

## Association of characters in relation to shoot and fruit borer infestation in brinjal (*Solanum melongena* L.)

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### ABSTRACT

To initiate breeding programme, it requires information on the magnitude of variation in available material and knowledge of association of various plant characters with each other and among themselves so that a rational choice of characters for selection can be exercised. An attempt was made to investigate the association of characters between the physical and chemical characters with percentage infestation of shoot and fruit borer in brinjal.. The correlation studies with various physical characters revealed that the per cent infested fruits had significant positive correlation with pedicel length and calyx length. The per cent infested shoots had significant positive correlation with shoot thickness and total shoots. The per cent fruit infestation had significant positive correlation with total sugars, potassium, zinc whereas significant negative correlation with total phenols, phosphorus, iron, copper, manganese, calcium, ash and silica. The per cent shoot infestation had significant positive correlation with nitrogen, zinc, whereas negative correlation with phosphorus, copper, manganese, calcium, crude fibre, ash and silica.

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**B**rinjal (*Solanum melongena* L.) is one of the most popular vegetable crop cultivated throughout the warmer regions of the world. A breeding programme to be initiated for yield and other characters requires information on the nature and magnitude of variation in available material and knowledge of association of the various plant characters with yield and among themselves so that a rational choice of characters for selection can be exercised. An exclusively self-pollinated vegetable is improved by selection. Efficiency of selection in any breeding programme mainly depends on the knowledge of association of characters. The correlations among the various characters are important for three reasons, first, in connection with the changes brought about the selection which is important to know how the improvement of one character causes simultaneous changes in other characters. Second, in connection with natural selection and third in connection with the genetic cause of correlation (Falconer, 1960).

### MATERIALS AND METHODS

The field experiment was conducted during *kharif* season of 2003 in the Department of Horticulture, Mahatma Phule Krishi Vidyapeeth, Rahuri. The experimental material comprised of a cross *Solanum integrifolium* x Ruchira, having six generations ( $P_1$ ,  $P_2$ ,  $F_1$ ,  $F_2$ ,  $BC_1$  and  $BC_2$ ). The experiment was laid out in a randomized block design with three replications. All recommended cultural practices were followed to ensure

good crop stand. Five competitive plants from each parent and  $F_1$ , 20 plants from  $F_2$  and 10 plants from  $BC_1$  and  $BC_2$  in each of the replication were selected randomly for recording observations for 13 physical characters on shoot and fruit borer infestation, and different quantitative characters (Table 1). The chemical parameters *viz.*, total sugars, total phenols, N, P, K, Fe, Cu, Zn, Mn, calcium, crude fibre, ash and silica of fruits (Table 2) and except sugars and phenols, all other parameters of shoots (Table 3) were determined according to the standard by A.O.A.C. (1975) procedures. The estimates of correlation was done according to the method given by Panse (1957).

Physical and biochemical constituents of the plants are known to impart resistance against pest and diseases. An attempt was made to investigate the correlation between the physical characters of plants and chemical characters of fruits and shoots with percentage infestation of shoot and fruit borer in brinjal.

### RESULTS AND DISCUSSION

Association of characters of infested fruits with physical characters of cross *Solanum integrifolium* x Ruchira was depicted in Table 1. The analysis of infested fruits with chemical characters of fruits was shown in Table 2 and that of infested shoots with chemical characters in Table 3.

The per cent infested fruits had significant positive correlation with pedicel length, calyx length whereas negative correlation with total fruits, and fruit skin