

Molecular Characterization of the Genetic Variability of a Colombian Collection of Soursop (*Annona muricata* L.) and Related Annonaceae Species of Horticultural Importance

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Purpose

To characterize the genetic variability of soursop and accessions of related annonaceous species of the Colombian Corporation of Agricultural Research (CORPOICA) germplasm bank at a molecular level.

Specific objectives

- To characterize the genetic variability of available annonaceous accessions using AFLP markers.
- To make a preliminary inventory of horticulturally important annonaceous species available at Colombian herbariums.
- To study the combination of molecular and morphological markers to develop taxonomic identification keys.

Outputs

Objectives

To characterize the genetic variability of available annonaceous accessions using AFLP markers

To make a preliminary inventory of horticulturally important annonaceous species available at Colombian herbariums

To study the combination of molecular and morphological markers to develop taxonomic identification keys

Outputs

Standardized AFLP methods for annonaceous DNA samples
 Statistical analysis of the number of primer pairs needed for the diversity study
 Information about genetic similarity between accessions and their clustering
 Publication about the AFLP characterization of the genetic variability of the CORPOICA germplasm bank annonaceous accessions

Information about the geographic origin of the horticulturally important annonaceous samples collected at Colombian herbariums
 Diversity maps of the annonaceous species characterized

Information about molecular-morphological taxonomic identification keys of annonaceous species

Beneficiaries

CORPOICA Annonaceae germplasm bank
 Plant breeders
 Farmers
 Plant nurseries

Scientific community, plant breeders

Taxonomists and botanists

Materials and methods

- AFLP variability analysis of 37 soursop accessions and 39 accessions of related annonaceous species
- DNA extraction using the method described by Dellaporta (1983)
- AFLP fingerprinting of the available accessions with two primer pairs, applying the method described by Vos et al. (1995), using the AFLP Analysis System I Gibco BRL kit
- Data analysis:
 - Calculation of genetic similarity between accessions using Nei-Li (1979) coefficient and conversion to a similarity matrix
 - Construction of dendrograms using Unweighted Pair Group Arithmetic Mean (UPGMA) analysis (Sneath and Sokal, 1973)
 - Calculation of heterogeneity parameters (Nei, 1987) as a measure of genetic variation within clusters

- Preliminary inventory of annonaceous herbarium collections compiling species, geographical source, and collectors
- Study of the combination of molecular and morphological markers in the development of taxonomic keys for annonaceous species

Grant: US\$ 8,000

Duration: 10 months

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