

RESEARCH NOTE

Scenarios in the Small Holder Mango Production Situation in Kerala – A Futuristic Analysis

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ABSTRACT

Commercial mango production in Muthalamada is believed to be one of the most promising agricultural enterprises for the small holder grower. Unfortunately the actual setback is evident in the marketing of the mangoes. The presence of large number of intermediaries in the marketing channel affects the small holder producers drastically. In addition, inability of the farmers to fulfill the quality prescriptions were forced to sell their produce at lower price in the local markets. The current paper is aimed to formulate the likely future of the Muthalamada mango sector using scenario analysis and to identify the constraints faced by the farmers. Through uncertainty-importance ranking, early and regular bearing and large number of markets were selected from the trends identified for deriving the futures. Over dominance of middlemen in the marketing channel, difficulty in getting reasonable price for the produce, dearth of enough common collection centers, poor availability of market information and improper post-harvest practices were the constraints faced by the farmers.

Key words: Mango; Marketing; Scenario; Constraints; Small holders;

Commercial mango production is an enterprise that is sure to be remunerative at the same time taking away the drudgery from mainstream farming. In Kerala, the Muthalamada belt in Palakkad district is the most vibrant area of commercial mango production. Being located in the Kerala- Tamil Nadu border with comparatively drier climate, an average annual rainfall of about 2269 mm and unique soil type favor the mango cultivation here.

For the past few decades mango had been commercially cultivated in about 4,500 hectares. Around 3000 farmers are undertaking mango cultivation and mango sector in Muthalamada is believed to be one of the most promising agricultural enterprises for the small holder grower (Shaji, 2015).

But the actual setback is evident in the marketing of the mangoes. The presence of large number of intermediaries in the marketing channel affects the small holder producers drastically (Pokhrel and Thapa, 2007). As the market price of mangoes at long distance markets is significantly high, farmers are forced to prefer

marketing channels that involves many intermediaries. Unfortunately most of the small holder farmers were unable to fulfill the quality prescriptions enforced by the key markets and they are forced to sell their produce at a lower price.

The current paper is aimed to understand the importance and influence of the producer farmers in the mango production situation through formulating the likely future of the Muthalamada mango sector using scenario analysis and identifying the constraints faced by the farmers through a constraint analysis.

METHODOLOGY

Scenario analysis is a methodology that helps to challenge existing assumptions. The methodology helps researchers make sense of and address complex and uncertain contexts (Ramirez et al., 2015). The research team opted for a simplified version of the scenario method (Heijden, 2005) called 'deductive' which creates a 2 × 2 quadrant of four scenarios. Two stakeholder interfaces were conducted in Kollengode

and Muthalamada for this purpose within duration of six months. The scenario of the mango sector in Muthalamada was studied by identifying the major trends and drivers in the mango value chain. Trends are the driving forces that are well established and will not change over the term, or are fairly certain to happen. These factors have implications for all future scenarios. Two dimensions, *i.e.*, trends of greatest uncertainty were selected using uncertainty ranking. These two dimensions form the axes of the scenario framework. The polar ends of the axes are labeled to show the possible extremes of the future outcomes. Each quadrant was summarized. The suitable future for farmer inclusion could thus be identified (Vermeulen *et al.*, 2008).

Constraints analysis was carried out using a sample of 100 farmers selected randomly representing the small, medium and large mango growers from the study area. 30 respondents were also chosen separately representing other stakeholder groups in the value chain using key informant and snowballing technique.

Garrett ranking was used to determine the constraints faced by farmers during marketing. For this, major problems were identified through key informant interviews. These constraints were then incorporated into the interview schedule and the respondents were asked to rank them. The ranks given to each constraint were converted into per cent position using the following formula:

$$\text{Per cent position} = 100 \frac{(R_{ij} - 0.5)}{N_j}$$

Where,

R_{ij} is the rank for i^{th} constraint by the j^{th} individual

N_j is the number of constraints ranked by the j^{th} individual

The rank obtained is an interval on a scale where its midpoint denotes the interval; hence 0.5 is subtracted from each rank. Using the Garrett Table, the per cent position obtained is changed into score (Garrett and Woodworth, 1969). Mean score was determined from the score obtained for each constraint and they are ranked according to the mean score.

RESULTS AND DISCUSSION

Trends and drivers in the mango scenario : Drivers are the factors that cause change in value chains and the policies that affect markets, while trends are the directions of change caused by the drivers (MSP, 2019). The following were the trends and drivers in the

Muthalamada mango scenario identified through the stakeholder interfaces and reiterated through expert consultations and review of literature.

Table 1. Trends and drivers of mango scenario

Trends	Drivers
Quality consciousness	Commercialization
Farmers organization	Price fluctuation
High Density Planting	Labor shortage
Allied industries	Consumer preference
Mechanization	Government policies
Involvement of women and youth	Export opportunities
Off season production	Increase in cost of produ.
Large number of market	Technical support
Processing improvement	Change in technology
Branding	
Utilizing large quantities of chemicals	
High cost of labor	
Involvement of intermediaries	

Prioritizing uncertainties : The identification of a future scenario that is most inclusive of primary producers involves determining two key uncertainties among the trends affecting the market. Through uncertainty-importance ranking, the trends with high uncertainty were selected as the two dimensions to form the axes of the scenario framework (Table 2).

Table 2. Scenario analysis: uncertainty-importance ranking

Trends	Uncertainty	Importance	Total
Quality consciousness	13	4	17
Farmers organization	10	5	15
High Density Planting	11	3	14
Allied industries	8	8	16
Mechanization	9	6	15
Involvement of women and youth	7	9	16
Early and regular bearing	1	7	8
Large number of markets	2	1	3
Processing improvement	12	2	14
Branding	6	12	18
Utilizing large quantities of chemicals	3	11	14
High cost of labor	5	13	18
Involvement of intermediaries	4	10	14

From among the different trends, early and regular bearing and large number of markets were selected for deriving futures as they were assigned the most degree of uncertainty and also were high in importance as far as the mango scenario was concerned.

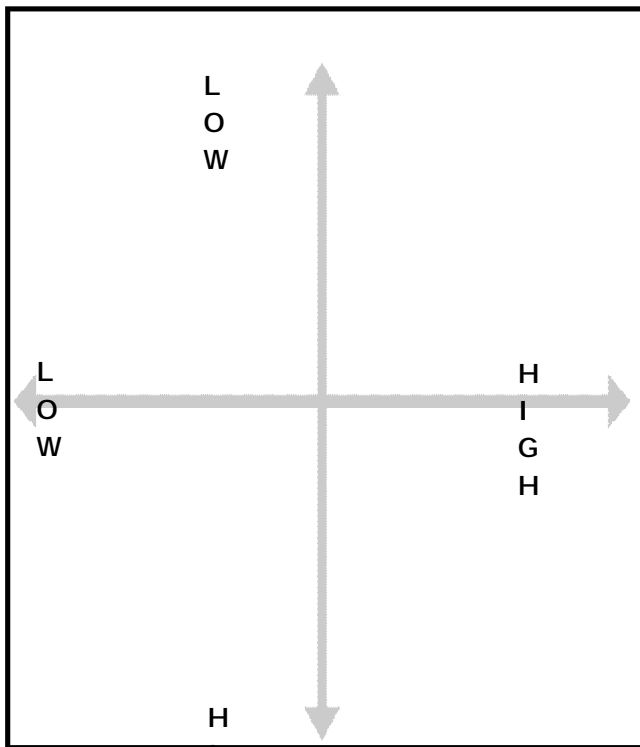


Fig. 1. Four futures of scenario analysis

Four futures were developed taking into account the two selected dimensions. When probability for both the dimensions, is low, Future A was the probable scenario, wherein the mango cultivation alone will not bring in any economic benefits to the farmers. So there will be an increase in mixed cropping practices and ecotourism activities to create a constant flow of income from the orchard. As the limited quantity of the produce is marketed to fewer markets, there will be a tendency to increase the processing of the produce in order to attract new markets and the farmers will tends to market their premium produce to export markets to attain higher price.

Future B is where the market availability will be high and early and regular bearing will have low probability. This future will result in an increase in price of the produce due to high market demand, but the involvement of the middle men in the marketing channel will be higher so as to cover the large number of markets. The produce available for processing industry will be low as there will be huge demand in the fresh market.

When probability for early and regular bearing is high and the number of markets available will be low, the resulting Future C will be seeing a decrease in price of the produce due to the limited markets and increase in wastage. Diversification of the varieties grown in an

orchard will be common, which in turn increases the cost of production. The decrease in availability to domestic markets will force the farmers to utilize the export opportunities

In the fourth future, Future D where probability for both dimensions is deemed high, the prices of the produce will be fairly distributed among the actors. The early and regular bearing and large number of markets will boost the allied industries and export opportunities will get enhanced and these together will account for an increase in agricultural income.

Most likely and most desirable futures : From the above appraisal, the most desirable future for best inclusion of primary producers in the value chain will be Future D, which will be the most remunerative for the farmers. To ensure this, meaningful market interventions have to be designed by the public sector agencies. Steady early bearing varieties have to be popularized in the area, and farmers have to be trained on ways and measures to combat climatic changes that affect the time of fruitset and regularity in bearing of the mango trees.

The future that holds the most likelihood to manifest will be future B, where mango will not be bearing early but markets for mango are prolific and widespread. This scenario will only promote the intermediaries in the value chain and bring down domestic processing of mangoes as well as export possibilities. It is not a bright situation for the producer farmers, so all possible measures should be taken to take the benefit of the availability of markets, to the farmers.

Table 3. Constraints faced by the farmers

Constraints	MS	Rank
Over dominance of middle men	67.25	1
Difficulty in getting reasonable price	66.64	2
Dearth of enough collection center	65.28	3
Poor availability of market information	60.99	4
Improper post-harvest practices	44.90	5
Lack of government support	43.67	6
Deficit of timely labor	42.01	7
Dearth of local markets	36.75	8
Improper cultivation practices	26.63	9
Lack of coordination	26.53	10

Constraints faced by the farmers : The farmers faced several problems during mango cultivation. The constraints were listed out in the interview schedule and the respondents were asked to rank it during the survey. Using Garret ranking technique, the ranks were then

converted into mean scores to identify the major constraints existing in the mango sector of Muthalamada.

The major constraints identified were, over dominance of middlemen in the marketing channel, difficulty in getting reasonable price for the produce, dearth of enough common collection center, poor availability of market information and improper post-harvest practices.

CONCLUSION

Commercial mango production holds great promise for the small holder farmers as it is relatively low maintenance and cost effective. But the sector is ridden with pitfalls of its own, like dominance of intermediaries, lack of marketing savvy among farmers apart from

climate change that is affecting the early bearing nature of mangoes. However, the study indicated the advantages outweigh the disadvantages in favor of the producer farmers. If the marketing constraints are addressed through possible farmer collectives or procurement by public sector agencies, it will prove to be a boost for the mango sector. Domestic marketing should be strengthened and awareness should be generated among the farmers as to how to be self sufficient in their endeavor. With increasing consciousness among the consumers about the superiority of indigenous fruit items and food safety, the mango producer farmers can surely look forward to a good future, if they are given consistent and timely institutional support.

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