



Heterosis for yield and its contributing traits in table pea (*Pisum sativum* L.)

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ABSTRACT

The present investigation concluded that the cross combination Azad P-5 x KS-150 expressed significant and desirable heterosis over both parents (superior and mid parent) for all the characters under study except pod width. Significant and desirable heterosis was observed in 11 crosses over superior parent and 11 crosses over mid parent for green pod yield; 8 crosses over superior parent and 6 crosses over mid parent for number of seeds per pod. The 5 best heterotic crosses were selected from 15 hybrids for yield performance, namely Azad P-5 x KS-150, Azad P-1 x Azad P-3, Azad P-5 x Azad P-3, KS-156 x Azad P-3 and KS-156 x Azad P-3, these crosses also performed better for other traits.

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Key words : Yield, Heterosis, Table pea

The most important step in the exploitation of heterosis is to know its magnitude and direction. This is a monoecious and self pollinated crop, which provides ample scope for the formulation of appropriate breeding methodology required for the improvement of specific trait and cross combinations. But attention on development of F_1 hybrids in table pea is meagre. Hence, attempts have been made to study the magnitude of heterosis in table pea.

MATERIALS AND METHODS

The experimental materials comprised of 6 lines of table pea namely, Azad P-1(P_1), Azad P-3(P_2), Azad P-5(P_3), KS-150(P_4), KS-156(P_5) and KS-175(P_6). These lines were crossed in half diallel fashion and 15 F_1 hybrids were obtained. Fifteen F_1 hybrids and 6 parents were grown in randomized block design with 3 replications. The crop was grown at a spacing of 10 cm between plants and 30 cm between the rows.

Five plants in each treatment (hybrid or parent) were used for recording observations on plant height (cm), pods per plant, pod length (cm), pod width (cm), number of seeds per pod, shelling percentage and green pod yield per plant (g). The magnitude of heterosis was calculated for each character as the difference between the values of F_1 and its superior parent and mid parent for that

character.

RESULTS AND DISCUSSION

The estimate of heterosis over superior parent and mid parent for 10 characters in parents and F_1 hybrids for yield and its contributing traits are presented in Table 1. Significant and negative heterosis was considered desirable for days to flowering, while positive and significant was considered desirable for other characters. It is revealed from the data that short statured plants with more number of branches were desirable for high pod yield. Hence, negative heterosis for plant height is desirable. Heterosis over superior parent varied from -12.99% (Azad P-1 x KS-156) to 19.26% (Azad P-5 x KS-150).

The results revealed that green pod yield per plant exhibited appreciably high amount of heterosis over superior parent and mid parent. Heterosis over superior parent varied from -21.45% (KS-175 x KS-156) to 77.44% (Azad P-5 x KS-150). The cross combination of Azad P-5 x KS-150 exhibited maximum heterosis over superior parent followed by KS-156 x KS-150 (60.52%), Azad P-1 x KS-150 (43.77%), KS-156 x Azad P-3 (31.24%) and Azad P-1 x Azad P-3 (27.39%). The heterosis over mid parent varied from -22.32% (KS-175 x KS-156) to 45.34% (Azad P-5 x KS-150). Other promising crosses in order