

Genetic variability, heritability and genetic advance in pearl millet [*Pennisetum glaucum* (L.) R. Br.]

A.S. BHADALIA, K.K. DHEDHI, H.J. JOSHI AND K.J. VAGADIYA

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SUMMARY

A set of 64 genotypes comprising of eight parents and 56 F_1 s generated through diallel were studied for genetic variability, heritability and genetic advance of grain yield and its nine components in pearl millet at Jamnagar (Gujarat) during *Kharif* season of 2009-10. The analysis of variance revealed highly significant genotypic differences for all the ten characters studied. The characters, namely, days to 50 % flowering, days to maturity, ear head length, ear head weight, plant height, 1000-grain weight, fodder yield per plant and grain yield per plant were less affected by environment showing close correspondence between genotypic co-efficient of variation and phenotypic co-efficient of variation. It was observed that the characters ear head weight, fodder yield per plant and grain yield per plant had high magnitude of phenotypic range, genotypic co-efficient of variation, phenotypic co-efficient of variation, heritability and genetic advance expressed as percentage of mean, which revealed role of fixable type of gene effects. Hence, these characters can be improved through simple selection process.

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Key words : Pearl millet, GCV, PCV, Heritability, Genetic advance

Pearl millet [*Pennisetum glaucum* (L.)] is the fourth most food grain crop after rice, wheat and sorghum in India, and grown mainly in Rajasthan, U. P., Maharashtra, Gujarat and Haryana which account for 95 % of the area under this crop. The critical assessment of nature and magnitude of genetic variability, heritability and genetic advance is one of the important prerequisites of plant breeding. The estimates of variability parameters for grain yield and its components in pearl millet could help in planning successful breeding programme. Grain yield is a complex character being governed by a large number of minor genes with cumulative, duplicate and dominant effect and highly influenced by environment. This necessitates a thorough knowledge of variability owing to genetic factors, actual genetic variation heritable in the progeny and the genetic advance that can be achieved through selection. Therefore, the present

investigation was undertaken to estimate the genetic variability, heritability and genetic advance for grain yield and nine components in pearl millet during *Kharif* season of 2009-10.

MATERIALS AND METHODS

Eight genetically diverse inbreds of pearl millet *viz.*, J-2290, J-2340, J-2405, J-2454, J-2467, J-2480, J-2511 and H-77/833-2 were crossed in all possible combinations to generate a diallel set at the Pearl millet Research Station, Junagadh Agricultural University, Jamnagar (Gujarat) during summer-2009. Eight parents along with their 56 F_1 s were evaluated for grain yield and nine yield components in a Randomized Block Design with three replications at Pearl millet Research Station, Junagadh Agricultural University, Jamnagar (Gujarat) during *Kharif*-2009. Each entry was sown in single row of 5.0 m length having 60 x 15 cm crop geometry. All the recommended cultural practices were adopted to raise good crop of pearl millet. Observations were recorded on ten randomly selected competitive plants for each entry, in each replication for 10 characters (Table 1). Days to 50 per cent flowering and days to maturity were noted on the basis of whole plot. Mean values were subjected to standard statistical analysis of variance (Panse and Sukhatme, 1967), genotypic and phenotypic co-efficient of variations (Burton, 1952) and heritability and genetic

Correspondence to:

K.K. DHEDHI, Pearl Millet Research Station, J.A.U., JAMNAGAR (GUJARAT) INDIA
Email : kkdhedhi@rediffmail.com

Authors' affiliations:

A.S. BHADALIA AND K.J. VAGADIYA, Department of Agricultural Botany, College of Agriculture, Junagadh Agricultural University, JUNAGADH (GUJARAT) INDIA

H.J. JOSHI, Pearl Millet Research Station, J.A.U., JAMNAGAR (GUJARAT) INDIA