Exploitation of exotic germplasm through multivariate analysis for genetic improvement of fodder yield related traits in oat

Amandeep[*], Rahul Kapoor, Harshavardan J. Hilli, Gurjeet Singh and Rajvir Kaur

Punjab Agricultural University, Ludhiana-141004, India
*Corresponding author e-mail: mirokaman24496@gmail.com

Abstract

A set of exotic germplasm accessions of oat (*Avena sativa* L.) was investigated for principal component analysis, cluster analysis, and box plot analysis during the two *Rabi* seasons. Analysis of variance for all traits under study showed sufficient amount of genetic variability, which revealed that all genotypes significantly different from each other. Three principal component analyses had Eigen values more than one and explained about 65.77% of the total variation. The first principal component explained about 35.56% of total variation followed by second (18.01%) and third (12.20%) principal components. Clustering analysis based on various morphological traits assorted 28 genotypes into five clusters. Cluster I had the highest number of genotypes (23) followed by cluster III which consists of two genotypes. The clusters II, IV and V contained only single genotype each. Data frequency distribution using box plot analysis for green fodder yield and its attributing traits revealed that huge amount of variation was present in exotic germplasm accessions under study. Further testing of these exotic germplasm accessions for fodder traits will be very useful in future breeding programmes to enhance fodder yield in oat.

Keywords: Box plot, Cluster analysis, Exotic germplasm, Oat, Principal component analysis