

ADOPTION OF SUSTAINABLE MANGO PRODUCTION TECHNOLOGY AND VALUE ADDITION BY MANGO GROWERS

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Abstract

Mango is the world's most popular fruit and is referred to as the 'King of Fruits'. Worldwide mangoes are grown in over 60 countries and half of the produced and traded tropical fruits are mango. Mangoes are excellent sources of vitamins A, C and fibre. Indian mangoes come in various shapes, sizes and colours with a wide variety of flavour, aroma and taste. India is one of the top mango producing countries of the world. Tamilnadu accounted for 6-7 per cent of the total Indian mango production. The mango pulp industry in Krishnagiri district of Tamilnadu is the second largest exporter of pulp in the country, generates between Rs. 400 to 500 crores of foreign exchange annually. The study was conducted in Krishnagiri district. Data were collected from both the mango growers and mango processors. Three hundred mango grower respondents and forty mango processors were identified and data were collected from them using well-structured and pre-tested interview schedules. More than half of mango growers were with medium level of adoption of recommended mango cultivation practices. With regard to the level of adoption of mango growers about the value addition and value added products in mango, more than four-fifth of the respondents had low level of adoption.

Key words: Mango growers, sustainable production technology, adoption and value addition.

1. Introduction

Mango is the world's most popular fruit and is referred to as the King of Fruits. Worldwide Mangoes are grown in over 60 countries and half of the produced and traded tropical fruits are mango. The mango fruit grows well under tropical climate, with long dry season followed by sufficient rains. Originally from India, mangoes have been around for over 5000 years. Mangoes are excellent sources of vitamins A, C and fibre. Indian mangoes come in various shapes, sizes and colours with a wide variety of flavour, aroma and taste. Tamilnadu accounted for 6-7 per cent of the total Indian mango production in recent years. Krishnagiri, Dindugal, Theni and Dharmapuri are the major districts producing mango in Tamilnadu. The important commercial varieties in Tamilnadu are Alphonso, Totapuri, Banganapalli, Neelum and Sendura. Bangladesh, Arab countries and Kuwait are the main importers of fresh mango from Tamilnadu. Considering the above facts in mind, an attempt has been made to study the adoption of sustainable mango growers and processors to recommend technologies in Mango cultivation and value addition.

2. Research methodology

The study was conducted in Krishnagiri district of Tamilnadu. The lists of mango growers in the selected 20 villages were obtained from the office of the Assistant Director of Horticulture, Krishnagiri. From the list, three hundred respondents were selected based on proportionate random sampling technique. From the items related for adoption and value addition were finalized in consultation with scientist. There were 10 major inclusive of value addition selected for the adoption study. “Two” score were assigned if adopted and ‘one’ score was assigned for non-adoption. The scores of all the sub-items under main items were summed up for each respondent and the adoption score was arrived at. The respondents were categorized as low, medium and high using cumulative frequency.

3. Findings

In this section, the extent of practice wise adoption of various crop cultivation practices and value addition in mango by the mango growers are presented.

TABLE 1

Practice wise Adoption of Recommended Crop Production Technologies and Value Addition by Mango Growers

S.No.	Category	No.	Percentage
1.	Selection variety		
	Early varieties: (Alphonso, Banganapalli)	148	49.33
	Regular varieties: (Bangalora, Neelam)	155	51.66
	High yield varieties: (Mallika, Ratna, Amarapalli)	197	65.67
2.	Preparation of main field		
	Designing a layout for a mango garden	175	58.33
	Forming a pit	285	95.00
3.	Method of propagation		
	Grafting	225	75.00
	Inarching	254	84.66
	Seedling	178	59.33
4.	Planting techniques		
	Planting season July – December	185	61.66
	The depth at which the graft has to be kept inside the pit, (10cm)	268	89.33
	Spacing (1m x 1m x 1m)	285	95.00
5.	Irrigation management		
	The recommended water requirement per tree	283	94.33
	Forming irrigation channels	120	40.00
	Drip irrigation system	95	31.66

	Time of irrigation (Once in a week)	254	84.66
6.	Inter-cultivation		
	1. Filling materials used in the pits FYM10kg + top soil	278	92.66
	2. Chemical material used in the plant (BHC 10% dust)	263	87.66
	3. Inter-cropping	135	45.00
	4. Weed management	154	51.33
	5. Pruning	286	95.33
7.	Fertilizer Management		
	1. Super phosphate 50 gm / tree	220	73.33
	2. Potash 50 gram 50 gm / tree	125	41.66
	3. FYM 10 kg / tree	262	87.33
8.	Plant protection		
	1. Using growth regulator hormones to prevent flower and fruit drop (Planofix 2ml in 4.5 liters of water is recommended)	243	81.00
	2. Pest management		
	a. Mango leaf hopper	125	41.66
	b. Mealy bug	65	21.66
	c. Fruit fly	48	16.66
	3. Disease Management		
	a. Mango powdery mildew	148	49.33
	b. Mango sooty mould	115	38.33
9.	Harvesting method		
	Correct time of harvesting	245	81.66
	Manual harvest	175	58.33
	Mechanical harvest	125	41.67
10.	Value added products		
	1. Mango pulp	-	-
	2. Mango squash	-	-
	3. Mango pickles	20	3.33
	4. Mango chutney	-	-
	5. Mango jam	-	-
	6. Mango jelly	-	-
	7. Mango thokku	10	3.33

The practice-wise adoption of recommended crop production technologies and value addition may vary from individual to individual. Hence, an attempt was made to analyze the adoption of recommend mango cultivation technologies as perceived by mango growers and the results are given in Table 1.

Selection variety: There are three different varieties viz. early, regular and high yield under this category. It could be ascertained from Table 1 that 65.67 per cent of the mango growers adopted high yielding varieties viz. Amarapalli, Ratna, Mallika, followed by regular viz. Neelam, Bangalora (51.66

per cent) and early varieties viz. Alphonso, Banganapalli (49.33 percent) respectively. It is noted that these high yielding varieties need technologies which require additional details and knowledge. Thus, the varieties though high yielding had moderate adoption. This finding is in line with the findings of Sujaivelu (2002).

Preparation of main field: Under main field preparation, there are two activities namely designing a layout for a mango garden and forming a pit of required size. More than ninety per cent of them adopted the practice of forming pit in correct size (95 per cent) and more than half of the respondents properly designed the layout for a mango garden (58.33 per cent). The designing of layout requires additional information from horticultural officers and high labour. Hence, there was not very high adoption. This finding is in accordance with that of Sujaivelu (2002).

Method of propagation: Three items viz. grafting, inarching and seedling were the sub-items under the major category of method of propagation. From the Table 1, it could be observed that more than four-fifth of the respondents were adopting inarching (84.66 per cent) followed by three-fourth of the respondents had adopted grafting (75 per cent) and three-fifth adopted seedling (59.33 per cent). The respondents had adequate knowledge in these practices. This finding is in line with the findings of Thirumal (1998).

Planting techniques: Planting season and depth of planting and spacing were the activities which fell under the major category of planting techniques. Majority of the respondents had adopted proper spacing of 1m x 1m x 1m (95 per cent), the recommended depth of planting of 10cm (89.33 per cent) followed by nearly two-third of the respondents adopting the recommended planting season (July-December) (61.66 per cent). These technologies are the major crucial components in enhancing the productivity of mango. This finding is in confirmation with the findings of Saravanakumar (1996).

Irrigation management: The practices viz. recommended water requirement per tree, forming irrigation channels, drip irrigation, and time of irrigation were the sub-items included under the major area of irrigation management. It could be observed that more than ninety per cent of the respondents adopted correct recommendation of irrigation (94.33 per cent). This was followed by time of irrigation (84.66%), and the rest of the practices were adopted by less than fifty per cent of the respondents and they were, forming irrigation channels (40%), and drip irrigation (31.66%). The respondents were not serious about these technologies as these technologies involved economic considerations and hence, there was low level of adoption.

Inter cultivation: Filling materials like FYM, top soil, etc. used in the pits, chemical materials used, intercropping, weed management and pruning were the activities which fell under the major category of inter cultivation. It could be observed that the following technologies had been adopted by more than ninety per cent of the respondents and they were, pruning (95.33%), and filling materials used for pits (87.66%). Rest of the technologies was adopted at a lesser level and they were weed

management (51.33%) and inter-cropping with vegetables, groundnut and pulses (45.00%). The higher level of adoption might be due to the fact that the growers had adequate knowledge about the technologies and they were aware that these technologies would increase their profit significantly. That is why most of the farmers had adopted. This finding is in consistent to the findings of Sujaivelu (2002).

Fertilizer management: There were 3 sub-items under the fertilizer management. Majority of the respondents (87.33) had applied FYM 10kg / tree followed by nearly three-fourth of the respondents (73.33%) had applied super phosphate @ 50 gm/tree and less than fifty per cent of the respondents (41.66%) had applied 50gm of potash / tree as recommended.

Plant protection: Under plant protection, there were three major sub-items namely using growth regulator hormones, pest management and disease management. Majority of the respondents (81 per cent) have been using growth regulator hormone Planofix @ 2ml in 4.5 lts of water to prevent flower and fruit drop. In pest management, there were three major pests found to be attacking mango crops and the respondents used plant protection measures for controlling them and they were mango leaf hopper (41.66%), mealy bug (21.66%) and fruit fly (16.66%). For controlling the pests mango leaf hopper, fruit fly and mealy bugs, the pesticides like Zolone, Phosphomidon, and Sevin dust respectively are normally recommended. The mango growers were aware of these measures and they were applying the pesticides according to the damage to the crops by pests in the mango orchards. In the case of disease management, nearly half (49.33 per cent) of the respondents had adopted control measure by applying wettable sulphur and other recommended fungicides for containing the mango powdery mildew disease (49.33%) and nearly two-fifth of respondents used measures for controlling mango sooty mould (38.33%). This finding is in agreement with the findings of Thirumal (1998).

Harvesting Method: In the case of harvesting, nearly three-fourth of the respondents adopted the correct time of harvesting (81.66 per cent). Manual harvesting was done by about 60 per cent of the respondents. Slightly less than half of the respondents (41.67 per cent) adopted the mechanical harvesting techniques.

Value added products: With regard to the value addition process, only 3.33 per cent of the growers manufactured mango pickles and an equal proportion of the respondents were engaged in the production of mango thoku. The reason for the lesser production of value added products by the growers is that they lacked time and knowledge on technology for the production of value added products. The high investment needed for the establishment of industrial units for the production of value added products like pulp and squash is another reason for the lesser production of value added products in mango by the mango growers.

4. Conclusion

While organizing extension programmes for encouraging the adoption of recommended sustainable mango cultivation techniques and value addition, special emphasis should be given to impart training in the areas like production of value added products, plant protection and post-harvest technologies. Separate trainings may be organized to the growers as well as the processors according to their information needs.

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