

ESTIMATES OF HETEROSIS IN INDIAN MUSTARD, BRASSICA JUNCEA L.

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ABSTRACT:

In order to estimate the heterosis in Indian mustard twelve F1 hybrids (Early raya x S 9, Early raya x P-53-72, S-9 x Early raya, S-9 x P-15, S-9 x RH-30, S-9 x P-43, P-53-72 x Early raya, P-15 x S-9 and RH-30 x S-9) developed through crossing six parents (Early raya, S-9, p-53-72, p-43, p-15 and RH-30) of Indian mustad. Both hybrids and parental lines were planted in a three replicated RCBD during winter, 1994-95. Study envisaged that seed yield and other chanters studied varied significantly between the parents and hybrids. Three crosses (S-9 x P-15, P-53-72 x Early raya and P-53-72 P-43) displayed their superiority in respect of seed yield and other characters studied, followed by P-15 x S-9, S-9 x RH-30 and S-9 x Early raya respectively when compared with rest of the crosses.

Keywords: Heterosis, Diallel, Brassica JUNCEA L.

INTRODUCTION

Rapeseed and mustard are on of most important oilseed crops growing in Pakistan, plays pivotal role in the domestic use as well as animals feed beside green manuring for improving fertility states of soil. Chuadhry, et al: (1). Brassical species provide more than 12 % of the total worlds edible oil Fehr (4).

The success of every breeding effort largely depends on the breeding methodology used. Improvement in both quantitative and qualitative taitis can only be established when the nature of genetic effects such as additive and non-additive are thoroughly studied. For heterosis, dominant and over-dominant genetic effects are considered responsible (13). Although extensive research has been done but until now it has been difficult to prove for disprove the theories of dominant and over dominant responsible for the manifestation of heterosis. However, at present, majority of scientists believe in dominant theory. The manifestation of heterosis usually depends on genetic divergence of parental lines. The lines are considered diverse if they manifest relatively high heterosis than those of manifest little (7). Thus establishing heterotic patterns has important implications for both a degree of heterosis. By increasing selfing generations, homozygosity increases, vigour and productiveness reduces by 50 % in each selfing generation due to in breeding depression (3).

Beversderf (4) reported heterosis upto 50 % over better parent for seed yield in Brassica. Similarly, grant (5) observed heterotic values in the hybrids developed from Canadian and European Brassica cultivars. The utilization of cytoplasmic male sterility and fertility restorer system have made the application easy to exploit heterosis. Larik, et al, (6) reported 69.95 % heterosis in hybrid of Brassica Juncea for seed yield. This study intends to provide information regarding the magnitude of heterosis expressed by F1 hybrids of Indian mustard.