

THE CULTIVATED YAMS (*DIOSCOREA CAYENENSIS* / *DIOSCOREA ROTUNDATA* COMPLEX) AND THEIR WILD RELATIVES IN BENIN REPUBLIC : DIVERSITY, EVOLUTIONARY DYNAMIC AND IN SITU CONSERVATION.

A. Dansi^{1,2}, H. Adoukonou^{1,2}, K. Moutairou³, O. Daïnou¹ & P. Sessou³

¹ Genetic Laboratory, National university of Benin, FAST, BP 526 Cotonou, Republic of Benin

² Crop, Aromatic and Medicinal plant biodiversity Research and Development Institute (IRDCAM): 071 BP 28, Cotonou, Republic of Benin

³ Biochemistry and cellular Biology Department, FAST, BP 526 Cotonou, Republic of Benin

Yam (*Dioscorea sp.*) occupy in Benin Republic, a pre-eminent position as food crops, next only to cereals and grain legumes. Among the diverse species cultivated, *D. cayenensis* / *D. rotundata* complex remains the most important, the most preferred and widely planted. In order to assess the diversity of the landraces maintained by farmers, to understand how farmers manage that diversity and to document the indigenous knowledge related to the diverse varieties, 70 villages distributed in 18 districts of 13 ethnic zones were surveyed. The number of varieties produced per village (10 to 45) and per farmer (2 to 12) is function of the ethnic zones. An important polymorphism of varietal name (about 300 in total) is observed; each village seems to have its series of vernacular (generic or specific) names. Origin, morphological traits, agronomic characteristics, cooking qualities, market value and medicinal proprieties are the criteria used by farmers for distinguishing and naming landraces. In the different production zones, factors influencing farmers varieties choice and the level of the diversity maintained are either social, cultural, economic, abiotic (edaphic, precipitation regimes) or biotic (pests and diseases). Using both morphological and isozyme analysis, 560 landraces accessions collected along with the surveys were characterised and classified into 26 cultivar groups, 90 morphotypes and 227 clones. Based on the geographical distribution of the clones, two centres of diversity were identified. The disappearance of some varieties (genetic erosion) has been reported. To overcome this erosion mainly due to biotic and economic factors and to broaden the existing genetic diversity, new genotypes are acquired by farmers through introductions from bordering countries or created through the domestication process. The domestication process consists of bringing into cultivation selected individuals which go through intense vegetative multiplication and selection procedure (over a lengthy but variable period of time) that induce morphological and biochemical change in the plant mainly at the tuber level. Selection criteria used by farmers during the domestication process are related to morphological traits, cooking qualities, agronomic characteristics and yield component. Surveys data coupled with morphological and isozyme analysis of 68 newly domesticated yams have shown that tubers collected in the bush and used in the domestication process are either from wild related species (*D. abyssinica*, *D. praehensilis*, *D. burkilliana*), weedy forms (diverse hybrids) or from existing landraces that turned to wild. The dynamic co-evolution between wild and cultivated forms hence point up has lead to the conclusion that in term of conservation, cultivated forms can not be separated from the wild ones. Yam species richness and density comparison of six of the national natural reserves allowed the selection of Ouémé-Supérieur and Ouénou-Bonou savannah zones in the north and Toui-Kilibo forest zone in the centre as genetic reserve for *in situ* conservation of natural populations of wild yam species. Complementary studies needed for the sustainable conservation of the genetic diversity of this crop and its wild relatives in the ecosystems where they have been generated are exposed.