Studies on genetic diversity for morphological and biochemical aspects of mango (*Mangifera indica* L.) genotypes.

Summary of thesis

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Summary of thesis

The present investigation entitled **"Studies on genetic diversity for morphological and biochemical aspects of mango *(Mangifera indica* L.) genotypes"** was undertaken with the objectives:

1. To make a survey of the orchards for collection of different genotypes of mango fruits from the Lucknow region and adjacent districts.

2. To study the morphological characters of different genotypes of mango fruits.

3. To estimate the biochemical composition of different genotypes of mango fruits.

The experiment was conducted using thirty distinct mango genotypes for two consecutive years (2018-19 and 2019-20). The trees were 22 to 24 years old and maintained at Farmers' orchards of malihabad region. These genotypes were maintained following uniform cultural practices to ensure yield of quality fruits. Three representative, healthy and uniform fruit of each genotype. Recording observations of various genotypes on works was done in laboratory of Horticulture, Department of Horticulture, School of Agricultural Sciences and Technology, Babasaheb Bhimrao Ambedkar University, Lucknow (U.P), India. The thirty mango genotypes were collected and evaluated for distinct morphological and biochemical characters. These genotypes showed a wide range of variability in fruit viz., fruit colour, fruit shape, fruit length (cm), fruit breadth (cm), fruit weight (g), fruit volume (ml), fruit specific gravity, fruit firmness (kg/cm2)**,** thickness of the peel (mm)**,** peel weight (g), peel (%), pulp colour, pulp texture, pulp flavor. pulp taste, pulp juice, pulp fibre, stone shape, stone body, stone size, stone length (cm), stone breadth (cm), stone thickness (cm), stone weight (g), stone marking, T.S.S. (^{0}B), reducing sugar (%), non-reducing sugar (%), total sugars (%), acidity (%), ascorbic acid (%) and total carotenoid pigments (expressed as ß-carotene mg/100g), respectively. The mean data were subjected to the various statistical and biometrical analyses. The salient findings of the study are summarized below:

1. Fazli produced the heaviest fruit weight, length and breadth (501.56 g, 12.74 cm and 8.69 cm). While, the lowest fruit weight, length and fruit breadth (160.68g, 5.61 cm and 4.07cm) were observed in the genotype MBL-6. Highest fruit volume (478.65 ml) observed in Fazli. Whereas, minimum fruit volume (157.18ml) observed in genotype MBL-6. The specific gravity of fruits ranged between 1.009 to 1.047. Langra produced maximum fruit firmness (14.85 kg/cm^2). Whereas, minimum fruit firmness (9.85 kg/cm^2) was observed in genotype MBL-6
2. Maximum peel thickness (2.67mm) was recorded in genotype Desi-Sipia. Whereas, minimum peel thickness (0.84mm) recorded in genotype Makhan. Minimum peel weight (16.30 g) was recorded in genotype Shahtuki. While, maximum peel weight (50.03g). was observed in Fazli. Minimum peel percentage (9.45%) was observed in genotype Shahtuki. While, maximum peel percentage (17.97%) was observed in Desi-Sipia.
3. Minimum stone length, breadth and weight (3.66 cm, 2.20 cm and 21.38g) was recorded in genotype Shahtuki. While, maximum stone length, breadth and weight was found in Fazli (10.54 cm, 4.30 cm and 49.47g). Minimum stone thickness (1.36 cm) was recorded in genotype Desi-Sipia. Whereas, maximum thickness (2.75 cm) was recorded in Fazli.
4. Chausa had maximum T.S.S. percentage (24.02 ^{0}Brix). Whereas, minimum T.S.S. percentage (15.43^{0}Brix) genotype MBL-4.
5. Maximum reducing sugar, non -reducing sugar, total sugars percentage was observed in Amrapali (5.31%,13.20% and 18.50%). Whereas, Minimum percentage (3.13 %, 6.71 % and 9.84 %) in this respect was noted in genotype MBL-4.
6. The minimum acidity (0.173%). was observed in Chausa. Whereas, maximum acidity was recorded in genotype MBL-4 (0.374%).
7. The maximum ascorbic acid was recorded in Langra (51.44 mg/l00g). Whereas, minimum (17.07mg/100g). was observed in genotypes MBL-2.
8. The maximum total carotenoids were recorded in Amrapali (8.25mg/l00g). Whereas, the minimum (1.79mg/l00g) was observed in genotype MBL-4.
9. Maximum score for pulp colour recorded in Hushnara (8.50), flavour (8.70), texture (8.80), taste (8.60), fibre (8.40), recorded in Amrapali and Juice (8.60) found in Bombay Green.

Conclusion

Based on the present findings, it can be concluded that the Fazli showed highest fruit weight, length, breadth, volume, peel thickness, stone length, breadth and weight, Langra showed maximum fruit firmness and ascorbic acid, Desi-Sipia showed peel thickness and peel percentage. Chausa showed maximum T.S.S, minimum acidity percentage, Amrapali showed reducing sugar, non-reducing sugar, total sugar and total carotenoids. Hence based on sensorial attributes and overall acceptability of fruit, the cultivar Amrapali can be recommended for commercial cultivation under Malihabad region of Lucknow.