

Research  
Paper

## Selection indices for improvement of fruit yield in okra [*Abelmoschus esculantus* (L.) Moench]

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### ABSTRACT

Sixty-eight advanced breeding lines of okra along with their seven parents and a check variety were evaluated for twelve characters. Genetic differences were significant for all the traits. The magnitudes of GCV and PCV were higher for fruit yield per plant, primary branches and fruits per plant. However, internodal length, plant height, primary branches, fruit length, ten fruit weight and fruit yield per plant exhibited moderate heritability with moderate to high genetic advance, indicative of reliability of such characters for effective selections. Discriminant function analysis based on six characters, namely fruit yield per plant, nodes per plant, plant height, internodal length, primary branches and ten fruit weight indicated that selection efficiency of the function was improved by increasing number of characters in the index. The index involving all the six traits recorded the highest genetic gain and selection efficiency. However, the index with three parameters, *i.e.* fruit yield per plant + plant height + ten fruit weight was comparable and practically possible to use for selecting suitable plant types.

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**Key words :** *Abelmoschus esculantus*, Discriminant function analysis, Fruit yield, Component traits, Selection efficiency

## INTRODUCTION

Variability is the prerequisite for success in improvement of any crop plants. Also, it is a key factor that determines the amount of progress expected from selection. The another important aspect in plant breeding programme is the selection indices, which are useful in understanding the extent of improvement that can be effected in yield by combination of characters. Discriminant function analysis developed by Fisher (1936) and first applied by Smith (1936) gives information on proportionate weightage that should be given to a particular yield component. Few studies on selection indices in okra have been carried out earlier. Lal (1986) studied selection indices for improving earliness, pod yield and seed yield and Singh and Singh (1978a) for fruit yield. However, in order to have a more comprehensive knowledge about genetic variability for yield and its attributing traits and to find out a suitable selection indices for the improvement of fruit yield in okra, the present investigation was conducted using advanced breeding lines derived from nine crosses.

## MATERIALS AND METHODS

Experimental material consisted of 68 advanced breeding lines derived through pedigree method of selection from nine crosses in okra. Four lines of the cross D 1-87-5 x GO 2, four of D 1-87-5 x Arka Anamica, nine of D 1-87-5 x Lorm 1, nine of D 1-87-5 x HRB 55, eleven of D 1-87-5 x Parbhani Kranti, twelve of GO 2 x HRB 55, five of GO 2 x Parbhani Kranti, seven of Parbhani Kranti x Chhodawadi and seven of HRB 55 x Chhodawadi along with their seven parents and a check variety Pusa Sawani were evaluated in randomized block design with three replications. A single replication comprised of one row of each genotype. There were ten plants in a row spaced 30 cm apart; the row-to-row spacing was 60 cm. All the agronomic practices including plant protection measures were followed for harvesting good crop. Fourteen picking were done for harvesting marketable green fruits. The observations were recorded on five plants selected at random from each plot for twelve characters namely days to 50% flowering, days to first picking, plant height, primary branches per plant, nodes per plant, internodal length, fruit length, fruit girth, fruit shape index, fruits per