

Detection of QTLs associated with growth, latex production and quality for the development of Marker assisted selection (Hevea brasiliensis)

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ABSTRACT

The objective of this study was to analyse the genetic determinism of the traits of interest for rubber tree breeding through QTL mapping approach: growth, latex production and rubber quality. The plant material consisted of 196 progenies derived from the F1 family RRIM600 x PB217. A genetic linkage map was built for this family with 229 SSR markers (microsatellites) and 198 AFLP markers. Phenotyping was carried out over a 6-year period on a field trial of 5 hectares, with around 2400 trees measured individually. Unexpected results were obtained with the identification of 1 QTL with major effects for each of the 2 traits, growth and latex production. The 2 parents, RRIM600 and PB217 bring a favourable allele at these 2 main QTLs. This result proved that, even in the genetic pool of elite varieties (Wickham clones), a significant genetic progress is still possible in rubber tree breeding, and that it can be monitored using marker aided selection. A second interesting result is the identification of pleiotropy of at least one major QTL, with effects on traits such as latex production and rubber quality.