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ESTIMATES OF HERITABILITY AND GENETIC ADVANCE FOR VARIOUS PLANT TRAITS IN A SEGREGATING POPULATION OF COTTON (G. HIRSUTUM L.) I. LINT PERCENTAGE, LINT INDEX AND SEED INDEX

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The estimates of broad sense heritabilities and expected genetic advance were computed for lint percentage, seed index and lint index in F, population originated from crossing four cotton varieties. The F, crosses, $12 x Arkugo No.4, B 496 x Arkugo No.4 and $12 x B 496 had 80.12, 64.15 and 65.99% heritability for lint percentage, seed index and lint index, respectively. The expected genetic advance was maximum for lint index (24.84%) and lint percentage (13.79%) by the cross $12 x B 496.

INTRODUCTION MATERIALS AND METHODS

Sufficient understanding about the mode This study was conducted in the Depart-
of inheritance of quantitative characters is es- ment of Plant Breeding and Genetics, Univer-
sential to develop an effective breeding strategy sity of Agriculture, Faisalabad during the year
for crop. The extent to which a given trait would 1990. The experiment consisted of a complete
be transmitted to the next generation is best diallel set of F, crosses among four cotton
visualized by the estimation of heritability. The cultivars viz. $12, B 496, BJA 592 and Arkugo
concept of heritability is associated with the No.4. The seed of sixteen genotypes of this
relative influences of heredity and environment diailel set of crosses was sown in the field with
on variation in a character. It helps the plant a distance of 30 cm among and 75 cm between
breeder in predicting the behaviour of the trait the plants in a triplicated randomized complete
in succeeding generations and making desirable block design. Each genotype consisted of three
selections, Thus higher the heritability, simpler rows with twenty plants in each row. At crop
the selection process and greater the response to maturity, the data on individual plants were
selection. The estimates of broad sense herit- recorded for lint percentage, seed index and lint
ability have been reported to be high for tint index. The data from crosses and their respec-
percentage (Sindagi, 1974: Cl.ao, 1977), seed tive reciprocals were composited for computa-
index (Memon ef al., 1978; Khan and Tariq, tion process since in F, this genetic material
1984) and lint index (Abo-E! Zahab and Abd- indicated no reciprocal differences (Khan, 1990).
Alla, 1972; Khan and Tariq, 1984). The present The variance of each parent and F,, cross foreach
study was planned to obtain heritability esti- trait was estimated according to Steel and Torrie
mates and genetic advance for lint percentage, (1980) and then broad sense heritability esti-
seed index and lint index. This information mates were odtained by using the formula given
would be of great importance for the future by Mahmud and Kramer (1951). Genetic ad-
cotton breeding programmes. vance for each trait based on 10 percent selec-