

Heterosis for yield and yield components in Indian mustard [*Brassica juncea* (L.) Czern and Coss]

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SUMMARY

The present investigation was undertaken to study the extent of heterosis in Indian mustard. The crosses were attempted by adopting line x tester mating design among 10 lines and 4 testers. In the present study, moderate heterosis was observed for seed yield per plant, number of siliqua per plant and number of secondary branches per plant whereas, in the remaining character low amount of heterosis was reported. The highest standard heterosis for seed yield was observed in RSK-87 x GM-2 (42.95%) followed by SKM-95-85 x GM-2 (40.11%) and RSK-87 x Varuna (37.67%).

Key words : Heterosis, Line x tester, Siliqua, Yield.

Amongst, different oilseed crops, Indian mustard (*Brassica juncea*) is the second most important oilseed crop of the country. The mustard oil is utilized for human consumption in Northern India, for cooking as well as frying purpose. The oil serves as a rich source of energy in the predominantly vegetarian diet consumed in the country. The mustard oil has great industrial utility for the preparation of hair oils, soap, lubricant and tanning industry. The phenomenon of heterosis has been proved to be the most important genetic tool in enhancing yield potential in self as well as cross pollinated crops. Exploitation of hybrid vigour in mustard has been recognized as an important tool by the breeders for increasing the yield. The present investigation was undertaken to study magnitude of heterosis for yield and its' component traits.

main castor-mustard Research Station, Gujarat Agricultural University, Sardar Krushinagar. The crossing programme was carried out by using line x tester mating design during *rabi* 1998-99 and 40 crosses were attempted. A set of 54 genotypes comprised of 40 crosses and 14 parents were sown in Randomized Block Design with three replications. Each genotype was sown in a single row of 3 m long with spacing of 45 cm row to row and 15 cm plant to plant distance, respectively. All recommended agronomical package of practices were followed for raising the crop. The mean values of five randomly selected plants in each plot were subjected to statistical analysis. The analysis of variance was carried out for ten characters as per the procedure described by Panse and Sukhatame (1978).

MATERIALS AND METHODS

The present investigation was undertaken to study the extent of heterosis in F_1 hybrids for seed yield and its component characters in Indian mustard during *rabi* 1999-2000 at Instructional Farm of Agronomy Department, Chimanbhai Patel College of Agriculture, Gujarat Agricultural University, Sardar Krushinagar. The experimental material comprised of ten lines (PM-67, RSK-87, SKM-95-85, SKM-9628, MJ-90-137, B-85, Pusabold, Vaibhav, Bio-902 and Vardan) and four testers (GM-1, GM-2, Varuna and Kranti) were obtained from

RESULTS AND DISCUSSION

The analysis of variances for genotypes showed highly significant values for all the characters studied (Table 1). The variances among parent vs. hybrids were found to be significant for days to 50 per cent flowering, number of primary branches per plant, number of secondary branches per plant, oil content, number of siliqua per plant and seed yield per plant.

With regards to days to 50 per cent flowering, five hybrids showed negative significant heterosis while nine hybrids exhibited negatively significant heterosis over standard check. Four hybrids recorded significant heterobeltiosis while none of the hybrid showed significant standard heterosis for plant height. For length of main branch, two hybrids exhibited negatively significant standard heterosis. With regards to number of primary branches four hybrids recorded positive heterobeltiosis while none hybrid exhibited heterosis over standard check.

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