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Studies on genetic variability and selection parameters for economic characters in egg plant

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SUMMARY

An investigation to study the variability and selection parameters was undertaken using fifteen lines and four testers. The estimates of phenotypic coefficient of variation were higher than the genotypic coefficient of variation for all the characters under studies. High magnitude of variability was observed in the mean among the parents, F_1s and F_2s for number of branches per plant, number of fruits per plant, length of fruit, width of fruit and yield per plant. The high genotypic and phenotypic coefficients of variation were observed for yield per plant, plant spread and number of fruits per plant in parents, F_1s and F_2s , suggesting the improvement by selection. High heritability coupled with high genetic advance indicating additive gene action was exhibited by characters, plant height, days to marketable maturity, plant spread, days to flowering, yield per plant, fruit weight and number of branches per plant in all the three populations. These characters can be improved by simple selection to get higher yield.

Key words : Solanum melongena, Genetic variability, Heritability, Genetic advance, Egg plant

The information on the nature and magnitude genetic L variability and degree of transmission of traits is of immense value for a successful breeding programme. Since, the phenotypic variation is the result of the genotypic value, the effect of environment and genotypeenvironmental interaction play a major role in breeding programmes. Therefore, the knowledge of genetic variability and selection parameter of the available genotypes is essential for further improvement. Heritability shows the reliability of phenotypic value as a guide to breeding value and also as a parameter in predicting genetic advance or response to selection. Hence, an attempt has been made to asses the extent of variability and genetic parameters like genotypic coefficient of variation, phenotypic coefficient of variation, heritability and expected genetic advance in egg plant.

MATERIALS AND METHODS

The genetic material comprising fifteen lines/ cultivars, viz., KS 219, KS 247, KS 253, KS 262, KS 228, KS 233, KS 250, KS 263, KS 235, KS227, ACC 5114, ACC 8204, ACC 8206, ACC 8207 and ACC 2623 and four testers, viz., T 3, AB 1, KS 224 and DBR 8 of egg plant were selected on the basis of variability for different characters. The resulting 60 F_1 s, 60 F_2 s alongwith 19 parents were evaluated in complete randomized block design with three replication during Kharif 2003-04 at Vegetable Research Station, Kalyanpur, C.S. Azad University of Agriculture and Technology, Kanpur. One month old healthy seedlings of each treatment were transplanted in 1st week of August. The parents had 2 rows whereas F_1s and F_2s each had 3 rows of 3m length in each replication. The row to row and plant to plant distance was kept 60 cm. The observations were recorded on randomly selected 5 plants from each parents and F₁s, and 10 plants from each F₂s for 10 characters, viz., days to flowering, days to marketable maturity, plant height (cm), number of branches per plant, number of fruits per plant, length of fruit (cm), width of fruit (cm), fruit weight (g), plant spread (m²) and yield per plant (kg). The mean values of data obtained were used to estimate genotypic and phenotypic coefficients of variation (Burton, 1952), heritability and genetic advance (Hanson et al., 1956).

RESULTS AND DISCUSSION

Highly significant differences were recorded among the genotypes for all the characters indicating sufficient diversity among the genotypes. The mean value were maximum for yield per plant and minimum for number of branches per plant in all the three generations. The wide range of variation among the parents was observed for days to flowering, days to marketable maturity, plant height and fruit weight, while among the F_1 s high range of variation was observed for number of branches per

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