

## Genetic variability and correlation studies for fruit physico-chemical properties of some mango cultivars grown under new Alluvial zone of west bengal

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### ABSTRACT

An experiment was carried out with 9 mango cultivars at Varietal Block of Horticultural Research Station, Mondouri, BCKV, Nadia, W. B. with Randomized Block Design to determine the genetic variability and correlation coefficient for among different fruit physico chemical characteristics. Among the various different characters the lowest range was recorded with acidity and it was highest for weight. Phenotypic co-efficient of variation was more than that of genotypic counter part for each of the characteristics. The estimated heritability showed a wide range of variation, *i.e.*, 37.10 – 95.41 per cent. The genetic advance as percentage of mean also revealed high degree of variation (9.03 – 33.93). Magnitude of all most all correlation of genotype coefficient was more than that of phenotypic correlation coefficient. There was a significant positive correlation of fruit weight with pulp content, breadth and significant negative co-relation with peel and acid content. Total soluble solids (TSS) showed high positive correlation with total sugar and non reducing sugar. Whereas, acidity showed high negative correlation with non reducing sugar, fruit weight, pulp content, TSS, Sugar and reducing sugar content. These selection criteria indicated the basis for further improvement of mango.

**Key words :** Mango, Genetic variability, Correlation, Physico-chemical property.

**M**ango (*Mangifera indica* L.) is the choicest and popular fruit among the people of orient and is designated as the 'king of fruits' because of its excellent flavours, attractive fragrances, beautiful shades of colour and delicious taste with high nutritive values. No other fruit has such combination of beauty and grace; and variety in colour, taste, size and shape as mango. Mango cultivars differ for different physico-chemical properties. Several workers have tried to determine the genetic diversity and correlation studies among different physical and bio-chemical properties of mango fruit (Yadav *et al.*, 1995; Yadav *et al.*, 2003; Attri *et al.*, 1999). This aspect is lacking for the new alluvial zone of West Bengal. The present investigation was undertaken to study the variability and the correlations among the different fruit characters of nine mango cultivars grown in New Alluvial Zone of West Bengal.

### MATERIALS AND METHODS

The present experiment was carried out at Varietal Block of mango with 9 mango cultivars of 27 years old (Meghlanthan, Totapari, Kishanbhog, Langra, Bombay Yellow, Bombay Green, Himsagar, Neelum and Alphonso) at Horticultural Research Station, Mondouri, Bidhan Chandra Krishi Viswavidyalaya, West Bengal, India. The Research Station is situated at 22.43°N latitude and 88.34°E longitude with an average altitude of 9.75 m above mean sea level. The experiment was carried out in

Randomized Block Design with three replications from each of treatment (cultivar) and single plant under each replication. For determining different physico-chemical parameters, four fruits were collected randomly at maturity stage and then the fruits were brought to the laboratory of Department of Fruits and Orchard Management, Faculty of Horticulture, Bidhan Chandra Krishi Viswavidyalaya. After proper ripening the twelve different physical and bio-chemical parameters were recorded gradually. Total sugar, reducing sugar, acidity were estimated by the method described in A.O.A.C. (1984). Total soluble solids (TSS), non-reducing sugar were analyzed through the method described by Mazumdar and Mazumder (2003) and ascorbic acid was determined through the procedure mentioned by Rangana (1977). Other parameters were estimated by specified standard methods. The genotype and phenotypic co-efficient of variation, heritability (%), genetic advance and correlation coefficient were estimated by the method described by Singh and Chaudhary (1996).

### RESULTS AND DISCUSSION

There was a significant variation in fruit physico-chemical properties among the cultivars (Table 1). The maximum range of variation (293.00) was recorded for weight (g), followed by pulp percentage (77.02) and ascorbic acid content (54.00), whereas, lowest range of variation (0.544) was recorded for acidity (%). The