



Generation mean analysis for fruit yield and its attributing traits in okra [*Abelmoschus esculentus* (L.) Moench]

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ABSTRACT

The experimental material comprised of six basic generations, viz., P_1 , P_2 , F_1 , F_2 , BC_1 and BC_2 of three okra crosses (VRO-5 x GO-2, VRO-3 x VRO-5 and KS 404 x HRB -108-2). The individual and joint scaling tests indicated the presence of epistatic gene effect for all the characters in three crosses. The mean effect was significant and positive in three crosses and was higher in magnitude as compared to additive and dominance effects. Duplicate epistasis was predominant in most of the characters in three crosses except average fruit weight in cross VRO-3 x VRO-5 indicating that complementary gene effects were prevailed. Study of gene action revealed that both additive and non-additive components of genetic variations were found important for the inheritance of fruit yield and its attributes. However, fixable components of genetic variation *i.e.* additive (d) and additive x additive (i) were observed in cross VRO-5 x GO-2 for number of nodes per plant and internodal length. Under this situation, the pedigree method of breeding would be useful. The rest of the characters in respective cross combinations showed additive and non-additive type of gene effects. These traits would be possible to improve by either recurrent selection or biparental mating system in segregating generations followed by selection. Further, all the three types of gene actions viz., additive (d), dominance (h) and epistatic gene effects [additive x additive (i), additive x dominance (j) and dominance x dominance (l)] were involved in the inheritance of internodal length in the cross VRO-5 x GO-2.

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Key words : Generation mean, Gene action, Okra

The knowledge of gene effects for different characters is of prime importance before starting the breeding programme. Determination of most suitable breeding method and selection strategy for improvement of a trait would depend upon knowledge of gene action operating in the breeding population. Generation mean analysis is an efficient tool to understand the nature of gene effect involved in the expression of particular character. Though generation mean analysis is used to understand the gene effect in different crops, very few reports are available on this technique for understanding the gene effects in okra. In this context, the present study aims to estimate different kind of gene effects in the inheritance of fruit yield and its component traits.

MATERIALS AND METHODS

The present study was conducted at Vegetable Research Station, Junagadh Agricultural University, Junagadh during *Kharif* 2004. The experimental material

consisted of six basic generations viz., P_1 , P_2 , F_1 , F_2 , BC_1 and BC_2 derived from three crosses (VRO-5 x GO-2, VRO-3 x VRO-5 and KS 404 x HRB -108-2) involving five genotypes of okra. The six generations of above three crosses were raised in a Randomized Block Design with three replications. Each replication was derived with six compact blocks and each block consisted of single cross of six basic generations. Each block was comprised of total eleven rows consisting of single row each of P_1 , P_2 and F_1 , four rows of F_2 and two rows each of BC_1 and BC_2 generations. Each row was 3 m long, spaced at 60 cm distance and plant to plant distance within the each row 30 cm. Recommended crop management practices and plant protection measures were followed time to time.

Observations were recorded on eleven quantitative characters viz., days to flowering, days to first picking, plant height, number of branches, number of nodes, internodal length, number of fruits per plant, fruit length, fruit girth, average fruit weight and fruit yield per plant.