

EVALUATION OF AVOCADO GERMPLASM USING MICROSATELLITE MARKERS

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Three horticultural races of avocado (*Persea americana* Mill.) are known: Guatemalan, Mexican, and West Indian. Each race has unique characteristics and current commercial varieties have been selected from within the races or from interracial hybrids. Utilizing 14 microsatellite loci we investigated the genetic variation among 224 accessions (394 plants) maintained at the National Germplasm Repository (NGR) in Miami, Fla. and a set of 34 clones from the University of California South Coast Field Station (SCFS) located in Irvine, Calif. The 14 microsatellite loci had an average of 18.8 alleles per locus and average unbiased genetic diversity was 0.83. The total propagation error in the collection, i.e., plants that had been incorrectly labeled or grafted, was estimated to be 7.0%. Although many unique alleles did exist, no useful race-specific markers were found. A general concordance between the horticultural race and the clusters obtained from molecular data was observed. Principal Coordinate Analysis (PCA) grouped the Guatemalan and Mexican races into two distinct clusters. The West Indian also grouped into a unique major cluster but with an outlying group. Using the PCA a change in the racial designation or interracial hybrid status for 50 accessions (19.7%) is proposed. The unbiased gene diversity estimate was highest in the Mexican and Guatemalan races and lower in the West Indian group. This demonstrates the need to collect more of the West Indian germplasm to broaden the genetic diversity and to emphasize the identification of individuals conferring resistance to Phytophthora Root Rot (PRR).