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Population structure and genetic diversity of an endangered and endemic Moroccan tree (*Argania spinosa* L. Skeels) based on AFLP and IRAP markers

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*A*rgania spinosa L., the only representative of the monotypic genus *Argania* (Sapotaceae) is a plant endemic to Morocco with great ecological and economical values. The oil extracted from the Argan fruit possesses innumerable nutritional and cosmetic properties. However, the area and the density of the argan forest are in continuous deterioration. In the present study, two molecular marker techniques AFLP and IRAP were used for genetic evaluation of 130 individuals collected from 13 population locations in south-west Morocco. A total of 477 polymorphic bands were amplified by 4 primer AFLP combinations specific to regular genome, and 154 polymorphic bands were observed using 4 IRAP combination primers. Average polymorphic information content (PIC), resolving power (RP) and marker index (MI) were 0.24, 12.7 and 9.40, respectively for IRAP markers, while AFLP markers showed high resolving power (35.81) and Marker index (25.61), also the polymorphic information content was 0.21. The two-marker techniques target different regions of the genome, which justifies the need to combine two markers in obtaining reliable estimates of genetic diversity. Cluster analysis of the combined data revealed that 130 individuals could be divided into two sub-populations based on STRUCTURE, UPGMA (Unweighted pair group method with arithmetic mean) clustering, and PCoA (principal coordinate analyses). The Jaccard's genetic similarity ranged from 0.17 to 0.60 and the genetic differentiation among populations was low (AMOVA = 19%, Gst = 0.21), indicating the possibility of gene flow between the studied populations (Nm= 1,809). These results have an important implication for Argan tree germplasm conservation and management programs.

Biography

Ouafae Pakhrou got her Master's degree in crop production and during her end-of-course internship she worked on the molecular characterization of cork oak *(Quercus suber L.)* using molecular markers ISSR and SSR. recently, she obtained her Doctorat in Molecular biology and plant biotechnology and worked on the characterization of genetic diversity of an endemic tree to Morocco "Argan tree". This study aims to identify promising trees that can be used in the constitution of a "core collection" and the establishment of conservation and management programs. This work is carried out in the Laboratory of Microbiology and Molecular Biology at the Faculty of Sciences of Rabat University Mohamed V and financially supported by Hassan II Academy of Science and Technology (Morocco)

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