

ID: 155

DNA marker-assisted diversity analysis of *Mangifera indica* L. populations

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Abstract

The genetic diversity of various mango cultivars was evaluated using Start Codon Targeted (SCoT) and Inter-Simple Sequence Repeat (ISSR) markers, and their utility for analyzing genetic variants was compared. Mango breeding requires seedling germplasm resources. Different types of markers were looked at and compared to each other. In total, we used 10 primers each for SCoT and ISSR markers. Genetic diversity assessments based on genomic data can provide valuable information for germplasm management and varietal characterization. For many species, start codon targeted (SCoT) markers and inter simple sequence repeats (ISSR) are useful and highly polymorphic phylo-genetic markers. The genetic diversity of 29 SCoT and 28 ISSR polymorphic alleles was assessed in light of the findings. According to SCoT, there were an average of 4.3 alleles per locus, ranging from 3 to 6. The SCoT genetic diversity index had a mean of 0.383 and a range of 0.16 to 0.44. While the ISSR genetic diversity index has a mean of 0.392 and a range of 0.19 to 0.475. Although both analyses produce comparable findings, the mean values of the number of effective alleles (N_e), genetic diversity (H), and Shannon's information index (I) revealed that SCoT analysis better represents the actual relationships than ISSR analysis. The outcomes show that the SCoT marker system is helpful for mango genetic diversity study and mango species identification. Most of the parameters looked at were found to work better in the SCoT system. The most amazing finding from this study is that by using cluster analysis on SCoT and ISSR data, we were able to clearly identify different cultivars based on their genetics. This research found that the genetic makeup of the evaluated samples is diverse. The dendrogram derived from the ISSR marker and the dendrogram derived from SCoT markers had many similarities, although there were some differences. SCoT and ISSR analysis can find enough differences in DNA for identifying it.

Keywords: Genetic diversity, SCoT marker, ISSR marker

