl. No	Variety (Local/HYV)	Pre-bearing Vines/Standards (Upto 3 years)	Peak Bearing Vines/Standards (4 years to 25 years)	Age of Pepper Vines(in years)	Over aged Vines (More than 20 years)	Any Remarks (if replanting not done, reasons)

#### 11. Method of cultivation in your farm

Years of active cultivation of black pepper	Method of cultivation					Remarks
	Traditional	Scientific	Organic	Partly organic	Mix of two/more methods	

#### 12. Cost of cultivation of pepper

Particulars	Input		Human labour					
			Hired Labour		Family Labour		Total	
	No/unit	cost	No	Amount	No	Amount	No	Amount
<b>Planting of new pepper vines/cultivars</b>								
Land preparation								
Digging of pits, filling up of pits								
Planting material								
Planting/ staking								
Mulching								

Pruning/training								
Manures								
Fertilizers (including transportation cost)								
Plant protection measures								
Irrigation								
Intercultural operations								
Others if any								
<b>Maintenance cost for pre bearing vines</b>								
Manures								
Fertilizers(including transportation cost)								
Plant protection measures								
Irrigation								
Intercultural operations								
Others if any								
<b>Maintenance cost for peak bearing vines</b>								
Manures								
Fertilizers(including transportation cost)								
Plant protection measures								
Irrigation								
Intercultural operations								
Others if any								
<b>Maintenance cost for Over aged vines</b>								
Manures								
Fertilizers(including transportation cost)								
Plant protection measures								
Irrigation								
Intercultural operations								
Others if any								
Total								



### 13. Production of Black Pepper

Total Production (in Kgs)	Price Received(Rs)/ Kg

### 14. Marketing & Processing (if any) Activities

Total Marketed Quantity (Qn. No. 16) (By taking a base year)	Kg
When do you sell the produce?	Weekly / Monthly during harvest
Distance to the market	km
Any market charges?	Yes/No If Yes, Rs
Mode of transport	
Transport charges (per load/kms)	
Price received per kg	Rs.
Criteria to fix price of pepper	Market price/accept price offered by trader/NGOs/other agency
Mode of Payment	Advance payment/spot/ delayed payment (mention the delay)
Storage i. Time period ii. Method of storage iii. Cost of storage (own store cost to be added) iv. Other remarks	Own store rooms/ rented warehouse  Rs.
Packaging charges (bulk/bags/packs/other)	Rs.
Loading and unloading charges	Rs.
Processing (Y/N)	Dried pepper/White pepper/Green pepper
Processing activities Drying/soaking/cleaning/steaming/crushing/powdering	
Processing charges (drying and cleaning)	Rs.
Packing	Rs.
Other expenses( to be apportioned)	Rs.
Other charges, if any	Rs.

### 15. Marketing Channel

Type of Black Pepper	Channel Participants Available in the area	Preferred Channel Participant to sell Black Pepper	Relation with Channel Participant (in years)	Cost of selling (if any) Rs.
Black pepper	<ol style="list-style-type: none"> <li>1. Local trader</li> <li>2. Wholesaler</li> <li>3. Exporter</li> <li>4. Cooperatives</li> <li>5. NGOs</li> <li>6. Others</li> </ol>			

### 16. Are you the member of any organization? Yes/No

If yes, which is/are that organization?

1. FPOs
2. Farmers Associations/clubs
3. Cooperatives
4. Civil Society Organisations
5. NGOs
6. SHGs
6. Others specify

### 17. Do you know which variety of pepper/grade of pepper get high price in the market? Yes/No If Yes,

Variety	Grade	Remarks
	Cochin-Malabar garbled	
	Cochin - Ungarbled	
	Calicut - Nadan	
	Calicut – Wayanadan	
	Others, if any	

18. Movement of produce from farmer and value added products

Do you know where the pepper moves to from your collecting agent? (Y/N)	Do you know to which actor the pepper is transferred from the trader? Yes/No (please specify)	List out the value added products of black pepper known to you	Do you know what type of value added product of pepper is produced out of the black pepper sold by you (Y/N)	List out the value added products of black pepper produced from the produce you sold
	Wholesaler	Pepper powder		Pepper powder
	Exporter	White pepper		White pepper
	Processor	White pepper powder		White pepper powder
	Others, if any	Green frozen pepper		Green frozen pepper
		Pepper oil		Pepper oil
		Pepper oleoresin		Pepper oleoresin

19. Governance - Rules and regulations within the chain

Formal Rules (with official legislative backing)	Rule set by whom	Whether the rules are properly informed / felt or not (mark Yes/No)	Whether the rules are influencing production and marketing or not (mark Yes/No)
1. Phytosanitary measures e. tolerance limit for residues, f. restricted use of substances,	WTO, European Union, SAARC, ASEAN,		

<ul style="list-style-type: none"> <li>g. labeling requirements related to food safety,</li> <li>h. hygienic requirements,</li> <li>2. Quality requirements</li> <li>3. Environment protection</li> <li>4. Prohibition of cultivation in forest land</li> <li>5. Credit availability &amp; rate of interest</li> <li>6. Eligibility to receive subsidy</li> <li>7. Others if any</li> </ul>	<p>GOI, State Governments etc</p>		
<p>Formal &amp; Informal Rules (commercial standards)</p>			
<p><b>Formal</b></p> <ul style="list-style-type: none"> <li>1. Written contracts with producers/wholesalers</li> <li>2. Contract farming</li> <li>3. Any other written contracts</li> </ul> <p><b>Informal</b></p> <ul style="list-style-type: none"> <li>1. Downgrading of the product by the buyer</li> <li>2. Price offered less than the market price by hiding information</li> <li>3. Trust with the buyer</li> <li>4. Delay in payments</li> <li>5. Encouraging advance payment</li> </ul>	<p>Industry Association Exporters Agri entrepreneurs</p> <p>Buyers/local traders/pre processors</p>		
<p>Voluntary standards (products with specific standards)</p>			
<ul style="list-style-type: none"> <li>1. Production requirements for organic certification and labeling</li> <li>2. Production requirements for Fair-trade certification and labeling</li> </ul>	<p>Organic certifying agency / NGOs /Fair trade Alliance</p>		

20. List out constraints in black pepper Production and Marketing?

Sl.No	Pre- production constraints (before starting production activities)	Strongly Agree (5)	Agree (4)	Moderately Agree (3)	Dis agree (2)	Strongly Disagree (1)
1	Shortage in availability of planting materials.					
2	Shortage in availability of agro chemicals.					
3	Shortage in availability of organic inputs					
4	Delay in receiving agricultural inputs.					
5	Climate change					
	Production Constraints					
1	Labour shortage for farm activities.					
2	high labour cost					
3	Increased incidences of pest and diseases					
4	Climate Change					
5	Shortage in agricultural credit					
6	High cost of agri inputs					
7	High interest rate for credit					
8	Untimely distribution of credit					
9	Labour shortage for harvesting					

10	High post-harvest loss					
	Marketing constraints					
1	Price variability of black pepper					
2	Long distance to market					
3	High cost of transportation					
4	Low price of black pepper					
5	Difficulty in storing black pepper					
6	High cost for storage facilities					
7	Traders offer less price than market price					
	Other constraints for farmers					
1.	Fragmentation of holdings.					
2.	Changing government policies.					
3.	Lost competitiveness in international market.					
4.	Increasing transaction cost.					

21. Reasons for not producing value added products of black pepper

Sl.No	Opportunities	Strongly Agree (5)	Agree (4)	Moderately Agree (3)	Disagree (2)	Strongly Disagree (1)
1	High investment required for value addition in black pepper					
2	High risk associated with value addition of black pepper					
3	Farmer faces low motivation for value addition in black pepper.					
4	Shortage in training for value addition of black pepper					

22. List out the opportunities in black pepper Production and Marketing?

Sl.No	Opportunities	Strongly Agree (5)	Agree (4)	Moderately Agree (3)	Disagree (2)	Strongly Disagree (1)
1	Produce value added products of pepper					
2	To improve quality of the black pepper					
3	Direct selling to processors or exporters					
4	To start own processing unit for black pepper					

5	To start a farmer producer company					
6	To start online business for pepper products					
7	To change to organic farming practices					
8	To obtain organic certification					
9	To obtain fair trade certification					
10	Others, if any					



23. Information and knowledge source and type of information

Sl No	Information source	Type of Information									
		Price Related/ marketing information	Pepper related schemes /subsidy	Fertilizer/ pesticides application	Information about new cultivating practices	Pest & disease control	About value Addition of pepper	About how to increase quality of pepper	Availa- bility of credit	Organic production & certification	Others, if any
1	Fellow Farmer										
2	Farmers Association/ FPOs										
3	Input Suppliers										
4	Local traders										
5	Wholesalers										
6	Processors										
7	Exporters										
8	Retailers										
9	Krishi Bhavan										
10	Spices Board										
11	KAU Research Station/KVKs										
12	NGOs										
13	Agri business entrepreneurs										
14	Cooperatives										
	Others if any										

24. Linkages / Business relationships

Sl No	Participants	Do linkages exist (Y/N)	Reasons		Benefits gained		Frequency of contacts		Level of formality		
			For linkage	For not having linkage	In short term	In Long term	No. of times /year	No contact	Informal	Verbal Arrangement	Formal written contract
1	Input Suppliers										
2	Local traders										
3	Wholesalers										
4	Processors										
5	Exporters										
6	Retailers										
7	Krishi Bhavan										
8	Spices Board										
9	KAU Research Station/KVKs										
10	NGOs										
11	Agri business entrepreneurs										
12	Fellow farmers										
13	Farmers Association										
14	Cooperatives										
15	Commercial Banks										
16	Microfinance Institutions/SHGs										
17	Money lenders										
18	Fertilizer & pesticides manufacturing firms										

19	Government Administration – District, Block, Panchayath										
20	Others if any										

25. Trust in linkages (Consider only those participants/actors having linkages)

Sl.No	Participants	Do you have trust in linkages(Y/N)	Level of trust in linkages			
			No trust	Little trust	Some trust	Full trust
1	Input Suppliers					
2	Local/Private traders					
3	Krishi Bhavan					
4	Spices Board					
5	KAU Research Station/KVKs					
6	NGOs					
7	Agri business entrepreneurs					
8	Fellow farmers					
9	Farmers Association					
10	Cooperatives					
11	Others if any					

26. Suggestions to overcome the constraints

- 1.
- 2.

## APPENDIX II

### KERALA AGRICULTURAL UNIVERSITY COLLEGE OF COOPERATION, BANKING AND MANAGEMENT

#### DEPARTMENT OF RURAL MARKETING MANAGEMENT

##### *Value Chain Analysis of Black Pepper in Kerala*

#### Local Traders Interview Schedule

1. Name of trader:
2. License / registration :
3. Address: \_\_\_\_\_
4. Type of trade: (✓) 1.  Retailer 2.  Wholesaler 4.  Collector 5.  Others
5. Position of respondent in the business  
:(✓): 1.  Owner- manager      2.  Spouse of owner      3.   
Employed manager  
4.  Other (specify)
6. How long have you been operating the business? \_\_\_\_\_ Years
7. Are you in trade alone or in partnership? (✓); 1.  Alone 2.  Partnership  
3.  Other (specify)
8. If in partnership, how many partners? \_\_\_\_\_ persons.
9. Total number of peoples employed in your business:
10. What is your main business?

Activity	(In order of importance and business proportions)
Trading (collecting produce from farmers)	
Wholesaling	
Brokerage activities (selling and buying for clients)	
Others (specify)	
11. Do you participate in pepper trading year round? (✓); 1.  Yes  
2.  No
12. If No, at what period of the year do you participate? (✓) 1.  When  
purchase price becomes low 2.  During high supply 3.  Other(specify)
13. Do you have trading in other agricultural produce other than pepper?  
(✓) 1.  Yes 2.  No

14. If Yes , Mention the other agricultural produces with average quantity

Other crops	Average quantity/year

15. Do you carry out any of the following activities related with your trade :

Activities	Yes/No
Transportation	
Storage/Warehousing	
Quality Testing/Grading	
Processing	
Others if any	

16. Are you feeling any entry barriers in pepper trading? (√)

1.  Yes 2.  No

17. Whether the information needed for pepper trade is available to you?

Yes/No

**Purchase practices**

18. From whom you prefer to buy most of the time?     Farmers/local collectors

19. Details of Pepper Procurement in last year.

Grade of Pepper Collected	Quantity of Pepper Collected	Value in Rs	Average Price/Kg
Garbled			
Ungarbled			

20. How do you fix the purchasing price for black pepper?

Market Price/Own price fixing method/ others if any

21. How many regular suppliers do you have?

Producers \_\_\_\_\_ local collectors \_\_\_\_\_

**Selling practices**

22. To whom did you sell black pepper?

Type/grade of pepper	Actor	Quantity Sold	Average price /Kg	Payment Details
Dried Pepper	Wholesaler/ Processor/Exporter /Others			Cash / Credit/ Advance Payment

23. Indicate your average cost incurred in the trading of black pepper (quantity).

Cost Components	Type of Pepper
	Dried pepper
Purchase price	
Loading/unloading	
Transportation fee	
Storage cost	
Packing expenses	
Loss in transport	
Loss in storage	
Wastage loss	
Processing cost (if any)	
Labour cost Other cost etc	

24. Are you a member of any organization?

Name of Organization	List out the benefits gained being a member

25. Do you follow any formal/ informal rules in black pepper trade?

	Formal Rules(Acts or written contracts)	Rule setting authority	Informal Rules	Rule setting Authority	Advantages/ Disadvantages
Cleaning and drying of Pepper					
Handling of Produce					
Storage related					
Transportation related					
Certification related(organic, fair trade, GAP)					
Processing (if any)					
Loading and unloading					
Others if any					

26. Any training attended (for last three years)? Yes/No

a. If Yes,

Name of the agency	Purpose of training	Type of farming	No of days
Krishi Bhavan			
Spices Board			
Krishi Vigyan Kendra			
Kerala Agrl. University			
ICAR Institutes			
IISR			
Others if any			

26.

27. Linkage with other value chain actors:

Sl. No	Participa nts	Do linka ges exist? (Y/N )	Purp ose of linka ge	Sh ort term /lo ng term	Frequency of contact		Level of formality		
					No cont act (last year )	No. of times/ year	In formal	Verba l Arran ge- ments	Form al Writt en Contr act
1	Wholesa lers								
2	Other Local Traders								
3	Processors								
4	Exporters								
5	Retailers								
6	Consumers								
7	Farmers								
8	Input Suppliers								
9	NGOs								
10	FPOs								
11	Spices Board								
12	Krishi Bhavan								
13	KVKs								
14	Commer cial Banks								
15	Cooperat ives								
16	Panchay at (Block & District also)								
17	Others (if any)								



28. Whether the information needed for pepper trade is available to you? Yes/No

29. If Yes, provide details

Sl.No	Information Source	Type of information received
1	Other Local Traders	
2	Wholesalers	
3	Processors	
4	Exporters	
5	Retailers	
6	Cooperatives	
7	NGOs	
8	Government Agencies(Krishi Bhavan/Spices Board/KVKs/KAU/KAU RS)	
10	Others specify	

30. Are you facing any problems on pepper trading? (√) 1. [ ] Yes 2. [ ] No

Problems	Yes/No	Most Felt (3)	Moderately Felt (2)	Least Felt (1)
Stringent rules and regulations in pepper trade				
Shortage in supply (less volume available for trade)				
Import of pepper				
Low quality of black pepper from farmers				
High transportation cost				
Poor post harvest handling				
High cost for storage				
Quality loss due to unscientific storage of produce.				
Difficulty in Price negotiations				
Lack of demand for black pepper				
Lack of proper market information				
Lack of credit availability				
Insufficient credit				
High capital requirements				
Untimely credit availability				
High wages to labourers.				
Changing Government policies				

31. Do you feel any additional opportunity in your business? If Yes, Please list out.

1. To get tie up with processors
2. To expand business to processing and exporting
3. To change into a wholesaler.
4. Others if any

32. Suggestions to overcome these constraints

- 1.
- 2.

## APPENDIX III

### KERALA AGRICULTURAL UNIVERSITY COLLEGE OF COOPERATION, BANKING AND MANAGEMENT

#### *DEPARTMENT OF RURAL MARKETING MANAGEMENT*

#### *Value Chain Analysis of Black Pepper in Kerala*

#### **Wholesalers Interview Schedule**

1. Name of trader:
2. License / registration :
3. Address: \_\_\_\_\_
4. Type of trade: (✓) 1.  Retailer 2.  Wholesaler 4.  Collector 5.  Others
5. Position of respondent in the business  
:(✓): 1.  Owner- manager      2.  Spouse of owner      3.   
Employed manager  
4.  Other (specify)
6. How long have you been operating the business? \_\_\_\_\_ Years
7. Are you in trade alone or in partnership? (✓); 1.  Alone 2.  Partnership  
3.  Other (specify)
8. If in partnership, how many partners? \_\_\_\_\_ persons.
9. Total number of peoples employed in your business:

10. What is your main business?

Activity	(In order of importance and business proportions)
Trading (collecting produce from farmers)	
Wholesaling	
Brokerage activities (selling and buying for clients)	
Others (specify)	

11. Do you participate in pepper trading year round? (✓); 1.  Yes 2.  No
12. If No, at what period of the year do you participate? (✓) 1.  When purchase price becomes low 2.  During high supply 3.  Other(specify)
13. Do you have trading in other agricultural produce other than pepper? (✓) 1.  Yes 2.  No

14. If Yes , Mention the other agricultural produces with average quantity

Other crops	Average quantity/year

15. Do you carry out any of the following activities related with your trade :

Activities	Yes/No
Transportation	
Storage/Warehousing	
Quality Testing/Grading	
Processing	
Others if any	

16. Are you feeling any entry barriers in pepper trading? (√)

1.  Yes 2.  No

17. Whether the information needed for pepper trade is available to you?

Yes/No

**Purchase practices**

18. From whom you prefer to buy most of the time? Farmers/local collectors

19. Details of Pepper Procurement in last year.

Grade of Pepper Collected	Quantity of Pepper Collected	Value in Rs	Average Price/Kg
Garbled			
Ungarbled			

20. How do you fix the purchasing price for black pepper?

Market Price/Own price fixing method/ others if any

21. How many regular suppliers do you have?

Producers \_\_\_\_\_ local collectors \_\_\_\_\_

### Selling practices

22. To whom did you sell black pepper?

Type/ grade of pepper	Actor	Quantity Sold	Average price /Kg	Payment Details
Dried Pepper	Wholesaler/ Processor/Exporter/Others			Cash / Credit/ Advance Payment

23. Indicate your average cost incurred in the trading of black pepper (quantity).

Cost Components	Type of Pepper
	Dried pepper
Purchase price	
Loading/unloading	
Transportation fee	
Storage cost	
Packing expenses	
Loss in transport	
Loss in storage	
Wastage loss	
Processing cost (if any)	
Labour cost Other cost etc	

24. Are you a member of any organization?

Name of Organization	List out the benefits gained being a member

25. Do you follow any formal/ informal rules in black pepper trade?

	Formal Rules(Acts or written contracts)	Rule setting authority	Informal Rules	Rule setting Authority	Advantages/ Disadvantages
Cleaning and drying of Pepper					
Handling of Produce					
Storage related					
Transportation related					
Certification related(organic, fair trade, GAP)					
Processing (if any)					
Loading and unloading					
Others if any					

26. Any training attended (for last three years)? Yes/No

a. If Yes,

Name of the agency	Purpose of training	Type of farming	No of days
Krishi Bhavan			
Spices Board			
Krishi Vigyan Kendra			
Kerala Agrl. University			
ICAR Institutes			
IISR			
Others if any			

26. Linkage with other value chain actors:

Sl.No	Participants	Do linkages exist? (Y/N)	Purpose of linkage	Short term /long term	Frequency of contact		Level of formality		
					No contact (last year)	No. of times/year	In formal	Verbal Arrange-ments	Formal Written Contract
1	Wholesalers								
2	Other Local Traders								
3	Processors								
4	Exporters								
5	Retailers								
6	Consumers								
7	Farmers								
8	Input Suppliers								
9	NGOs								
10	FPOs								
11	Spices Board								
12	Krishi Bhavan								
13	KVKs								
14	Commercial Banks								
15	Cooperatives								
16	Panchayat (Block & District also)								
17	Others (if any)								

27. Whether the information needed for pepper trade is available to you? Yes/No

28. If Yes, provide details

Sl.No	Information Source	Type of information received
1	Other Local Traders	
2	Wholesalers	
3	Processors	
4	Exporters	
5	Retailers	
6	Cooperatives	
7	NGOs	

8	Government Agencies(Krishi Bhavan/Spices Board/KVKs/KAU/KAU RS)	
10	Others specify	

29. Are you facing any problems on pepper trading? (√) 1. [ ] Yes 2. [ ] No

Problems	Yes/No	Most Felt(3)	Moderately Felt(2)	LeastFelt(1)
Stringent rules and regulations in pepper trade				
Shortage in supply (less volume available for trade)				
Import of pepper				
Low quality of black pepper from farmers				
High transportation cost				
Poor post harvest handling				
High cost for storage				
Quality loss due to unscientific storage of produce.				
Difficulty in Price negotiations				
Lack of demand for black pepper				
Lack of proper market information				
Lack of credit availability				
Insufficient credit				
High capital requirements				
Untimely credit availability				
High wages to labourers.				
Changing Government policies				

30. Do you feel any additional opportunity in your business? If Yes, Please list out.

1. To get tie up with processors
2. To expand business to processing and exporting
3. To change into a wholesaler.
4. Others if any

31. Suggestions to overcome these constraints 1.



## APPENDIX IV

### KERALA AGRICULTURAL UNIVERSITY COLLEGE OF COOPERATION, BANKING AND MANAGEMENT

#### *DEPARTMENT OF RURAL MARKETING MANAGEMENT*

#### *Value Chain Analysis of Black Pepper in Kerala*

#### **Exporters Interview Schedule**

1. Name of the Organization:
2. Location:
3. Type of business:
4. Licensing Details
  1. Import & Export Code (IEC from Directorate of Foreign trade)
  2. Spices Board License
  - 3.
5. How did you come to this business?                      Family Business/ Own business
6. What are your major business activities?

Business Activities	Rank based on the business volume
Spices trade	
Processing of Spices	
Exporting of spices	
Retailing	
Others, if any	

7. Which are the spices exported from your company?

Major Spices exported	Exporting country	Quality Requirements of the importing country	Quantity exported (year wise if possible)	Approximate value in Rs.

8. Where do you get your raw materials from (area & district)?
  - a. Own farm
  - b. Smallholders at their farm gate
  - c. Local Trader
  - d. Wholesalers
  - e. Others if any

9. Type of relationship with your suppliers

Suppliers	Informal/Formal	Relationship (in Years)
Smallholders at their farm gate		
Local Trader		
Wholesaler		
Others if any		

10. Do you have special requirements for your suppliers (in quantity/quality)?  
(Yes/No)

11. If Yes, Please specify the requirements for black pepper from suppliers.

Quantity requirements	Quality requirements	Price /Kg

12. Details of Processing activities of black pepper

Stages of Processing	Cost /Kg on each stage
Cleaning	
Steaming	
Grading	
Powdering	
Packing	
Transportation	
Quality Testing	
Fixed cost (proportion to pepper processing)	
Others, if any	

13. Details of activities in exporting pepper

Stages of Processing	Cost /Kg on each stage
Quality Testing for exporting	
Documentation	
Shipment charges	
Customs charges	
Certification charges	
Fixed cost (proportion to pepper exporting)	
Others if any	

14. Do any governmental requirements exist? (Y/N)

If yes, please specify

Processing related requirements	Cost Incurred (Rs.)	Export related requirements	Cost Incurred (Rs.)
1. Agmark		IEC (from Directorate of Foreign Trade)	
2. FSSAI		Spices Board License	
3. Requirements stipulated by importing countries			
4. GST Registration			
5. Others if any			

15. Details of products exported

Type/grade of pepper	2017		2018*		Profit Margin (per quantity of processed product) (Kg/Qt/ton)	Countries to which the products exported	Quantity exported to each countries (Kg/ql/ton)	Quality requirements of the importing country
	Quantity exported(Kg/Qt/ton)	Average price /Kg	Quantity exported(Kg/Qt/ton)	Average price /Kg				
Dried Pepper								
White Pepper								
Green Pepper								

16. Do you have storage facilities? Yes/No

17. If Yes,

Owned	Year	Investment (Rs)	Rented	Rent (Monthly/yearly) (Rs)	Storage Capacity

18. Support services received from different agencies? (Yes / No)

Financial Support	Details	Non-financial support	Details
1.Credit availability		1.Training	
2.Subsidy schemes		2.Technology	

19. Do you received subsidy for the business? 1. [ ] Yes 2. [ ] No

20. If Yes, give details

Sl.No	Subsidy Scheme	Subsidy received year	Agency	Amount (Rs)
1.	<b>Infrastructure Development Scheme</b> a. Adoption of Hi tech in spice processing b. Technology & process up gradation c. Setting up of in-house quality control laboratory d. Quality certification e. training of laboratory pesonnel		Spices Board	
2.	Trade Promotion schemes			
3.	International trade fairs/meetings			
4.	Promotion of Indian spice brand abroad			
5	Product Development & Research			
	<b>Market Development Assistance</b>		Spices Board	
	Participation in Buyer- seller Meets/Fairs/ Exhibitions			
	Others if any			

21. Do you follow any formal/ informal rules in black pepper trade?

If Yes,

	Formal Rules(Acts or written contracts)	Rule setting authority	Informal Rules	Rule setting Authority	Advantages/ Disadvantages
Certification related(organic, fair trade, GAP)					
Quality standards					
Technical aspects					
Safety rules in the plant					
Working environment rules					
Others if any					

22. Linkage with other value chain actors:

Sl. No	Participants	Do linkages exist?( Y/N)	Purpose of linkage	Short term /long term	Frequency of contact		Level of formality		
					No contact (last year)	No. of times/year	Informal	Verbal Arrangements	Formal Written Contract
1	Wholesalers								
2	Other Local Traders								
3	Processors								
4	Exporters								
5	Retailers								
6	Consumers								

7	Farmers								
8	Input Suppliers								
9	NGOs								
10	FPOs								
11	Spices Board								
12	Krishi Bhavan								
13	KVKs								
14	Commercial Banks								
15	Cooperatives								
16	Panchayat (Block & District also)								
17	Others (if any)								

27. Whether the information needed for pepper trade is available to you?  
Yes/No

28. If Yes, provide details

Sl.No	Information Source	Type of information received*
1	Wholesalers	
2	Processors	
3	Other Exporters	
4	Retailers	
5	Cooperatives	
6	NGOs	
7	Government Agencies(Krishi Bhavan/Spices Board/KVKs/KAU RS)	
8	Others specify	

29. What would you point out as your biggest problems in exporting?

Problems	Yes/ No	If Yes,		
		Most Felt(3)	ModeratelyFelt(2)	LeastFelt(1)
Inception Problems				
Delay in registration				
Stringent rules and regulations for licensing/registration				
Difficulty in getting credit				
Difficulty in getting subsidy				
Procurement problems				
Poor quality of black pepper				
Shortage in required volume of pepper				
High transportation cost				
Difficulty in fixing price				
Poor post harvest handling				
Value addition Problems				
High processing cost				
Lack of skilled workers				
High wage rate of labourers				
High investment needed for technology for value addition				
Lack of training for value addition				
Insufficient mechanization in pepper processing				
Marketing Problems				
Lack of proper market information				
High promotion cost				
High storage cost				
Quality loss due to unscientific storage of produce.				
High distribution cost				
Lack of channel members				

Problems	Yes/ No	If Yes,		
		Most Felt(3)	ModeratelyFelt(2)	LeastFelt(1)
Competition in the market				
Financial Problems				
High Capital requirements				
Untimely credit disbursement				
Insufficient credit availability				
Force to approach different agencies to obtain the needed credit amount				
Excessive documentation for credit application				
Export related problems				
Unable to find buyer for exporting processed pepper.				
Different quality standards for exporting to different countries				
Difficulty in Price negotiations with buyers				
Heavy documentation & procedures to be followed for exports				
Difficulty in finding packing materials to suit the export requirements				
Lack of awareness of existing schemes related to exports				
Insufficiency of legal provisions(lacks national stds. covering SPS)				
Rejection of export materials				
Congestion at the ports due to high waiting period of shipments				
High Transportation cost				
High Warehouse cost at the port				
System break down in customs				



Problems	Yes/ No	If Yes,		
		Most Felt(3)	ModeratelyFelt(2)	LeastFelt(1)
Multiple tests in importing country (makes it economically unviable)				
Changing Government policies				

30. Do you feel any additional opportunity in your business? If Yes, Please list out.

1. To get tie up with other exporters
2. To expand business
3. Others if any

31. Suggestions to overcome constraints in business

- 1.
- 2.

## APPENDIX V

### KERALA AGRICULTURAL UNIVERSITY COLLEGE OF COOPERATION, BANKING AND MANAGEMENT

#### DEPARTMENT OF RURAL MARKETING MANAGEMENT *Value Chain Analysis of Black Pepper in Kerala*

##### Key Informants Interview

1. Name of the organization: \_\_\_\_\_
2. Role of the interviewee in the organization:
3. Location and contact information:
4. Type of the organization:  
public/private/NGO
5. Organizational mission, vision and objectives
6. What is the role of your organization in Black Pepper value chain in the study area?
7. What are the challenges and opportunities you faced in performing your role?

Challenges	Opportunities

8. Main topic of discussion:
  1. Participants in black pepper value chain :  
Farmers/Traders/Processors/Exporters/Consumers
  2. Interactions with different actors :
  3. Linkages with different actors :
  4. Formal rules and regulation supposed to comply ( while performing your role):
  5. Monitoring and enforcement of rules ( if any):
  6. Major constraints face by black pepper farmers :
  7. Major constraints face by other actors (if any):
  8. Viable opportunities for black pepper farmers:

**VALUE CHAIN ANALYSIS OF BLACK PEPPER  
IN KERALA**

*by*

**HENA .M**

**(2016-25-001)**

**ABSTRACT OF THE THESIS**

**Submitted in partial fulfilment of the requirement  
for the degree of**

*Doctor of Philosophy in Rural Marketing  
Management*

**Faculty of Agriculture  
Kerala Agricultural University**



**Department of Rural Marketing Management  
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**2020**

## ABSTRACT

Agriculture value chain analysis is an inclusive analysis to assist farmer-producers of less developed and developing countries to stimulate economic growth of poor and it is a way for poverty reduction and social development. Further, it analyses the necessity of farmer integration, agriculture viability, and collaboration across chain actors and importance of rural advisory and support services to farmers, especially in case of market information and innovative production and processing techniques. It gives equal importance to strengthen the value chain relationship between farmer-producers and other actors in the chain through mutual benefit and cooperation. Black pepper is mostly cultivated as an inter crop in the homestead gardens in Kerala. At present, Kerala has 85,141 ha of total area under black pepper cultivation with a total production of 37,995 MT, in which Idukki and Wayanad districts together contributes 74 percent of the total black pepper production in Kerala from 65 percent of the total area under black pepper cultivation (GoK, 2019).

The research work entitled “Value chain analysis of black pepper in Kerala” was undertaken to map the value chain of black pepper in Kerala, to examine the governance influence on value chain actors, to evaluate the producer farmer’s linkages with other value chain actors, to analyse the opportunities and constraints faced by value chain actors and to suggest appropriate strategies to upgrade the performance of value chain actors of black pepper.

The study area was confined to Idukki and Wayanad districts of Kerala, since these districts accounted for the first and second position under the area under cultivation of black pepper in Kerala. The sample respondents were selected from Vandiperiyar panchayath of Azhutha block and Rajakumari panchayat of Nedumkandam block in Idukki district and Mullenkolly panchayath of Panamaram block and Vellamunda panchayat of Mananthavady block in Wayanad district. Thirty black pepper farmers were selected from each panchayat at random and thus a total of 120 farmers were selected for the study. The other value chain actors were identified using snowball technique and the size of the

sample was limited to a maximum of one hundred actors, including nurseries (6) input suppliers (7), hill produce dealers (38), wholesalers (32), retailers (6), exporters (3), marketing cooperative societies (2), registered companies (2) and IPSTA Brokers (4). Expert interviews were carried out with Officials in Spices Board, Agriculture Officers in Krishi bhavan, Principal Agriculture Officer (District level), and NGOs. The data analysis was done by using Value chain mapping tool (global approach), percentage analysis, index method, modified market efficiency (Acharya's approach) and Kruskal Wallis test.

After conducting the value chain mapping of black pepper in Kerala, the results revealed that the major core processes included in the value chain were input supply, production, procurement or collection, wholesaling, processing, exporting and retailing. The main actors who actively participated in the value chain were input suppliers, black pepper farmers (organic farmers and conventional farmers), hill produce dealers, wholesalers, marketing cooperatives, exporters (under NGOs), commission agent, farmer producer company, retailers and IPSTA brokers. The identified collectors of black pepper farmers were hill produce dealers, exporters (under NGOs), marketing cooperatives, farmer producer company and other registered companies. From the hill produce dealers the black pepper was transferred to wholesalers, and the exporters (under NGOs) carried out the major value addition activities to convert the black pepper and fresh raw pepper to quality black pepper, white pepper and green pepper.

The total establishment cost per acre incurred by the conventional black pepper farmers in Idukki district and Wayanad districts were ₹1,00,950 and ₹1,02,870 respectively. In Idukki district, the establishment cost incurred by the black pepper farmers in first, second and third year were ₹ 43,650, ₹ 29,600 and ₹27,700 respectively, whereas in Wayanad district it was ₹43,775, ₹29,350 and ₹29,745 respectively. The major inputs required for the maintenance of organic black pepper was human labour, farm yard manure, organic manure, organic plant protection materials and harvesting bags. The total annual maintenance cost per acre incurred by organic black pepper farmers in Idukki and Wayanad district was ₹80,540.38 and ₹76,822.07 respectively. The major inputs required for the

maintenance of inorganic black pepper in one acre was human labour, farm yard manure, organic manure, fertilizers, plant protection chemicals and harvesting bags. The annual maintenance cost of inorganic black pepper per acre was computed as ₹73,047.06 for Idukki district and ₹72,767.10 for Wayanad district. Thus, the total cost of production of organic black pepper was arrived at ₹ 344.50 per kg in Idukki district with a comparatively less cost of ₹337.00 per kg in Wayanad district. However, the total cost of production per kilogram of inorganic black pepper was worked out as lower than the cost of production of organic black pepper in both districts. The cost of production of inorganic black pepper in Idukki district was ₹311.00 per kg and in Wayanad district it was ₹309.00 per kg.

Five marketing channels were found in the value chain of the three selected products in the study: black pepper, white pepper and green pepper. The identified marketing channels are:

- 1) Marketing Channel I (MC-I)      Farmers —→ Exporters (Organic)
- 2) Marketing Channel II (MC-II)      Farmers —→ Marketing  
Cooperatives      —→      Buyers in Kochi (Inorganic)
- 3) Marketing Channel III (MC-III)      Farmers —→ Farmer Producer  
Company      —→ Commission Agent —→ Buyers in Kochi (Inorganic)
- 4) Marketing Channel IV (MC-IV)      Farmers —→ Hill Produce Dealers  
Wholesalers —→ Buyers in Kochi (Inorganic)
- 5) Marketing Channel V (MC-V)      Farmers —→ Hill Produce Dealers  
Retailers (Inorganic)

In both districts, the marketing cost incurred by the exporters in the production of value added organic products were very high compared to the marketing cost incurred by the other channel members in the marketing of inorganic black pepper. It was exposed that in both districts, the black pepper farmer has got the highest price in the marketing channel with shortest length, i.e. farmer to exporter. In Idukki district, the farmers who are supplying black pepper to exporters were registered organic certified farmers and the organic black pepper fetch ₹378.50 per kilogram. The total marketing margin of Channel I was

₹131.50/kg for black pepper, ₹395.00 per kg (highest margin) for white pepper and ₹251.50 per kg for green pepper. While in Channel V, the retailer (exclusive spice outlets) captured the highest margin of ₹379.41 per kilogram of black pepper and the lowest margin was obtained by Channel II (₹32.21 per kg). Among the different marketing channels in Wayanad districts, the farmers got highest price (₹370.70 per kg) in the marketing channel of organic black pepper. The total marketing margin computed for each product in Channel I was ₹139.30 per kg of black pepper, ₹417.80 per kg of white pepper and ₹278.30 per kg of green pepper. In the marketing channel of inorganic black pepper, the highest marketing margin was obtained by Channel V (₹342.00 per kg of black pepper) and the lowest marketing margin was obtained by Channel III (₹44.25 per kg of black pepper).

An examination over the value chain governance in the black pepper value chain exposed that the price of the black pepper remains a significant factor that decides the “market type” governance structure of the value chain. Hence, the conventional farmers in the value chain and their chain actors fell under the market type governance structure. “Modular” type of governance structure was identified between the farmers and the NGOs, the farmers supplied the required product to the NGOs where the technology and knowledge has transferred from the NGOs to the farmers and encouraged farmers to undertake additional investment in agriculture. “Relational” type of governance structure was observed between the registered companies where the interaction between farmer and buyer were complex, but the mutual dependence existed between them were prominent and the firm collected the desired quality product from the farmers.

The analysis on linkages in value chain exhibited that there exist cent percent linkage between farmers and fellow farmers, farmers and hill produce dealers, farmers and commercial banks, farmers and krishi bhavan and farmers and local administration. Three factors were identified to obtain the level of formality in the linkages like, informal, verbal arrangement and formal written contract. Business linkages or relationships can be formal or informal, accordingly, the formality in linkages between farmers and other actors in the value chain has identified. Trust and linkages are interconnected within a value

chain, and linkages creates trust in the relationships. Hence, it is exposed that the formality and trust existed in the linkages is on the basis of the type of business relationship between the actors.

Black pepper value chain is predominantly a buyer driven value chain, therefore the black pepper farmers had less price negotiation power. Furthermore, the farmers were exposed to different type of constraints in various activities included in the value chain, like pre-production constraints, production constraints, marketing constraints and other associated constraints. The low price of black pepper, price fluctuations of black pepper in the market, low quality of black pepper, import of black pepper from other countries were reported as the severe constraints by the majority of the actors involved in the black pepper value chain. Producing the value added products of black pepper, to improve the quality of black pepper and direct selling of black pepper to processors or exporters were the major opportunities identified by farmers. There is an opportunity for the conventional farmers to shift to organic farming practices and to become a certified organic farmer after three years, but the result revealed that conventional farmers were not interested to shift to organic farming. Because most of the conventional farmers cultivates cardamom in their farms, and according to them organic cultivation of cardamom and some other crops will not be viable and practical.

The strategies identified to upgrade the performance of value chain actors includes: 1) to increase the productivity of black pepper, 2) need for farmer producer organizations for value addition, 3) upgrading of products and processes in the value chain 4) need to change government policies and if, the import of black pepper cannot be stopped, strict action should be taken to avoid the commingling of imported black pepper with the black pepper produced in Kerala in different nodes of value chain, which ultimately degrade the value of black pepper in the Kochi market.

To conclude, the competitiveness of Kerala's black pepper in the international market is diminishing day by day, as the price of black pepper is



showing a decreasing trend from 2017 in the country. To get a reasonable income for the farmers from the black pepper cultivation they have to go for value addition activities. While in the current circumstances, a single farmer cannot undertake the production of value added products like white pepper and green pepper. Hence, the farmers has to group together to carry out these activities in the black pepper value chain in Kerala to capitalize the opportunities ahead, by taking into consideration of the actual constraints faced by them. Side by side, the institutional support machineries for enhancing the agriculture production in the state should focus on the farmer producer organizations like marketing cooperatives or farmer producer companies, so that a share of the noticeable profit grabbing by the actors, who undertakes value addition of black pepper and its value added products like white pepper and green pepper in the value chain can be transferred to the black pepper farmers.