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Research Article

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Study of Physico-Chemical Characters of Mango Varieties / Hybrids in Kodur Agro-Climatic Conditions

M. D. Saheda*, M. G. Bala Hussaini and M. Balakrishna

College of Horticulture, Dr. YSR Horticultural University, West Godhavari, Andhra Pradesh, India

*Corresponding Author E-mail: shahedaali87@gmail.com

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ABSTRACT

An evaluation of physical, morphological and biochemical characters of twenty four varieties and six hybrids of mango were made under Kodur agro-climatic conditions. It was observed that cv. Jehangir had the maximum fruit weight (671.67 g), length (14.01 cm), breadth (9.95 cm), volume (646.67 ml), pulp weight (460.30 g), peel weight (147.17 g) and stone weight (82.85 g). The maximum contribution of pulp per centage was recorded in cv. Royal special (79.09 %) whereas, on other hand maximum peel per centage was obtained from cv. Suvarnarekha (28.82 %). The highest stone per centage was noted in cv. Dilipasand (26.22 %). Fruits of hybrid Mallika recorded the highest values of TSS (24.77 ^{0}Brix), total sugar (15.80 %) and reducing sugars (6.83 %) contents. The maximum ascorbic acid content was found in cv. Royal special (62.86 mg/100g), while the titrable acids are highest in cv. Prodduturiavakai (1.47 %). Looking to the overall qualitative characters of the mango cultivars Jehangir, Royal special, Suvarnarekha, Dilipasand were found better in physical properties, whereas, Mallika, Royal special, Prodduturiavakai, Athimadhuram exhibited their superiority in chemical qualities.

Keywords: *Mangifera indica L., Morphological, Physical, Biochemical, Varietal/hybrid response, Kodur region.*

INTRODUCTION

Andhra Pradesh has mango cultivation over an area of 0.315 million hectares with an annual production of 2.822 MT (National Horticulture Board, 2014-15). A large number of mango cultivars are grown in different places of Rayalaseema. Among these, varieties *viz*; Pulihora, Yelamanda, Mulgoa, Bangalora, Kesar, Baneshan, Alphanso, Neelum, Royal special, Dashehari, Himampasand, Cherukurasam, Chinnarasam, Peddarasam, Panchadarakalasa, Kalepad, Allipasand, Prodduturiavakai, Suvarnarekha, Jehangir and hybrids *viz*; Swarna Jehangir, Neeleshan, Neeluddin, KMH-1 (Kodur Mango Hybrid-1), A.U.Rumani and Mallika are very important. However, comprehensive information about physico-chemical characters of mango commercial varieties and hybrids grown under Kodur agro-climatic conditions is limited; no planned study has been carried out to identify the best cultivar in this region.

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Hence an attempt was made to evaluate the performance of important mango cultivars in Kodur.

MATERIALS AND METHODS

The study was carried out at post-harvest lab, Horticultural College and Research Institute, Anantharajupet, YSR (Dist.), Andhra Pradesh from December 2014 to May 2015. The experiment was laid out in a completely randomized block design having twenty four varieties (Alphanso (or) Khader, Bangalora, Dashehari, Himampasand, Neelum, Kesar, Royal special, Mulgoa, Athimadhuram, Yelamanda, Dilipasand, Pulihora, **C**herukurasam, Chinnarasam, Baneshan, Peddarasam, Allipasand, Prodduturiavakai, Kalepad, Panchadarakalasa, Suvarnarekha, Jehangir, K-O-5, K-O-15) and six hybrids *viz.*, Neeleshan, Neeluddin, KMH-1, **S**warna Jehangir, A.U.Rumani and Mallika which were replicated thrice with one tree per replication. The plants were nine years old, grown under uniform conditions as per the package of practices recommendations of HRS, Anantharajupet, Kodur. Fully matured fruits were collected and placed in a wooden box covering with paddy-straw for ripening at room temperature. The morphological characters recorded by panel test as per the descriptors of IPGRI, (2006). Whereas, fruit weight, stone weight, pulp weight, peel weight recorded by using digital balance, the length and width of fruit measured with vernier callipers. Peel, pulp stone per cent calculated based on fresh weight basis. TSS was measured with the help of a hand refractometer. Ascorbic acid content was estimated by volumetric method as suggested by Sadasivam & Manickam, (2009). Reducing sugars were estimated by titrimetric method. Titrable acidity and total sugars were estimated following the methods of AOAC, (1980).

RESULTS AND DISCUSSION

Morphological Characters

The data presented in table 1 on fruit shape revealed that various different cultivars significantly in fruit shape. The fruit shape was oblong in 14 varieties (Prodduturiavakai, Khader, Banglora, Himampasand, Neelum, Kesar, Dilipasand, Chinnarasam, Baneshan, Peddarasam, Allipasand, Kalepad, Suvarnarekha, K-O-15) and 3 hybrids (Swarna Jehangir, Mallika, KMH-1), elliptic shape exhibited in 2 varieties (Dashehari, Cherukurasam,) and 1 hybrid (Neeleshan) and remaining 8 varieties (Royal special, Athimadhuram, Yelamanda, Pulihora, Jehangir, K-O-5, Mulgoa, Panchadarakalasa) and 2 hybrids (Neeluddin, A.U. Rumani) showned round shaped fruits. Shirin et al. (2013) reported similar findings in fruit shape as oblong, oblong elliptic, roundish and ovate oblong.

It is clear from the data presented in table 1 that the fruit skin color different significanty among the mango cultivars. The fruit skin color was greenish yellow in cultivars like Himampasnd, Athimadhuram, Yelamanda, Cherukurasm, Chinnarasam, Jehangir, Kalepad, Panchadarakalasa, Prodduturiavakai, Peddarasam, Neeleshan, Neeluddin, KMH-1, A.U.Rumani and green color in Allipasand, whereas Khader, Dashehari, Neelum, Mulgoa, Dilipasand, Baneshan, K-O-5, K-O-15, Mallika are yellow in colour. Other cultivars Banglora, Kesar, Royal special, Pulihora, Suvarnarekha, Swarna Jehangir are in green with red blush colour. Fruit colour is genetically controlled character and may be affected by environment. Importance of different fruit colours of mango cultivars was earlier reported by Abourayya et al. (2011), in different cultivars.

The data on fruit stalk cavity of fruit showed variation among the mango cultivars (Table 1). The fruit stalk cavity was absent in cultivars Khader, Bangalora, Dashehari, Himampasand, Neelum, Kesar, Dilipasand, Cherukurasam, Chinnarasam, Allipasand, Prodduturiavakai, Jehangir, K-O-15, Neeluddin, KMH-1, Swarna Jehangir, Mallika, while, Royal special, Mulgoa, Athimadhuram, Yelamanda, Pulihora, Baneshan, Peddarasam,

Kalepad, Suvarnarekha, K-O-5, Panchadarakalasa, Neeleshan exhibited shallow stalk cavity and A.U. Rumani recorded deep fruit stalk cavity. Fruit stalk cavity is the varietal charcter, based on variety fruit stalk cavity varies. Similar studies were conducted by Naik and Gangolly (1950) in different cultivars of mango.

The fibre content of the fruit varied from fribre less, low fibre, intermeadiate fibre and high fibre. The mature fruits of Athimadhuram, Yelamanda are found with low fibre, whereas Royal special, Cherukurasam, Chinnarasam, Allipasand, Prodduturi avakai, Panchadarakalasa, K-O-5 and KMH-1 noted with intermediate fibre and mango varieties like Khader, Bangalora, Dashehari, Himampasand, Neelum, Kesar, Dilipasand, Pulihora, Baneshan, Kalepad, Suvarnarekha, Jehangir, K-O-15, Neeleshan, Neeluddin, Swarna Jehangir, A.U. Rumani and Mallika are found fibreless. Peddarasam variety showed high fibre content among all cultivars of mango (Table 1). Mannan et al. (2003), studied the mango varieties in fruit fiber varied from scanty, high, medium and very low.

The data on firm texture showed significant variation among the cultivars (Table 1). Firm texture was found in cultuvars Khader, Bangalora, Dashehari, Himampasand, Neelum, Kesar, Dilipasand, Yelamanda, Mulgoa, Baneshan, Allipasand, Prodduturiavakai, Kalepad, Panchadarakalasa, K-O-5, K-O-15, Suvarnarekha, Jehangir, Neeleshan, Neeluddin, Swarna Jehangir and Mallika, whereas soft texture of fruits was found and in Athimadhuram, Pulihora, KMH-1, A.U.Rumani. The fruit texture of Royal special, Peddarasam, Chinnarasam and cherukurasam juicy.

Significant variation was observed in terms of beak type (Table 1). Dashehari, Neelum, Kesar, Baneshan, Jehangir, Neeluddin, KMH-1, Swarna Jehangir exhibited pointed beak, Pulihora and Chinnarasam possess prominent beak type and varieties like Athimadhuram, Mulgoa, Peddarasam, Prodduturiavakai, Kalepad, Suvarnarekha, Mallika recorded mammiform beak. Beak was absent in remaining other cultivars Khader, Banglora, Himampasand, Royal special, Dilipasand, Cherukurasam, Panchadara kalasa, Neeleshan, A.U. Rumani. Perceptible beak was appeared in Yelamanda, K-O-5 and K-O-15.

Sinus type of the fruit varied from shallow sinus, deep sinus, absent. (Table 1) The fruits of Allipasand and Suvarnarekha showned deep sinus, whereas sinus was absent in cultivars like Khader, Dashehari, Himampasand, Royal special, Mulgoa, Yelamanda, K-O-5 and Swarna Jehangir, A.U. Rumani. Mango cultivars Bangalora, Athimadhuram, Neelum, Kesar, Dilipasand, Pulihora, Baneshan, Peddarasam, Panchadarakalasa, Jehangir, Cherukurasam, Chinnarasam, Prodduturiavakai, K-O-15, Neeleshan, Neeluddin, KMH-1 and Mallika are recorded shallow sinus type. Bhuyan and Kobra, (2007) recorded that fruit sinus of most of the varieties varied from shallow to absent in Khulna region.

The data presented in table 1 indicated that the fruit apex differed among the cultivars of the mango. Acute fruit apex was recorded in cultivars of Banglora, Royal special, Athimadhuram, Dilipasand, Chinnarasam, Peddarasam, Pulihora, Suvarnarekha, Allipasand, Baneshan, Panchadrakalasa, Cherukurasam, Neeleshan, Neeluddin, while, obtuse/round apex showed in Dashehari, Himampasand, Kesar and Jehangir. Khader, Neelum, Mulgoa, Yelamanda, Kalepad, K-O-5, A.U. Rumani, Mallika noted round apex and cultivars like Prodduturiavakai, K-O-15, KMH-1, Swarna Jehangir recorded obtuse apex. Fruit apex of mango is a genetically controlled character. Similar findings are reported by Anila & Radha (2003) in different cultivars of mango.

Table 1: Morphological characters of fruits of various mango varieties and hybrids

Varieties	Fruit shape	Colour of skin	Fruit stalk cavity (or) fruit base	Fibre content
T_1: Khader	Oblong	Yellow	Absent	Fibreless
T_2 : Bangalora	Oblong	Green with red blush	Absent	Fibreless
T_3 : Dashehari	Elliptic	Yellow	Absent	Fibreless
T_4 : Himampasand	Oblong	Greenish yellow	Absent	Fibreless
T_5 : Neelum	Oblong	Yellow	Absent	Fibreless
T_6 : Kesar	Oblong	Green with red blush	Absent	Fibreless
T_7 : Royal special	Round	Green with red blush	Shallow	Intermediate
T_8 : Mulgoa	Round	Yellow	Shallow	Fibreless
T_9 : Athimadhuram	Round	Greenish yellow	Shallow	Low
T_{10} : Yelamanda	Round	Greenish yellow	Shallow	Low
T_{11} : Dilipasand	Oblong	Yellow	Absent	Fibreless
T_{12} : Pulihora	Round	Green with red blush	Shallow	Fibreless
T_{13} : Cherukurasam	Elliptic	Greenish yellow	Absent	Intermediate
T_{14} : Chinnarasam	Oblong	Greenish yellow	Absent	Intermediate
T_{15} : Baneshan	Oblong	Yellow	Shallow	Fibreless
T_{16} : Peddarasam	Oblong	Greenish yellow	Shallow	High
T_{17} : Allipasand	Oblong	Green	Absent	Intermediate
T_{18} : Prodduturiavakai	Oblong	Greenish yellow	Absent	Intermediate
T_{19} : Kalepad	Oblong	Greenish yellow	Shallow	Fibreless
T_{20}: Panchadarakalasa	Round	Greenish yellow	Shallow	Intermediate
T_{21} : Suvarnarekha	Oblong	Green with red blush	Shallow	Fibreless
T_{22} : Jehangir	Round	Greenish yellow	Absent	Fibreless
T_{23} : K-O-5	Round	Yellow	Shallow	Intermediate
T_{24} : K-O-15	Oblong	Yellow	Absent	Fibreless
Hybrids				
T_{25} : Neeleshan	Elliptic	Greenish yellow	Shallow	Fibreless
T_{26} : Neeluddin	Round	Greenish yellow	Absent	Fibreless
T_{27} : KMH-1	Oblong	Greenish yellow	Absent	Intermediate
T_{28} : Swarna Jehangir	Oblong	Green with red blush	Absent	Fibreless
T_{29} : A.U.Rumani	Round	Greenish yellow	Deep	Fibreless
T_{30} : Mallika	Oblong	Yellow	Absent	Fibreless

Contd...

Varieties	Flesh texture	Beak type	Snus type	Fruit apex
T_1: Khader	Firm	Absent	Absent	Round
T_2: Bangalora	Firm	Absent	Shallow	Acute
T_3: Dashehari	Firm	Pointed	Absent	Obtuse/round
T_4: Himampasand	Firm	Absent	Absent	Obtuse/round
T_5: Neelum	Firm	Pointed	Shallow	Round
T_6: Kesar	Firm	Pointed	Shallow	Obtuse/round
T_7: Royal special	Juicy	Absent	Absent	Acute
T_8: Mulgoa	Firm	Mammiform	Absent	Round
T_9: Athimadhuram	Soft	Mammiform	Shallow	Acute
T_{10}: Yelamanda	Firm	Perceptible	Absent	Round
T_{11}: Dilipasand	Firm	Absent	Shallow	Acute
T_{12}: Pulihora	Soft	Prominent	Shallow	Acute
T_{13}: Cherukurasam	Juicy	Absent	Shallow	Acute
T_{14}: Chinnarasam	Juicy	Prominent	Shallow	Acute
T_{15}: Baneshan	Firm	Pointed	Shallow	Acute
T_{16}: Peddarasam	Juicy	Mammiform	Shallow	Acute
T_{17}: Allipasand	Firm	Absent	Deep	Acute
T_{18}: Prodduturiavakai	Firm	Mammiform	Shallow	Obtuse
T_{19}: Kalepad	Firm	Mammiform	Shallow	Round
T_{20}: Panchadarakalasa	juicy	Absent	Shallow	Acute
T_{21}: Suvarnarekha	Firm	Mammiform	Deep	Acute
T_{22}: Jehangir	Firm	Pointed	Shallow	Obtuse/round
T_{23}: K-O-5	Firm	Perceptible	Absent	Round
T_{24}: K-O-15	Firm	Perceptible	Shallow	Obtuse
Hybrids				
T_{25}: Neeleshan	Firm	Absent	Shallow	Acute
T_{26}: Neeluddin	Firm	Pointed	Shallow	Acute
T_{27}: KMH-1	Soft	Pointed	Shallow	Obtuse
T_{28}: Swarna Jehangir	Firm	Pointed	Absent	Obtuse
T_{29}: A.U.Rumani	Soft	Absent	Absent	Round
T_{30}: Mallika	Firm	Mammiform	Shallow	Round

Physical Properties of Fruits

The data presented in table 2 indicated that the physical properties of fruits of these cultivars have been evaluated in terms of weight, length, breadth, volume, pulp weight, pulp per centage, peel weight, peel per centage, stone weight, stone per centage. The maximum fruit weight (671.67 g), breadth (9.95 cm), volume (646.67 ml), pulp weight (460.30 g), peel weight (147.17 g) was recorded in cv. Jehangir, whereas lowest fruit volume (136.67 ml), pulp weight (106.22 g), peel weight (18.66 g) in cv. Dashehari. The equally higher length and stone weight of fruit was noted in cv. Jehangir (14.01 cm & 9.95 cm) followed by cv. Himampasand (13.67 cm & 9.40 cm)), while the shorter length (6.69 cm) and stone weight (21.90 cm) was observed in cv. Royal special. On the other hand the stone per centage was maximum in cv. Dilipasand (26.22 %) and minimum in cv. Yelamanda (6.47%). The highest pulp per centage was noted in cv. Royal special (79.09 %) followed by cv. Khader (78.83 %) and lowest in cv. Dilipasand (48.76 %). The per centage weight of peel was maximum in cv. Suvarnarekha

(28.82 %), whereas minimum in cv. Royal special (9.84 %). Varietal variations regards with physical properties of fruit were also observed by Abirami et al. (2004) Singh et al. (2009) and Abourayya et al. (2011).

Biochemical Properties of Fruits

The data presented in table 3 indicated that the fruit quality of different cultivars was analysed in terms of TSS, total sugars, reducing sugars, acidity, ascorbic acid, acid/sugar ratio. The maximum TSS was found in cv. Mallika (24.77^0Brix), followed by cv. A.U. Rumani (23.87^0Brix), while the minimum was noted in cv. Prodduturiavakai (12.60^0Brix). Slight variation in TSS was observed which could be attributed to seasonal variation or variation due to soil and climatic conditions. TSS of fruit is a genetic character, which might be affected by the date of harvesting in mango (Kumar, 1998).

The fruits having high total sugars (15.80 %) and reducing sugars (6.83 %) content were noted in cv. Mallika and low in cv. Prodduturiavakai (5.67 % & 1.75 %). The titrable acidity in the fruits was maximum in cv. Prodduturiavakai (1.47 %) followed by Allipasand (0.70 %) and lowest in cv. Athimadhuram (0.17 %). The level of titrable acidity in mango fruits is decreases continuously with the development of skin color and increase in sugar contents. The variations in fruit acidity were also reported by Akhtar et al. (2009), in different cultivars of mango.

Table 2: Physical characters of fruits of various mango varieties and hybrids

Varieties	Fruit weight (g)	Fruit length (cm)	Fruit breadth (cm)	Fruit volume (ml)	Stone weight (g)
T_1: Khader	391.98	10.36	7.60	381.00	41.84
T_2 : Bangalora	435.93	11.95	8.14	405.00	66.43
T_3 : Dashehari	163.95	8.53	5.97	136.67	34.41
T_4 : Himampasand	559.00	13.67	9.40	535.00	76.44
T_5 : Neelum	303.79	11.08	7.70	290.00	49.6
T_6 : Kesar	221.71	10.41	6.50	201.67	36.26
T_7 : Royal special	198.07	6.69	7.04	170.00	21.90
T_8 : Mulgoa	364.69	10.32	8.55	340.00	61.49
T_9 : Athimadhuram	305.42	8.66	7.90	291.00	42.77
T_{10} : Yelamanda	452.67	10.22	8.78	435.00	29.31
T_{11} : Dilipasand	261.41	10.92	7.14	244.00	68.44
T_{12} : Pulihora	293.85	10.10	7.20	271.67	54.45
T_{13} : Cherukurasam	314.84	10.70	7.03	296.67	40.14
T_{14} : Chinnarasam	324.46	10.30	7.21	306.67	62.78
T_{15} : Baneshan	445.00	10.90	8.63	420.00	43.53
T_{16} : Peddarasam	542.33	13.60	9.26	515.00	75.51
T_{17} : Allipasand	170.08	9.43	6.81	145.00	26.38
T_{18} : Prodduturiavakai	165.00	9.34	6.38	138.33	25.93
T_{19} : Kalepad	178.18	9.55	6.80	161.67	30.50
T_{20}: Panchadarakalasa	345.00	9.69	7.33	320.00	34.76
T_{21} : Suvarnarekha	294.67	10.22	7.14	283.33	31.60
T_{22} : Jehangir	671.67	14.01	9.95	646.67	82.85
T_{23} : K-O-5	342.69	10.52	8.23	316.67	69.84
T_{24} : K-O-15	227.68	9.64	7.33	211.67	44.60
Hybrids					
T_{25} : Neeleshan	390.85	12.70	8.41	370.00	53.64
T_{26} : Neeluddin	242.33	8.75	6.44	221.67	46.91
T_{27} : KMH-1	258.36	12.3	7.27	243.33	39.37
T_{28} : Swarna Jehangir	381.23	10.55	8.63	365.00	36.97
T_{29} : A.U.Rumani	464.67	9.71	8.84	446.67	39.46
T_{30} : Mallika	502.33	13.33	9.03	481.67	70.22
S.Em±	1.63	0.05	0.02	6.18	0.70
CD(P=0.05)	3.85	0.13	0.06	14.62	1.67

Contd...

Varieties	**Stone %**	**Pulp weight (g)**	**Pulp %**	**Peel weight (g)**	**Peel %**
T_1: Khader	10.66	310.47	78.83	39.68	10.11
T_2 : Bangalora	15.27	279.48	64.06	90.03	20.66
T_3 : Dashehari	20.99	106.22	64.84	18.66	11.38
T_4 : Himampasand	13.67	380.99	68.15	137.10	24.51
T_5 : Neelum	16.29	197.35	64.97	56.84	18.67
T_6 : Kesar	16.26	142.86	64.48	42.59	19.16
T_7 : Royal special	11.05	156.67	79.09	19.50	9.84
T_8 : Mulgoa	16.87	254.24	69.86	48.96	13.27
T_9 : Athimadhuram	13.99	192.37	63.80	70.28	23.30
T_{10} : Yelamanda	6.47	315.37	69.36	85.77	18.94
T_{11} : Dilipasand	26.22	127.69	48.76	67.14	25.70
T_{12} : Pulihora	18.50	202.49	68.90	34.90	11.86
T_{13} : Cherukurasam	12.75	242.20	76.93	32.50	10.30
T_{14} : Chinnarasam	19.34	175.03	53.92	72.84	22.44
T_{15} : Baneshan	9.76	303.07	68.80	81.53	18.32
T_{16} : Peddarasam	13.92	371.61	68.51	102.66	18.93
T_{17} : Allipasand	15.51	112.25	65.99	30.38	17.86
T_{18} : Prodduturiavakai	15.71	111.66	67.67	27.62	16.74
T_{19} : Kalepad	17.11	118.76	66.66	31.87	17.88
T_{20}: Panchadarakalasa	10.07	231.15	67.00	78.91	22.54
T_{21} : Suvarnarekha	10.72	185.00	63.35	84.17	28.82
T_{22} : Jehangir	12.33	460.30	68.53	147.17	21.91
T_{23} : K-O-5	20.37	187.36	54.50	83.66	24.50
T_{24} : K-O-15	20.12	134.16	58.80	48.92	21.54
Hybrids					
T_{25} : Neeleshan	13.73	284.39	72.66	52.82	13.60
T_{26} : Neeluddin	19.4	137.94	56.79	57.48	23.80
T_{27} : KMH-1	15.36	169.85	65.58	49.14	19.05
T_{28} : Swarna Jehangir	9.67	253.40	65.20	80.20	22.07
T_{29} : A.U.Rumani	8.54	339.19	72.77	86.03	18.68
T_{30} : Mallika	13.97	370.00	73.67	99.12	19.73
S.Em±	0.17	4.58	0.27	0.95	0.17
CD(P=0.05)	0.40	10.84	0.64	2.26	0.41

Table 3: Biochemical characters of fruits of various mango varieties and hybrids

Varieties	TSS (^{0}Brix)	Total sugars (%)	Reducing sugars (%)	Acidity (%)	Ascorbic acid (mg/100g)	Sugar / acid Ratio
T_1: Khader	18.48	14.57	5.08	0.33	50.67	43.87
T_2 : Bangalora	15.27	13.80	5.90	0.23	16.90	60.61
T_3 : Dashehari	18.90	11.17	2.66	0.26	41.23	43.79
T_4 : Himampasand	19.72	11.87	2.51	0.52	14.27	21.75
T_5 : Neelum	17.47	13.83	3.35	0.41	13.84	32.93
T_6 : Kesar	18.27	10.18	3.86	0.21	14.74	43.33
T_7 : Royal special	16.33	9.27	3.28	0.69	62.86	13.35
T_8 : Mulgoa	20.40	14.37	1.79	0.31	28.92	43.91
T_9 : Athimadhuram	21.27	15.65	2.67	0.17	28.90	89.77
T_{10} : Yelamanda	18.83	13.78	2.65	0.24	18.00	58.45
T_{11} : Dilipasand	21.23	13.72	2.32	0.48	13.83	28.33
T_{12} : Pulihora	21.60	10.17	5.37	0.39	15.83	26.27
T_{13} : Cherukurasam	17.53	13.85	3.27	0.42	17.71	32.63
T_{14} : Chinnarasam	16.40	12.30	6.30	0.22	28.48	55.91
T_{15} : Baneshan	18.57	15.52	4.15	0.47	41.20	31.96
T_{16} : Peddarasam	14.67	12.31	5.07	0.43	25.30	28.92
T_{17} : Allipasand	13.03	8.24	1.77	0.70	13.59	11.80
T_{18} : Prodduturiavakai	12.60	5.67	1.75	1.47	27.52	3.86
T_{19} : Kalepad	23.63	12.43	2.48	0.49	42.08	25.53
T_{20}: Panchadarakalasa	18.63	11.21	3.40	0.45	36.38	19.16
T_{21} : Suvarnarekha	15.40	15.00	5.23	0.43	54.24	33.90
T_{22} : Jehangir	16.13	12.83	2.27	0.29	15.43	44.78
T_{23} : K-O-5	20.23	12.23	2.22	0.44	18.20	28.06
T_{24} : K-O-15	21.01	10.23	3.84	0.20	17.27	50.41
Hybrids						
T_{25} : Neeleshan	18.70	12.79	2.19	0.27	14.70	49.01
T_{26} : Neeluddin	22.40	12.77	4.52	0.25	12.29	47.64
T_{27} : KMH-1	23.77	15.60	2.67	0.30	21.37	51.77
T_{28} : Swarna Jehangir	17.07	9.73	2.29	0.55	15.70	18.87
T_{29} : A.U.Rumani	23.87	15.77	6.70	0.34	18.14	47.94
T_{30} : Mallika	24.77	15.80	6.83	0.32	18.55	49.74
S.Em±	0.08	0.08	0.13	0.003	0.26	0.45
CD(P=0.05)	0.19	0.21	0.32	0.007	0.61	1.07

On the other hand maximum ascorbic content was registered in cv. Royal special (62.86 mg/100g), whereas minimum in cv. Allipasand (13.59mg/100g). Variation in ascorbic acid content of mango was recorded due to varietal character and with the increase of sugars, TSS and vitamin C contents generally decline on ripening. (Sanjay, 2003), Othman and Mbogo (Othman & Mbogo, 2009) also find variation in ascorbic content among different varieties of mango. The lowest sugar/acid ratio was noticed in the mango cv. Prodduturiavakai (3.86) followed by cv. Allipasand (11.80), whereas more sugar/acid ratio was noticed in cv. Athimadhuram (89.77).

CONCLUSION

From the present investigation, the overall perusal of the data revealed that the mango cv. Jehangir found promising for fruit physical characters and as per bio-chemical characters, cultivars like Mallika, A.U. Rumani, Royal special, Prodduturiavakai and Athimadhuram were found to be superior than all other varieties / hybrids. Multilocational trials may be carried out with the promising mango cultivars in and around regions of Rayalaseema and can be further evaluated for improvement of yield and quality of fruit of promising one with good crop production practices and it helps a lot for the export of fruit to the long distant markets and foreign, simultaneously it fetches good returns to the farmer.

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