



VOL. 4

NO. 1

JANUARY 2014

ISSN 0975 - 0045



# MANAGING THE FUTURE

*A Half Yearly Peer Reviewed Publication*

Published by  
POSTGRADUATE DEPARTMENT OF COMMERCE  
Bishop Abraham Memorial College  
Thuruthicadu, Kerala



## VALUE CHAIN OF MANGO-AN EXPLORATORY STUDY AT MUTHALAMADA PANCHAYAT OF KERALA

\* G.VEERAKUMARAN, \*\* ASHITHA H, \*\*\* SHEENA K

### ABSTRACT

*The mango cultivated in Muthalamada Panchayat of Palakkad district has got its own competitive advantage, because of its early harvest. Hence an attempt has been made to map the value chain of mango. Accordingly an exploratory study was conducted among the farmers, farmer cum merchants and merchants. The results are brought out in the form of eight value chain maps addressing the matters related to core processes, actors involved, specific activities of core process, flows of product, information and knowledge, geographical flow, relations and business services. Though the Kerala Government has not taken any serious steps in strengthening the sector, the people themselves have identified the potential and transformed the village economy. The enterprising business community in the area has also formed a private consortium and acts as a nodal agency to procure process and market the mangoes produced by the farmers. The neighbouring Tamilnadu state entrepreneurs are playing a vital in the supply of seedlings and other inputs required for the healthy growth of the mango trees. Since there is high demand for the mangoes in the Arabian countries, export revenue floods in to the village and it reflect in the life of farmers.*

*Key words: value chain, mango, mapping, farmers, merchants*

### 1. INTRODUCTION

Muthalamada Panchayat is in Chittur taluk of Palakkad District, Kerala state and known as the 'mango city' of the state for its early harvest and large scale export. Mango cultivation becomes the profitable business for farmers, since the village has suitable land, seasonal rainfall and soil. The Muthalamada Panchayat was formed in the year 1954 and has 66.76 square kilometres. The population of Muthalamada Panchayat was 33,935 and out of which 16,957 were male and 16,978 were female (Census 2011). The

population density was 508 square kilometres. The proportion of female to that of male is 1001:1000. Majority of them are agriculturists and mainly engaged in mango cultivation. There are approximately 4000 hectares of mango orchards and nearly 5000 mango growers in Muthalamada Panchayat. The Panchayat produces mangoes to the tune of approximately 40,000 tonnes/per year.

Of-late agribusiness is gaining momentum and value addition is considered as an important factor to ensure better price to the

\*Associate Professor, Department of Cooperative Management, College of Cooperation, Banking and Management, Kerala Agricultural University, KAU Post, Thrissur-680656, Kerala. Email: [govindarajveerakumaran@gmail.com](mailto:govindarajveerakumaran@gmail.com)

\* MBA Students, College of Cooperation, Banking and Management, Kerala Agricultural University, KAU Post, Thrissur-680656, Kerala.

\* MBA Students, College of Cooperation, Banking and Management, Kerala Agricultural University, KAU Post, Thrissur-680656, Kerala.





farming community. Moreover understanding the value chain of agricultural produces facilitates the policy makers to frame suitable farming policies. As a management discipline, the domain of agribusiness management started contributing significantly to the management science and farming community as well to realise their status and role expectations. In this regard, this exploratory study on value chain of mango will lead us to conduct further research work.

## 2. OBJECTIVE OF THE STUDY

The objective of the study was to map the value chain of mango with special reference to Muthalamada Panchayat of Kerala state.

## 3. METHODOLOGY

The study attempted to map the value chain of mango with the following questions:

- 1) What are the different core processes in the mango value chain?
- 2) Who are the actors involved in these mango processes and what do they actually do?
- 3) What are the specific activities of core process?
- 4) What are the flows of product, information and knowledge in the value chain?
- 5) Where does the mango originate from and where does go?
- 6) How does the value changes throughout the chain?
- 7) What types of relation and linkages exists?
- 8) What types of business services

feeding in to the chain?

Accordingly the study evolved 8 maps of value chain for mango. The survey was conducted at Muthalamada Panchayat during the months of July and August 2012. The study was conducted among the farmers, merchants, and farmer cum merchants, traders and other actors involved in the value chain of mango at Muthalamada Panchayat in Palakkad district.

## 4. RESULTS AND DISCUSSIONS

A value chain can be defined as the 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 product services), delivery to final customers, and final disposal after use. The chain of actors who actually transact a particular product as it moves through the value chain includes input providers, farmers, traders, processors, transporters, wholesalers, retailers and final consumers.

Mapping is the process of making a pictorial representation of the VCA (value chain analysis). Mapping is considered as the tool of the value chain. The following paragraphs depict the value chain of mango with explanations to understand the maps.

There have been various steps in curbing the epidemic of Non-Communicable diseases (NCDs) in several developed countries and developing countries as well. However, not many policies have been introduced in the developing countries like India, to target the NCDs, and in turn decrease the prevalence. The NCDs contribute a greater proportion of the burden and affect the quality of life in terms of Quality Adjusted Life Years (QALY) and Disability Adjusted Life Years (DALY). The change in lifestyle, increased propensity of high risk behaviors, leading to higher incidence of risk



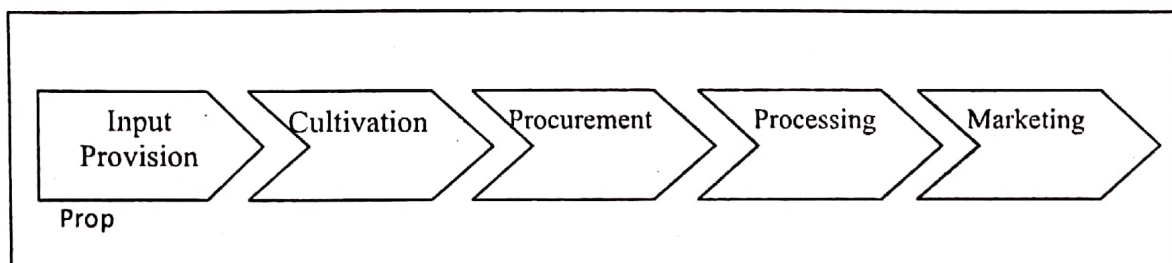
factors, has been found to cause almost 45% of the Global Burden of Disease (GBD) and lead to almost 60% of global annual mortality due to chronic diseases like cancer, Cardio Vascular Disease (CVD) and metabolic syndromes. It has been proven through various studies that there is a huge gap between the evidence generation and the policy formulation. This can be tackled by encouraging cross-country learning and by increasing the awareness regarding this interface. The policies, which directly or indirectly target population health, are a major determinant of health. There is a greater emphasis on bringing health in the heart of all social and economic policies as this approach is proved to be cost-effective. The policies which indirectly or directly target a health behavior / risk behavior or which impact health outcomes can be considered as a health policy. The health systems play an important role in shaping the policies which affects the health, whether it is positive or negative.

The abuse of tobacco and its related products would lead to more than a billion deaths in twenty first century, which is one of the largest preventable burdens. It is an important causal factor in several NCD like cancer, CVD, Diabetes and many others. There are about 5.4 million deaths annually due to tobacco, and there are a high proportion of people dying at

middle age due to smoking. The smoking prevalence in adults stands high at 1.3 billion out of which India has a proportion of 16.6%. This leads to a huge burden of risk behavior in developing countries, ultimately leading to greater magnitude of morbidity and mortality due to this preventable and modifiable behavior or lifestyle choice. Many of the studies have proven that the prevalence of high risk behaviors like smoking is more in young adults and people belonging to low socio-economic status. Due to this, the burden, in terms of direct and indirect costs involved in combating the disease related to tobacco, exceeds the revenue generation by the Indian government through selling it. In line with that, the policies must be tailored to target those vulnerable sections people as there is a great variance of effectiveness of the policies between different population groups<sup>2</sup>. Although the Cigarette and Other Tobacco Products Act (COTPA), 2003 was comprehensive in nature, the success of it depends on the awareness among the people, effective regulatory environment and enforcement.<sup>5</sup> Since capturing the minds of growing number young adults in India who are productive, and have disposable income is seen important for tobacco industry to make more profits, there is a lot of opposition and force to hinder the legislations passed against the use and sale of tobacco.

## 5. CORE PROCESS IN THE MANGO VALUE-CHAIN

Core Process in the Mango Value Chain







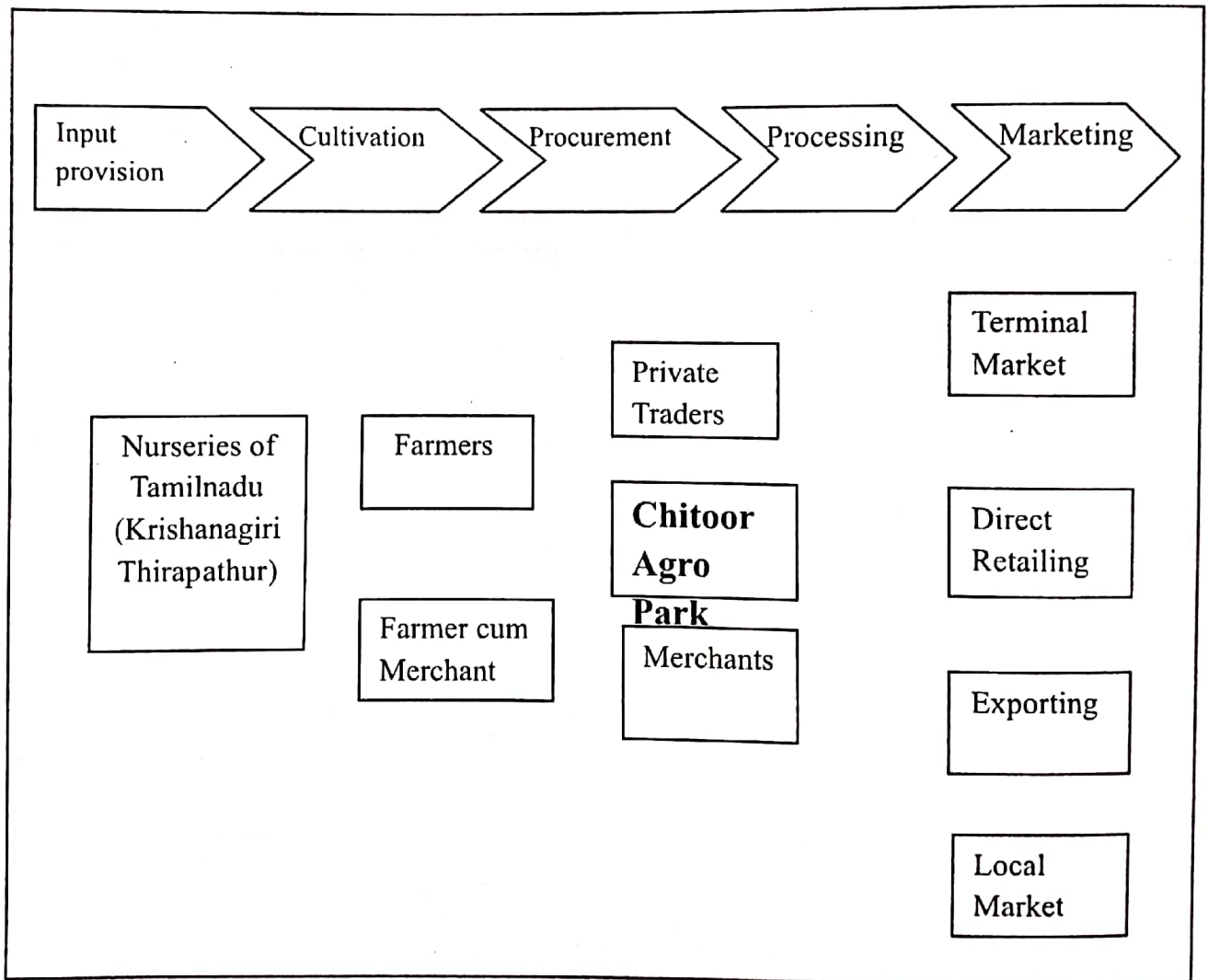
The study starts with mapping the core process of mango value chain in Muthalamada panchayat of Palakkad district. Input provision, Cultivation, Procurement, Processing and Marketing are the core process identified in the mango value chain. Input provision can be defined as the facilities provided by somebody or obtained something as input such as seedlings, fertilizers,

pesticides for the better cultivation of mango. Cultivation can be defined as the caretaking of seedlings get to enough matured tree for high yielding varieties. Procurement can be defined as the collection and storage of mangoes. Processing means a change over of crop produce from one form to another form. Marketing means the way of buying and selling the crop in a different kind of competitive market.

### 6. ACTORS INVOLVED IN THE MANGO VALUE -CHAIN

Figure 2

Actors Involved in the Mango Value Chain

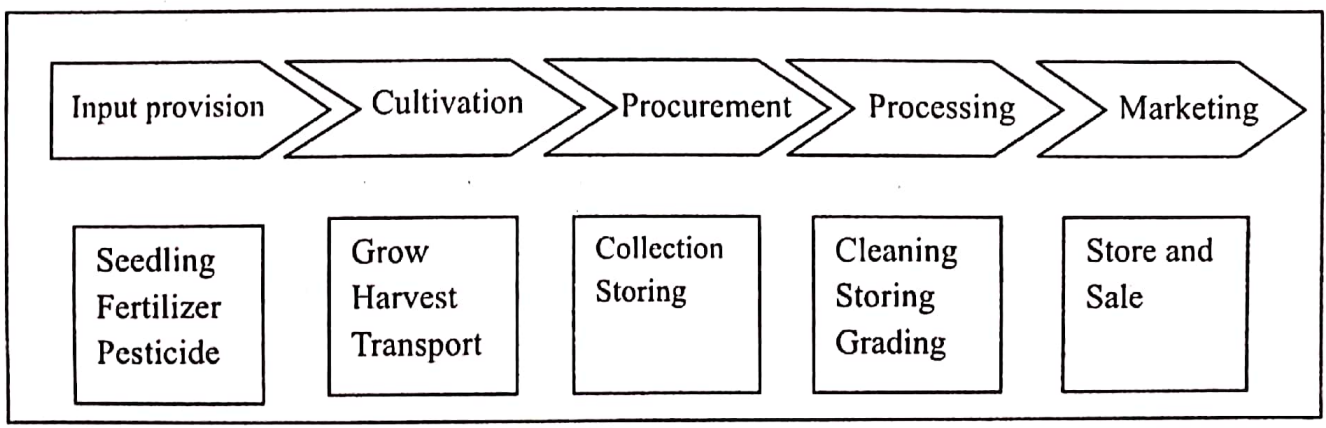


Actor means each and every person involved in the value chain (Figure 2). Actors involved in the input provision are mainly the seedling suppliers. They are private nursery firms mainly from the neighbouring state of Tamilnadu. In addition to small scale nurseries, large scale nurseries firms like 'Kissan' and 'Swami' are supplying significantly to the Muthalamada Panchayat farmers. The two major nurseries have 300 acres for the purpose of producing seedlings in Krishnagiri and Thirupathur districts. Actors involved in the cultivation are farmers, farmer cum merchants. Actors involved in procurement of mango are one consortium named Chitoor Agro Park, private traders, direct retailers and exporters. Farmers are the individuals those who are cultivating mango in their own landholdings. Merchants are the individuals who are doing mango business. Merchants are of two types, they are viz., merchants who only purchase the fresh mangoes from mango growers and sell it in

the market, the other group of merchants, who cultivate mango in other's landholdings for lease. The contractual agreement is in the form of written document for two or three years with 50 percent payment to the total amount as an advance at the time of signing the agreement. These kinds of merchants are real risk bearers in this field of mango business. The next significant actor involved in the value chain is a consortium named 'CHITTOOR AGROPARK'. The firm employed 30 male labourers and operates three days in a week with three shifts per day. They are paid Rs.1000/- per day as wage with food. During the season, the farmers witnessed supply of twenty tonnes of mangoes per week. They are mainly focusing on packing and exporting of mangoes to the Gulf countries. Private traders from the cities like Delhi, Mumbai, Ahemedabad, Indore and Chennai are also coming down to the village and procuring mangoes. Direct retailing is also carried out by the traders. Exporting is mainly the activity of CHITTOORAGROPARK.

**7. SPECIFIC ACTIVITIES OF CORE PROCESS**

**Figure 3**  
Specific Activities of Core Process



Input provision: Input provision includes supply of seedlings, fertilizers, pesticides and agricultural-tools. Block Panchayat office, Panchayat office and krishi bhavan are not found in any way to support the cultivation of

mangoes Therefore, they are depending on the Tamilnadu state private nurseries.

Cultivation: Mango cultivation starts from the planting of mango seedlings. The pit





should be of 3.5 feet depth for planting the seedlings. The pit digging is done by labourers or by using JCB machines. If the JCB machine is used, then the shape of the pit would be square type. One labourer can dig 25 pits in a day. While planting the seedlings, the graft has to project above the soil (ground level). The seedling is planted after removing the plastic cover and placed in that pit. The pit is filled with the same soil and other nutrients as advocated by the extension agents. Then the mango growers are applying fertilizers in their field. They are using both bio-fertilizers and chemical fertilizers. Bio-fertilizers are rich in proteins

and applied at any time as farmers wish. The chemical fertilizers used are NPK i.e., mixture of nitrate, phosphate & potassium. 300 gram of NPK mixture is enough for 1 year for one tree plant in the normal course; one seedling takes 5 years for flowering, so it consumes 1500 grams for 5 years. Harvest is the next major process of cultivation. Harvest is the process of gathering matured fruits from the fields. The flowering commences during November- December. At the stage of flowering, mango growers are spraying pesticide to prevent disease spread. At least 3 times pesticides are sprayed in a season. The level of pesticide application for a 10 years old tree and its cost is given below:

Table 1  
Cost of Pesticides as on 25<sup>th</sup> July 2012:

Pesticide	Quantity	Price Per Litre(Rs)
Sulphur	50 gm	450
Simpush	50 ml	390
Karate	50 ml	390
Rocket	50 ml	390

Source: primary data

Different Maturity stages: Mango fruits become ready for harvesting in five to six months from flowering. The fruits will be ready for harvest in April-May from a tree flowered during October-November. Some

varieties may take 3 ½ to 4 months. The competitive advantage of Muthalamada Panchayat mango cultivation lies in the early harvesting period as explained below:



Table 2: Harvesting Period of mango in India

States	Month of Harvest
Maharashtra	April – May (Ratnagiri)
(Other areas)	May – June
Gujarat	May – June
Tamil Nadu	April – May
Andhra Pradesh	April – May (coastal districts)
Karnataka	May – July
Bihar, Uttar Pradesh and other parts of North India	June - August
<i>Kerala</i>	<i>March - April</i>

Source: [www.phrcaari.org.pk/Mango%201.PPT](http://www.phrcaari.org.pk/Mango%201.PPT)

Mangoes are harvested at four different maturity stages. They are hard mature green, sprung mature green and half-ripe and ripe. And usually mangoes are harvested at the hard green mature stage. Fruit maturity is typically based on time and the quality is based on skin roughness, fruit firmness, glossiness, shoulder 'fullness', peel and flesh colour. Harvesting is being carried out by using secateurs and cutting the pedicel 2-3cm away from the fruit to hasten the process. The mango fruit harvester is a long pole with a cutting blade and a small bag under the blade to catch the fruit. Harvesting is a continuous process and carried out 3 to 4 times during the season, since the fruits mature in a staggered manner. The yield of mango fruits varies due to several factors namely age of the tree, variety, climatic conditions, and soil types, type of tree, pests and disease incidence. However from a well grown orchard, an average of 8 to 10 tonnes of fruits per hectare can be obtained. Finally, transportation is the specific activity in

cultivation. The movement of harvested mangoes travels from the farm gate to godown (their home itself) and from godown to market.

**Procurement:** Procurement means the collection and storing of the mangoes. Usually the mango growers and merchants collect and store in their own house. Cold storage facility is not available for them.

**Processing:** Farmers, Farmer-cum-merchant and merchants are simply packing the mangoes and selling it. However, Chitoor Agro-park is doing processing through different methods as sorting, grading, cleaning, ripening and packing. For exporting purpose they are processing these mangoes. Sorting is done manually by the experienced workers. Grading is by measuring the weight of the mangoes. The mango having the weight of 250 gram to 300gram is considered as the first quality and weight above 200 gram is the second quality. Below 200 gram mangoes are not chosen for exporting. First quality mangoes





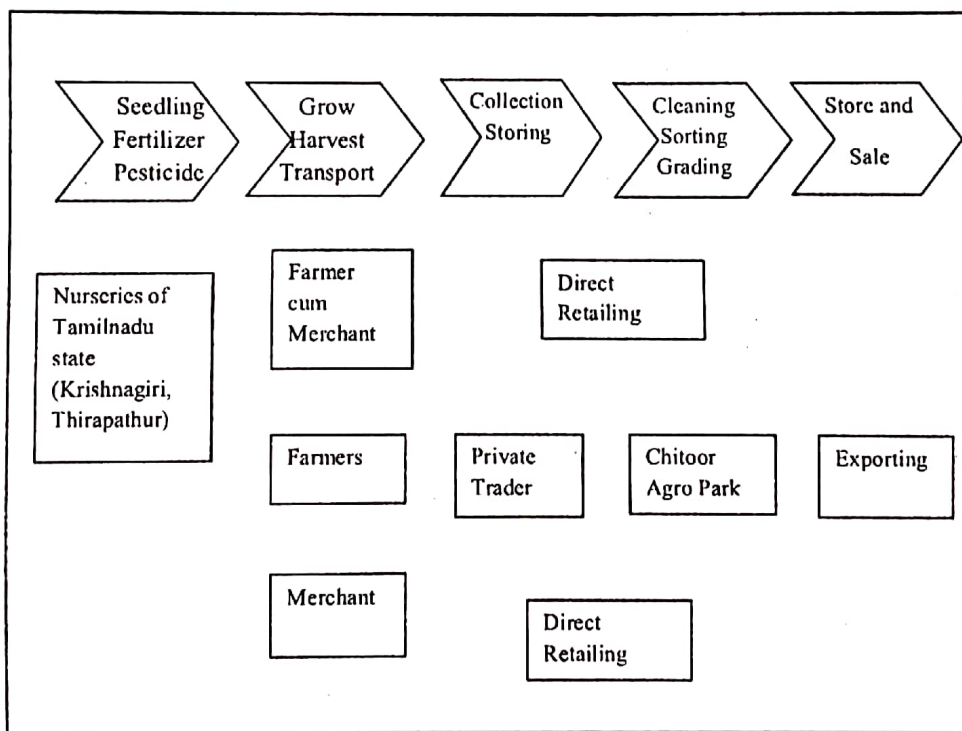
are exported to Gulf countries and second quality to the private traders of other cities. Cleaning is done by a simple wash with water or washes it in a boiled saltwater. The process of ripening is being carried out for those who have requested. There is a mechanised room with facility for ripening 4000 kilo gram of mangoes at a time. These ripened mangoes are packed for the exporting. The packing charge for (15 to 18 pieces) a box is Rs.17 which includes cost of labour, box, paper and hay. These raw materials are supplied by one private agency called 'relax'. Agro-park is a private consortium acts as a good supporting firm for mango growers and also

helps to narrow down the gap between the farmer and end-users. Chitoor Agro Park is also recognized by Indian Institute of Horticulture Mission in Bangaluru as model unit and NABARD gave financial assistance of Rs 50 lakhs.

Marketing: Buying and selling of mangoes produced in the Muthalamada Panchayat takes place in the local market. However, it reaches to the terminal market through private traders. Alphonza, bhanagapally, sindhuram, thothapuri and himapasanth varieties are having high demand.

### 8. FLOWS OF PRODUCT, INFORMATION AND KNOWLEDGE IN THE VALUE CHAIN

Figure 4  
Flow of Product, Information and Knowledge in the Value Chain



The product in this value chain is the 'mangoes from Muthalamada Panchayat. This paragraph depicts how information and knowledge about the mango business are flowing between the actors. The Tamil Nadu state

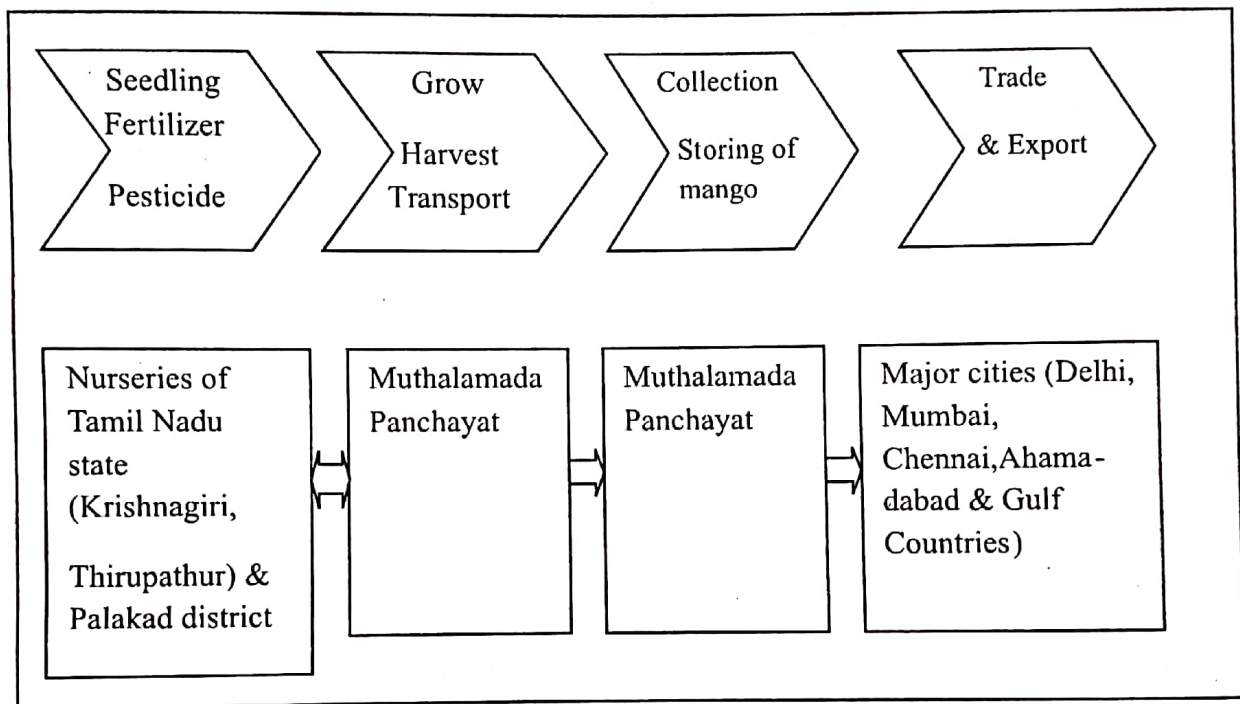
nurseries carrying out extension work to sell their hybrid varieties of seedlings. Actually, there were no awareness programs or technical extensions for the mango growers from the side of Government. The flow of information and

knowledge in the mango value chain are mutual sharing of information among farmers. Sometimes, the farmers will approach the scientists of Agricultural University, Chittoor Agro Park and Private Traders disseminating

information to farmers about the product requirements and in turn the farmers passes information about quality, productivity and maturity period.

## 9. GEOGRAPHICAL FLOW OF PRODUCT

Figure 5  
Geographical Flow of Products



The above figure shows the mapping of the geographical flow of mango at Muthalamada Panchayat. It indicates the starting point of a value chain of mango to the final consumers. The supply of seedlings is mainly from the Tamil Nadu state ( krishnagiri and Thirupathur districts) and the 'himapasanth' variety seedlings from the Palakkad district. The tools used for mango cultivation and required pesticides are sourced from Tamil Nadu state. The labourers are mostly from Tamil Nadu and paid a daily wages of Rs.450/- with food and tea. Cultivation is at Muthalamada panchayat , blessed with

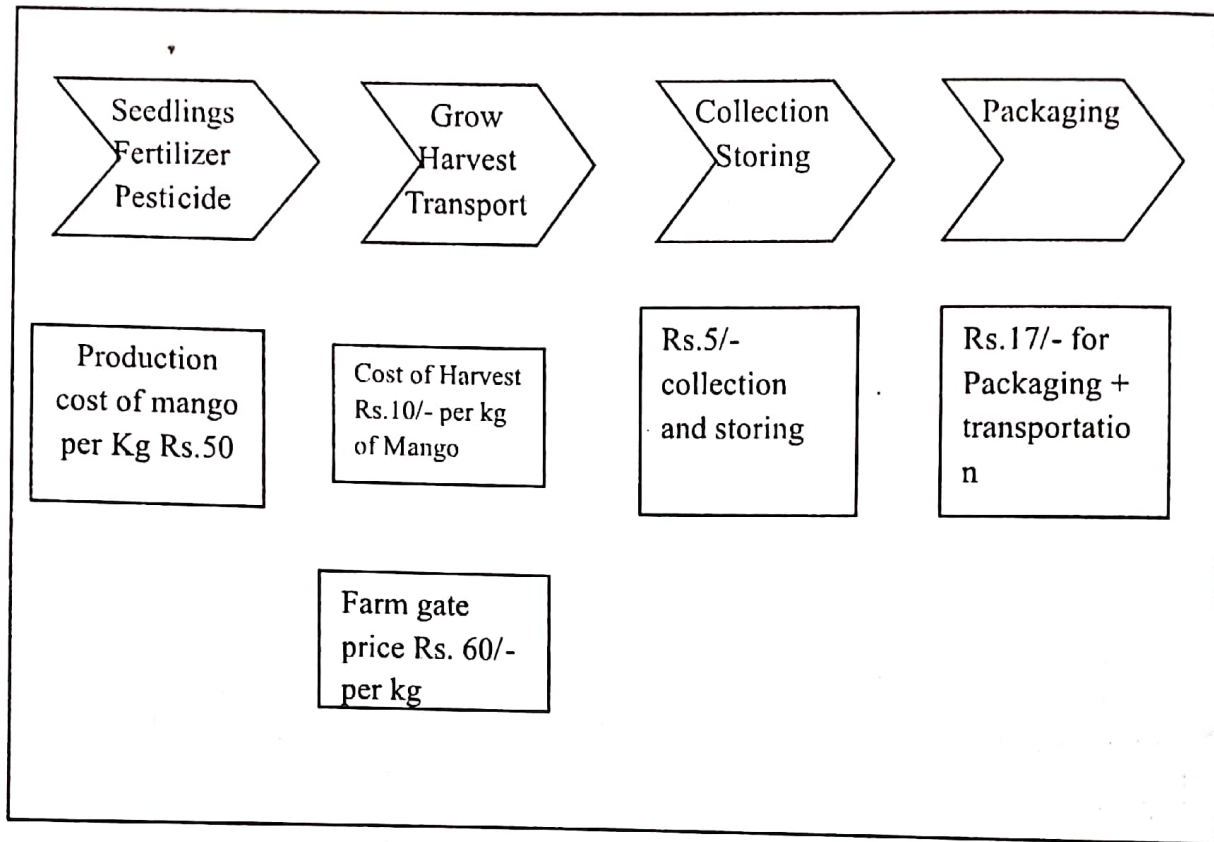
suitable climate, soil and water facilities. The retail marketing takes place in and around Muthalamada. The private traders purchase mangoes for trading purpose. Major trading cities are Delhi, Chennai, Mumbai, and Ahmadabad. Private traders also appoint commission agents for procuring mangoes from the farmers. Chittoor Agro Park acts as a nodal point for processing and packing. And finally the best qualities of mangoes are exported from the Chittoor Agro Park. The export takes place by ship and transport to other cities by trucks.





### 10. VALUE AT DIFFERENT LEVELS OF VALUE CHAIN

Figure 6  
Value at Different levels of Value Chain



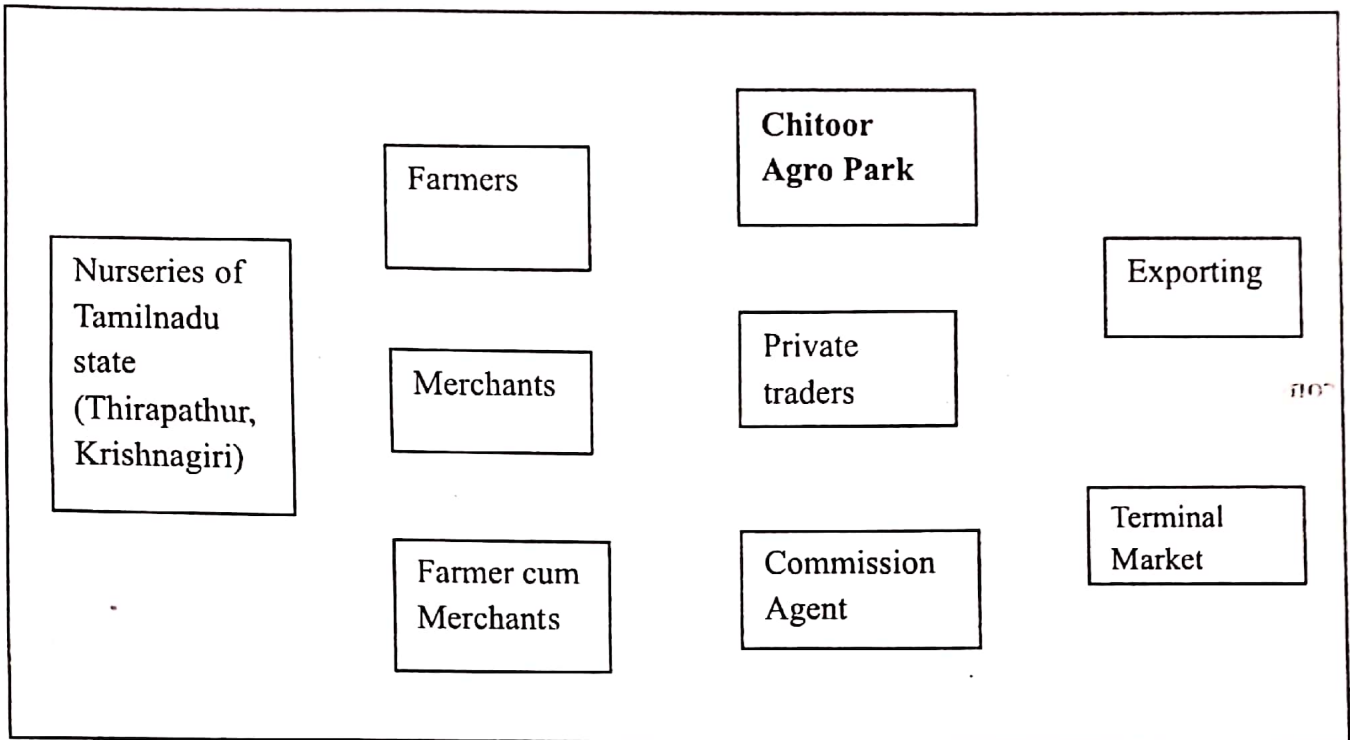
The study conducted a survey (July-august 2012) among the mango farmers, merchants, and farmer-cum-merchants to substantiate this map to account value at different levels of value chain (Figure 6). The cost of production of the famous export varieties are approximately Rs.50/- per kilogram. The cost of harvesting is around Rs.10/- per kilogram. Local collection charges per kilo gram come around five rupees. For packaging they spent Rs.17/- at Chitoor Agro park. Thus the mangoes while gets transported costs around Rs.82/- kg.

### 11. RELATIONSHIP AND LINKAGES IN THE VALUE CHAIN

The below mentioned figure clearly

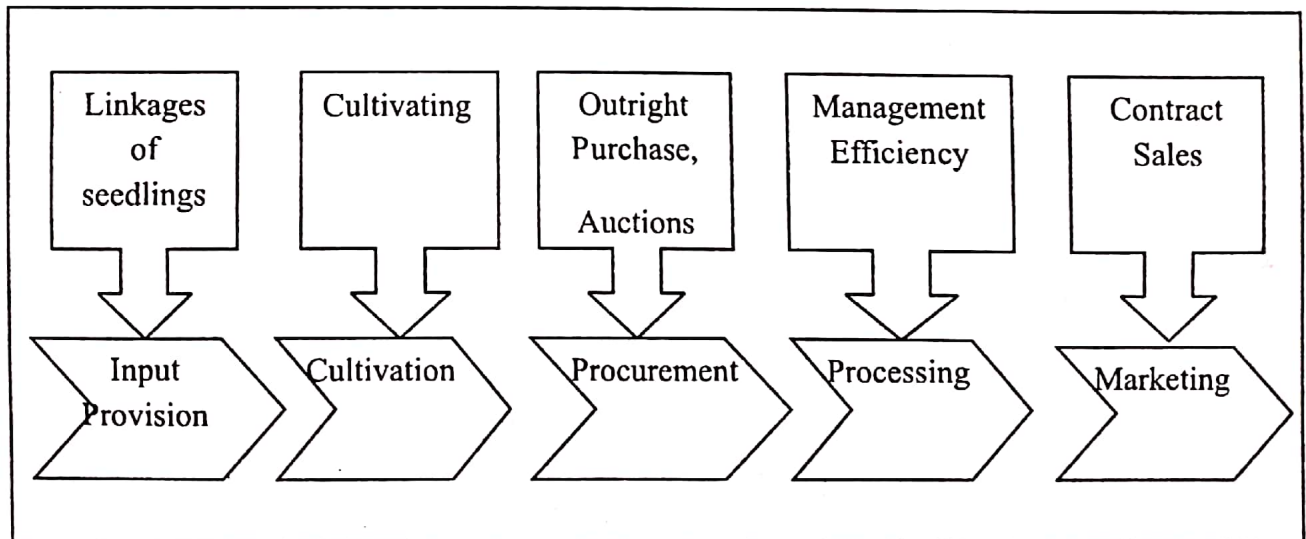
indicates the relationship between different actors in the value chain. The major limitation of this map is that it used only one type of arrows rather than different types to indicate different typology of relationship. Further research is needed to clearly bring out the legal and contractual relationships among the actors. The relationship between the nursery owners and the farmers are in a way perpetual in nature and they are continuously engaging the farmers. The farmers and merchants are having contractual agreements for harvesting and procurement. Chitoor Agro Park acts as a nodal agency in the Muthalamada Panchayat.

Figure 7  
Relationship and Linkages



12. BUSINESS SERVICES THAT FEED IN TO VALUE

Figure 8  
Business Services that Feed in to Value Chain



The business service extended by the input providers is door delivery of seedlings and information regarding application of fertilizers and pesticides. Those information services are

provided free of cost and by virtue of it they could increase their sales volume. The players in the market are having two methods of business namely outright purchase of mangoes either with





pre-agreed price or at market rate, conduct of open auction in the market. The processing takes place only in the Chitoor Agro Park and on payment basis to all those who are in need of that service. The service was used only by the exporters or traders supplying to terminal markets. Such marketing activities takes place only on agreed principles.

### 13. CONCLUSION

The mango cultivated in Muthalamada Panchayat of Palakkad district has got its own competitive advantage, because of its early harvest compared to any other state. Though the Kerala government has not taken any adequate steps in strengthening the sector, the people themselves have identified the potential and transformed the village economy. The enterprising business community in the area has also formed a private consortium and acts as a nodal agency to procure process and market the mangoes produced by the farmers. The neighbouring Tamilnadu state entrepreneurs are playing a vital role in the supply of seedlings and

other inputs required for the healthy growth of the mango trees. Since there is high demand for the mangoes in the Arabian countries, export revenue floods in to the village and it reflect in the life of farmers. This voluntarily emanated model has got its own merits and needs a thorough research which the authors have already initiated.

### REFERENCES

1. [http://www.markets4poor.org/sites/default/files/file/Publications/M4P1/VC%20toolbook\\_eng.pdf](http://www.markets4poor.org/sites/default/files/file/Publications/M4P1/VC%20toolbook_eng.pdf)
2. <https://ifama.org/events/conferences/2003/cmsdocs/trienekens.PDF>
3. <http://mahider.ilri.org/handle/10568/13027>
4. [http://library.wur.nl/frontis/quantifying\\_supply\\_chain/05\\_aramyan.pdf](http://library.wur.nl/frontis/quantifying_supply_chain/05_aramyan.pdf)
5. [http://www.acdivoca.org/site/Lookup/VC-EconDev%20folio2/\\$file/VC-EconDev%20folio2.pdf](http://www.acdivoca.org/site/Lookup/VC-EconDev%20folio2/$file/VC-EconDev%20folio2.pdf)