



A studies on hybrid vigour and inbreeding depression in okra *Abelmoschus esculentus* (L.) Moench

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ABSTRACT

The relative heterosis, heterobeltiosis and inbreeding depression for fruit yield and their attributes were studied in six crosses of okra. Ample amount of heterosis over mid and better parent was observed for all the traits. Significant and positive heterobeltiosis was observed in KS-404 x HRB-108-2 and VRO-5 x GO-2 for fruit length and fruit yield per plant. Similarly, significant and positive relative heterosis has been depicted in KS-404 x HRB-108-2 for number of nodes per plant, number fruits per plant and fruit length and in VRO-5 x GO-2 for number of fruits per plant and fruit yield per plant. Moderate to high amount of inbreeding depression was observed for all the traits. All the three types of gene effect *viz.*, additive, dominance and epistasis were observed for fruit yield and their attributes in okra. Indicating that only applicable methodology is progeny selection, which may first, exploited the additive gene effects and then intermating in F_2 and back cross generations can increase the frequency of desirable recombinants.

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Key words : Hybrid vigour, Okra, Heterobeltiosis

Okra is the most important vegetable crop in India. It is grown in tropical and subtropical regions of the world. It is more remunerative than the leafy vegetables. Fresh okra fruits are used as vegetable in India, Brazil, West Africa and many other countries. Heterosis has been exploited for increasing the yield in several crops. However, direct use of heterosis in okra is limited. From economic point of view, retention of heterosis in further generation is more practical for low degree of inbreeding depression.

MATERIALS AND METHODS

The present study was undertaken in six crosses *viz.*, VRO-5 x GO-2, VRO-3 x VRO-5, KS-404 x HRB-108-2, D-1-87-5 x KS-404, Arka Anamika x Parbhani Kranti and HRB-55 x Arka Abhay involving ten promising genotypes of diverse nature *viz.*, VRO-5, GO-2, VRO-3, KS-404, HRB-108-2, D-1-87-5, Arka Anamika, Parbhani Kranti, HRB-55 and Arka Abhay. Six F_1 hybrids, their F_2 generation and ten parents were grown in *Kharif-2005* in a randomized block design with three replications at Vegetable Research Station, Junagadh Agricultural University, Junagadh. The sowing was carried out at 60 cm x 30 cm. The recommended agronomical practices

were followed to raise a healthy crop. The observations were recorded from five randomly selected plants from F_1 and parents and 20 plants from F_2 generation for fruit yield and its components traits. Relative heterosis and heterobeltiosis were calculated for percentage increase in F_1 over mid parent and better parent, respectively. Inbreeding depression was calculated as percentage reduction in F_2 over F_1 for eight characters *viz.*, days to flowering, days to first picking, plant height, and number of branches / plant, number of nodes / plant, number of fruits / plant, fruit length and fruit yield / plant.

RESULTS AND DISCUSSION

The results on heterosis, heterobeltiosis and inbreeding depression for eight characters in okra are presented in Table 1.

Days to flowering:

The parent with early flowering is considered as the better parent for calculating heterobeltiosis as it is desirable in okra. The relative heterosis ranged from -9.92% (KS-404 x HRB-108-2) to 3.56% (VRO-3 x VRO-5). Out of six crosses, four crosses *viz.*, VRO-5 x GO-2, KS-404 x HRB-108-2, D-1-87-5 x KS-404 and HRB-55 x Arka