

# Arbopolis

## Arbopolis: Strengthening African livelihoods, food and nutrition security using indigenous fruit tree species

### ABSTRACT

Driven by urban consumer demand, selective pressure from farmers and consumers for food tree species is weakening their genetic bases. This affects food tree species' adaptiveness to withstand environmental changes. Our work focuses on a key food tree species in Cameroon, *Dacryodes edulis*.

Achieving sustainable tree/forest management needs characterization and impact assessment of current management practices including aspects of species' adaptive capacity linked to their genetic diversity. IFTS contributions to diet and health and consumer demand are also poorly understood. 'Arbopolis' will characterize interplays between human practices, genetic diversity and sensory/nutritional aspects along the rural-urban continuum in Cameroon, focusing on an economically-important IFTS: *Dacryodes edulis*.

Understanding relationships between management practices, genetic diversity and consumer preferences will help to sustainably manage genetic resources, allowing adaptable/resilient food systems.

People, especially urbanites should be environmentally sensitized and especially to the role of indigenous fruit tree species in strengthening their livelihoods. Arbopolis will work with Yaoundé municipality and schools to raise environmental awareness. Setting up/running a school garden will be part of awareness-raising, also generating extension opportunities, by providing seedlings for home gardens/public areas to improve quality of urban life.

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**Project type :** AAP

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**Project leader :** Jérôme Duminil

**Project leader's institution :** IRD

**Project leader's RU :** DIADE

**Budget allocated :** 237000 €

**Total budget allocated ( including co-financing ) :** 275824 €

**Funding :** Labex

### GOAL

Arbopolis will contribute to strengthening african poor people's livelihoods through better knowledge, promotion and harnessing of IFTS, using a participatory approach centred on the main project stakeholders as active agents and researchers, within a multi-disciplinary framework. Sustainable management strategies of *D. Edulis* will integrate an urbanization gradient concept roughly corresponding to safou's domestic value chain, with strands originating in rural and peri-urban production zones and ending in yaoundé.

The project will acquire new local and scientific knowledge on interplay between genetic diversity and human practices (planting, management and consumption) and expectations (safou quality criteria, consumer demand, and on contribution of species to diet (see question marks-fig 3). More specifically we will:

- (i) characterize safou's value chain, moving from consumption in yaoundé and reaching towards production areas (along the urbanization gradient);
- (ii) characterize the heterogeneity of management practices (planting, pruning, harvesting, pest and disease control), uses, consumer demand, and cultural values (food, herbal medicine, wood uses, ornamental, improvement of soil quality) across geographical areas and socio-cultural/ethnic groups;
- (iii) identify and describe the different ethnovarieties recognized by locals;
- (iv) evaluate the species' genetic diversity distribution and adaptive capacity for changing environmental conditions along the rural-urban continuum; and
- (v) establish a nutritional/sensory profiling of safou fruits from main ethnovarieties, and
- (vi) assess acceptability and preferences for different safou fruit varieties with rural and urban consumers.

Preferred varieties with high nutritional value will be used in selecting and planting desired varieties for improved food security and wellbeing of populations, while maintaining sufficient genetic diversity for the species to adapt by developing conservation and management strategies of genetic resources.

Besides getting new knowledge, arbopolis will strengthen stakeholders' engagement in urban agroforestry through co-production of knowledge, awareness raising and social learning for ifts contributing to local diets, by collaborating with safou's value chain actors, including municipalities and primary/secondary schools from Yaoundé.. Knowledge sharing and awareness raising activities will be orientated by knowledge acquired in previous steps and tailored to participants' and intended beneficiaries' needs: women and men, boys and girls of different ages and ethnic affiliations.

## **ACTION**

WP1: Mapping safou's value chain for the city of Yaoundé

WP2: Mapping safou's value chain for the city of Yaoundé

WP3: Genetic diversity of the species along the urbanization gradient and link with human practices

WP4: Contribution of *D. edulis* to people diet along the urbanization gradient

WP5: Raising environmental awareness and planting activities

## **RESULTS**

- Strengthening African livelihoods, food and nutrition security using indigenous fruit tree species by acquiring new knowledge on (i) the inter-relationship between human behaviours (management practices and consumer choices) and genetic, nutritional and sensory diversity of the species; (ii) the contribution of fruit tree species on diet and food security.

## **PERSPECTIVES**

- Establishing a multi-stakeholders exchange platform involving rural and urban people, policy makers involved in environmental questions and scientists- stakeholders would act then to effect changes in management, policy and consumption to improve particularly urban wellbeing and nutritional security/ livelihoods.
- Strengthening a multi-disciplinary South/North scientific network on the conservation and management of sub-Saharan tree resources. Such a network will allow adoption of best conservation and management practices and result in improved livelihoods and nutrition.
- Raising awareness of urban and rural people on environmental questions, principally children through school activities, but also women and men that do plant trees and people that do not plant trees. More trees would be planted and sensitised children would be more likely to adopt improved practices now and in the future.
- Publishing technical briefs that will present a synthesis of information from scientific and indigenous

local knowledge acquired in the project. It will in particular provide information on the different existing ethno-varieties and their characteristics (allowing to identify them). This information could then be effectively applied by relevant stakeholders in changing practices along the rural-urban continuum.

- Acquiring knowledge on the various consumption patterns and habits, and the various cooking and processing ways, depending on the species and maturity stage. Knowledge is power. Once the stakeholders have access to the knowledge they are much more likely to apply the knowledge for improving the wellbeing of the target communities. The project will include mechanisms to ensure this knowledge is deployed.
- Identification of quality criteria of safou meeting consumer demand. Using the developed criteria stakeholders within the sanoufier value chain will be able to extract more value to boost livelihoods and nutrition.
- Mapping of nutritional and sensory properties of the diverse species. With a better overview of such properties beneficiaries will be able to make more informed choices. Identification of the most liked safou varieties. This will also stimulate use of more nutritional and productive varieties.