

## Genetic fidelity and variability of micropropagated cassava plants (*Manihot esculenta* Crantz) evaluated using ISSR markers

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**ABSTRACT.** Molecular markers are efficient for assessing the genetic fidelity of various species of plants after *in vitro* culture. In this study, we evaluated the genetic fidelity and variability of micropropagated cassava plants (*Manihot esculenta* Crantz) using inter-simple sequence repeat markers. Twenty-two cassava accessions from the Embrapa Cassava & Fruits Germplasm Bank were used. For each accession, DNA was extracted from a plant maintained in the field and from 3 plants grown *in vitro*. For DNA amplification, 27 inter-simple sequence repeat primers were used, of which 24 generated 175 bands; 100 of those bands were polymorphic and were used to study genetic variability among accessions of cassava plants maintained in the field. Based on the genetic distance matrix calculated using the arithmetic

complement of the Jaccard's index, genotypes were clustered using the unweighted pair group method using arithmetic averages. The number of bands per primer was 2-13, with an average of 7.3. For most micropropagated accessions, the fidelity study showed no genetic variation between plants of the same accessions maintained in the field and those maintained *in vitro*, confirming the high genetic fidelity of the micropropagated plants. However, genetic variability was observed among different accessions grown in the field, and clustering based on the dissimilarity matrix revealed 7 groups. Inter-simple sequence repeat markers were efficient for detecting the genetic homogeneity of cassava plants derived from meristem culture, demonstrating the reliability of this propagation system.

**Key words:** Germplasm; Meristem culture; Molecular marker; Somaclonal variation