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PHYSICO-CHEMICAL CHARACTERS OF FRUITS OF DIFFERENT CITRUS SPECIES

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Abstract

Characteristics of 8 citrus varieties under 4 commercially important groups representing 4 species were studied. Pummelo fruits were largest having thick rind while the lime fruits were smallest with very thin rind. Maximum juice and highest brix were also found in pummelo. Maximum acid was obtained in lime and lemon varieties (5.3 to 6.2%) while in pummelo and satsuma mandarin the acid content varied from 0.9 to 1.1%.

Key words : Citrus, Physico-chemical characters, Fruits

The genus *Citrus* comprises 159 species (Swingle, 1967). Among these *Citrus grandis* (pummelo), *Citrus limon* (lemon) and *Citrus aurantifolia* (lime) are the major citrus fruits grown throughout Bangladesh. *Citrus reticulata* (mandarin orange) is also grown to some selected areas of north-east and south-eastern part of it. Citrus fruits are very good source of vitamin C. But there is recommended variety of mandarin orange and pummelo for the growers. Further, there is very little information regarding the characteristics of fruits of citrus grown in Bangladesh. Therefore, this study was undertaken at BARI, Joydebpur in 1984 to record the physico-chemical characters of fruits of different citrus species that were grown after collecting from home and abroad.

Miho Wase & Okitsu Wase (mandarin group); Anseikan & Tosa Buntan (pummelo group); Kagzi & Kagza (lime group); and Lisbon & Seedless lemon (lemon group) were the varieties included in this study. Three 6 years old plants were selected from each of the aforesaid varieties for this experiment. Five randomly selected fruits from each plant were taken and analysed in the laboratory. Data on fruit size, shape, rind thickness, juice content, brix reading (%) and total acid (%) were recorded. Brix reading was taken by a hand refractometer.

The average data on fruit characters were presented in Table 1. The fruits of satsuma mandarin were oblate and those of Tosa buntan, Anseikan and Kagzi lime were ovate. The fruits of Lisbon, Kagza and Seedless lemon were elliptical, oval and oblong, respectively. Satsuma mandarin and Lisbon had medium smooth skinned fruits while Pummelo, Lime and Seedless lemon had smooth skinned fruits. As regards flesh colour, Satsuma mandarin fruit was orange coloured while Tosa buntan and Anseikan were white and pink, respectively.

Table 1. Fruit characteristics of satsuma mandarin, pummelo, lime and lemon varieties.

Variety	Fruit weight (g)	Size (cm)		Rind thickness (cm)	No. of segment	No. of seed	Weight of 100 seeds (g)	Juice (%)	Brix reading (%)	Total acid (%)
		Height	Width							
Satsuma mandarin										
Miho Wase	194.3	8.0	7.3	0.44	9.2	0	0	43.4	8.9	0.9
Okitsu Wase	169.8	7.6	7.1	0.41	10.5	0	0	42.4	8.4	1.0
Pummelo										
Tosa buntan	255.8	9.5	8.5	0.99	13.0	10.3	13	45.5	9.2	1.1
Anseikan	571.4	10.8	11.2	1.57	13.7	26.7	21	49.3	9.4	1.0
Lime										
Kagzi	44.2	4.7	4.1	0.18	11.3	28.3	8	24.0	7.7	5.3
Kagza	52.1	6.6	3.9	0.26	9.3	17.3	8	44.2	7.5	5.8
Lemon										
Lisbon	102.2	6.8	3.6	0.48	11.0	41.0	9	32.9	7.7	6.0
Seedless	73.4	7.1	4.3	0.34	10.0	0	0	36.8	6.7	6.2

The flesh of lime varieties were greenish and those of lemon varieties were light yellowish in colour. The results confirm the findigns of Hodgson (1967).

Anseikan produced the largest fruit (571.4 g) having thickest rind (1.57 cm) while Kagzi produced the smallest fruit (44.2 g) with thin rind (0.18 cm). The number of segment among the varieties varied from 9.2 to 13.7.

The maximum number of seeds was observed in Lisbon lemon (41.0) followed by Kagzi (28.3), Anseikan (26.7), Kagza (17.3) and Tosa buntan (10.3). There were no seed in Satsuma mandarin varieties and Seedless lemon. The per cent juice varied from 49.3 to 24.0 among the varieties.

In case of lime, Kagza was found to be more juicy (44.2%) than that of Kagzi (24.0%). Maximum brix reading was obtained in Anseikan (9.4%) which was followed by Tosa buntan (9.2), Miho Wase (8.9) and Okitsu Wase (8.4). The brix reading in lime and lemon varieties ranged between 6.7 to 7.7%. The brix reading of Satsuma mandarin were much lower than that was reported by Hodgson (1967). This may be due to environmental factors. As regard acidity reverse trend was obtained. Maximum acid was obtained in lime & lemon varieties (5.3 to 6.2%) while in pummelo and Statsuma mandarin varieties it varied from 0.9 to 1.1%. This result support the findings of Hodgson (1967) and Ahmed *et al.* (1964).

It may be concluded from the results that the quality of pummelo fruits is within the acceptable range in case of sweet pulp citrus. In case of lime and lemon, the variety Kagza found spuperior to others.

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