

Genetic Diversity of Sorghum bicolor (L.) Moench Genotypes as Revealed by Microsatellite Markers

Authors : Maletsema Alina Mofokeng, Hussein Shimelis, Mark Laing, Pangirayi Tongoona

Abstract : Sorghum is one of the most important cereal crops grown for food, feed and bioenergy. Knowledge of genetic diversity is important for conservation of genetic resources and improvement of crop plants through breeding. The objective of this study was to assess the level of genetic diversity among sorghum genotypes using microsatellite markers. A total of 103 accessions of sorghum genotypes obtained from the Department of Agriculture, Forestry and Fisheries, the African Centre for Crop Improvement and Agricultural Research Council-Grain Crops Institute collections in South Africa were estimated using 30 microsatellite markers. For all the loci analysed, 306 polymorphic alleles were detected with a mean value of 6.4 per locus. The polymorphic information content had an average value of 0.50 with heterozygosity mean value of 0.55 suggesting an important genetic diversity within the sorghum genotypes used. The unweighted pair group method with arithmetic mean clustering based on Euclidian coefficients revealed two major distinct groups without allocating genotypes based on the source of collection or origin. The genotypes 4154.1.1.1, 2055.1.1.1, 4441.1.1.1, 4442.1.1.1, 4722.1.1.1, and 4606.1.1.1 were the most diverse. The sorghum genotypes with high genetic diversity could serve as important sources of novel alleles for breeding and strategic genetic conservation.

Keywords : Genetic Diversity, Genotypes, Microsatellites, Sorghum

Conference Title : ICPGB 2016 : International Conference on Plant Genomics and Biotechnology

Conference Location : Cape Town, South Africa

Conference Dates : November 03-04, 2016