J Krishi Vigyan 2020, 8 (2) : 104-108 DOI : 10.5958/2349-4433.2020.00022.7

Enhancing Farmer Competitiveness– Case of Mango Post-Harvest Centre in Palakkad, Kerala

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ABSTRACT

Mango is a crop that is being commercially cultivated over a substantial area in Palakkad District, Kerala. The crop has shown a steady trend with good opportunities not only for the small holder farmers but also entrepreneurs. However, the sector is not devoid of problems. Marketing, generally, is not very efficient for the small holders. The presence of many intermediaries in the value chain leaves the farmers at the mercy of the smarter players. To rectify this and to support farmers, marketing functions like collection, packaging, storing *etc.,* can be done on a collective basis. This study attempted to focus on one such initiative, *i.*e., a post-harvest centre for fruits, operating in Palakkad, whose bulk produce dealt with were mangoes. Taking the center as a case, the marketing functions, marketing margins to two actors associated with the center were analysed. The traders were found to enjoy much higher marketing margin than the producer farmers. Though the farmers were showing entrepreneurial behavior through scientific cultivation of mangoes in leased land under the guidelines of the Farmer Producer Organization, they had a setback in the marketing function as the farmers were extensively dependant on traders. The major production constraints faced by the farmers were scarcity of labour, unpredictable climatic condition and incidence of pest and diseases. The major marketing constraints include dominance of middle men, lack of market information and price fluctuations in the market. The study indicated a great necessity for extension interventions aimed at entrepreneurship development among the small holder mango farmers.

Key Words: Constraint, Marketing, Post-harvest centre, Value chain.

INTRODUCTION

Mango is a crop that is being commercially cultivated over a substantial area in Palakkad District, Kerala.Mango orchards spread in 45,000 ha of land sharing borders with Tamil Nadu. Muthalamada is the biggest centre of mango production in the country and the fruit varieties are the first to reach global markets much before the mangoes mature in the gardens of the competitors. Mango export alone is worth Rs.200 crores. It is known for its early mango harvest and mango export, which is said to use hi-tech technology in sorting, grading, ripening, packing and export of mangoes and reportedly produces 1.1 lakh tones of mangoes annually, hence the name mango city (Shaji, 2015).

Satish (2015) reported that mango farmers of Muthalamada had taken a big step in the post-harvest handling of mango. They came upwith a 100 t ethylene based ripening cum processing centre coming up atNaripparaChalla. This system is having pre-cooling chambers and refrigeration, anti-ageing, preservation and humidity controlling processes. They also provide facilities for washing, grading, sorting and packing mangoes. Earlier calcium carbide was widely used for ripening mango, where the acetylene gas liberated was reported to be carcinogenic. The ripening centre employs ethylene-based ripening, which is recognized internationally as a safe method for ripening fruits. This allows to get more orders and good prices in national and international markets,

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mango should be organically cultivated and ripened (Prabhakaran, 2010).

Ignorance of the growers about the real price of their produce and lack of marketing facilities which result in interference of middle men, as the major problems in mango sector in Palakkad District (Radha and Nair, 2000). Farmers do not want to take risk of price and income variation due to perishability, quality variations and seasonality and lack of knowledge of marketing (Gopalakrishnan, 2013). If wider market connections were established by means of a value chain analysis, the villages could even manufacture products for export to neighboring states and countries (Mannambeth*et al*, 2015). Thakor and Mehta (2018) revealed that education, area under mango cultivation, annual income, social participation, awareness regarding value addition, mango yield index, employment generation, extension participation, mass media exposure, extent of adoption, management orientation, innovativeness, progressiveness and knowledge of mango growers had significant relationship with entrepreneurial behaviour of mango growers, whereas age, land holding, irrigation facility, family size and cropping intensity had no association with entrepreneurial behaviour. This paper triedto study the farmer producers who utilized the post-harvest centre and post-harvest dynamics of the produce as it is marketed. It also examined the constraints experienced by the farmers with respect to production and marketing and formulate suggestions for enhancing competitiveness of farmers.

MATERIALS AND METHODS

Muthalamada was selected as the study area having the largest area under mango cultivation in Palakkad district. The study used case study approach and customer farmer and other value chain functionaries of V plus fruits and vegetables Pvt. Ltd. were interviewed for information collection. Data collection was carried out using pre tested well-structured interview schedule. Sixty farmers and thirty intermediaries were randomly chosen from this centre. The marketing cost and margins were worked out using actual transaction information collected from farmers. Two way contingency tables were used to classify and analyse the farmers profile characteristics. Estrada and Batanero (2006) considered two-way tables, they were investigating conditional probability not the dependence or independence of variables. This table is a fundamental tool for pattern discovery with conditional probabilities (Psumoto, 2004). The statistical software SPSS version 20 was used for data analysis. Constraint analysis was done using Garrett's ranking technique which generated ranks of constraints expressed by farmers using the formula

$$\text{Percent position} = 100\,\frac{(Rij - 0.5)}{Nij}$$

Where, R_{ij}= Ranking given to the i^{th} attribute by the j^{th}individual

N_{ij}= Number of attributes ranked by the j^{th} individual (Garrett and Woodworth, 1969).

Constraints expressed by different stakeholders in the value chain namely farmers, intermediary functionaries (traders and collection agents) and post-harvest centre representatives were collected and presented.

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

Some of the socio-economic characteristics of the respondents were as classified as follows using a two way contingency table.

Table 1 showed that more young farmers (less than 30-50 yr) were leasing orchards in addition to their owned land for mango cultivation. This indicate the entrepreneurial behavior of the emerging farmers and their willingness to take risk and try out innovative technologies. The young farmers were also more affiliated to organizations when compared to traditional and old farmers. All the young farmers had membership in the farmer

Table 1. Two way table showing respondent distribution according to selected profile characteristics (n=60).

Age	Land ownership (%)		Organizational membership (%)		
	Owned	Both owned and leased	Non member	Membership in 1 organization	Membership in more than 1 or 2 organizations
Less than 30 yr	-	100	-	40	60
30-50 yr	28.57	71.43	-	9.52	90.48
51-70 yr	70	30	-	73.33	26.67
More than 70 yr	75	25	25	50	25

producer companies and were well connected to the cooperative society as well as other youth clubs in the locality. It was found that majority of the farmers were having more than one source of family income. About 35 per cent of the respondents depended on agriculture alone. An equal proportion of the respondents (35 %) was involved in agriculture along with agriculture related business activities especially as collection agents. This clearly showed that for majority of the respondents, agriculture was the key source of income.

As far as mango was concerned, there is generally no need for strict maintenance. For the important maintenance activities like agrochemical application, intercultural operations, irrigation and other infrastructural facilities (pump house, agricultural equipments, *etc*.), approximately Rs. 24,000/- ha was incurred annually. The farmers had to incur around Rs. 3,60,000/-ha for the overall establishment and maintenance of an orchard. Table 2, gives the distribution of respondents based on total area, annual income and production cost. It was found that, respondents having an area more than 6 ha (60 %) were having the highest annual income from Rs. 1.5 to 2.5 lakh/ha whereas their production cost was only around Rs. 50,000-75,000/-ha. In case of respondents having 1-2 ha of total area, the annual income was less than Rs. 50,000 to 1.5 lakh /ha and for majority these respondents (83.33%), production cost was almost similar to that of the large farmers, *i.e*., Rs. 50,000-75,000/-ha. It could be inferred from the results that, with the increase in area, there was an increase in annual income and with decrease in area there is an increase in production cost. This was in line with the findings of Saripalle (2019).

After carrying out the post-harvest operations (Table 3), the traders market the produce at the rate of Rs. 60/-kg. Traders get a margin of about Rs.23.50, which was more than seven times the margin obtained by the farmers. This magnifies the fact that the intermediaries were more involved in the value chain activities than farmers.

Table 2. Distribution of respondents based on total area, annual income and production cost (N=60).

Total area (ha)	Annual income Rs. /ha (%)				Production cost Rs. /ha (%)			
	<50,000	50,000-1.5 lakh	1.5-2.5 lakh	>3 lakh	25,000-50,000	50,000-75,000	75,000-1.25 lakh	1.25-2 lakh
1-2	36.67	36.67	20	6.67	10	83.33	6.67	0
2.5-4	31.25	31.25	25	12.50	6.25	56.25	25	12.50
4.5-6	22.22	55.55	11.11	11.11	0	11.11	77.77	11.11
>6	0	40	60	0	0	80	20	0

Table 3. Cost at two levels of the supply chain (per kg).

Particular	Farmers' level (in Rs.)	Intermediary (trader) level (in Rs.)
Total cost of mango cultivation	27	-
Total procurement cost	-	30
Ripening cost	-	0.50
Loading and unloading cost	-	0.25
Grading and packing	-	2.25
Cost of transportation	-	3.25
Cost of labour	-	0.25
Total cost	27	36.50
Selling price of mango	30	60
Marketing Margin	3	23.50

As the export of mangoes from Muthalamada gained importance, endeavors like V plus fruits and vegetables were welcomed by actors in the mango sector. The extended demand for chemical free mangoes attracted the traders in using the ripening units for exported mangoes. But the farmers remained ignorant about such facilities. Most of the post-harvest operations were done by the intermediaries and farmers only involved in the production activity. Rarely do the farmers take up grading and packing of the produce.

Marketing by the intermediaries

The intermediaries procure mangoes directly from the farmers in unripe form and sell it in both unripe as well as ripened form. The mode of payment to the farmers is in the form of cash. The procurement price varies from Rs.20-50 during March-April (on season) to Rs.50-100 during off season. Mode of transportation during procurement and marketing is through either owned or hired vehicle. The important markets to which fruits are sold include Delhi, Mumbai, Ahmedabad and Allahabad. The fruits are graded and packed in 7 kg carton boxes which costs Rs.30/-. These boxes are then taken to the next trader at the market place. The traders sell the produce within 1-2 days even though the mangoes can be kept without deterioration for 15 days, as there were chances for loss due to wastage like spoilage and loss of weight, which accounts for about 5 percent. For exporting of mangoes, traders made use of the ethylene ripening

Table 4. Constraints experienced by the farmers.

Sr. No.	Constraint	Mean score	Rank
Production constraits			
1	Difficulties in labour availability	61.65	I
2	Unpredictable/ varying climatic condition	55.55	II
3	Increasing incidence pest and diseases	47.63	III
4	High cost of labour	32.68	IV
Marketing constraints			
1	Dominance of middle men	62.07	I
2	Lack of proper and timely market information	56.82	II
3	Price fluctuations	46.68	III
4	Lack of fair price	35.43	IV

unit at NaripparaChallasince it is the nearby unit from the traders shed in Muthalamada.

Constraint analysis

The constraints expressed by different stakeholders associated with post-harvest centre namely farmers, intermediate functionaries (traders and collection agents) and post-harvest representatives are given below.

Scarcity of labour, unpredictable climatic condition and pest and disease incidence were the major production constraints. Overpowering middlemen, lack of proper and timely market information and price fluctuations were the major marketing constraints expressed by the farmers. The constraint analysis gave an indication as to the necessity of extension interventions in capacity building among the stakeholders in accessing update market information, developing entrepreneurship skills among the farmers and educating the farmers in the need for maintaining varietal uniformity, which will surely enhance their profit margins.

CONCLUSION

Though the mango sector is having many bottlenecks, there are still untamed markets and opportunities waiting to be advanced. The increasing demand for pesticide free fruits and vegetables can be addressed by making use of post-harvest facilities as that of V plus fruits and vegetables. The emerging young farmers need to be encouraged to carry out more marketing functions so as to avoid the dominance of many layers of intermediaries. The present scenario of over dominance of intermediariesin the mango sector should be ruled out. For this, the Farmer producer organizations could extend initiatives to undertake marketing functions on a collective basis. Farmers should be given awareness about the benefits of using ethylene ripening as well as value addition of their produce. Education among producer farmers regarding opportunities and possibilities both domestically and internationally. Timely market information should be made available to the producer farmers. There is a need for upgrading policies for safeguarding the farmers from price fluctuation. All these could open up everlasting opportunities in farmer inclusive value chains benefiting not only the producers but also the intermediaries and such innovative endeavours.

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Received on 18/12/2019 Accepted on 15/03/2020