

MORPHO-AGRONOMIC, CYTOGENETIC AND MOLECULAR CHARACTERIZATION OF THE CIRAD YAM COLLECTION FOR THEIR ENHANCEMENT AND UTILIZATION IN GENETIC IMPROVEMENT PROGRAMS

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ABSTRACT: The greater yam (*Dioscorea alata*) is a crop with a potential for increased commercial production. However, several problems limit its development: Tuber characteristics are often not adapted to commercial production, and anthracnose disease, caused by the fungus *Colletotrichum gloeosporioides*, is always a threat. In 2003, CIRAD initiated a selection and varietal improvement program in Guadeloupe (French West Indies) to provide producers with new varieties adapted to agronomic, phytosanitary and socio-economic constraints. For this purpose, we have a collection of 150 *D. alata* accessions from different countries (South Pacific, etc), representing wide genetic crop variability, as well as 145 accessions of five other *Dioscorea* sp., closely related to *D. alata*, which present useful characteristics. This collection has been characterized at the morpho-agronomic, cytogenetic and molecular levels. Data on 13 morpho-agronomic characteristics were collected on the basis of IPGRI descriptors. Chromosome counting and flow cytometry were used to assess the ploidy levels. Fifteen microsatellite markers were used to estimate the genetic diversity of *D. alata* germplasm. The data obtained have made it possible to streamline cross-breeding and have also allowed us to select some good varieties that combine productivity, tuber quality and anthracnose resistance. These varieties are directly usable by producers.

Keywords: Yam, germplasm, characterization