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STUDY ON YIELD AND QUALITY ATTRIBUTES OF MANGO (*MANGIFERA INDICA* L.) COMMERCIAL VARIETIES UNDER COASTAL ANDHRA PRADESH, INDIA

K. Nissi Olive[1*], K. Radha Rani[2], M. Madhavi[3] and B. Kanaka Maha Lakshmi[4]

[1]Department of Fruit Science, Dr. YSR Horticultural University, Venkataramannagudem, Andhra Pradesh-534101, India
[2]Principal Scientist (Hort.) Dr. YSR Horticultural University, Mango Research Station, Nuzvid, Andhra Pradesh-521201, India
[3]Director of Research (Hort.), Dr. YSR Horticultural University, Venkataramannagudem, Andhra Pradesh 534101, India
[4]Principal Scientist (Pl. Path)/Head, Dr. YSR Horticultural University, Mango Research Station, Nuzvid, Andhra Pradesh-521201, India
*Corresponding author e-mail: nissikotla@gmail.com
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ABSTRACT

An experiment was conducted at College of Horticulture, Venkataramannagudem, West Godavari, Andhra Pradesh during the year 2023-24 to study the performance of commercial varieties of Coastal Andhra Pradesh for yield and quality. The experiment was laid out in Randomized Block Design (RBD) with 4 replications. The results revealed that among the varieties studied Peddarasam recorded maximum fruit weight (490.7 g), fruit length (18.9 cm) and yield per tree (31.1 kg). Number of fruits per tree were found highest in Cherukurasam (101.8). Average fruit breadth was maximum (9.7 cm) in Himampasand which was at par with Peddarasam (9.5 cm) and shelf life was noticed maximum in Himampasand (10.2 days). Regarding quality parameters, Himampasand had highest Total Soluble Solids (21.2 °brix), highest Total sugars (16.6 %), Reducing sugars (5.3%), non-reducing sugars (11.3%) and low acidity percentage (0.14 %). However, Ascorbic acid content was found highest in Chinnarasam (23.4 mg/100g) under same set of environmental conditions.

Keywords **:** Mango, phenology, yield, quality, Coastal Andhra Pradesh.

Introduction

Mango *(Mangifera indica* L.) belongs to family Anacardieceae is one of the most important tropical and subtropical fruit crops grown in India. Mango is popularly known as 'King of Fruits' due to its excellent flavour, attractive colour, delicious taste, huge variability and varied end usage. In Andhra Pradesh Mango is the most important fruit crop grown in 1.31 lakh hectare area and producing 43.5 lakh metric tonnes (Anonymous, 2023).

Mango fruit skin is smooth, thick and commonly yellow or greenish in colour when matured. The fruit develops rapidly after fruit set and to be ready for harvesting within 13-20 weeks after flowering depending upon the variety and climatic condition. Both ripe and unripe mangoes are used extensively by food processing industry to prepare a wide variety of products such as syrup, jam, squash, juice, cereal flakes and toffee etc., from unripe mango.

The quality parameters like size, shape, colour, total soluble solids (TSS), acidity, pH, physiological weight, juice, pulp and moisture content are essential for the table purpose and value addition of mango (Jha *et al*., 2008). Generally, the cultivars are site specific and the commercial varieties of one area may not do so well when grown in other areas.

Among the different varieties of mango, Chinnarasam, Cherukurasam, Peddarasam, Himamapasand, Baneshan, Suvarnarekha, Totapuri are the commercially grown varieties in Coastal Andhra Pradesh. Since the information on yield and quality attributes of commercial varieties of mango under

coastal Andhra Pradesh was limited, this study was under taken.

Material and Methods

The present investigation was conducted at College of Horticulture, Venkataramannagudem, Dr. YSR Horticultural university, West Godavari District, Andhra Pradesh. The experimental site falls under 'Agro-climatic Zone-10, humid, East Coast Plain and Hills (Krishna-Godavari Zone) with an average annual rainfall of 900 mm. The site is located at an altitude of 34 m (112 feet) above the mean sea level and geographically suited at 16º 63' 120" latitude and 81º 27' 568" East longitudes with hot humid summer and mild winter climate. The experiment was laid out in randomised block design (RBD) with four replications. Two trees were selected for each replication under each treatment. The data recorded on various parameters during the experiment were subjected to statistical analysis and the mean values have been summarized as per Panse & Sukhatme (1985) and presented in various tables along with graphs.

Results and Discussion

The results based on statistical analysis were presented in Table 1 & 2.

Table: 1 Yield and yield parameters of different commercial varieties of Mango under Coastal Andhra Pradesh

Treatments	Number of fruits per tree	Average fruit weight (g)	Average fruit length (cm)	Average fruit breadth (cm)	Fruit yield per tree (kg)	Shelf life (days)
Cherukurasam	101.8	269.1	11.8	8.7	27.6	5.7
Chinnarasam	52.8	210.8	10.0	7.4	11.1	6.6
Himampasand	54.0	402.5	11.2	9.7	26.3	10.2
Peddarasam	53.0	490.7	18.9	9.5	31.1	8.0
Suvarnarekha	63.5	203.5	8.7	7.2	12.9	7.5
S Em ±	1.9	1.5	0.2	0.2	0.8	0.6
CD (0.05P)	5.8	4.6	0.5	0.6	2.3	1.7

Results from Table (1) indicated that all varieties showed significant differences for yield, yield attributing parameters and shelf-life in the present study. Number of fruits per tree was found to be highest in Cherukurasam (101.8) and lowest in Chinnarasam (52.8) when compared to other varieties. Among the varieties, Peddarasam recorded maximum fruit weight (490.7 g), fruit length (18.9 cm) and yield per tree (31.1 kg) while Suvarnarekha recorded minimum fruit weight (203.5 g) and fruit length (8.7 cm) and Chinnarasam recorded low yields per tree (11.1 kg). Regarding average fruit breadth, Himampasand recorded maximum (9.7 cm) which was at par with Peddarasam (9.5 cm) whereas minimum breadth was found in Suvarnarekha (7.2 cm) followed by Chinnarasam (7.4 cm). Among the varieties under study, maximum shelf life was noticed in Himampasand (10.2 days) while minimum was observed in Cherukurasam (5.7 days) under ambient conditions after ripening.

The difference observed for the above characters among the varieties studied might be attributed to the genetic makeup of the varieties and local climatic conditions. The present findings are in agreement with Singh *et al.* (2014), Majumder *et al.* (2012), Araiza *et al.* (2004).

The results based on statistical analysis were presented in figure 1 to 12

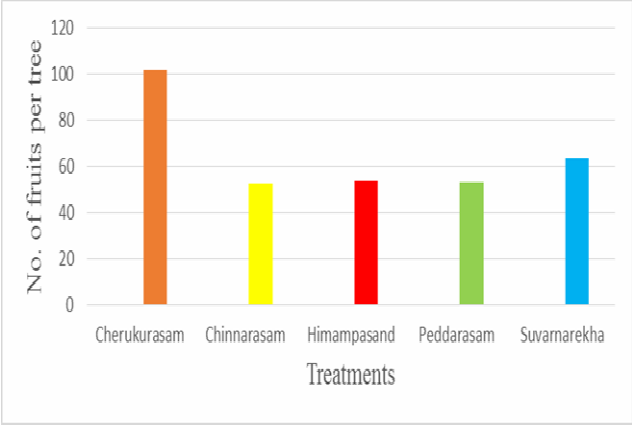

Fig. 1: Number of fruits per tree

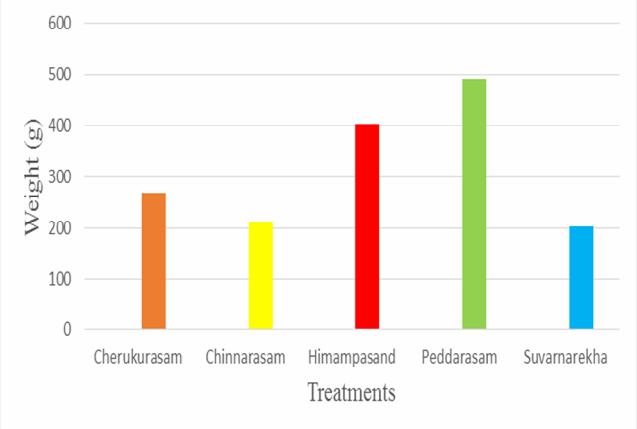

Fig. 2: Average fruit weight (g)

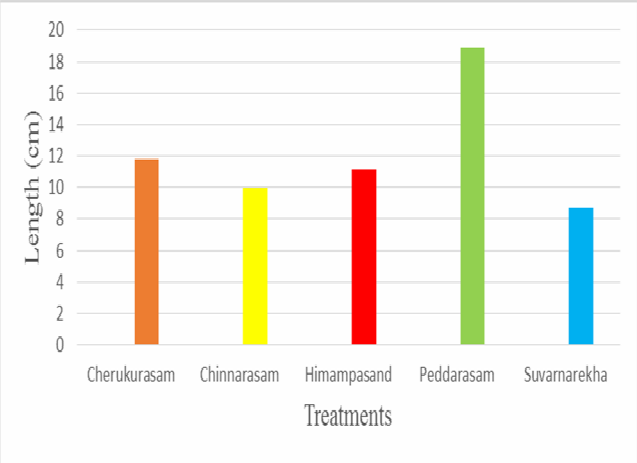

Fig. 3: Average fruit length (cm)

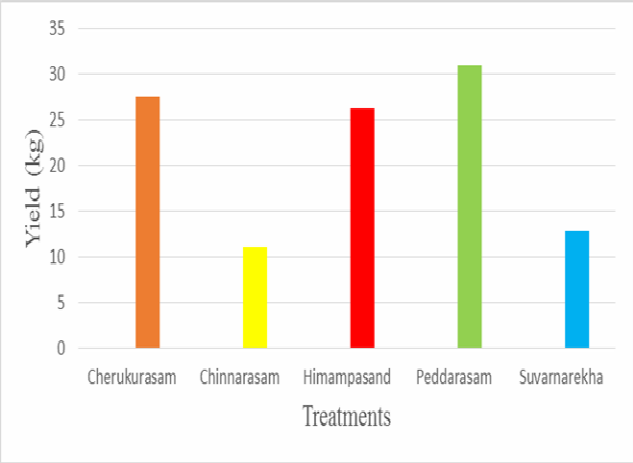

Fig. 5: Fruit yield per tree (kg)

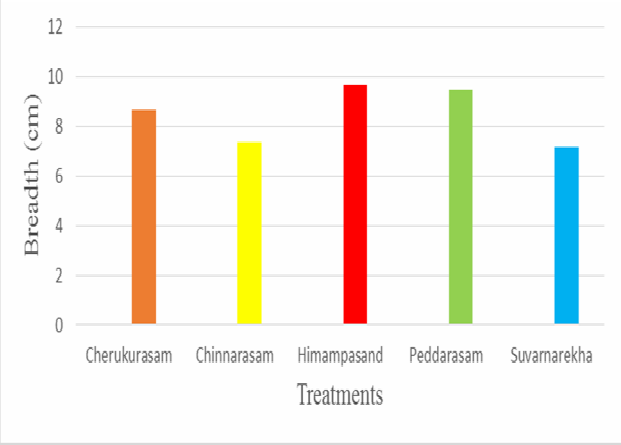

Fig. 4: Average fruit breadth (cm)

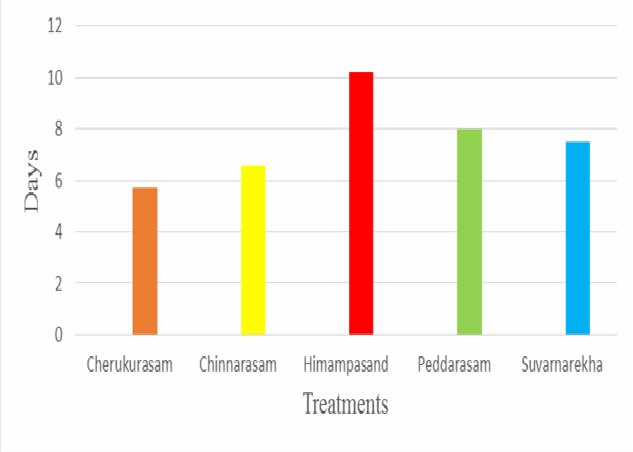

Fig. 6: Shelf life (days)

Table 2 : Quality traits of different commercial varieties of Mango under coastal Andhra Pradesh.

Treatments	Total Soluble Solids (ºbrix)	Acidity (%)	Ascorbic acid (mg/100gm)	Total sugars (%)	Reducing sugars (%)	Non-reducing sugars (%)
Cherukurasam	18.3	0.25	22.2	12.1	3.9	8.2
Chinnarasam	17.8	0.31	23.4	11.8	3.9	8.0
Himampasand	21.2	0.14	14.4	16.6	5.3	11.3
Peddarasam	19.7	0.23	19.8	13.5	4.1	9.4
Suvarnarekha	20.5	0.16	15.4	15.2	4.9	10.3
S Em ±	0.7	0.02	0.2	0.2	0.2	0.1
CD (0.05P)	2.0	0.05	0.8	0.6	0.5	0.3

The results revealed that (Table 2), Himampasand had highest Total Soluble Solids (21.2 ºbrix) and low acidity percentage (0.14 %) while Chinnarasam had lowest TSS (17.8 ºbrix) and high Acidity (0.31%). Ascorbic acid content was found highest in Chinnarasam (23.4 mg/100g) followed by Cherukurasam (22.2 mg/100g) while it was minimum in Suvarnarekha (15.4 mg/100g). Among the varieties studied, Himampasand had highest Total sugars (16.6 %) including Reducing sugars (5.3%) and non-reducing sugars (11.3%) whereas Chinnarasam had lowest values for Total sugars (11.8%), reducing sugars (3.9%) and non-reducing sugars (8.0%).

The variation observed for the above characters among the varieties studied were probably due to varietal character, nature and extent of genetic variability present in the experimental material. The present findings are in line with Ahmed *et al.* (2016), Gopu *et al.* (2014), Singh *et al.* (2010). Further, Lohakare *et al.* (2024) reported that temperature is most influencing factor for increasing ascorbic acid content which could be due to improved biosynthesis and translocation of pigments.

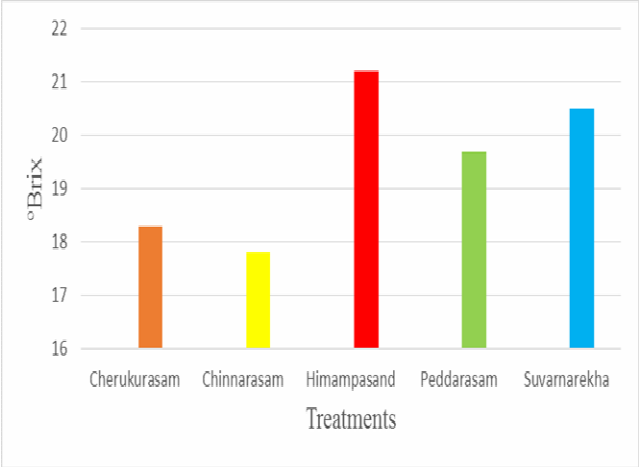

Fig. 7: Total Soluble Solids (ºBrix)

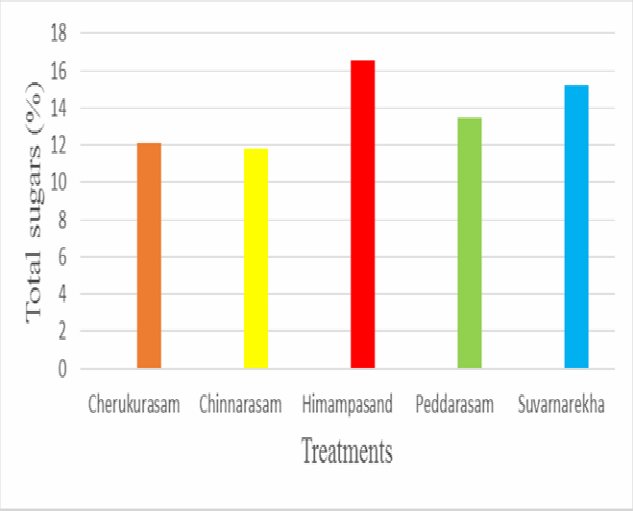

Fig. 10: Total sugars (%)

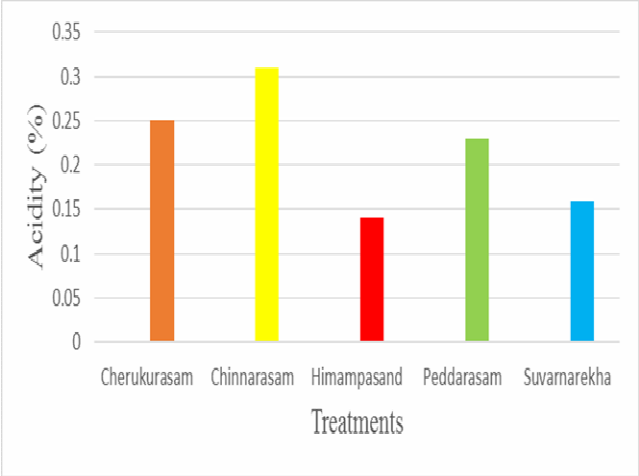

Fig. 8: Acidity (%)

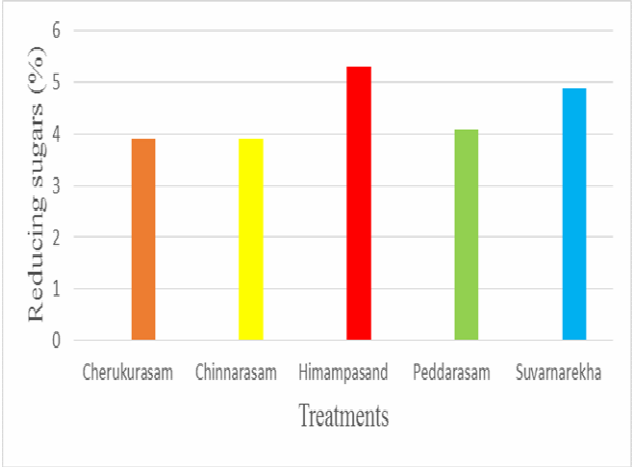

Fig. 11: Reducing sugars (%)

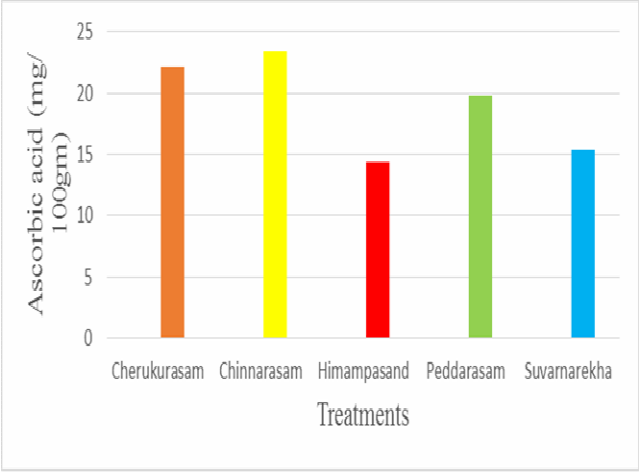

Fig. 9: Ascorbic acid (mg/100gm)

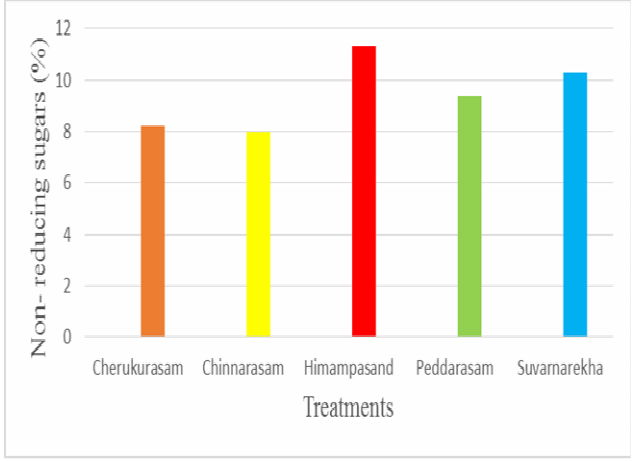

Fig. 12: Non - reducing sugars (%)

Conclusion

From the above results it can be concluded that among the varieties, Peddarasam and Cherukurasam performed well for yield and yield attributing parameters while Himampasand and Suvarnarekha were good at quality parameters in terms of sugars, TSS and Acidity under the same set of climatic conditions.

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