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Physico-Chemical characteristics of different varieties of mango in kymore Plateau of Madhya Pradesh

Rajesh Singh*, S. Solanki, P. S. Gurjar and Rakesh Patidar
Department of Horticulture, J.N.K.V.V., Jabalpur, College of Agriculture, Rewa 486 001

ABSTRACT

The ripe fruits of 20 selected varieties of mango were analyzed for their physico-chemical characters under kymore plateau of Madhya Pradesh. Significant variation in fruit characters i.e. size, weight, volume, specific gravity, peel, pulp, stone, stone/peel ratio, TSS, acidity, reducing sugar, non reducing sugar and total sugar content were recorded among various varieties. In general, Totapari Red, Dilshad and Safeda were found superior in physico-chemical characters of fruits compared to other varieties.

Key words: Physico-chemical characters,mango variety.

INTRODUCTION

The mango (*mangifera indica* L.) is the member of the family Anacardiaceae and it is one of the most important commercial fruits of India. The fruit are put to multifarious uses right from the first stage of development to maturity and ripening stage. Ripe fruits are used for desert, juice and all kinds of preserves like mango canned, slices in syrup, mango pulp, mango jam, mango leather, mango *toffees*, while pickles, chutney, mango powder etc. are prepared from unripe fruits. Mango is a national fruit of India which is most popular. Row fruits are used for the mango kernel also contains 8-10 percent good quality fat which can be used in soap industries. It is an excellent souce of vitamin 'A' and 'C', mango is also considered to have some medicinal properties. Therefore, studies were undertaken to find out variation in physio-chemical characters of fruits of 20 varieties under kymore plateau of Madhya Pradesh.

MATERIALS AND METHODS

The study was carried out at Fruit Research Station, Kuthulia by College of Agriculture, Rewa (M.P.) during the year 2007-08. On uniform root stocks raised from the stones of a single seedling. The varieties were Ashbania, Dilshad, Fazri, Jagatswami, Karela, Kakariya, Kalepad, Kesar, Khirama, Krishanbhog, Langra, Maddukuppi, Mohamood bahar, Neelam, Prabhashankar, Safeda, Sunderja, Sukul, Taimuria and Totalpari Red. Thus, there were 20 varieties (treatments) which were replicated thrice in a randomized block design with one tree per treatment per replication. The trees were maintained under uniform cultural practices. The data on physio-chemical characters were recorded in the during year 2007-08 of values has been presented.

*Correspondence author's E-mail: rajeshsinghkvk@yahoo.com

Five fruits were randomly selected from the lot of harvested fruits for recording the data. The fruits were stored 10 days for ripening before data were recorded. The fruit shape was recorded visually, whereas fruit size was recorded by measuring length and diameter of fruits. The fruits were weighed and volume of fruits were determined by water displacement method. Specific gravity of fruits was calculated by dividing weight of fruits with its volume. Peel percent was calculated by dividing weight of peel with its weight of fruit into hundred pulp percentage was calculated by dividing weight of pulp with its weight of fruit into hundred stone percentage was calculated dividing weight of stone with its weight of fruit into hundred. The T.S.S. of pulp was determine with the help of and refrectometer. The total acidity of fruit pulp was estimated as per standard method (A.O.A.C. 1). Total acidity percent was calculated by dividing tritated value into normality of alkali into volume made up into equivalent weight of an acid with its weight of sample taken into hundred x 100. However the quality parameters such as, reducing sugar, non-reducing sugar and total sugar percentage were analysed by using standard methods suggested by AOAC (1). The present data where angularly transformed before statistical analysis.

RESULTS AND DISCUSSION

The data on fruit size in terms of length and diameter of fruits differed significantly among varieties (Table 1). Maximum fruit length was observed in 'Dilshad' and 'Kakaria', while maximum diameter was observed in 'Safeda', followed by 'Prabhashankar' and 'Fazri'. The minimum fruit length was recorded in 'Madhukuppi' and fruit diameter in 'Taimuria', followed by 'Kelapad' and 'Neelam'. The variation in length and diameter of fruits in mango varieties was also observed by Sharma *et al.* (6).

Table 1. Physical character of fruits of mango variety.

S.No.	Varieties	Fruit size (cm)		Fruit weight (g)	Fruit volume (ml)	Specific gravity
		Length	Diameter			
1.	Ashbania	10.6	7.62	263.33	241.67	1.09
2.	Dilshad	11.9	6.57	256.67	236.67	1.08
3.	Fazri	11.0	7.67	323.33	308.33	1.05
4.	Jagatswami	9.7	6.40	253.33	236.67	1.07
5.	Karela	9.8	6.90	283.33	256.67	1.10
6.	Kakaria	11.9	6.30	213.33	188.33	1.13
7.	Kolepad	7.6	5.43	123.33	100.67	1.15
8.	Kesar	9.9	6.47	238.33	221.67	1.07
9.	Khirama	10.5	6.30	230.00	206.67	1.11
10.	Krishanbhog	8.5	7.50	253.33	240.00	1.08
11.	Langra	9.7	6.37	216.67	191.67	1.13
12.	Madhukuppi	7.3	5.57	150.00	136.67	1.09
13.	Mahamoodbahar	9.1	6.47	221.67	191.67	1.16
14.	Neelam	7.8	5.67	133.33	108.33	1.22
15.	Prabhashankar	11.1	6.50	206.67	176.67	1.16
16.	Safeda	9.6	7.77	231.67	111.67	1.18
17.	Sunderja	9.7	7.17	280.00	268.33	1.08
18.	Sukul	9.6	6.23	213.33	190.00	1.12
19.	Taimuria	9.7	5.40	163.33	133.33	1.24
20.	Totapari Red	11.0	6.40	213.33	180.00	1.18
	CD (5%)	1.022	0.800	52.42	48.87	0.075

The fruit weight and volume differed significantly among varieties (Table 1). The maximum fruit weight and volume were recorded in 'Fazri' followed by 'Karela' and the minimum fruit weight and volume were recorded in 'Kalepad'. The maximum specific gravity was recorded in 'Taimuria' and minimum was found in 'Fazri' followed by 'Neelam' and 'Jagatswami'. Similarly, variation in fruit weight and volume was also recorded among various cultivars (Sharma *et al*., 5).

The physical composition of fruits differed significantly among varieties (Table 2). The peel content was maximum in 'Prabhashankar' followed by 'Jagatswami', 'Karela', 'Kolepad', 'Kakaria' and 'Kesar'. The minimum peel content was in 'Madhukuppi', followed by 'Sukul' and 'Ashbania'. The pulp content was maximum in 'Ashbania', followed by 'Langra' and 'Madhukuppi'. The minimum pulp content was found in 'Totapari Red', followed by 'Safeda' and 'Kakaria'. The maximum stone percent was found in 'Totapari Red' followed by 'Safeda'. The minimum stone percent was recorded in 'Ashbania' followed by 'Dilshad' and 'Langra'. The stone/peel ratio content was found maximum in 'Taimuria', followed by 'Totapari Red', and 'Kesar'. The minimum stone/peel ratio content was found in 'Karela', followed by 'Dilshad', Prabhashankar' and 'Sunderja'. Similarly, Variation in peel pulp, stone and stone/peel ratio content were reported Shyamal and Mishra (7), Bhuyun *et al*. (2), Rajput and Pandey (3), Sharma *et al.* (5) conforming these results.The data indicate that TSS and acidity differed significantly among varieties, while reducing sugar, non reducing sugar and total sugar differed significantly among varieties (Table 2). The TSS was maximum in fruit pulp of 'Krishanbhog' followed by 'Dilshad', 'Sunderja' and 'Taimuria'. The minimum TSS was found in 'Totapari Red' followed by 'Fazri' and 'Jagatswami'. The maximum acidity was recorded in 'Mahamood bahar' followed by 'Sukul'. The minimum acidity found in 'Kakaria' followed by 'Madhukuppi', 'Khirama' and 'Krishanbhog'. The maximum reducing sugar was found in 'Langra' followed by 'Sukul' and 'Neelam'. The minimum reducing sugar was in 'Totapari Red' followed by 'Jagatswami'. The maximum non reducing sugar was recorded in 'Dilshad' followed by 'Krishanbhog', 'Taimuria' and 'Karela'. The minimum non reducing sugar found in 'Sukul' followed by 'Fazri', 'Kalepad', 'Khirama', 'Neelam' and 'Totapari Red'. The maximum total sugar was recorded in 'Dilshad', followed by 'Karela', 'Krishanbhog', 'Langra', 'Safeda', 'Sunderja' and 'Taimuria'. The minimum total sugar was found in 'Sukul' followed by 'Fazri', 'Kalepad', 'Khirama' and

Table 2. Physio-chemical composition of fruits of mango varieties.

S.No.	Varieties	Physical composition of fruits					Chemical composition of pulp			
		Pee (%)	Pulp (%)	Stone (%)	Stone/ peel ratio (%)	Acidity (%)	TSS (°Brix)	Reducing sugar (%)	Non-reducing sugar (%)	Total sugar (%)
1.	Ashbania	13.07	75.20	12.13	0.930	0.31	18.35	5.84	10.44	16.28
2.	Dilshad	15.13	72.54	12.45	0.822	0.31	22.22	5.32	12.67	17.99
3.	Fazri	14.53	72.36	13.15	0.905	0.35	17.42	5.19	9.63	14.82
4.	Jagatswami	16.48	68.16	15.49	0.940	0.28	17.18	5.03	10.58	15.61
5.	Karela	16.06	71.25	13.05	0.812	0.36	21.23	5.66	12.00	17.72
6.	Kakaria	16.03	65.93	18.06	1.126	0.24	21.50	5.25	11.63	16.88
7.	Kolepad	16.14	66.19	18.19	1.127	0.35	18.19	5.25	9.74	14.99
8.	Kesar	16.39	66.41	17.62	1.308	0.34	20.39	5.65	10.36	16.00
9.	Khirama	14.26	70.51	15.31	1.073	0.27	20.68	5.49	9.04	14.53
10.	Krishanbhog	13.59	71.52	14.98	1.102	0.27	23.38	5.60	12.25	17.85
11.	Langra	13.23	74.48	12.90	0.973	0.31	19.67	6.63	10.79	17.42
12.	Madhukuppi	12.23	74.39	13.56	1.109	0.25	20.28	5.59	10.91	16.51
13.	Mahamoodbahar	15.36	68.81	16.14	1.037	0.46	21.41	5.47	10.69	16.06
14.	Neelam	16.50	67.61	16.28	0.986	0.36	19.14	6.04	9.76	15.80
15.	Prabhashankar	17.52	67.49	15.08	0.860	0.35	19.30	5.20	10.65	15.85
16.	Safeda	15.41	64.64	20.30	1.289	0.31	20.40	5.81	11.63	17.44
17.	Sunderja	14.64	72.78	13.04	0.890	0.28	22.23	5.63	11.74	17.37
18.	Sukul	12.71	73.18	14.54	1.143	0.42	18.41	6.31	7.58	13.89
19.	Taimuria	15.85	66.43	20.15	1.456	0.36	22.08	5.57	12.22	17.80
20.	Totapari red	14.87	63.58	21.41	1.455	0.37	16.80	5.06	9.65	14.71
	CD (5%)	0.127	0.215	0.217	0.149	0.045	0.48	0.262	0.11	0.328

'Totapari Red'. Similar variation in TSS, acidity, reducing sugar, non reducing sugar and total sugar content in pulp was also recorded by Shyamlal and Mishra (7), Sharma *et al*. (6) and Roy Chowdhary *et al.* (4).

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