

Hybrid vigour in interspecific hybrids of cotton (*Gossypium hirsutum* L. x *Gossypium barbadense* L.)

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SUMMARY

Thirty two hybrids of cotton (*Gossypium hirsutum* L. x *Gossypium barbadense* L.) derived from four lines x eight testers were evaluated for yield and component traits. Data were analyzed for heterosis. Significant heterotic crosses for characters under study indicated the presence of genetic diversity among parental lines. Number of crosses exhibiting significant heterobeltiosis and standard heterosis for seed cotton yield were 22 and 12, respectively. The significant positive standard heterosis over G. cot. Hy.102 for seed cotton yield per plant was exhibited by G. cot. -10 x GSB-21 (82.95 per cent). It also exhibited high heterosis and per se performance for yield attributing traits viz., lint yield per plant, number of bolls per plant, boll weight and number of sympodia per plant.

Key Words : Cotton, Heterobeltiosis, Standard heterosis, Seed cotton yield, Yield components

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Improvement in yield has been achieved through distance hybridization, particularly through interspecific hybridization. The identification of specific parental combination capable of producing the desired level of F_1 heterotic effects is important in improving the yield potential of this crop. Commercial exploitation of heterosis is considered to be an out standing application of the principles of genetics into the field of plant breeding. Thus, heterosis can be useful only with marked superiority over the best checks. The present study was, therefore, undertaken to determine the extent of heterosis in cotton and to identify most heterotic hybrids.

MATERIALS AND METHODS

The experimental material consisted of 46 entries comprising of four lines, eight testers and resultant thirty two

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hybrids produced by line x testers mating design were evaluated along with two standard hybrids G.cot. Hy-102 and DCH-32 as checks. The experimental material was sown in a Randomized Block Design with three replications during Kharif 2009-2010. A single row of 6.0 meter length was assigned to each genotype with 10 dibbles having 60 cm intra row spacing and 120 cm inter row spacing. Five plants were randomly selected from each replication for each genotype and the average value was computed for recording observation on plant height, number of sympodia per plant, number of monopodia per plant, boll weight, number of bolls per plant, seed index ginning percentage, lint index, staple length, lint yield per plant, seed cotton yield per plant and oil content. While days to 50 per cent flowering and days to 50 per cent boll bursting were recorded on plot basis. Magnitude of heterosis and heterobeltiosis were computed as per procedure suggested by Meredith and Bridge (1972) and Fonesca and Patterson (1968), respectively.

RESULTS AND DISCUSSION

Analysis of variance revealed that the mean squares due to genotypes were significant for all the characters under study. Mean squares due to genotypes were further