

Genetic diversity in chilli (*Capsicum annum L.*)

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ABSTRACT

Genetic diversity among 36 chilli genotype was worked out using D² statistic. On the basis of genetic distance, these genotypes were grouped in to 11 clusters. Cluster-II was largest, consisting of 16 genotypes, while cluster, IV, V, VI, VII, VIII, IX and XI contained single genotype each. There was no parallelism between genetic diversity and geographical distribution. Among the different characters studied fruits per plant, fruit yield per plant, plant height, ten green fruit weight, powdery mildew disease incidence; leaf curl complex incidence contribute significantly for the genetic diversity. The maximum inter cluster distance (125.45) was highest between the II and X. The genotypes phule Sai, LCA-206, Pant C-1, KDC-1, Byadgi dabbi and AD-5 from these clusters may be used as parental donors for future hybridization programme to develop higher fruit yield with resistant to disease pests.

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Genetic improvement mainly depends upon the amount of genetic variability present in the population. In any crop, the germplasm serves as a valuable source of the base population and provides scope for wide variability of information on the nature and degree of genetic divergence. Study of genetic divergence in existing germplasm in selecting the parents for hybridization is more realistic (Kalloo, 1988). Therefore, in the present study, 36 chilli genotypes were evaluated to assess the genetic diversity among these genotypes.

MATERIALS AND METHODS

The experimental material consisted of 36 chilli genotypes including local (Byadgi kaddi, Byadgi dabbi, Dyavnoor kaddi, Kadrolli local, Sankeshwar, Lokur local) and advanced line (AD-4-10, AD-4-4, AD-8 and AD-5). The experiment was conducted in randomized block design with three replication during *khariif* 2002-03 at the Department of Horticulture, College of Agriculture Dharwad, UAS, Dharwad. A month old seedlings were transplanted with a spacing of 60cm and 45cm between rows and between plants, respectively. All recommended agronomic practices were followed to ensure a normal healthy crop. Observations on five randomly selected plants, multivariate analysis Mahalonobis (1936) was carried out (Rao, 1952), Grouping of genotypes was done as per the procedure given by Singh and Choudhery (1977).

RESULTS AND DISCUSSION

The analysis of variance revealed that the presence of significant variability among chilli genotypes for all the

characters studied. Based on the relative magnitude of D² estimates, 36 genotypes were grouped in to eleven clusters (Table 1). It is confirmed with the statement of Singh (1993) that the genotypes grouped together are less divergent than the ones, which are placed in different clusters. Among them, cluster-I was the largest and had as many as 16 genotypes and IV, V, VI, VII, VIII, IX and XI were solitary and II, III and X contained 4,7, and 2 genotypes, respectively. The pattern of clustering revealed that prevalence of certain extent of diversity in the materials maintained. Warade *et al.* (1997) also noticed maximum diversity in the genotypes studied.

The clustering pattern of genotypes indicates that

Table 1 : Grouping of chilli germplasm based on D² values

Sr. No.	Clusters	No. of genotypes	Name of the genotypes
1.	I	16	LCA-305, LCA-324, KDSC-810, LCA-334, KA-2, AR-19, AD-7, AD-4-10, Surakta, Punjab Gucchedar, Ujwala, AD-4-4, AD-8, Kadrolli local, GPC-82, Dyavanoor Kaddi
2.	II	4	Phule Sai, LCA-206, Pant C-1, KDC-1
3.	III	7	JCA-284, LCA-357, LCA-312, DH-5, LCA-300, LCA-301, PMR-21
4.	IV	1	Sankeshwar
5.	V	1	PMR-57
6.	VI	1	RHRC 50-1
7.	VII	1	Lokur local
8.	VIII	1	Mundu
9.	IX	1	VN2
10.	X	2	Byadgi dabbi, AD-5
11.	XI	1	Byadgi kaddi