The astonishing diversity of the coconut palm under threat

Preserving and **making the most** of such wealth

Over the millennia, man has slowly created and preserved numerous coconut varieties that are nowadays used for food, medicinal and ritual purposes. The result is an abundant diversity that is notably displayed in the colour and shape of the fruits. However, those varieties, which have been passed down from generation to generation, are now under threat from the globalization of trade, cultural levelling and the industrialization of agriculture.

Young Samoan girl in a plantation. © R. Bourdeix.

State-of-the-art methods for a millennial heritage

- CIRAD is helping to preserve and make optimum use of that diversity through its work on variety certification, genetic improvement, and also on the anthropology of trade linked to biological resource management.
- The conservation of threatened agricultural species and selection of new cultivars are often distinct activities undertaken by different organizations. CIRAD offers the originality of working in both fields.
- CIRAD listens to farmers: implementing participatory breeding programmes and adopting breeding criteria that best meet their requirements respect their cultural diversity. In that way, farmers are readier to adopt innovations.

Preparation of a DNA electrophoresis gel. © L. Baudouin

For more information

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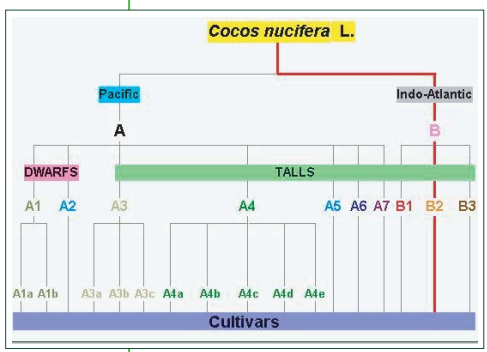
Clear identification of varieties for more effective utilization

If varieties are to be preserved and put to optimum use, they need to be known, strictly identified and characterized. For example, selecting varieties displaying resistance to a lethal disease may preserve the socio-economic balance in producing regions. CIRAD has developed precise varietal identification techniques: molecular markers, standardized protocols for morphological and technological markers. It regularly trains numerous researchers from developing countries in those techniques. A recent molecular study revealed the strong heterogeneity of so-called "Malayan Yellow" Dwarf palms in Jamaica; that disparity partly explains the inconsistent tolerance of those Dwarf palms to lethal yellowing, a serious disease that is rife in that country. CIRAD has also recently designed and published a variety catalogue of the international collection of coconut palms for Africa and the Indian Ocean.



Diagrammatic representation of coconut diversity.

Expertise in genetic improvement and seednut production

Coconut fruit diversity.
© R. Bourdeix

Rational dissemination of high-yielding hybrid varieties forms an integral part of rational diversity management. CIRAD provides expertise in designing genetic improvement programmes, monitoring vast field trials, and managing seed gardens. For example, a software exists for managing all the experimental data collected in the field for each palm over a long period.

The needs of producing countries are not restricted to oil production. CIRAD is developing observation protocols to identify varieties that are more suited to other uses, such as coconut water. The COGENT database, which lists the characteristics of conserved coconut varieties on a global scale, was designed by CIRAD.

Genetic diversity working for man

If a programme to develop coconut cultivation is to succeed, in addition to purely technical aspects, it also needs an understanding of the social undercurrents–traditional law, trading circuits and symbolic representations. For instance, a recent study set out to explain why Indian farmers in Kerala assess their coconut varieties differently, one being called "traditional" the other "modern", though they are genetically similar. Farmers appreciate innovation all the more if they feel they are benefiting from the progress made. All in all, their participation in breeding programmes is just as much an asset for preserving genetic diversity as it is for the economic development of communities. These anthropological approaches form part of the participatory management of biodiversity, which attempts to reconcile the dissemination of innovations, productivity demands, environmental conservation and local cultures.

The happy owner of a Pemba red dwarf palm in Tanzania.
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Partners...

- CIB (Coconut Industry Board), Jamaica
- CNRA (Centre national de la recherche agronomique), Ivory Coast
- CRI (Coconut Research Institute), Sri Lanka
- OPRI (Oil Palm Research Institute), Ghana
- VARTC (Vanuatu Agricultural Research and Training Centre), Vanuatu

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