

Heterosis studies for fruit yield and its contributing characteristics in Okra [*Abelmoschus esculentus* (L) Moench]

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(Accepted :May, 2007)

SUMMARY

Twenty-eight crosses from 8 x 8 diallel excluding reciprocals were studied to assess the magnitude of heterosis over BP and SC for fruit yield and its components in Okra [*Abelmoschus esculentus* (L) Moench]. An appreciable amount of heterosis was observed for almost all the characters. The cross Hissar Unnant x Duptari 45 exhibited the highest magnitude of heterosis to the extent of 24.36 per cent over better parent and 13.93 per cent over standard check for fruit yield plant⁻¹ 22.13 per cent over better parent and 11.80 per cent over standard check for number of internodes plant⁻¹ and 17.87 per cent over better parent and 15.37 per cent over standard check for number of fruits plant per plant. The crosses Hissar Unnant x Duptari 45 (4 x 7), Parbhani Kranti x Arka Anamika (1 x 3), Arka Anamika x Ankur 40 (3 x 8) and Duptari 45 x Ankur 40 (7 x 8) were identified as promising crosses and they have immense practical value as can be exploited for hybrid vigour.

Key words: Heterosis, Heterobeltiosis, Standard heterosis, Okra

The magnitude of heterosis provides a basis for genetic diversity and a guide for the choice of developing superior F₁ hybrids so as to exploit hybrid vigour and / or for building gene pools to be employed in breeding programme. Study of heterosis and inbreeding depression has a direct bearing on the breeding methodology to be employed for varieties improvement. Fruit being an important component of yield in okra, several workers reported heterosis for fruit related components (Patil *et al.*, 1996; Bauri and Kabir, 1996; Rewale *et al.*, 2003). However, information on heterosis for fruit characteristics such as number of internodes plant⁻¹, fruit girth, fruit length and number of fruit plant⁻¹ is meager. Therefore, the present investigation was undertaken to study the quantitative manifestation of heterosis and hybrid performance for eight characters in okra.

MATERIALS AND METHODS

Eight diverse genotypes of okra (*Abelmoschus esculentum* (L.) Moench) viz., Parbhani Kranti (1), Arka Anamika (3), Shagun (6), Duptari 45 (7), Ankur 40 (8), Versha Uphar (5), Hari Rani (2) and Hissar Unnant (4) collected from senior vegetable breeder, All India coordinated of vegetable Improvement Project, M.P.K.V., Rahuri were crossed in all possible combinations excluding reciprocals. The 28 F₁'s and eight parents were evaluated in a randomized block design with three replications at Botany from, College of Agriculture, Pune during *kharif*, 2003. Each entry was sown in a single row of 4.5 m. length with a spacing of 45 cm. between rows and 15

cm. between plants. All the crop management and plant protection operations were carried out as per recommended package of practices. The observations were recorded on five randomly selected competitive plant for eight characteristics viz., days to 50 per cent flowering, days to maturity, number of internodes plant⁻¹, plant height (cm), number of fruits plant⁻¹, fruit length (cm), fruit girth (cm) and green fruit yield plant⁻¹. The heterosis was estimated as percentage increase or decrease of the mean of F₁ over its respective better parents (heterobeltiosis) and check (standard heterosis).

RESULTS AND DISCUSSION

The analysis of variance (Table 1) showed highly significant differences among treatment, parents and hybrids indicating presence of variability in parents and scope of selection in hybrid for fruit characters. The F₁ hybrids also exhibited highly significant differences amongst themselves for all the characters. Mean squares due to parents v/s hybrids were highly significant for days to 50 per cent flowering, days to maturity, plant height, fruit length and green fruit yield plant, suggested the existence of heterotic effects and independent behaviour of parents and hybrids. The results in general indicate that magnitude as well as direction of heterosis different from character to character.

The range of mean performance of hybrids was higher than parents for fruit yield, number of inter node, fruit girth and fruit length. The highest mean range was noted for plant height in parents and green fruit yield plant

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