

GERMPLASM NUTRITION AND CHARACTERIZATION OF TEN MANGO VARIETIES FROM MURSHIDABAD DISTRICT, WEST BENGAL

Ankush Pal

Department of Botany, Berhampore Girls' College, Berhampore, Murshidabad, 742101

Abstract

Mango is one of the popular fruits all over the world for its rich aromatic flavour and delicious taste, where sweetness and acridness are amalgamated. Mango provides the human diet with major and minor nutrients along with various types of bioactive compounds, which have beneficiary effects on health and reduce the risk of several diseases. Germplasm conservation is one of the most promising methods to conserve the genetic properties of commercially important species. Germplasm is very essential for plant breeding technology as well as for conservation strategy. Murshidabad is famous for its traditional mango varieties from the time of Nawab and Jamindars.

Keywords: Mango, Nutrition, Germplasm, Pulp evaluation, Murshidabad.

Introduction

Mango is one of the most admired fruits all over the world. This plant is native to the Indian sub continent and has been introduced to other warmer regions of the world. It is widely cultivated in the tropics and common all over the Bengal. Cultivation of mango has been started in India over 4000-5000 years ago approximately. India is a vast country and their climate is also variable. About one thousand five hundred varieties of mango have been found in different climatic zone of India. The intraspecific diversity of mango is very wealthy. Mango is the dominant fruit of Bengal. Mango conservation is very important for biological diversity. Economically mango is very supreme plant species. Murshidabad is famous for mango orchards and protected garden houses. Due to urbanization, mango germplasm is under pressure. Mango germplasm is effortless and needs extended space for conservation. Conservation and documentation of mango germplasm run parallel for future production.

Materials and Method

10 (Ten) mango varieties were selected for this study, of which two were rare, four moderate, and four available in the market. For the chemical analysis of the fruit pulp, the fruits were macerated and the fruit pulp was used for observation. The surface of the pulp, fleshiness, and amount of pulp was noted. The pH of the pulp was distinguished by a pH meter. From the fixed amount of pulp (10 gm pulp dissolved in 25 ml of distilled water) the dissolved sugar is filtered using filter paper. The concentration was determined by using a colorimeter (anthron-based method) and the percentage was calculated against the total amount of dissolved material present in the juice. For this, the juice of 10 gm pulp (dissolved in 25 ml distilled water and filtered through a net) was dried in the oven and weighed. These qualities were chosen because of their commercial importance (Singh, 2012).

Germplasm characterization

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Mango belongs to the family Anacardiaceae which is characterised by the spreading branches and dense heads of dark green leaves. India is the dominant transporter of mango to the other world. The mango is a naturally cultivated tropical plant. Mango is a large evergreen tree and the bark is very irregular in appearance. With the help of morphological data genetic diversity could be measured. Environment plays a great role in germplasm characterization. Heterogeneous diversity helps the plant breeders for the restoration of genetic characters and also for future germplasm. Documentation and characterization of mango is very helpful for the segregation of genetic variability and also for the identification of different varieties. Physiochemical characters specify the quality and maturation time of the fruit. Presence of different bioactive and chemical characteristics such as shape, size, weight, volume, and taste. For the improvement of the crop, the establishment of a mango gene pool is very essential in our country.

Nutritional usefulness of Mango

Mango fruit is a potent source of divergent types of vitamins and many beneficial nutrients. The dietary fibre is present in mango fruit, is very helpful to stop the stasis of the lower bowel and gastrointestinal problems. The main phytochemical constituents of mango are tannin, mangiferin, quercetin mangiferol, mangiferone, sitosterol, α and β amyryn and so on. One cup (160 gm) of fresh mango provides following nutrients and vitamins. Table –1 shows the mineral and vitamin percentages of 10 (Ten) mango varieties.

Table: 1

Sl. No.	Name of the variety	Calories	Protein	Carbohydr	Fat (gm)	Fiber (gm)	Sugar (gm)	Vitamin C (mg)	Copper	Folate	Vit. B6	Vit. A	Vit. E	Vit. K	Niacin	Potassium	Riboflavin	Magnesium	Thiamine
1	Anaras	98.7	1.4	24.6	0.6	2.7	22.5	66.9	20.1	17.8	12	10.2	10.5	6	7	5.9	5.2	4	4.2
2	Bhabani	99.6	1.5	24.2	0.7	2.8	23.2	65.2	19.8	16.9	11	10.5	10.7	6.2	7.3	6.1	5.3	4.1	4.3
3	Bira	99.2	1.3	24.7	0.7	2.9	22.8	66.1	20.2	16.8	10	10.3	10.6	6.7	7.2	6.2	5.7	4	4.1
4	Borosinduria	98.9	1.7	25.1	0.7	2.8	22.3	67.01	21.1	17.2	11	10.4	10.6	6.9	7.4	6.1	5.2	4.3	4.1
5	Chandan khosa	99.2	1.6	24.9	0.5	2.3	21.1	66.2	21.3	17.5	11	10.6	10.5	6.3	7.2	6	5.4	4.7	4.3
6	Daudi	99.1	1.5	23.9	0.6	2.4	20.2	65.1	20.3	17.1	10	10.1	10.4	6.1	7.1	7	5.3	4.8	4.2
7	Dhobani	98.8	1.9	23.7	0.7	2.7	20.8	66.2	20.7	17.2	10.3	10.2	10.9	6.2	7.7	7	5.7	4.3	4.1
8	Dilpasand	98.3	1.8	22.9	0.6	2.5	20.1	65.2	20.3	17.2	10.4	10.7	10.2	6.4	7.8	6.9	5.2	4.5	4.2
9	Gulabkhas	98.9	1.7	22.3	0.5	2.7	21.7	66.7	21.2	16.9	11	10.2	10.7	6.5	7.9	6.7	5.9	4.8	4.3
10	Kohitoor	99.3	1.8	23.4	0.8	2.9	22.1	66.9	22.1	17	11.5	10.9	10.8	6.9	8.1	6.9	6.3	5.1	4.7

Results and Discussion

Morphological Characterization of the mango fruit using DUS Testing was carried out. The surface of the pulp, pulp fleshiness, pulp colour, water percentage in the pulp, amount of pulp and simple sugar percentage is given in Table - 2.

Table 2: Analysis of standard specification of mango varieties:

Sl. No.	Variety Name	Surface of the pulp	Pulp fleshiness	Pulp colour	Water % in the pulp	Amount of pulp (%)	pH	Simple sugar (%) in pulp
1	Anaras	Semi soft	Intermediate	Orange	67.02	61.08	3.66	14.12
2	Bhabani	Semi soft	Intermediate	Light yellow	66.05	51.60	6.67	18.90
3	Bira	Fibrous	High	Yellow orange	66.80	66.21	5.73	25.73
4	Borosinduria	Fibrous	High	Yellow orange	67.90	76.31	3.52	21.61
5	Chandankhosa	Fibrous	Intermediate	Golden	65.23	79.08	2.31	20.34
6	Daudi	Soft	Intermediate	Light yellow	67.07	52.19	6.02	20.01
7	Dhobani	Semi soft	Intermediate	Light yellow	66.70	65.72	5.30	18.91
8	Dilpasand	Soft	Intermediate	Orange	68.10	51.31	4.97	17.81
9	Gulabkhas	Soft	Intermediate	Reddish	67.30	67.03	3.57	19.91
10	Kohitoor	Soft	High	Golden yellow	68.80	67.23	6.41	27.81

From the observation of 10 (Ten) mango varieties, there is a considerable variation both in the morphological specification of the fruit and also in the chemical properties of the fruit pulp. Not any single character shows a constant outcome. Visual comparison of the morphological identity of the mango fruit of these 10 (Ten) varieties shows a significant difference. The colour of the pulp varies from orange, light yellow, golden and reddish to golden yellow. The pulp fleshiness differs from intermediate to high. The variety Chandankhosa appears to be the highest pulp amount belonging to 79.08%. pH facing the range of 2.31 - 6.67. Chandankhosa noted the lowest pH viz.- 2.31 and Bhabani registered the highest pH viz. 6.67.

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