ESTIMATION OF HETEROSIS AND GENETIC ANALYSIS OF SOME UPLAND COTTON CULTIVARS I. YIELD AND YIELD COMPONENTS

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ABSTRACT

Six varieties of cotton (*G. hirsutum* L) were analysed for gene action and estimates of heterosis for various plant characters in a complete diallel set of crosses. Additive type of gene action with partial dominance was observed for hight of the main stem, number of bolls and boll weight while over dominance type of gene action was found to be prevailing for yield of seed cotton. A considerable extent of heterosis and heterobeltiosis was also observed in most of the hybrids for all the characters studied.

INTRODUCTION

Diallel analysis, as proposed by Hayman (1954) and Jinks (1954) has wisely been used in crop plants for characterizing the nature and magnitude of gene action involved in the phenotypic manifestation of quantitative traits. While a number of national and foreign workers has emphasized the exploitation of heterosis to achieve the goal of higher production in cotton crop, Soomro *et al.*, (1982), Khan *et al.*; (1980, 1985, & 1984), Singh and Bhat (1984), Mirza and Khan (1974 & 1984), Patil and Chopde (1985), Singh (1980 & 1982) and Ali *et al.*, (1990) testified that, before starting any varietal improvement programme, a cotton breeder should have information about the inheritance pattern of different plant parameters of economic importance. This study was, therefore, designed to generat information regarding gene action and heterotic effects for various plant characters, which may ultimately make a sound basis for further improvement work in cotton.

MATERIALS AND METHODS

The experimental material consisted of six cultivars of cotton (*G. hirsutum* L.) including one local (S-12) and five exotic viz: Austin, DPL-6127, DOS-56, HG-496 and B2 (67)1470. These parents were crossed in all possible combinations to make a complete

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