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Evaluation of traditional mango (*Mangifera indica* L.) varieties of Tamil Nadu for fruit quality attributes

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Abstract
Investigations were carried out at the Horticultural College and Research Institute for Woman, Trichy, to characterize traditional mango varieties of Tamil Nadu, based on quality of fruits. Evaluation was carried out in the germplasm of mango being maintained by the Government Institutions of Tamil Nadu, and commercial farmers fields and the data were documented. Based on the DUS guidelines, morphological characterization of mango was carried out at HC&RI (W), TNAU, Trichy. Survey has been made in all 32 districts of Tamil Nadu and the traditional mango varieties have been documented.
On evaluation, variabilities were observed for traditional varieties for fruit and quality attributes. Among the traditional varieties, Potalma was found to be early bearer (June I – II weeks). Fibre content was found to be low in Potalma and Kodur chinnarasam. These traditional varieties with desirable traits could be utilized for further breeding programme and may be mass multiplied for commercial cultivation.

Keywords: Traditional varieties, mango, Tamil Nadu, fruit characters

Introduction
Mango (*Mangifera indica* L.) belongs to the family Anacardiaceae is the most important commercially grown fruit crop of the country and it is called 'King of fruits'. India has the richest collection of mango cultivars and is believed to have originated in South East Asia. India ranks first among world's mango producing countries accounting for about 46 per cent of the global area and 40 per cent of the global production. In India, mango is cultivated in an area of 22 lakh ha and the production is 186 lakh tonnes (Anon, 2017) [1]. In Tamil Nadu, mango is cultivated in about 1. 25 lakh ha with production of about 5.37 lakh tonnes with average productivity of 4.30 t /ha. Major mango growing districts in Tamil Nadu are Dharmapuri, Krishnagiri, Vellore, Dindigul, Thiruvallur and Theni. In order to assess the genetic diversity of mango, research has been conducted out at the Horticultural College and Research Institute for Woman, Trichy, to evaluate the traditional mango varieties of southern states of India, based on utility of fruits. Quality parameters of the genus *Mangifera* its varieties were studied by Bihari *et al* (2012) [2].

Materials and Methods
The mango genetic resources maintained by TNAU and State Department of Agriculture and Horticulture were documented. Based on the Distinctness, Uniformity and Stability test (DUS) guidelines, morphological characterization was carried out at Horticultural College & Research Institute for Women (HC&RIW). Traditional mango varieties maintained at Govt. institutions of Tamil Nadu are Potalma, Kodur Chinnarasum, Dilpasand, Pathiri, Peter, Nadusalai, Luvas, Majanaari and Nadusalai. Fruits were studied for fruit length, length/width, fruit: shape in cross section, color of skin, amount of fibre attached to stone, and time of fruit maturity. The standard descriptor prescribed by IPGRI (2006) [3] was used as a guideline to describe fruit characters.

Table 1: Mango germplasm maintained at Research stations

Sl. No.	Name and Address of the research station in Tamil Nadu	Total number of mango genotypes maintained	Number of traditional varieties available
1.	Horticultural College and Research Institute for Women, Tiruchirapalli.	16	7
2.	Regional Research Station, Paiyur	43	5
3.	Agricultural Research Station, Bhavanisagar	21	1
4.	Horticultural College and Research Institute, Coimbatore	20	1
5.	Horticultural College and Research Institute, Periyakulam, Theni district.	45	3
6.	Agricultural Research Station, Pattukkottai, Thanjavur	4	-
7.	Agricultural College and Research Institute, Killikulam, Tuticorin	21	3
8.	State Horticulture Farm, Kanyakumari	24	3

Results and Discussion

Fruit length was found to be higher (>10 cm) in traditional varieties Kodur chinnarasam, Dilpasand and Pathiri, whereas medium fruit length of 5-10 cm was found in Peter, Luvas, Potalma and Manjanaari. Broad fruit of <7.1 cm width was found in varieties Kodur Chinnarasam, Dilpasand, Pathiri, Peter and Luvas. Whereas medium fruit width (5 - 7 cm) was found in Potalma and Manjannari. Ratio of length and width was registered highest in Luvas (>1.5) and the ratio was found to be medium (1.1 – 1.5) in varieties *viz.*, Potalma, Kodur chinnarasam, Dilpasand, Pathiri, Peter and Manjanaari. Shape in cross section was found circular in Potalma, Peter, Luvas whereas medium elliptic fruits were found in Kodur chinnarasam, Dilpasand, Pathiri and Manjannari in mature fruit. Colour of the skin was found green and yellow in Potalma, Dilpasand, Manjannari and Luvas. Whereas greenish and yellowish was found in Kodur chinnarasam, yellow colour skin was seen in Pathiri and yellow with red tinge was found in peter. In ripe fruit, yellow green colour skin was found in Potalma, Dilpasand, Luvas & Manjanaari. Whereas yellow colour was seen in Pathiri and Peter and greenish yellow was seen in Kodur Chinnarasam. Amount of fibre attached to stone was found to be low in Potalma, Kodur chinnarasam, Pathiri, Peter, Luvas medium amount of fibre was found in Dilpasand, Manjanaari (Table 2).

Amount of fibre attached to skin was low in Potalma, Kodur chinnarasam, Pathiri, Luvas, Peter whereas medium amount of fibre attached to the skin was found in Dilpasand and Manjanaari. Variability was observed for time of fruit maturity also Potalma, Dilpasand and were found to be very early (June I – II week) maturing group, Luvas was found to mature early (June III-IV week) and Pathri was found to be medium (July I-II week) in maturity. Variety Kodur chinnarasam is found to mature late at July (III week).

Similar study was conducted at Kerala by Simi and Rajmohan (2013) [4] and found that variability could be observed for floral, fruit and quality attributes. Flowering round the year was observed in Vellari Type-1, Thali, Kizhakkan Thali and Ambalathara Local. Karpoora Varikka with carotenoid content higher than most leading, superior varieties was identified. He has also reported that pickling type mangoes gave highest average ascorbic acid content (46.02mg/ 100g), average titrable acidity (%) and crude fibre content.

A similar study was made on physico-chemical quality characteristics of some mango cultivars growing under the Mediterranean subtropical climate in Spain (Pleguezuelo *et al*, 2012) [5]. 'Osteen' and 'Tommy Atkins', cultivars of mango with high quality fruits, were recommended for their performance and sustainable yield in subtropical, marginal environment. Physico-chemical analysis of fruit samples of 28 elite strains of Punjab revealed that variability found in the indigenous mango population for various qualitative and quantitative attributes not only contributes to biological diversity, nutritional security and livelihood, but can also be used for crop improvement (Singh *et al*, 2012) [6].

Table 2: Fruit characters of traditional mango varieties maintained at Research Stations of Tamil Nadu

Characteristics	Varieties						
	Potalma	Kodur chinnarasam	Dilpasand	Pathiri	Peter	Luvas	Manjanaari
Mature fruit: length	Medium	Long	Long	Long	Medium	Medium	Medium
Mature fruit: width	Medium	Broad	Broad	Broad	Broad	Broad	Medium
Mature fruit: ratio length/width	Medium	Medium	Medium	Medium	Medium	Large	Medium
Mature fruit: shape in cross section	Circular	Medium eliptic	Medium eliptic	Medium eliptic	Circular	Circular	Medium eliptic
Mature fruit: color of skin	Green and yellow	Greenish yellow	Green and yellow	Yellow	Yellow & red tinge	Green and yellow	Green and Yellow
Ripe fruit: predominant color of skin	Yellow green	Greenish yellow	Yellow green	Yellow	Yellow	Yellow green	Yellow green
Ripe fruit: amount of fiber attached to stone-	Low	Low	Medium	Low	Low	Low	Medium
Ripe fruit: amount of fiber attached to skin	Low	Low	Medium	Low	Low	Low	Medium
Time of fruit maturity	Very early	Late	Early	Medium	Medium	Early	Medium

Fig 1: Fruit characters of Kodur Chinnarasam variety

Fig 2: Fruit characters of Potalma variety

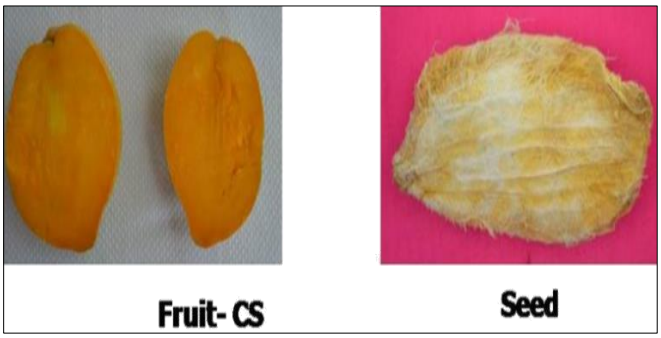

Fig 3: Fruit characters of Dilpasand vari

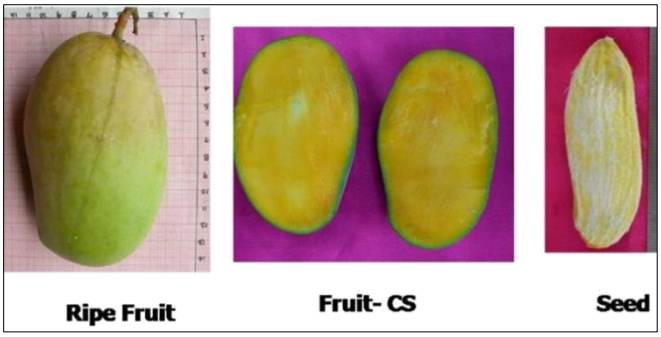

Fig 4: Fruit characters of Pathiri variety

Fig 5: Fruit characters of Peter variety

Fig 6: Fruit characters of Luvas variety

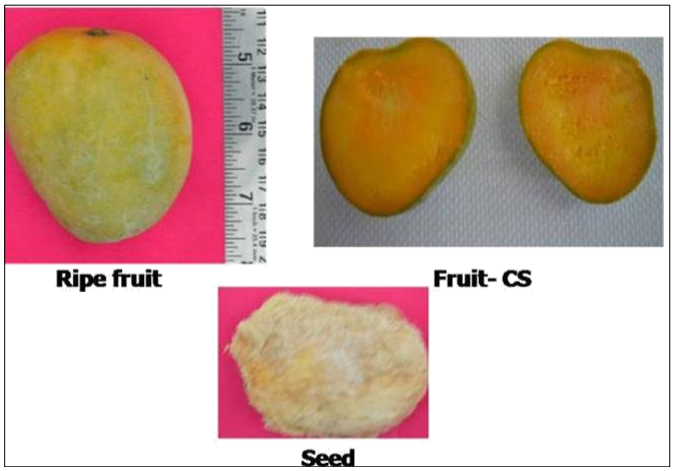

Fig 7: Fruit characters of Manjanaari variety

Conclusion

In view of the importance of these traditional mango varieties with rare and desirable qualities, and their adaptability to our environmental conditions, these varieties have to be conserved. These traditional varieties may be multiplied through grafting. These varieties may be utilized in breeding programme to exploit its potentials.

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References

1. Anonymous. Horticultural Statistics at a glance. Ministry of Agriculture and Farmers welfare. Government of India, 2017.
2. Bihari M, Kumar R, Singh K, Kumar A, Prasad A, Narayan S, *et al*. Quality parameters studies on *Mangifera* genus and varieties. Indian J. Hort. 2012; 69:272-276.
3. IPGRI. Descriptors for mango (*Mangifera indica* L.). International Plant Genetic Resources Institute, Rome, Italy, 2006, 60.
4. Simi S, K Rajmohan. Evaluation of traditional mango (*Mangifera indica* L.) varieties of southern Kerala. J. Hortl. Sci. 2013; 8(2):228-233.
5. Pleguezuelo CRR, Zuazo VHD, Fernandez JLM, Tarifa DF. Physico-chemical quality parameters of mango (*Mangifera indica* L.) fruits grown in a Mediterranean subtropical climate (SE Spain*)*. J. Agri. Sci. Tech. 2012; 14:365-374.
6. Singh NP, Jerath N, Singh G, Gill PPS. Physico-chemical characterization of unexploited mango diversity in sub-mountain zone of northern India. Indian J. Pl. Genet. Resour. 2012; 25:261-269.