

GENETIC STUDIES FOR PARENTAL SELECTION AMONG DIVERSIFIED BRINJAL (*Solanum melongena* L.) GENOTYPES

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Executive Summary

Twenty brinjal genotypes were evaluated in the field to determine the significance of variation, heritability, genetic advance, correlation, and the direct and indirect effect of various yield and yield contributing features on yield per plant. From August 2019 to March 2020, the experiment was conducted at Sher-e-Bangla Agricultural University in Dhaka using a Randomized Complete Block Design with three replications. The proposed study was undertaken with the objectives were to estimate the variability present among the genotypes, to select the early and high yielding genotypes and to find the best parent for the brinjal hybridization program in the future. For all characters in this experiment, there were substantial differences among the genotypes. For each character, the phenotypic variance was greater than the genotypic variance. Except for days to first flowering, days to first fruiting, days to first harvesting, plant height, number of flowers per plant, individual fruit length, individual fruit weight and percent of infested fruit, the yield and yield contributing parameters such as number of primary branches per plant, number of secondary branches per plant, number of fruits per plant, individual fruit diameter, and yield per plant showed the least phenotypic and genotypic variance. The high genotypic and phenotypic coefficient of variation was observed in the number of flowers per plant, number of fruits per plant, individual fruit length, individual fruit diameter, individual fruit weight, percent of infested fruit, and yield per plant. Plant height, individual fruit weight, and percent of infested fruits had substantial heritability and genetic advance. Plant height, number of primary branches per plant, number of secondary branches per plant, number of flowers per plant, number of fruits per plant, individual fruit length, and individual fruit weight were all found to have high heritability with high genetic advance in percentage of mean. The number of primary branches per plant, number of secondary branches per plant, individual fruit diameter, and individual fruit weights, demonstrated and significant genotypic and phenotypic positive correlation with yield per plant. Days to first flowering, days to first fruiting, number of primary branches per plant, number of secondary branches per plant, number of flowers per plant, individual fruit length, individual fruit diameter, individual fruit weight, percent of infested fruit, and yield per plant all had direct positive effects on seed yield per plant, according to path analysis. The study found that G8, G15, G16, and G17 performed the best among the genotypes investigated, and that they might be adopted as the best performing genotype for future hybridization programs in Bangladesh.

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