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Short Communication

FRUIT CHARACTERISTICS OF SOME UNCOMMON MANGO VARIETIES GROWN UNDER JOYDEBPUR CONDITION

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Key Words: Fruit characteristics, uncommon mango.

Mango (*Mangifera indica* L.) is grown all over Bangladesh, but good varieties, both common and uncommon, are concentrated in the north-western region of the country. In other areas, there are no recommended standard varieties, resulting in the production of mostly inferior mangoes. Propagation through seeds has given rise to numerous genotypes that provide great diversities in different characters. Elizabeth (1939) reported that physico-chemical composition of mango varieties vary with the variation in environment. Physicio-chemical characteristics are the important qualitative indexes of any fruit for fresh consumption. Total soluble solids determine the quality of juice and other canned products. Information on the physico-chemical characteristics of some common and important mango varieties grown in Bangladesh have been reported by Samad and Faruque (1976), Bhuyan and Islam (1986), Ghose and Hossain (1988), Islam *et al.* (1990), and Islam *et al.* (1992). But, a large number of potentially good varieties have not yet been investigated. This work was, therefore, undertaken to collect information on the quantitative and qualitative characteristics of some uncommon mango varieties planted in the germplasm plot of the Fruit Farm of the Horticulture Research Centre, BARI, Gazipur. These varieties were collected form different parts of undivided India during the pre-partition days.

The study was conducted during the 2005 fruiting season. Twenty two varieties of mango, namely, Begumphuli, Kania, Kalachini, Lalbhog, Dilsad, Khude Khirsapat, Kanchan Koshal, Fazli Kalan, Brindaboni, Alfa, Jeelapirkera, Begum Passand, Kohinoor, Kohitoor, Kalua, Nakua Gootee, Jaffar Passand, Adri, Bhabani, Salman Passand, Maldah and Baromashi were included in this study. Ten ripe fruits of each variety were harvested randomly from different heights and positions of each tree for recording data on the quantitative and qualitative characteristics of fruits as per 'Descriptors for Mango' published by the IBPGR in 1989 with the help of digital balance, vision refractometer and using organoleptic tests.

The quantitative and qualitative characteristics of the mango varieties are presented in Table 1 and Table 2, respectively. The fruits of all varieties became

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harvestable between 20 May to 30 June. Begumphuli was the earliest and Maldah was the latest in respect of harvesting time. Wide range of variability was observed among the varieties under study in respect of different physico-chemical characteristics of fruits. Fruit weight of the different varieties varied from 85 to 407g (Table 1). The highest fruit weight was recorded in Maldah (407g) followed by Kalua (333g), Jaffar Passand (266g), Begum Passand (230g), Bhabani (221g), Salman Passand (185g), Nakua Gootee (180g), and Kanchan Koshal (180g). The lowest fruit weight was obtained from Lalbhog. The length, breadth, and thickness of fruits varied from 6.00 to 12.50cm, 4.59 to 7.90cm and 4.20 to 7.12cm, respectively. The longest, widest, and thickest fruit was produced by Maldah, while Kalachini had the shortest fruit. The lowest breadth and thickness was recorded in Dilsad. The highest percentage of edible portion (76%) was obtained from Jaffar Passand, closely followed by Nakua Gootee (70%), Salman Passand (70%), Kalua (70%), and Brindaboni (69%). The lowest percentage of edible portion (45%) was recorded in Lalbhog. Among the varieties studied, Nakua Goote had the highest total soluble solid content (26%) which was closely followed by Salman Passand (24%), Jeelapir Kera (24%), Dilasd (23.5%), Brindaboni (22.5%), Bhabani (21%), Kohinoor and Kohitoor (20%). The variety Kalua had the lowest total soluble solid content (14%). Bhuyan and Islam (1986) recorded the fruit weight, percentage of edible portion and total soluble solid content of Khude Khirsapat as 205.22g, 77.56% and 19.50%, respectively, under the climatic conditions of Chapi Nawabgonj. Islam *et al.* (1990) reported the fruit weight, percentage of edible portion and total soluble solid content of Brindaboni as 165g, 70%, and 19%, respectively, while Baromashi had the fruit weight, percentage of edible portion and total soluble solid content of 170g, 62%, and 17.5%, respectively. The results of this study tally partially with the above authors. This may be due to differences in the environmental and management conditions. Even genetic differences between trees with the same name are possible.

The skin colours of unripe fruits of the varieties were green, light green, greenish, greenish yellow, and light yellow, while the skin colours of ripe fruits were green, light green, greenish yellow, yellowish, yellowish green, light yellow, and yellow. Kamal Uddin (1967) described the colour of ripe fruits of Brindaboni and Baromashi as mostly yellow and slightly yellow. But, Islam *et al.* (1990) recorded the skin colour of Brindaboni and Baromashi as yellowish and bright yellow at ripe stage, respectively. Islam *et al.* (1992) observed the colour of ripe fruit and pulp in Khude Khirsapat as yellow. Fruit shapes of the varieties were oblong, ovate-oblong and roundish, while fruit skin were thin, medium thick and thick. Islam *et al.* (1990) described the fruit shape of

Table 1. Quantitative characteristics of fruits of some uncommon mango varieties.

Name of variety	Date of harvest	Fruit wt (g)	Fruit size (cm)			Edible portion (%)	TSS (%)
			Length	Breadth	Thickness		
Begumphuli	20 May	139.00	7.32	5.93	5.04	60.00	15.50
Kania	22 May	132.00	6.91	6.02	5.00	55.00	17.50
Kalachini	02 June	92.00	6.00	4.86	4.58	54.00	17.00
Lalbhog	28 May	85.00	6.65	5.25	4.60	45.00	15.00
Dilsad	30 May	94.00	6.69	4.59	4.20	66.00	23.50
Khude Khirsapat	30 May	120.00	6.85	5.45	5.00	67.00	21.00
Kanchan Koshal	01 June	180.00	7.78	6.83	5.96	65.00	17.50
Fazli Kalan	04 June	159.00	7.65	5.93	5.53	67.00	19.50
Brindaboni	04 June	168.00	8.16	6.12	5.59	69.00	22.50
Alfa	08 June	166.00	7.40	6.25	5.55	67.50	16.50
Jeelapir Kera	13 June	140.00	7.60	6.70	6.10	56.00	24.00
Begum Passand	13 June	230.00	8.58	6.98	6.64	65.00	18.00
Kohinoor	13 June	175.00	9.26	6.34	5.50	65.00	20.00
Kohitoor	15 June	145.00	7.90	5.25	4.95	61.00	20.00
Kalua	13 June	333.00	12.23	7.00	6.30	69.00	14.00
Nakua Gootee	15 June	180.00	8.25	6.00	5.43	70.00	26.00
Jaffar Passand	15 June	266.00	9.00	6.70	6.60	76.00	20.00
Adri	15 June	110.00	6.10	5.20	5.10	55.00	14.00
Bhabani	20 June	221.00	9.88	6.33	5.97	68.00	21.00
Salman Passand	30 May	185.00	7.50	6.50	5.80	70.00	24.00
Maldah	30 June	407.00	12.50	7.90	7.12	65.00	15.50
Baromashi	08 June	120.00	7.10	5.24	4.86	55.00	14.50
Range	20 May-30 June	85.00-407.00	6.00-12.50	4.59-7.90	4.20-7.12	45.00-76.00	14.00-26.00
Mean	-	174.864	8.060	6.062	5.519	63.182	18.932
Variance	-	6182.885	2.881	0.650	0.552	52.156	12.817
SD	-	78.631	1.697	0.806	0.743	7.222	3.580
SE	-	16.764	0.362	0.172	0.158	1.540	0.763
CV (%)	-	44.97	21.06	13.30	13.46	11.43	18.91

Table 2. Qualitative characteristics of fruits of some uncommon mango varieties.

Name of variety	Skin colour at harvest	Skin colour at ripen	Fruit shape	Skin thickness	Skin texture	Stalk insertion	Adherence of skin to pulp	Fruit attractiveness	Basal cavity
Begumphuli	Greenish yellow	Yellowish Green	Roundish	Thin	Smooth	Oblique	Absent	Intermediate	Absent
Kania	Greenish	Greenish yellow	Roundish	Medium thick	Smooth	Oblique	Absent	Intermediate	Absent
Kalachini	Greenish	Yellowish	Roundish	Medium thick	Smooth	Oblique	Absent	Poor	Absent
Lalbhog	Green	Light yellow	Oblong	Thin	Smooth	Vertical	Absent	Poor	Present
Dilsad	Green	Greenish	Oblong	Medium thick	Smooth	Oblique	Absent	Poor	Absent
Khude Khirsapat	Green	Greenish yellow	Ovate-oblong	Medium thick	Smooth	Oblique	Absent	Intermediate	Present
Kanchan Koshal	Green	Greenish	Roundish	Thin	Smooth	Oblique	Absent	Good	Present
Fazli Kalan	Green	Greenish yellow	Oblong	Thin	Rough	Oblique	Absent	Intermediate	Absent
Brindaboni	Green	Green	Oblong	Medium thick	Smooth	Oblique	Absent	Good	Present
Alfa	Light green	Yellowish green	Ovate-oblong	Thin	Smooth	Vertical	Absent	Good	Present
Jeelapir Kera	Greenish	Yellowish green	Roundish	Medium thick	Smooth	Oblique	Absent	Intermediate	Present
Begum Passand	Light green	Light yellow	Roundish	Medium thick	Smooth	Vertical	Present	Good	Absent
Kohinoor	Green	Light green	Oblong	Medium thick	Smooth	Vertical	Absent	Good	Absent
Kohitoor	Green	Green	Oblong	Thin	Smooth	Oblique	Absent	Intermediate	Absent
Kalua	Green	Light green	Oblong	Thin	Smooth		Absent	Good	Absent
Nakua Gootee	Light green	Yellowish green	Oblong	Thin	Smooth	Vertical	Absent	Good	Absent
Jaffar Passand	Green	Green yellow	Oblong	Thin	Smooth	Vertical	Absent	Good	Absent
Adri	Green	Light green	Roundish	Thin	Smooth	Oblique	Present	Poor	Present
Bhabani	Light green	Greenish yellow	Oblong	Thin	Smooth	Oblique	Absent	Good	Absent
Salman Passand	Light green	Yellow	Roundish	Thin	Smooth	Oblique	Absent	Good	Present
Maldah	Light green	Light green	Oblong	Very thick	Smooth	Oblique	Absent	Excellent	Present
Baromashi	Greenish yellow	Yellowish green	Oblong	Thick	Smooth	Oblique	Absent	Intermediate	Absent

Table 2. Cont'd.

Name of variety	Beak	Beak type	Sinus	Sinus stype	Slope of shoulder	Apex	Pulp texture	Pulp colour	Fibrosusness	Eating quality
Begumphuli	Present	Point	Absent	Absent	Rising & then rounded	Rounded	Soft	Yellow	Scarce	Intermediate
Kania	Absent	Absent	Absent	Absent	Rising & then rounded	Rounded	Soft	Deep yellow	Absent	Good
Kalachini	Absent	Absent	Absent	Absent	Ending in a long curve	Obtuse	Soft	Yellow	Absent	Intermediate
Lalbhog	Absent	Absent	Present	Shallow	Rising & then rounded	Rounded	Juicy	Yellow	Scarce	Intermediate
Dilsad	Present	Point	Present	Shallow	Rising & then rounded	Rounded	Juicy	Yellow	Absent	Good
Khude Khirsapat	Absent	Absent	Present	Shallow	Rising & then rounded	Rounded	Juicy	Yellow	Absent	Good
Kanchan Koshal	Absent	Absent	Absent	Absent	Ending in a long curve	Rounded	Juicy	Yellow	Much	Good
Fazli Kalan	Absent	Absent	Present	Shallow	Rising & then rounded	Obtuse	Juicy	Yellow	Absent	Good
Brindaboni	Absent	Absent	Present	Shallow	Ending in a long curve	Obtuse	Juicy	Yellow	Absent	Good
Alfa	Present	Point	Present	Shallow	Rising & then rounded	Rounded	Juicy	Yellow	Much	Good

Table 2. Cont'd.

Name of variety	Beak	Beak type	Sinus	Sinus stype	Slope of shoulder	Apex	Pulp texture	Pulp colour	Fibrosusness	Eating quality
Jeelapir Kera	Absent	Absent	Absent	Absent	Ending in a long curve	Obtuse	Juicy	Deep yellow	Absent	Excellent
Begum Passand	Absent	Absent	Present	Shallow	Rising & then rounded	Rounded	Juicy	Yellow	Scarce	Good
Kohinoor	Absent	Absent	Present	Shallow	Ending in a long curve	Obtuse	Juicy	Yellow	Scarce	Good
Kohitoor	Present	Point	Present	Shallow	Ending in a long curve	Obtuse	Juicy	Yellow	Much	Good
Kalua	Absent	Absent	Present	Shallow	Ending in a long curve	Obtuse	Juicy	Yellow	Much	Intermediate
Nakua Gootee	Present	Point	Present	Deep	Ending in a long curve	Obtuse	Juicy	Yellow	Scarce	Excellent
Jaffar Passand	Absent	Absent	Absent	Absent	Ending in a long curve	Obtuse	Juicy	Yellow	Absent	Excellent
Adri	Absent	Absent	Present	Shallow	Ending in a long curve	Obtuse	Juicy	Yellow	Much	Poor
Bhabani	Present	Point	Present	Shallow	Ending in a long curve	Obtuse	Soft	Yellow	Scarce	Good
Salman Passand	Absent	Absent	Absent	Absent	Rising & then rounded	Rounded	Soft	Yellow	Absent	Good

Brindaboni and Baromashi as oblong and long. Islam *et al.* (1992) observed the fruit shape of Khude Khirsapat as ovate-oblong. Skin texture and stalk insertion of the varieties varied from smooth to rough and vertical to oblique, respectively. The adhesion of skin to pulp was present in Begum Passand and Adri, while the others were non-adhering. Fruit attractiveness of the varieties was poor, intermediate, good, and excellent. The fruit attractiveness of Maldah was excellent. The basal cavity of fruit was present in Lalbhog, Khude-Khirsapat, Brindaboni, Alfa Jeelapir Kera, Adri, and Salman Passand and the others had no basal cavity.

The beak of the fruit was pointed in Begumphuli, Dilsad, Kohitoor, Nakua Gootee, and Bhabani and absent in other varieties. Fruit sinus of most of the varieties was shallow except in Nakua Gootee in which it was deep, while it was absent in Begumphuli, Kania, Kalachini, Kanchan Koshal, Jeelapir Kera, Jaffar Passand, and Salman Passand. The slope of shoulder of the fruits in these varieties ends in a long curve, rises and then is rounded, while the fruit apex is rounded to obtuse. Pulp texture of the varieties vary from soft to juicy, while pulp colours are yellow to deep yellow. The fruits of the varieties Jeelapir Kera, Nakua Gootee, and Jaffar Passand are excellent in taste but the others are good to intermediate. The fruits of the variety Adri are poor in taste. Several authors have described the fruit qualitative characteristics of some popular varieties of mango. Some of the varieties under the present study have more or less similar qualitative characters as those of the famous standard varieties.

The findings of the present study will help in selecting mango varieties for fresh consumption, processing, and variety development programmes. Considering the overall quantitative and qualitative characteristics of the fruits of all the studied varieties, Jaffar Passand, Nakua Gootee, Jeelapir Kera, Bhobani, Salman Passand, and Brindaboni were found to be superior to other varieties in respect of fruit weight, edible portion, TSS, taste, skin colour, fruit attractiveness, and fibrousness. These varieties deserve a place in any mango varietal trial for selecting superior varieties for different agro-climatic region of the country.

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