

Genetic diversity in brinjal germplasm

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Accepted : September, 2008

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ABSTRACT

Depending upon their mean values, the varieties like IC-1, IC-7, IGB-1, IGB-11, IGB-4 and IC-19 can be used as parents in hybridization programme for higher yield. As these genotypes have better means for yield and yield contributing characters and are placed in different clusters showing great genetic diversity.

Key words : Brinjal (*Solanum melongena* L.), Genetic diversity, Cluster, Genotypes.

Brinjal (*Solanum melongena* L.) is an important vegetable fruit crop. Farmers generally grow impure open pollinated and old varieties having good adoption but poor yield potential. Genetic improvements mainly depends upon the amount of genetic variability in the population. Mahalanobis D^2 techniques appears to a fruitful approach which is based on multivariate analysis and serves to be a good index of estimating genetic diversity (Gadekar *et al.*, 1992). Hence, an efforts was made for ascertaining the nature and magnitude amount of genetic diversity in seventy five genotypes.

MATERIALS AND METHODS

The experiment was conducted at Horticultural experimental field, Department of Horticulture, IGAU, Raipur during the year 2005-06 with 75 diverse genotypes of brinjal. The experiment was laid out in a randomized block design with three replications. One month old healthy seedlings of each genotype were transplanted with a spacing of 60cm x 45cm. The recommended package of practices was adopted for raising the crop. Observation were recorded in five randomly selected plants for twelve characters *viz.*, plant height (cm), number of primary branches per plant, plant spread (cm), number of long styled flowers, number of fruits per plant, days to 50 per cent flowering, days to first fruit set, fruit length (cm), fruit girth (cm), fruit stalk length (cm), average fruit weight (g) and fruit yield plant (g). The genetic divergence was estimated using Mahalanobis's D^2 statistic and the group constellations were formed according to Tocher's Method as described by Rao (1952).

RESULTS AND DISCUSSION

The analysis of variance showed significant difference among the genotypes with respects to each of the twelve characters. On the basis of D^2 values, the seventy five genotypes were grouped into ten cluster

(Table 1). The cluster VII was largest, comprised of 14 genotypes, followed by cluster III, which had 13 genotypes while ten genotypes were accommodated in cluster V, 9 genotypes in cluster IX, 8 genotypes in included cluster I, 7 genotypes in cluster IV, 5,4,3 and 2 genotypes were found in cluster VI, VIII, X and II, respectively.

Intra and Inter-cluster average D^2 values are presented in Table 2. The intra-cluster distance was maximum in cluster VI(2.733) and minimum in cluster IX (1.983). The highest inter-cluster distance observed between cluster II and IV (5.973), suggesting wide diversity among the constituent genotypes. The lowest inter-cluster distance was found between cluster I and V (2.387), indicating close genetic relationship among the

Table 1: Grouping of brinjal genotypes into different clusters

Cluster Number	Number of genotypes	Name of genotypes
I	8	IGB-2, IGB-46, IC-4, IC-13, IC-36, IC-38, IC-39, DBR-8
II	2	IC-19, IC-35
III	13	IGB-3, IGB-2I; IGB-22, IGB-24, IGB-27, IGB-38, IGB-42, IGB-43, 1GB-54, 1GB-55, IC-3, IC-5, IC-12
IV	7	1GB-II, 1GB-52, IC-2, IC-16, IC-17, IC-20, IC-42
V	10	IGB-9, IC-6, IC-23, IC-25, IC-29, IC-30, IC-31, IC-40, IC-41, IC-43
VI	5	IC-7, IC-9, IC-18, IC-28, Pusa Purple Long
VII	14	IGB-23, IGB-36, IGB-40, IGB-45, IGB-47, IGB-48, IGB-49, IC-10, IC-22, IC-24, IC-27, IC-33, IC-34, Mukta Keshi
VIII	4	IGB-4, IGB-5, IC-14, IC-26
IX	9	1GB-1, IGB-16, IGB-18, IGB-19, IGB-50, IC-8, IC-15, IC-21, IC-32
X	3	IC-1, IC-11, IC-37