

## GENETIC STUDIES ON EARLINESS OF FLOWERING AND EARLY AND TOTAL YIELD IN EGGPLANT (*Solanum melongena* L.)

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### ABSTRACT

Six parental genotypes of eggplant, i.e., Balady Long Purple, Black Beauty, Balady Long White, Belleza Nera, Violetta Lunga and Baker were used in making non-reciprocal diallel pattern of crosses. The results indicated the involvement of both additive and non-additive type of gene action in the inheritance of earliness of flowering and early and total yield per plant. However, the GCA/SCA ratio indicated that the non-additive type of gene action was more important in the inheritance of early yield/plant and total yield/plant, while the additive type was more important in the inheritance of earliness of flowering. Partial dominance was observed in the inheritance of number of days to first flower bud anthesis. The direction of dominance was toward the parents with higher expression of this character. The relative values of the  $V_r$  and  $W_r$  showed that the parental cultivars Belleza Nera, Violetta Lunga, Baker and Balady Long White had the highest values of  $V_r$ - $W_r$  concerning number of days to first flower bud anthesis, which indicated that these parental cultivars had the most recessive genes, while cultivars Balady Long Purple and Black Beauty had the lowest values and, hence had the most dominant genes concerning this character. The results indicated the unequal distribution of alleles which decreased the expression of number of days to first flower bud anthesis character and that which increased it over the related loci in the six parents. The narrow sense heritability estimates for number of days to first flower bud anthesis, and early yield, were 68.13 and 57.99%, respectively. The narrow sense heritability estimate for total yield/plant was 12.96% and hence selection should be performed in replicated experiments.

Key words: *Solanum melongena* L., Breeding, Diallel analysis, Earliness, Yield.

### INTRODUCTION

Eggplant (*Solanum melongena* L.) is one of the popular vegetable crops in Egypt which is used diet of many people from different social classes.

Genotypic variations among different eggplant genotypes concerning earliness of flowering were reported by Gulam *et al* (1999), Prasad and Singh (2003), Illangakoon *et al* (2004) and Mahaveer *et al* (2004). Additive gene action was found to be predominant in the inheritance of earliness of flowering (Srivastava and Bajpai, 1977). Different natures of dominance were reported, i.e. partial (Biswajit *et al* 2005a), complete (Hani *et al* 1977) and over-dominance (Peter and Singh, 1973, Hani *et al* 1977). Heritability estimates for earliness of flowering ranged from low (Mahaveer *et al* 2004) to high (Biswajit *et al* 2005a, Omkar and Kumar, 2005). Genetic