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Population Structure And Genetic Diversity In Acacia senegal Complex Of Species As Revealed By SSR Markers

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Acacia senegal is a multipurpose African tree mainly exploited for gum Arabic production. It also played a capital role in soil fertilization and as fodder for animals. Despite its wide distribution in Africa and its economic and ecological importance, no studies about population structure and genetic diversity using highly polymorphic and co-dominant markers, such as microsatellites have yet been performed for this species. In this study, we investigate the pattern of A. senegal genetic diversity in its African distribution range using 469 samples from 12 populations and 6 countries. Microsatellite markers that we developed especially for this species are used. The first results show that different specific alleles are fixed in some populations. This led to a high genetic structure and confirms that A. senegal is a complex of several sub-species. When population samples with common alleles are only considered the genetic structure becomes low with Fst = 0.09, indicating gene flow among these populations. Genetic structure investigated using Bayesian model displays 6 clusters and presence of migrants among them. Allelic richness ranges from 3.16 to 5.17 with an average value of 5.03. Expected heterozygosity (He) ranges from 0.41 to 0.56 with 0.47 of average. These results show the ability of microsatellites markers developed and used in this study, to distinguish sub-species in the A. senegal complex and, to detect genetic structure and diversity within sub-species

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