RESEARCH ARTICLE | *International Journal of Plant Sciences,* (January to June, 2010) Vol. 5 Issue 1 : 323-326

# Studies on generation mean analysis for yield and its associated traits in okra [*Abelmoschus esculentus* (L.) Moench]

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*Accepted : December, 2009*

**SUMMARY**

Generation mean analysis with six generations ($P_1$, $P_2$, $F_1$, $F_2$, $BC_1$ and $BC_2$) was chosen to study the nature and magnitude of gene effects for yield and yield attributing traits. The studies were undertaken on Vegetable Research Farm, Department of Horticulture, Institute of Agricultural Sciences, Banaras Hindu University Varanasi, during rainy season of 2006 and 2007. Characters days to first flowering, first flowering node, plant height, number of branches per plant, number of fruits per plant, fruit length and fruit yield per plant. The analysis showed the presence of additive, dominance gene effects and epistatic interactions in almost all the cases indicating the importance of both additive and non-additive gene actions in the expression of the characters. For majority of characters, duplicate type of gene action was observed. Biparental mating which could exploit both additive and non-additive type of gene effects was suggested for the improvements of the traits in the cross studies.

**Key words :** Generation mean analysis, Gene action, Duplicate, Okra

Okra is one of the important vegetable crop grown during spring summer and rainy season. It has a prominent position among vegetables due to its wide adoptability, year round cultivation, export potential and high nutritive value. The knowledge of gene effects for different traits in okra is of prime importance before starting a breeding programme. Determination of the most important suitable method and selection strategy for improvement of a trait would depend on the knowledge of gene action operating in the breeding population. Generation mean analysis is an efficient tool to understand the nature of gene effects involved in the expression of the characters. Though, generation mean analysis has been extensively used to understand the gene effects in different crops, but very few reports are available on the use of this technique for understanding the gene effects in okra crop. In view of this, the present study has objective to estimate different kinds of gene effects in the inheritance of fruit yield and its important traits.

## MATERIALS AND METHODS

The experimental material consisted of four okra crosses namely HRB-55 x P-7, HRB-55 x Pusa Sawani, BO-2 x P-7 and BO-2 x Pusa Sawani. Six generations ($P_1$, $P_2$, $F_1$, $F_2$, $BC_1$ and $BC_2$) of each of the four crosses were raised in a randomized block design with three replications during rainy season of 2007 at Vegetable Research Farm, Department of Horticulture, Institute of Agricultural Sciences, Banaras Hindu University Varanasi (U.P.). In each replication one row of parents and $F_1$s, two rows of back crosses and four rows of $F_2$s were grown in 10 meter long rows following 60 cm distance between rows. An approximate distance of 45 cm between plants within the rows was maintained by thinning. Recommended agronomic practices were followed for raising a good crop. The data were recorded on 5 competitive plants in parents and $F_1$s, 15 plants in back crosses and 20 plants in $F_2$'s in each plot of each replications. The mean perfomance was used for the analysis. Observation were recorded on days to first flowering, first flowering node, plant height, number of branches per plant, number of fruits per plant and fruit yield per plant. In order to estimate additive, dominance and interaction (additive x additive, additive x dominance and dominance x dominance) parameters, generation mean analysis was carried out following Hayman, (1958) and Jinks and Jones (1958). This procedure led to estimate the genetic parameters which gave the relative magnitude of various gene effects in different traits.

## RESULTS AND DISCUSSION

All the four crosses were subjected to A, B, C and D scaling test Mather, (1949) to sort out interacting and non interacting crosses. The test indicated the presence

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