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HETEROSIS FOR YIELD AND YIELD GOVERNING TRAITS IN OKRA

M.I. MANIVANNAN, J. RAJANGAM AND P. ARUNA

See end of article for authors' affiliations

Correspondence to :
M.I. MANIVANNAN
Department of Horticulture, Horticultural College and Research Institute, T.N.A.U., PERIYAKULAM (E) (T.N.) INDIA

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ABSTRACT

The crosses showing significant heterosis over better parent in Okra (*Abelmoschus esculentus* L. Moench) were VRO –5 X IIVR-10 for plant height, Arka Anamika X IIVR – 10 for plant spread, Punjab Padmini x Pusa sawani for number of leaves, Arka Anamika X VRO – 6 for days to 50%. flowering, Punjab Padmini x VRO –5 for fruits per plant, Pusa Sawani X Parbhani Kranti for fruit weight, Pusa A-4 X VRO-5. For number of Seeds per fruit, Arka Anamika X VRO-6 for hundred seed weight and Pusa A–4 X VRO – 6 for yield per plant. The crosses Pusa sawani x IIVR-10 for number of ridges per fruit, Arka Anamika x VRO–6 for hundred seed weight and Pusa A-4 x VRO–6 for yield showing significant heterobeltiosis all showed superiority over the standard check Parbhani Kranti for the respective characters. However, Pusa A-4 X VRO–6 recorded higher mean value for yield per plant and also recorded sustained improvement over check for the above mentioned traits.

Keywords: Okra, heterosis, diallel, hybrid vigour, yield.

India is the largest producer of okra in the world. The tender green fruits of okra are used as a Vegetable and the roots and stems of okra are used for cleaning the canned juice from which sugar is prepared. Okra has tremendous export potential as fresh vegetable. It accounts for 70% of the 30% foreign exchange earnings other than aim from export of vegetables. Production of F_1 hybrids may increase this state percentage as well as yield and fruit characteristics. The breeding strategy for exploitation of heterosis in okra is primarily dependent on the development and identification of high *per se* performing vigor and productive purelines with good seed quality and their subsequent evaluation for combining ability in cross combinations to identify crosses with high heterotic effects.

MATERIALS AND METHODS

The study involved ten diverse lines of okra in a half diallel fashion. The resulting F_1 hybrids were grown along with their ten parental lines in a randomized block design with three replications during the summer of 2003-2004. Using a size of 5 m X 0.6 m as single rows of each genotype accommodating 10 plants spaced 45 cm within rows, the experiment was carried out with all the recommended and required cultural practices for raising a healthy crop. Crossing technique was carried out with hand emasculation and pollination. For recording various growth and yield characters, randomly selected plants were observed. The mean value of various characters for each genotype were used in diallel analysis for the estimation of heterosis and effects.

RESULTS AND DISCUSSION

For plant height, heterosis over mid parent ranged from 19.58% (Pusa A-4 x Pusa sawani) to – 48.82% (Pusa A-4 x IIVR-10) (Table 1). The magnitude of heterobeltiosis varied from 83.97% (VRO-5 X IIVR-10) to – 45.73% (Pusa A-4 X IIVR-10). Similarly, all the F_1 hybrids exhibited significant standard parent heterosis over the standard check Parbhani kranti. The cross Pusa A-4 X VRO–6(19.06%) exhibited maximum positive and significant values for economic heterosis. These crosses showing significant and maximum positive effect may be suitable for producing tall varieties/hybrids where crosses showing maximum negative values may be used for developing dwarf varieties.

Pusa A-4 x VRO-6 was also better for other economically important traits like fruit length, number of fruits per plant, fruit weight, number of seeds per fruit, hundred seed weight and yield per plant.

For the development of early maturing okra negative heterosis for days to 50% flowering is considered desirable. On the other hand, the cross Arka Anamika x VRO-6 gave maximum negative heterobeltiosis to the tune of 20.58% over the standard check (Parbhani kranti). Punjab Padmini x VRO–5(9.37%) registered best among the forty five crosses showing significantly negative standard heterosis. The F_1 progeny of Punjab Padmini x VRO-5 registered best for yield associated characters like number of fruits per plant and fruit weight. But these