

Estimation of Genetic Diversity in Sorghum Accessions Using Agro-Morphological and Nutritional Traits

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Abstract : Sorghum is one of the most important cereal crops grown as a source of calories for many people in tropics and sub-tropics of the world. Proper characterisation and evaluation of crop germplasm is an important component for effective management of genetic resources and their utilisation in the improvement of the crop through plant breeding. The objective of the study was to estimate the genetic diversity present in sorghum accessions grown in South Africa using agro-morphological traits and some nutritional contents. The experiment was carried out in Potchefstroom. Data were subjected to correlations, principal components analysis, and hierarchical clustering using GenStat statistical software. There were highly significance differences among the accessions based on agro-morphological and nutritional quality traits. Grain yield was highly positively correlated with panicle weight. Plant height was highly significantly correlated with internode length, leaf length, leaf number, stem diameter, the number of nodes and starch content. The Principal component analysis revealed three most important PCs with a total variation of 78.6%. The protein content ranged from 7.7 to 14.7%, and starch ranged from 58.52 to 80.44%. The accessions that had high protein and starch content were AS16cyc and MP4277. There was vast genetic diversity observed among the accessions assessed that can be used by plant breeders to improve yield and nutritional traits.

Keywords : accessions, genetic diversity, nutritional quality, sorghum

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