



Research article

Multivariate analysis of germplasm lines of pearl millet [*Pennisetum glaucum* (L.) R. Br.] for identification of dual-purpose cultivar

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Abstract

An experiment was conducted in a randomized complete block design with three replications to study the genetic variability in germplasm lines of pearl millet. A total of eight traits were taken including grain yield and dry fodder yield. Analysis of variance showed significant variability for all the studied traits. The grain yield ranged from 42.76 to 10.45 q/ha with an average mean of 20.32 q/ha, and the dry fodder yield ranged from 103.66 to 40.30 q/ha. There was little difference between PCV and GCV in the studied traits suggesting a minimum influence of environment. High estimates of heritability coupled with high/ moderate genetic advance were recorded for all traits indicating the presence of additive genetic variances. Correlation, regression and path analysis study revealed that grain yield was positively related to dry fodder yield, panicle length, panicle diameter and plant height. The first five principal components captured almost 90% of the variability, and the hierarchical clustering separated 28 germplasm lines into four groups. The studied germplasm lines have sufficient variability for grain and fodder yield. Selection of these germplasm lines in future breeding programmes would be rewarding to release dual-purpose cultivars.

Keywords: Genetic variability, Germplasm lines, Hierarchical clustering, Pearl millet, Principal component analysis