Genetic Analysis of Seed Cotton Yield and its Attributes under Early and Late Plantings


Abstract:

THIS RESEARCH was conducted to study the effects of late planting on the performance of Egyptian cotton sensitivity to the environment, and gene actions that controlling seed cotton yield/plant (SCY/P) and related traits. Half diallel crosses of eight Egyptian cotton varieties were evaluated under early and late plantings. The analysis of variance indicated significant (p ≤ 0.01) differences among entries (parents and crosses) for most traits. The reduction percentin seed SCY/P caused by the stress of late planting was 17.98 and 18.25 percent for the parents and hybrids; respectively. Stress susceptibility index indicated that five parents were tolerant for SCY/P to late planting. Fifteen out of the 28 hybrids showed tolerance in SCY/P to late planting. The diallel analysis of variance indicated that both additive and dominance effects of genes were involved in the inheritance of all traits. Generally, the regression coefficient \( b \) and the graphical analysis revealed that the inheritance of seed cotton yield/plant controlled by additive, dominance and epistatic effects of genes. The results of boll weight under the stress of late planting suggested the presence of additive, dominance and epistatic genes interaction. The genetic analysis of number of seeds/boll under late planting indicated no significance of the additive effects of genes, however, the dominance item was significant (p ≤ 0.01). The non-additive effects of genes were reflected in the departure of narrow from broad sense heritability. Therefore, pedigree and recurrent selection breeding methods could be effective in isolating lines adapted to late planting.

Keywords:

Egyptian cotton, Gene action, Late plantings, Seed cotton yield

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