

MANIFESTATION OF HYBRID VIGOUR, THE DEGREE OF DOMINANCE AND EXPECTED GENETIC LOSS IN *Gossypium hirsutum* L.

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ABSTRACT

Most of the hybrid combinations yielded better than the parents. F_1 hybrid combinations varied in the manifestation of hybrid vigour and genetic loss expectations in F_2 . Hybrid between DPL 26 x 4F appeared worth heterotic exploitation for yield of seed cotton and number of bolls per plant and to obtain high yielding segregant. Combination of Gossypol dressed x DPL 26 appeared worth improving the boll weight, Bambasa, 49 x 4F showed maximum heterosis for ginning outturn, and DPL 26 x 4F showed maximum heterosis for staple length.

INTRODUCTION

The success of Plant Breeding Programme aiming at evolution of high yielding cotton cultivars depends upon the identification and selection of vital commendable parents to be utilized in any hybridization programme. Hybridization being most widely used, generates a lot of progenies to handle in segregating generations which involves lot of expenses and bother. But the paucity of the resources urges to screen the breeding material in first filial generations. One possible basis for this can be screening on the magnitude of heterosis and genetic loss in F_2 shown by hybrids. Accumulation of favorable dominants, over dominance, inter and intergene interactions and heterozygosity per se are the suggested genetic mechanisms for heterosis. The present research findings are to help the breeders and geneticists with limited resources in planning their hybridization programmes to obtain cotton segregants having better yielding ability coupled with better quality. This may also be helpful in selecting hybrids for the exploitation of heterosis.

Among the earlier findings Hawkins et al. (6) observed higher yield of the seed cotton in four out of six crosses. A closer relationship between the parents and their crosses was also observed. Galal et al. (5) estimated an increase of 15.5 to 24.5% in yield in F_1 as compared with mid parent value in all the crosses. Lee et al. (13) reported significant values of heterosis for seed cotton yield, boll size and lint percentage. Thomson (17) advocated the heterosis in yield due to heterosis in three components viz, number of bolls, boll weight and lint percentage. Sharif and Din (16) studied remarkable heterosis in some *G. hirsutum* L. crosses for seed cotton yield, ginning outturn, boll weight and staple length.