

Genetic variability in chilli (*Capsicum annuum* L.) genotypes

SANDEEP D. PATIL, B.I. BIDARI, G.B. SHASHIDHARA AND N.K. HEGDE

Accepted : September, 2008

ABSTRACT

A field experiment was conducted with 37 chilli genotypes. The genotypic and phenotypic coefficients of variation were moderate on matured ripe chilli yield (33.95% and 34.18%). Low GCV and PCV were recorded for plant height (14.06% and 14.22%), crown size (10.65% and 14.25%), plant girth (16.18% and 16.61%), primary branches (8.63% and 11.73%), secondary branches (8.81% and 10.45%), days to 50 per cent flowering (7.34% and 9.18%), number of fruits per plant (18.62% and 19.47%) and dry chilli yield (26.56% and 26.85%), respectively. High heritability in association with low genetic advance over mean (GAM) was recorded for plant height (97.80% and 28.66%). High heritability coupled with moderate genetic advance as per cent over mean for plant girth (94.90% and 32.35%), number of fruits per plant (91.40% and 36.68%), matured ripe chilli yield (98.70% and 69.47%) and dry chili yield (97.80% and 54.11%). Low heritability coupled with low genetic advance as per cent over mean for per cent fruit set (33.40% and 6.72%).

See end of the article for authors' affiliations

Correspondence to:

B.I. BIDARI

Department of Soil Science and Agril. Chemistry, College of Agriculture, University of Agricultural Sciences, DHARWAD (KARNATAKA) INDIA

Key words : Genotypic, Phenotypic, Heritability, Chilli.

Chilli is the most economic and additive to improve food acceptability. It is grown for spice and vegetable purpose. Before taking up breeding programme in any crop species a thorough knowledge regarding the amount of genetic variability existing in that particular crop for various characters is essential. Information on nature and magnitude of variability in existing plant material and association among the various characters is pre-requisite for improvement in the yield.

MATERIALS AND METHODS

A field experiment was conducted at Spices and Plantation Crops department of Kittur Rani Channamma College of Horticulture, Arabhavi in Belgaum district of Karnataka state during 2005-06 under irrigation with 37 chilli genotypes and three replications in a randomized block design. In the present investigation, 37 genotypes (collected from ARS, Devihosur) viz., DCA-101, DCA-102, DCA-103, DCA-104, DCA-105, DCA-106, DCA-107, DCA-108, DCA-109, DCA-110, DCA-111, DCA-112, DCA-113, DCA-114, DCA-115, DCA-116, DCA-117, DCA-118, DCA-119, DCA-120, DCA-121, DCA-122, DCA-123, DCA-124, DCA-125, DCA-126, DCA-127, DCA-128, DCA-129, DCA-130, DCA-131, DCA-132, DCA-133, DCA-134, DCA-135, DCA-136 and DCA-137 were used. Observations on growth, yield and quality characters were recorded on five randomly selected plants in each treatment. Genotypic and phenotypic coefficients of variations (GCV and PCV) heritability, genetic advance over mean were estimated by statistical analysis.

RESULTS AND DISCUSSION

The data presented in the Table 1 revealed that, low genotypic and phenotypic coefficient of variations were recorded for plant height (14.06% and 14.22%), crown size (10.65 and 14.25%), stem girth (16.18% and 16.61%), primary branches (8.63% and 11.73%) and secondary branches (8.81% and 10.45%). This low GCV and PCV indicated the limited variability in the genetic stalk studied. These results are in support of those of Arya and Saini (1976), Sahoo *et al.* (1989), Warade *et al.* (1996), Rani *et al.* (1996) and Nehru and Manjunath (1996). The low estimates of GCV and PCV for these traits indicated limited variability offering little scope for improvement of these traits. So, for all these growth parameters, the variability has to be generated for their further improvement.

Lower estimates of GCV and PCV were recorded for days to 50 per cent flowering (7.34% and 9.18%), number of fruits per plant (18.62% and 19.47%) and dry chilli yield (26.56% and 26.85%). These results are in conformity with the works of Arya and Saini (1976), Achal shah and Panth (1986), Sahoo *et al.* (1989), Rani *et al.* (1996), Warade *et al.* (1996) and Nandadevi (1999). Lower GCV and PCV for these traits provide evidence of low variability. Hence, the variability has to be generated through introduction and hybridizing diversified genotypes to generate transgressive segregations.

Lower estimates of GCV and PCV were recorded for fruit length (18.19% and 18.67%), pedicel length (13.69% and 14.76%), matured ripe fruit weight (20.05% and 22.80%), dry fruit weight (15.06% and 16.51%),