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Correlation studies in okra *Abelmoschus esculentus* (L.) Moench

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ABSTRACT

In a correlation study conducted with 20 parents (17 lines x 3 testers) and their 51 F_1's, in two different seasons *i.e. Kharif* and summer, it was revealed that the single fruit weight, number of fruit per plant and number of seeds per fruit were identified as important fruit yield component in *Kharif* season. However, number of fruits per plant, plant height and stem diameter were most crucial yield component for summer season.

Key words : Correlation, Line x tester, Okra

In okra so many varieties have been developed but substantial increase in productivity potential could not be realized probably due to genetic potential ceilings of the genotypes. Thus, there is an urgent need of genetic improvement of the crop for yield. The main objectives of crop improvement include the development of early maturing, high yielding, insect and disease resistance varieties along with other desirable quality attributes like good fruit shape and size besides fresh texture. In most of the developed countries like U.S.A. and Japan mainly F_1 varieties are under cultivation on commercial scale instead of open pollinated varieties. Estimation of correlation coefficient among the yield contributing variables is necessary to understand the direction of selection and to maximize yield in the shortest period of time. Genetic correlation indicates the relative importance of character(s) on which greater emphasis should be made in selection for yield. However, as the number of variables in the correlation study increases the direct and indirect association between yield and particular component character becomes complex. It only reveals the direction and magnitude of association between any two characters.

MATERIALS AND 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 *Kharif* season, 2007 and summer season, 2008. All the recommended practices were followed during experimentation. The experimental material consisted of 51 F_1'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, Pusa Sawani and Parbhani Kranti). 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). Phenotypic and genotypic correlation coefficients were worked out to study the inter-relationship between various pairs of characters as suggested by Al-Jibouri *et al*. (1958).

RESULTS AND DISCUSSION

The phenotypic and genotypic correlation coefficients computed between fifteen characters under study for parents and their F_1's in two different seasons (*Kharif* and Summer) are presented in Table 1 (*Kharif* parents), Table 2 (summer parents), Table 3 (*Kharif* F_1's) and Table 4 (summer F_1's). The genotypic correlation coefficients were higher in magnitude than phenotypic correlations for most of the traits barring few exceptions indicating inherent genetic association.

In *Kharif* parents, only 13 and 4 combinations showed significant positive and negative correlation coefficients, respectively. The single fruit weight (P = 0.720, G = 0.826) had highest positive significant correlation followed by number of fruits per plant (P = 0.642, G = 0.722) with number of seeds per fruit and