

MOLECULAR MARKERS FOR CACAO TRAITS

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SUMMARY

Seventy-one microsatellites and 82 SNP markers were examined for their association with flush colour, shell content, seed butterfat content, fruit butterfat content, dry mass of cotyledons in a seed and dry mass of cotyledons from a fruit in 145 cacao accessions drawn from Refractario and Forastero groups. The more reliable markers were obtained when a vector matrix of multidimensional similarities rather than a matrix of population composition was utilised as a system screen. Fifteen markers (five SNPs and 10 SSRs) were found over six linkage groups (chromosomes 1, 2, 4, 5, 7 and 9). Each marker accounted for 10 – 43% of the phenotypic variation. Three markers (mTcCIR250, mTcCIR251 and SNP836) appeared fairly robust. The microsatellite mTcCIR250, present on chromosome nine, accounted for a substantial 34.1% of variation in the cotyledonary mass of a fruit. The microsatellite mTcCIR251, located on the same chromosome, tagged both the cotyledonary mass and butterfat content of a fruit explaining 43.4% and 41.7% of the variation respectively. The marker SNP836, present on chromosome 2, tagged both fruit butterfat content and cotyledonary dry mass in a seed explaining 12% and 11% of the total variation respectively.