

Abstract

Acacia senegal belongs to the subgenus, Aculeiferum. It is an African arid and semi arid zone multipurpose tree species, highly valued for gum arabic production, agroforestry and desertification control besides other multiple uses. Genetic variation and resulting variable groupings were assessed using combined RAPD+ISSR markers within and among four Kenyan populations of A. senegal. Using 10 RAPD and 5 ISSR primers, a total of 55 polymorphic bands with an average of 3.6 polymorphic loci per RAPD+ISSR primer were detected. The mean Nei's gene diversity index (H) for the populations was 0.283 and mean observed number of alleles per locus (A) was 1.982. Much of the genetic variation resided within the populations based on the Analysis of Molecular Variance (AMOVA) (86%). The dendrogram derived using the Unweighted Pair-Group Method with Arithmetic averaging (UPGMA) clustered the Garissa and Wajir populations in one group and the Samburu and Baringo populations in the other, reflecting geographical sub-structuring of the genetic diversity. It was therefore recommended that selection of desired important economic traits for improvement and conservation should target individual trees within populations and cover the entire ecological amplitude of the populations.