Identification of cDNA-RFLP markers and their use for molecular mapping in oil palm (Elaeis guineensis)

ABSTRACT

Restriction fragment length polymorphic (RFLP) probes derived from complementary DNA (cDNA) clones were developed for oil palm genome analysis. A total of 321 cDNA-RFLP probes were evaluated for their ability to detect polymorphism in a mapping family derived from the selfing of a Tenera guineensis palm (palm T128). Approximately 38% (123 probes) revealed polymorphism with at least one restriction enzyme. All the 123 informative probes were used to genotype the mapping family. Majority of the markers (80%) showed expected segregation ratios, indicating that most of the RFLP markers were inherited in a Mendelian manner. A total of 116 segregating markers were assigned to 20 linkage groups spanning 693cM. The RFLP markers were found to be largely well distributed and did not show excessive clustering in any particular region. This is the first published map for oil palm containing gene specific markers. The cDNA-RFLP probes mapped will not be merely anonymous markers with symbols, but point to the actual location of specific genes. The map also proved useful in revealing QTL associated with oil to wet mesocarp (O/WM) content.

Keyword: Oil palm; cDNA-RFLP; Linkage map; Molecular markers