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Studies on variability, heritability and genetic advance in chilli (*Capsicum annuum* L.)

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ABSTRACT

Genetic variability, heritability and genetic advance for 18 different quantitative characters were studied in 36 genotypes of chillies. The study indicated that the moderate to high genotypic coefficient of variation (GCV) and phenotypic coefficient of variation (PCV) were observed for most of the characters except days to 50 per cent flowering. High heritability (broad sense) with high genetic advance as per cent mean was observed for most of the characters except plant height and days to 50 per cent flowering, respectively.

Key words : Chilli, *Capsicum annuum L.*, Variability, Heritability and genetic advance

A critical estimate and study of genetic variability is pre-requisite for initiating appropriate breeding procedure for effective selection of superior genotypes. The partitioning of total variability into heritable and non-heritable components by using suitable design will enable the breeders to know whether the superiority of selection is inherited by the progenies. Since, natural genetic variation for most of the yield attributes is considerably high in chillies. There is an urgent need of information on the nature and magnitude of variation available in the material and part played by environment in expression of different characters. Keeping in view the above facts, the present investigation was undertaken to estimate the magnitude of heritable and non-heritable component of variation and genetic parameters such as genotypic coefficient of variation, heritability and genetic advance in 36 genotypes of chillies.

MATERIALS AND METHODS

The present investigation was carried out at the AICRP (Vegetable) plots in the Department of Horticulture, University of Agricultural Sciences, Dharwad during the *kharif* 2002-03. Thirty six germplasm consisting some released/pre-released varieties, breeding lines and local collections were taken for the study. Experiment was laid out in randomized block design with three replications. A month old seedlings were transplanted in 60 x 45 cm spacing and all the recommended agronomic package of practices were followed. The observations were recorded on five randomly selected plants per replication for each germplasm on 18 important characters. The parameters of variability like grand mean, range, phenotypic and genotypic coefficient of variation (As per the Burton, 1952) broad sense heritability (Burton and De Vance, 1953) and genetic advance were calculated. Angular transformed values were used for disease and pest incidence parameters.

RESULTS AND DISCUSSION

Good amount of variability was observed for all the characters under study (Table 2) wide range of variation was observed in all the characters except primary branches. Number of fruits per plant varied from 35.17 in Kadrolli Local (Table 1) to 157.83 (Pant C-1), yield per plant from 13.00 g (AD-8) to 64.67 g (LCA-300), leaf curl complex incidence from 30.7 (AD-8) to 62.13 (Byadgi Dabbi). Desphnade and Anand (1988), Nandadevi (1999), Munshi and Behera (2000) and Acharyya *et al.* (2002) also reported wide range of variation for most of the characters studied in this crop. The GCV, which gives a picture of extent of genetic variability in the population ranged from 4.17 per cent (Days to 50% flowering) to 162.99 per cent (Fruit volume).

The GCV values were considerably high for most of characters except days to 50 per cent flowering, plant height, number of primary branches, number of secondary branches and leaf curl complex incidence. These high GCV values bearing characters having higher range of variation have a better scope of improvement through selection. Table 2 shows narrow difference between GCV and PCV values for most of the characters indicated that these characters had low sensitivity to environment. These findings are in agreement with those reported by Munshi and Behera