



Research Paper

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Nature of gene action for yield and yield attributing traits in okra [*Abelmoschus esculentus* (L.) Moench]

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ABSTRACT : A line × tester analysis in okra was carried out with 20 parents (17 lines × 3 testers) and their 51 F₁'s, in two different seasons. For most of the traits dominance gene action was more important than additive gene action especially fruit yield per plant, plant height and number of seeds per fruit showed slight over dominance. During rainy season crop, the degree of dominance was maximum for days to first flowering (7.59) followed by plant height (7.28), number of branches per plant (4.69) and minimum was found in fruit length (-3.91). However, during summer season, all of the traits expressed more dominance genetic component of variance as compared to additive variance except for fruit diameter (0.01) and number of ridges per fruit (0.01) *i.e.* equal to dominance variance. The degree of dominance ranged from -3.79 (fruit length) to 8.34 (number of fruits per plant). In the crosses where dominance gene effect is significant heterosis breeding would be most effective.

KEY WORDS : Gene action, Dominance, Additive, Line × tester, Okra

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India is the largest producer of okra in the world. In India, the total area covered under okra is 0.41 million hectare and production is 4.19 million tonnes green pods, whereas productivity of the crop is 10.3 metric tones per hectare. Among the vegetables, contribution of okra is 5.2 per cent in area and 3.3 per cent in production. West Bengal is leading state in area and production of okra, while Andhra Pradesh in productivity (Anonymous, 2008). The genetical studies revealed that yield and its components is most assessing in nature and magnitude of gene effect is important for increasing the yield potential. Exploitation of heterosis has been attempted and hybrid vigour has been reported with as much as 86 per cent increase yield (Elmaksoud *et al.*, 1986).

RESEARCH METHODS

The present investigation was carried out at Institute of Agriculture Sciences, Banaras Hindu University, Varanasi, in

a Randomized Block Design with three replications during rainy season, 2007 and summer season, 2008. All the recommended practices were followed during experimentation. The experimental material consisted of 51 F₁'s, involving 17 lines (IC-128883, VRO-5, VRO-6, AC-108, IC-45806, IC-218877, IC-218844, Arka Abhay, IC-43720, IIVR-342, IC-140906, IIVR-198, EC-305612, IIVR-435, IIVR-401, SA-2 and IC-140934) and 3 testers [Arka Anamika (AA), Pusa Sawani (PS) and Parbhani Kranti (PK)]. Observations were recorded on fifteen characters *viz.*, plant height (cm), stem diameter (cm), number of branches/plant, number of nodes/plant, internodal length (cm), days to first flowering, days to 50 per cent flowering, number of fruits/plant, single fruit weight (g), fruit length (cm), fruit diameter (cm), fruit yield/plant (g), number of seeds/fruit, number of ridges/fruit and ascorbic acid content (mg/100g). Griffing (1956) and Gardner (1963) suggested an analytical technique for the estimation of genetic