



## Adoption of recommended technologies in mango cultivation by the mango growers in Dindigul district of Tamil Nadu

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### Abstract

Mango occupies a prominent place among the fruits grown in India because of its great utility, and is acknowledged as the king of tropical fruits. Mango offers good scope for commercial marketing. Various types of processed products prepared from mango are pickles, chutneys, squash and mango pulp. It is an outstanding source of Vitamin A and C. To meet the needs of increasing population, Production targets have to go up. It would be possible only by adopting the improved technologies in mango cultivation. Increased productivity is greatly dependent on available technology and extent of adoption by the farmers. Information on the adoption of modern recommended mango cultivation techniques help us to identify the gaps and enable the extension scientists and policy makers to devise strategies to improve the production and productivity of mango. This research study was undertaken to assess the extent of adoption of recommended technologies in mango cultivation by the mango growers. The study was taken up at Dindigul, one of the mango predominant districts in Tamil Nadu State. A sample size of one hundred and twenty mango growers were selected based on proportionate random sampling method. This study revealed that majority of the mango growers had medium level of adoption of latest recommended technologies in mango cultivation, whereas about one – fourth of them had high level of adoption and slightly more than two - fifth of them had low level of adoption of the recommended mango technologies.

**Keywords:** adoption, recommended technologies, mango growers

### Introduction

Mango (*Mangifera indica* L.) is one of the most widely cultivated tropical and subtropical fruit crops in the world. Therefore, it is also called as the king of fruits. India is the second largest producer of fruits in the world. Its share in world's fruit production is 11 per cent (Tala et.al, 2020) [6]. Mango is commercially cultivated in more than 80 countries like Brazil, China, Egypt, India, Mexico, Pakistan, Philippines, Thailand and Vietnam (Meena, 2018) [4]. Global production of mango is concentrated mainly in Asia and precisely in India. Mango accounts for 40 per cent of the total fruit exports from the country. There are more than 480 mango exporter companies in India. There is good scope for increasing the area and productivity of Mango in the country (Divya and Arunachalam, 2020) [2].

Production of mango in India was 21.82 million tonnes during 2017-18, with an area of 2,258,100 hectares under cultivation. Among the various states in India, Tamil Nadu is one of the major mango producing states in the country. The area and production of mango in Tamil Nadu during 2017-18 was 152,570 ha and 1.23 million tonnes respectively. Dindigul is one of the mango predominant districts in Tamil Nadu State. The area and production of mango in Dindigul district during 2016 -17 was 37,960 ha and 0.29 million tonnes respectively (Horticultural Statistics at a Glance, 2018) [3].

Mango is mostly grown in a traditional way by majority of farmers. But success of mango cultivation depends mainly on the adoption of latest recommended cultivation technologies by the mango growers. Increasing the production is possible only by adopting improved recommended technologies in mango cultivation. The need of the day is increasing the rate of adoption and reducing the gap between the agricultural technology recommended by the scientists and its acceptance by the farmers on their field (Chavhan et.al, 2015) [1]. Hence, a study was undertaken to assess the extent of adoption of recommended technologies in mango cultivation by the mango growers in Dindigul District of Tamil Nadu.

### Methodology

The present study was conducted in Dindigul district of Tamil Nadu. Among the fourteen blocks, Natham block was selected based on the maximum area under mango cultivation. From the block, six villages namely Lingavadi, Nadumandalam, Pudur, Punnaipatti, Reddiyappatti and Sathampatti were selected based on the maximum area under mango cultivation. A sample size of 120 mango growers was selected by using proportionate random sampling technique. Data were collected using a well - structured and pre - tested interview schedule. Percentage analysis and cumulative frequency were used for analysing and interpreting the data and the results are tabulated.

## Findings and Discussion

The results of the analysis with regard to overall adoption and technology-wise adoption are presented as follows:

### Overall adoption level

The distribution of respondents according to their overall adoption of latest recommended technologies in mango cultivation is given in Table 1

**Table 1:** Distribution of respondents according to their overall adoption level on recommended mango cultivation technologies (n=120)

S. No.	Category	Number	Per cent
1	Low	27	22.50
2	Medium	64	53.33
3	High	29	24.17
	Total	120	100.00

It is understood from Table 1 that majority of the respondents (53.33 per cent) had medium level of adoption of recommended mango technologies followed by 24.17 per cent of the respondents with high level of adoption. Only 22.50 per cent of the respondents fell under low level of adoption. Medium level of experience in mango cultivation, innovativeness, risk orientation, scientific orientation and economic motivation might be the reasons for majority of them to belong to medium level of adoption category. This finding is in line with the findings of Divya and Arunachalam (2020) [2].

### Technology-wise adoption level

The technology-wise adoption level of respondents on mango cultivation is presented in Table 2

**Table 2:** Distribution of respondents according to their technology-wise adoption (n=120)

S. No.	category	Number	Per cent
I	Crop improvement practices		
1.	Varieties		
	a. Early bearing varieties	112	93.33
	b. Regular bearing varieties	113	94.17
	c. High yielding varieties	115	95.83
II	Crop production technologies		
2.	Preparation of main field		
	a. Designing a layout for mango garden	92	76.67
	b. Forming a pit	110	91.67
3.	Methods of propagation		
	a. Grafting	89	74.17
	b. Inarching	96	80.00
	c. Seedlings	92	76.67
4.	Planting techniques		
	a. Ideal planting seasons	104	86.67
	b. Recommended depth at which the graft has to be kept inside the pit	114	95.00
	c. Recommended spacing	82	68.33
5.	Irrigation management		
	a. Recommended water requirement per tree	115	95.83
	b. Forming irrigation channels	64	53.33
	c. Drip irrigation system	52	43.33
	d. Recommended time of irrigation	106	88.33
6.	Inter cultivation		
	a. Filling materials used in the pits	112	93.33
	b. Chemical material used in the plant	79	65.83
	c. Intercropping	63	52.50
	d. Weed management	82	68.33
	e. Pruning	75	62.50
7.	Manures and Fertilizers		
	a. FYM (10 kg /tree)	114	95.00
	b. Super phosphate (50 gm / tree)	92	76.67
	c. Potash (50 gm / tree)	81	67.50
III	Plant protection technologies		
	a. Using growth hormones	68	56.67
	b. Pest management		
	i. Mealy bugs	65	54.17
	ii. Mango leaf hopper	76	63.33
	iii. Fruit fly	48	40.00
	c. Disease management		
	i. Mango powdery mildew	54	45.00
	ii. Mango sooty mold	38	31.66
IV	Harvesting technology		
	a. Correct time of harvesting	115	95.83

### **Crop improvement practice (varieties)**

It is observed from the Table 2 that a fairly high level of adoption was found in adopting the recommended early bearing varieties, regular bearing varieties and high yielding varieties by 93.33 per cent, 94.17 per cent and 95.83 per cent of the respondents respectively.

### **Crop production technologies**

Under the main field preparation, there are two activities namely designing a layout for a mango and forming a pit of required size. More than ninety percent of them adopted the practice of forming pits in correct size (91.67 per cent) and more than three-fourth of them properly designed the layout of mango gardening (76.66 per cent).

### **Method of propagation**

It consists of three sub items namely grafting, inarching and seedlings. More than three-fourth of the respondents adopted inarching (80.00 per cent) and more than seventy per cent of the respondents adopted grafting (74.17 per cent) followed by little more than three-fourth of the respondents had adopted seedlings (76.66 per cent). The respondents had adequate knowledge in these practices.

### **Planting techniques**

More than ninety per cent of the respondents (95.00 per cent) adopted recommended depth of planting. More than two - third of the respondents had adopted the proper spacing of 1m\*1m\*1m (68.33 per cent) and more than four-fifth of them adopted the recommended planting seasons (86.67 per cent).

### **Irrigation management**

The recommended water requirement per tree, forming irrigation channel, drip irrigation system, recommended time of irrigation are the sub items present here. More than 95.83 per cent of the respondents had adopted recommended water requirement per tree. This was followed by recommended time of irrigation (88.33 per cent), forming irrigation channels (53.33 per cent) and adopting drip irrigation (43.33 per cent). The respondents were not serious about the technology as the technology involves the economic considerations.

### **Intercultivation**

Filling materials like soil and FYM are used in the pits, Chemical materials used in the plant, Intercropping, weed management and Pruning were the activities involved in inter cultivation. 93.33 per cent of the respondents adopted using Filling materials like soil and FYM in the pits and 52.50 per cent of the respondents adopted Intercropping practices, followed by Pruning by 62.50 per cent. About 68.33 per cent of the respondents adopted chemical materials used in the plant followed by weed management (68.33 per cent).

### **Fertilizer management**

There were three sub items in fertilizer management. It could be seen from the Table 2 that majority of the respondents (95.00 per cent) had applied FYM 10kg /tree followed by nearly three-fourth of the respondents (76.66 per cent) applied super phosphate @50 gm /tree and more than three - fifth of the respondents (67.50 per cent) applied the potash @50 gm /tree.

### **Plant protection technologies**

Under plant protection, there were three major sub items namely growth hormone, pest and disease management. More than half of the respondents (56.67 per cent) had adopted the growth hormone for controlling of the fruit and flower drop. In the study area, three major pests affected the mango crop and the respondents used plant protection measures for controlling them and the names of pests are mealy bugs (54.16 per cent), mango leaf hoppers (63.33 per cent) and fruit flies (40.00 per cent) respectively. For controlling the pest, the pesticides like zolone, phosphomedon and sevin dusts are normally recommended. The mango growers were aware of these measures and they were applying pesticides to control pest in orchards. In case of disease management, it could be seen from the Table 2 that majority of the respondents had applied wettable Sulphur and other recommended fungicides for controlling the mango powdery mildew disease (45.00 per cent) followed by nearly one-third of the respondents (31.66 per cent) had adopted controlling measures for controlling mango sooty mould.

### **Harvesting technology**

From the Table 2, it could be seen that most of the respondents (95.83 per cent) had followed the correct time of harvesting. The mango growers are well aware of the right time of harvest. This finding is in line with the findings of Sujaivelu (2002) [5].

### **Conclusion**

It is concluded that the adoption rate is less in aspects like 'management of powdery mildew', 'using drip system of irrigation', 'management of fruit fly' and 'management of sooty mould'. However a fairly higher rate of adoption is observed on aspects like 'varities of mango', 'correct time of harvesting', 'recommended water per plant', 'recommended depth of planting', 'application of FYM', 'filling materials used in the pits' and 'forming pits in correct size'.

Majority of the respondents were found to have medium level of adoption of recommended mango technologies. Hence it is suggested that the extension workers of State Department of Horticulture and the scientists concerned may conduct demonstrations and field days. It is further suggested that the State Department of Horticulture may arrange for seminars, exhibitions and video shows periodically. Printed literature like booklets, leaflets and pamphlets may also be distributed to the farmers at regular intervals.

The findings of the study would help the extension workers and policy makers to know the practices which are widely adopted as well as those which are not popular among the farmers. This would help them to concentrate on the popularization of the less adopted practices among the mango growers.

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