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Genotypic and phenotypic variability in fig (*Ficus carica* L.)

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ABSTRACT

The 290 plants of fig from two orchards of Pune district area were studied for 15 characters. The genotypes exhibited significant variability in growth habit, bearing potential, fruit shape, pulp colour, pedical length, leaf area, days to first harvest. The magnitude of PCV was slightly more than GCV for all the characters in both orchard. In orchard-I, the GCV and PCV ranged from 25 to 46 per cent in case of spread, non reducing sugar, number of fruits per plant, total weight of fruits plant^{-1} and more than 55 per cent for tree volume (tree size). The magnitude of PCV was more for acidity (65-79), while in orchard-2, GCV and PCV ranged from 34 to 56 per cent in case of acidity, number of lobes, volume of the tree and non reducing sugar. Heritability in orchard-1 was very high (> 80%) in case of number of secondary branches, spread, volume, number of fruits plant^{-1}, total weight of fruit plant^{-1}, TSS, while in orchard-2 heritability was very high in case of height, spread, volume, number of main branches and secondary branches. While genetic advance in terms of percentage was highest for volume (119.10) followed by total weight of fruits plant^{-1}, spread and number of fruits plant^{-1} in orchard-1 and in orchard-2, it was also highest for volume (66.78%) followed by number of secondary branches, number of main branches and spread. These estimates indicate the scope of fig improvement.

Key words : Genotypic variability, Phenotypic variability, Heritability.

INTRODUCTION

Fig *(Ficus carica* L.) is a small or moderate sized deciduous tree. The total mineral content in fruit is two or four times that of most other fresh fruits. Fig is rich in proteins, calcium, iron and vitamin 'A' and good source of sugars, copper etc. The common fig is the only type grown in India and are named after the locality and exhibit no special distinction to warrant varietal names. The area under fig crop is decreasing day by day as no promising varieties of this crop have been released. Study of variability in a population is a prerequisite for existing selection because of a wide range of variability always produces more possibility of selecting desired types. Therefore, the present investigation was carried out to assess and evaluate critically the plants from two different orchard with an intention to judge whether there are any better genotypes than local cultivated variety for yield and yield contributing characters with quality. The objective of investigation was to study the natural variability existing for various characters in fig germplasm and to locate some desirable types to exploit them as commercially potential cultivars.

MATERIALS AND METHODS

Through intensive survey, two orchards were selected for the study consists of 290 plants of fig cv. Poona fig, comprised of vegetatively propogated fig genotypes. The detail observations for various characters of these 290 plants were recorded for different quantitative and qualitative characters *viz.* height of tree (m), spread (m), size, number of main branches, number of secondary branches, days to first harvest, leaf area, number of lobe, weight of fruit, length of pedicel, TSS, acidity, reducing sugar, non reducing sugars, total sugar, incidence of disease, total weight of fruit plant^{-1}, number of fruit plant^{-1} etc.

The analysis of variance was done as per method suggested by Panse and Sukhatme (1967). The data were further analyzed for GCV and PCV as per the formula given by Burton and De Vane (1953), while heritability was worked by using formula suggested by Hanson *et. al*, (1956) and genetic advance calculated by Johnson *et. al*, (1956 a).

RESULTS AND DISCUSSION

The magnitude for PCV was slightly more than GCV for all the characters in case of orchard-1 (Table 1) and orchard -2 (Table 2) which indicated that there is further scope to improve upon through selection. It was noted that the PCV (65.22) and GCV (61.41) were more than 50 per cent for volume of tree size in orchard-1. In this orchard -1, the magnitude of phenotypic variance was greater than genotypic variance for all the characters. The magnitude of PCV was more for acidity (65-79). The GCV and PCV ranged from 25 to 46 per cent in case of spread (E to W and N to S), non reducing sugar, number of fruits plant^{-1} and total weight of fruits Plant^{-1}. While very little difference in magnitude of PCV and GCV

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