

Estimation of Genetic Stability and Diversity in Marula using The AFLP Technique

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Marula is a wild-growing dioecious tree species indigenous to Africa. The species exhibits a high phenotypic variability, which is exploited by indigenous communities for commercial gain. In order to assess the relationship between the phenotypic and genotypic properties of the marula species, the genetic structure of natural and cultivated marula populations was assessed using the Amplified Fragment Length Polymorphism technique. Furthermore, evaluation of the genetic stability within grafted marula lines was performed. Fourteen primer combinations were used for genetic stability analysis within grafted marula lines. Similarity indices within lines and the clustering pattern of individuals in the UPGMA-based dendrogram showed a significant amount of genetic variation within some grafted lines. Further genetic analysis showed that some individuals within the grafted lines had probably grown from the rootstock and not from the scion. Seven primer combinations were used to assess the degree of genetic diversity among natural marula sampled from Bochum, Tzaneen and Nelspruit. The similarity indices between natural marula stands and the clustering pattern in the dendrogram showed a low genetic divergence among marula and the tendency of samples from the same region to cluster together. Thus the phenotypic differences observed in marula could be due to the influence of environmental or epigenetic factors on the genetic characteristics rather than the manifestation of genotypic characteristics.