

Prediction of combining ability effects through *per-se* performance in okra [*Abelmoschus esculentum* (L.) Monech]

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Accepted : April, 2008

ABSTRACT

Correlation studies were carried out in hybrids and their parents using *per se* values and combining ability effects. The results indicated strong association between growth and yield parameters and there was inverse relationship of earliness parameters with growth and yield parameters. Correlation studies between *per se* values and gca effects indicated that, parents combining ability can be predicted based on their *per se* performance for days to first and fifty per cent flowering, average fruit weight, number of fruits per plant and total yield per plant. Association between *per se* values and sca effects indicated that the sca effects of crosses can be predicted based on their *per se* performance for growth, earliness and yield parameters in okra.

Key words : Correlation, Gca and sca effects, Okra.

Okra is a popular vegetable grown for its tender pods in tropics, subtropics and warmer parts of a temperate zone. Even though India is the largest producer of okra, the productivity is very low compared to developed countries. Heterosis breeding is one of the prominent breeding methods for improvement in the productivity of vegetable crops. Proper choice of parents for hybridization is very crucial in generating high heterotic hybrids. Further identification of potential parents for developing heterotic hybrids in cumbersome and time consuming process involving development of F_1 hybrids using large number of genotypes and evaluating them with proper designs or models. If the relationship between combining ability effects and *per se* performance is established then, it can at least help in culling or rejecting large number of genotypes based on their *per se* performance for key characters. Ultimately fewer numbers of genotypes can be assessed for combining ability by following proper design and this can help in increasing the efficiency of breeding programme to achieve ultimate goals. Hence, an attempt was made in the present investigation to establish relationship between *per se* performance of parents and their gca effects, hybrids and their sca effects for various key characters.

MATERIALS AND METHODS

Fourteen lines were crossed with three testers in a line x tester design. Forty-two F_1 's along with parents were evaluated in a randomized block design with three

replications and a spacing of 60 x 30 cm. The observations recorded on various parameters were subjected to line x tester analysis to estimate sca effects of crosses and gca effects of parents. Simple correlation coefficients were worked out among different tracks using *per se* values ($n = 177$). Coefficients were also worked out between *per se* values of parents with their gca effects ($n = 17$) and *per se* values of crosses with their sca effects ($n = 42$) for different traits. Correlation analysis was carried out according to the procedure given by Panse and Sukhatme (1967).

RESULTS AND DISCUSSION

Correlation with per se values :

Number of leaves at 45 days after sowing (DAS) was positively and significantly associated with 60 DAS (Table 1). Days to first and fifty per cent flowering was negatively and significantly associated with number of leaves on 45 and 60 DAS as also indicated by Vijay and Manohar, (1990). Days to fifty per cent flowering had positive and strong association with days to first flowering ($r_p = 0.917$). Number of nodes on main stem had positive and significant association with number of leaves at 45 and 60 DAS but had negative and significant association with days to first and fifty per cent flowering (Sood *et al.*, 1995). Fruit length had positive and significant association with number of leaves at 45 and 60 DAS. Average fruit weight had positive and significant association with number of leaves at 45 and 60 DAS and fruit length but negative and significant association with days to first and fifty per cent flowering.