

GENETIC IMPROVEMENT OF THE GREATER YAM *D. ALATA* THROUGH POLYPLOIDY BREEDING

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ABSTRACT: The greater yam (*Dioscorea alata*) is an important food crop in the Greater Caribbean, with a potential for increased commercial production. However, several factors limit its development, such as abiotic and biotic constraints, and tuber characteristics not adapted to commercial production. The CIRAD (Centre International de Recherche Agronomique pour le Développement) is conducting 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. *Dioscorea alata* species include varieties with three different ploidy levels of $2n = 40, 60$ and 80 . Until 2005, genetic improvement research was devoted entirely to the creation of diploid varieties. Triploid and tetraploid varieties were found to be more vigorous and to have a higher potential yield than diploid varieties. Our genetic resource collection has the distinction, in relation to others, of possessing fertile floriferous tetraploid accessions that we have used as genitors to produce, for the first time ever, triploid hybrids ($4x-2x$) and tetraploid hybrids ($4x-4x$). Four hundred triploid hybrids and 600 tetraploid hybrids were produced in 2006, and will be evaluated in 2007 to identify promising lines. Polyploidy breeding opens the way to developing hybrids with higher yields, combined with tuber characteristics adapted to commercial production (quality, tuber shape, etc.), and to anthracnose resistance. All of the research that we are conducting at this time on polyploidy breeding will be presented.

Keywords: *D. alata*, genetic improvement, polyploidy