

Heterobeltiosis in okra (*Abelmoschus esculentus* (L.) Moench)

S. R. MAMIDWAR*¹ AND NANDAN MEHTA

Department of Horticulture, Indira Gandhi Agricultural University, Raipur - 492 006 (C.G.) India.

¹Dept. of Plant Breeding and Genetics, IGAU, Raipur.

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SUMMARY

Exploitation of hybrid vigour in any crop improvement programme depends on substantial heterosis for yield, coupled with method of producing hybrid seeds. The heterosis revealed the type of gene action involved and therefore, it helps in the selection of suitable breeding methodology and parameters, which are employed for crop improvement. In okra very little work has been done in studying the heterosis effects on fruit yield and its components particularly in context to Chhattisgarh plains situation. Therefore, the present study was carried out to estimate the magnitude of heterosis for fruit yield and its components as well as to find out heterotic hybrid combinations for Chhattisgarh plains. This study comprised of fourteen lines (females), three testers (males) and their 42 hybrids, having contrasting agronomic traits were sown in randomized complete block design and replicated thrice during summer and rainy season of 2002-03. The observations were recorded on five randomly selected plants for eight quantitative traits viz., days to first flowering, days to 50% flowering, fruit weight, fruit length, plant height, number of seed fruit⁻¹, hundred seed weight and fruit yield plant⁻¹. The mean value of crosses and heterosis over better parent were estimated. Out of 42 crosses the highest heterosis over better parent was recorded for cross VRO-6 x Parbhani Kranti (55.57%) followed by cross Daftari-1 x Arka Abhay (54.31%) for fruit yield per plant. The results discussed above are quite indicative of the fact that hybrid okra has great potential of maximizing fruit yield in Chhattisgarh plains.

Key words : Okra, Heterobeltiosis, line x tester

Of the various options available, the genetic enhancement is one of the important tools to improve productivity of any crop. The heterotic breeding, a modern approach to enhance the genetic potential, has been widely achieved and established in various crop species. The present experiment was designed to find out the magnitude of heterosis over better parent in okra for fruit yield and its components.

MATERIALS AND METHODS

The experimental material comprised of fourteen genetically diverse genotypes of okra namely Daftari-45, Shagun, Kaveri Selection, X-2, OD, Bilaspur-55, Harsha, VRO-3, VRO-4, VRO-5, VRO-6, KS-410, OV and Daftari-1 as lines and three genotypes namely, Arka Anamika, Arka Abhay and Parbhani Kranti as testers. Forty-two F₁ crosses were obtained through line x tester analysis. The forty-two hybrids along with seventeen parents were grown in randomized block design with three replications during *Kharif* season of 2002-03 at the research farm of Department of Horticulture, Indira Gandhi Agricultural University, Raipur. In each replication, each entry was accommodated in three rows and there were 30 plants spaced at 45 and 30 cm inter-row and intra-row spacing, respectively.

The observations were recorded on 5 randomly selected plants from each genotype in each replication for eight quantitative characters, viz., days to first flowering, days to 50 % flowering, fruit weight, fruit length, plant

height, number of seeds fruit⁻¹, hundred seed weight and fruit yield plant⁻¹. The magnitude of heterosis as the difference in F₁'s performance over better parent in percentage was calculated and presented as per Singh *et al.*, (1996).

RESULTS AND DISCUSSION

The mean value of fourteen lines, three testers and forty-two hybrids as well as percentage heterosis over better parent for eight characters is presented in Table 1. The results obtained have been discussed as below.

Days to First Flowering :

The number of days taken to first flowering among the parents and hybrids varied from 44.30 to 52.07 days and 44.07 to 53.43 days, respectively. Twenty-six hybrids showed favourable heterobeltiosis, varied from -4.03 to -11.10 per cent, which was significant for thirteen hybrids. The highest heterobeltiosis for early flowering was observed in Daftari-1 x Arka Abhay (-11.10) followed by VRO-4 x Arka Abhay (-8.46), OV x Arka Abhay (-8.41) and Daftari-1 x Arka Anamika (-7.70) Similar results has been reported by Sharma and Mahajan (1978) and Singh *et al.*, (1996).

Days to 50% flowering:

The variation in parents ranged from 49.83 to 57.23 days and 49.50 to 56.33 days in hybrids. Twenty-six hybrids

*Author for correspondence