

A Global Strategy

for the conservation and use
of Coconut Genetic Resources

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Accessions of high agronomic or market quality values for the country would be funded, irrespective of whether they are sufficiently represented elsewhere or not.

Thus, it seems important to distinguish between what is needed at country level and what is needed *sensu stricto* for conservation of the species at global level. Most of the genebanks are interested in acquiring the same set of well-known, well-performing and representative varieties. Indeed, this is useful for their national breeders, as it serves as a core collection and basic material for breeding programmes. But when conservation is assessed at the global level, there is no need for the same germplasm to be conserved in more than two (according to FAO international standards) or three genebanks (according to some coconut genebank curators)³⁰.

2.4 Genetic resources information management

In a perennial plant such as the coconut palm, the constraints linked to its biology increase the cost of scientific progress and worsen the consequences of possible errors. Consequently, coconut research and conservation not only need high financial and human resource investments but also a secure and sustainable information management system³¹.

2.4.1 Local genebank management systems

In various countries, many years of field observation data have been lost as a result of different types of calamities and constraints, such as fires, floods, revolutions, staff turnover or simply the lack of funds leading to termination of the breeding programme. In some cases, due to the very long period between the start and completion of a breeding project, the data from initial years of bearing have been lost even before full project completion. High staff turnover has fortunately now reduced with greater concomitant stability and sustainability.

Data on characterization of accessions can be lost. This was recently the case in some COGENT member-countries. Acting on the advice of the COGENT secretariat, in 2013 and 2014 CRP-FTA and Bioversity International funded three internships (two MScs and a PhD) to assist researchers in cleaning, reconciling, improving and analysing the available data on genebanks and genetic experiments.

Some genebank curators often use home-made software or Microsoft Excel to store their data, which are



Tagging palms. (R. Bourdeix, CIRAD)

³⁰ Except for some varieties serving as international reference controls. For Dwarf-types, the Malayan Yellow Dwarf; for Tall-types, there is no consensus yet.

³¹ A coconut accession is presently kept in the field during 30 years, although most of the characterization is conducted during the first 12 years. A genetic experiment frequently covers an area of 8 hectares for a minimum period of at least 12 years. A coconut breeder often analyses the experiments established by his/her predecessor and establishes experiments for his/her successors.

generally scattered in many small files not all having the same structure. This put the data at further risk, because over time such bespoke software becomes obsolete, or it becomes difficult to understand the particular structure of the numerous small files used for storing the data.

The Coconut Data Management software (CDM) was created in 1996 by CIRAD for managing palm-by-palm data³². This software is presently used in only three COGENT member-countries. Its main advantage is an efficient graphic interface for managing the identity of the palms. The coconut database managed with CDM software in Côte d'Ivoire is the largest and most comprehensive existing database in any COGENT member-country. In October 2013, it contained 8.2 million observations of fruit and bunch harvests conducted on 90,500 palms during 47 years (from 1967 to 2013); and millions of other observations of standard descriptors and fruit component analysis.

2.4.2 Managing international coconut databases

Information on morphology, evaluation, origins and locations of accessions conserved *ex situ* is available in the CGRD³³ which was developed between 1994 and 2013 by CIRAD. Until 2002, the project was funded by the French Government via Bioversity International and implemented in collaboration with COGENT member-countries.

In 1999, the COGENT Steering Committee took the decision to release the CGRD into the public domain, in order to disseminate this useful information and create public awareness about coconut genetic resources³⁴. Since 2002 no regular funding has been available to manage this database.

In the CGRD, data on coconut cultivars are divided in two main components: (1) passport data and (2) characterization and evaluation data. It takes into account the standardized descriptors for the coconut palms and the methods detailed in the STANTECH manual. As indicated elsewhere in this Strategy, the CGRD is a crucial strategic tool for three reasons:

- It provides the only means to assess coconut conservation at the global level. Most strategic analyses presented in this Strategy rely on the content of CGRD;
- It provides access to information on conserved germplasm for all users. Curators can be informed of what exists in other genebanks and request germplasm transfers. Breeders can search for and identify the accessions they would like to include in their plans;
- It serves as a data repository, to back up paper documents containing historical data of accessions in the event of loss.

³² Version 3 of CDM delivered in March 2000 is able to manage the palm identification traits along with data on observations during the vegetative phase, leaf morphology, stem measurements and state of the palms. It is possible to execute powerful queries on the database, to export data into external file, and to make statistical analysis of widely used experimental designs. The software was introduced in a COGENT training course held in Montpellier in 2002.

³³ Available from URL: <http://www.cogentnetwork.org/cgrd-version-6-0-test-version>

³⁴ Source: minutes of the 8th COGENT Steering Committee held in Ho Chi Minh City, Vietnam, 20 -22 September 1999.