Research **P**aper

Potential heterosis in okra [*Abelmoschus esculentus* (L.) Moench]

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Abstract : The present study was undertaken to identify potential parents and superior cross combinations for yield and yield attributes. Twenty two hybrids generated by crossing with single tester (Parbhani Kranti) and twenty three lines along with parents for studying of heterosis, plant height, number of primary branches/plant, fruit length, number of fruits per plant, fruits weight per plant, fruit yield (q/ha) during rainy season of 2008-09 and 2009-10 at Vegetable Research Centre, Govind Bhallabh Pant University of Agriculture and technology, Pantnagar, Uttrakhand, India. The magnitude of heterosis varied from cross to cross for all the characters. The highest plant height was found in parent (AC-177) and cross (KS-404XPK), number of primary branches in parent (Pant Sel-1) and cross (AC-176XPK), fruit length in parent (AC-123) and cross (AC-123XPK), number of pods per plant in parent (AC-123) and cross(AC-123XPK) and fruit weight per plant in parent (AC-45) and cross (AC-177XPK). Thirteen crosses showed significant heterosis for fruit yield (q/ha), in which maximum heterobeltiosis, relative heterosis and standard heterosis were found in AC174XPK (158.86), AC 177XPK (136.67) and KS 404XPK (165.03%). Ten crosses showed the highest significant heterosis, in which maximum heterobeltiosis, relative heterosis and standard heterosis were found in AC123XPK (200.00%), (181.63%) and (200.26) followed by in AC 177XPK for number of fruits per plant.

Key words : Okra hybrids, Heterosis, Growth attributes, Yield

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Okra is an important vegetable crop being native to Hindustan. One of the major problems in okra cultivation in India is lack of location specific high yielding cultivars. In often cross-pollinated crops like okra, improvement in past was based on selection in locally adapted populations. Application of biometrical techniques, the line x tester analysis has appeared to be the best and vastly useful breeding tool, which gives us generalised picture of genetics of the characters under study. Thus, there is an urgent need to improvement the crop for yield as well as for quality which may be accomplished by exploitation of hybrid vigour through heterosis breeding. Nowadays, hybrids become very popular in several crops as they give an opportunity to utilize the synergistic effect of a genetic combination. A hybrid would be superior, hardy, more vigorous and more tolerant to biotic as well as abiotic stresses than the pure lines.

RESEARCH METHODS

Experimental material comprised of twenty two genotypes and single tester (Parbhani Kranti). Each line was crossed with tester and thus, 22 F_1 were produced. The 23 parents along with 22 F_1 were grown in a randomized block design with three replications at the Vegetable Research Centre, G.B.PU.A&T Pantnagar, U.S Nagar during rainy season of 2008-09 and 2009-10. Each entry had two rows and 20 plants in each replication. Each row of 3 m length was spaced at 60 cm and plants were spaced at a distance of 30cm in the rows. Recommended cultural practices were followed to raise a successful crop. Five plants in each entry and in each replication were randomly selected for recording the observations on number of primary branches per plant, plant height, fruit length, number of fruits per plant, fruit weight per plant and fruit yield (q/ha). The analysis of data was done as described by Snedecore and Cochran (1967), and heterosis expressed as percentage