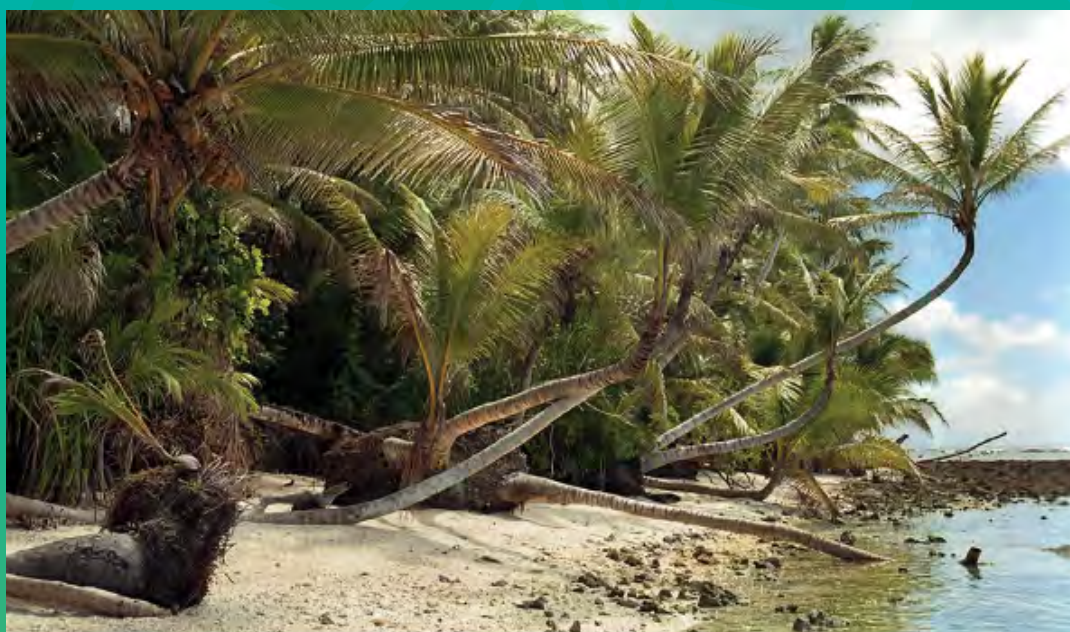




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Coconut Risk Management and Mitigation Manual for the Pacific Region



Compiled by R. Bourdeix, J. M. Sourisseau and J. Lin

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Coconut Risk Management and Mitigation Manual for the Pacific Region

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14. TRADITIONAL VARIETIES

By R. Bourdeix, F. Haikuo and M. Cook

Description

The risk is that the traditional varieties, which elders have taken thousands of years to breed, might rapidly disappear or dilute whereas they are vital for developing new products and markets, and for the prevention of emerging pests and diseases.

A major challenge is the existing conflict between the dissemination of agricultural technologies (intensification of agriculture) and maintaining agro-biodiversity. Adoption of more uniform, improved crop varieties may narrow down crop varietal diversity on-farm. Two polarized visions oppose each other: the 'genetic erosion model' blames globalization and the Green Revolution for most of the loss of agro-biodiversity. A less common school of thought sees improved varieties as having an important role in maintaining and even enriching genetic diversity of the local gene pool and indigenous cropping systems.

In the risk description n°12 (Lack of good and diversified varieties), we provided an example of syncretism leading to mixing and dilution of traditional and modern varieties. We also show, in the sections n°12 and n°35, how seednuts can be harvested wrongly on hybrids, either consciously or by mistake (Hybrids mistaken for productive Tall-types).

Occurrence and severity

A study conducted on Bellona (Solomon Islands) has shown that only five coconut varieties could be found in 2004, to be compared to the nine varieties recorded forty years ago. As experts, we estimate that a quarter to half of the coconut varieties are lost every 50 years, from 1850 onwards in the Pacific region. When surveying coconut varieties, asking questions of farmers and gardeners, the reply is often 'I don't know, but I know the one who knows'. Unfortunately, in many situations, it happens that 'the one who knows' has retired or passed away and will no longer be able to transmit her/his knowledge. Because of cultural and social changes linked to globalization, the agricultural knowledge of elders is often lost.

In the 2000s, L. M. Fili and T. H. Hoponoa, from the Ministry of Agriculture and Forestry of Tonga, told us about the traditional coconut variety called 'Niu 'utongau'. This variety belongs to rare forms of coconut, highly threatened, known as 'Sweet husk'. The husk of the young fruit is sweet and can be chewed like sugar cane. Its taste resembles that of coconut heart. Once the fruits are ripe, the husk fibres are white and thin and sometimes can be removed with bare hands. The 'Niu 'utongau' coconut variety was said to be found in quantity only on the small coral islet of Onoiki in the Ha'apai group. In 2018, when returning to Tonga, the key officers in the Ministry of Agriculture did not know 'Niu 'utongau' and had no idea about the traditional conservation work by elders in Onoiki motu.

During a survey conducted in Moorea Island, we interviewed a farmer about the same kind of rare and disappearing *sweet husk* varieties (see above). He replied: ‘I had one *kaipoa* coconut palm in my farm, but I cut it two years ago. Why? Over 10 years, I was unable to harvest a single fruit: all were stolen and eaten by children from the neighbourhood.’ This example is emblematic of the dynamics that occurred in Polynesia in the 2000s: a traditional variety remains appreciated by the child, the next generation; the farmer is not aware of the rarity and of the cultural value of the resource; because of various reasons – in this case overuse due to rarity- the farmer neglects or destroys the resource.

Crop diversity is central to food security. Article 9 of the International Treaty on Plant Genetic Resources for Food and Agriculture emphasizes the enormous contribution that local and indigenous communities and farmers have made and will continue to make for the conservation and development of plant genetic resources. With respect to national legislations, this article encourages protection and promotion of Farmers’ Rights regarding plant genetic resources for

food and agriculture. This includes: a) protection of relevant traditional knowledge; b) the right to equitably participate in sharing benefits arising from germplasm use; and c) the right to participate in making decisions, at the national level, on related matters. Thus, national laws that restrict access to plant genetic resources have emerged in many Pacific countries, while



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Plate 14. Whitish sweet husk variety (left) compared to normal coconut husk (right).

most of these countries do not have coconut gene banks to preserve their traditional varieties. The recognition of national sovereignty and restrictions to access genetic resources, combined with a lack of interest about traditional varieties, have made the availability of genetic diversity in recent years much more difficult. We estimate that complicating the management of genetic resources in such situation creates a strong risk of increasing the losses of traditional varieties.

Mitigation and adaptation

The coconut industry is facing an important revival linked to the diversification of coconut products. Both traditional varieties and associated knowledge should be preserved, because of their high cultural value and their economic interest.

Governments to support agricultural services in collecting, characterization and perseveration traditional coconut varieties. This may remain difficult in the Pacific countries that do not have coconut gene banks. The new concept of delocalized community-based coconut collections developed in the Cook Islands may help in such situation.

Agricultural officers, when selecting mother palms for national coconut replanting programs, should record data on palms in farmers' field as recommended in the method developed by Bourdeix et al. (2018); and carefully keep these data in a standardized and easy-access format. Create, share and maintain databases of traditional varieties conserved *in situ* by farmers, and produce catalogues of traditional varieties, following the template created for the catalogue of conserved germplasm.

Farmers' perception is the key determinant of their actions. Thus, communication with farmers is crucial. Farmers can pay more attention to conservation of their traditional varieties, and act by themselves, as individual or through NGOs or associations.

In the highly competitive context of the tourism industry, it is becoming increasingly important to stand out by offering less standardized travel offers. Many tourists are no longer satisfied with the exotic golden beaches fringed by anonymous coconut palms. Those who are satisfied of it will choose the cheapest destinations. According to Bourdeix et al. (2013): 'Coconut palms should no longer serve as symbols of anonymous and counterfeit exoticism: they tell true stories, specifically related to island cultures in the framework of an ecotourism approach.'

Actions to undertake

Ministries of Agriculture, in coordination with important cultural events, should organize varietal contests at the national or regional level. CIRAD launched a reflection on how to organize such a contest. Its multiple benefits would be to: 1) strengthen local interactions between coconut farmers; 2) encourage farmers to develop private initiative in coconut seed production; 3) strengthen interactions between farmers and national services in charge of extension and research; 4) locate coconut germplasm, assess its diversity and facilitate the collecting process; 5) help farmers preserve disappearing traditional varieties; and 6) boost global communication of the coconut value-chain in the Pacific region.

On-farm conservation strategies may target some specific farmers who better understand the occurrence of replacement and loss and those who better appreciate the role of traditional varieties to their livelihoods. Organizing contests will help to locate such farmers.

Record the elders' knowledge before it disappears. A century of colonial, capitalistic and industrial coconut cultivation should not wipe out the traditional varieties and associated knowledge that Pacific islanders have patiently bred and developed over millennia.

Educational programs are needed for farmers to understand the importance of traditional varieties and the need to conserve them, highlighting that they may be important varieties in the future, particularly for climate resilience. Mass media advertising such as radio programs may help people learn about genetic diversity and importance of conserving it. Farmers should be encouraged to provide their most diverse traditional varieties to the National *ex situ* coconut collection. Even if not perfect, transfer to the *ex situ* gene bank will increase the probability for those varieties to be conserved.

An imported question remains: imagine I am a farmer, I am afraid of losing a traditional variety, and want to deposit it in the national field gene bank (if it exists - in the Pacific region, only Fiji and Vanuatu presently have credible and efficient coconut gene banks); but I want this variety to be recognized as a property of myself or my local community. How to proceed?

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Plate 13. An amazing Compact Green dwarf with 'Kaipoa' characteristics: the husk of young fruits is tender, sweet and edible in its upper part. This palm was photographed on the Katiu atoll, Tuamotu, French Polynesia. It is the only one of its kind observed so far.

15. CERTIFIED ORGANIC PLANTING MATERIAL

By R. Bourdeix and S. Hazelman

Description

The risk is the shortage of good value organic coconut planting material. It may result in the farmer choosing organic planting material with low genetic value, so the yield of their farm will be limited; or the farmer choosing non-organic seedlings with high genetic value, so the farm could not be certified as organic during a certain period – or lose its certification and related markets.

Organic production is a way to get better access to market and to sell farm products at better prices. The delay between un-organic management and certified organic management is 3 years. So, in theory, farmers can plant non-organic coconut seedlings with mineral fertilization and chemicals. Three years later (or 1.5 years later according to the Pacific organic standards) when or before the palms will start to produce, it will be organic if no unwanted products are used during the delay.

Another point is that, if a farm is not organic, all the surroundings farms will have to consider a buffer zone. Size of buffer zones may differ according to standards, the physical configuration of the land, and the risk of contamination. On flat land, the distance is generally 20 m or less.

Occurrence and severity

In many places, mixed cropping is used. Not all the coconut palms are replanted at the same time. Other crops are often grown while the coconut palms are growing and not yet producing. Even in this case, the use of non-organic coconut seednuts will not remove the organic certification of the whole farm, for the other crops grown, such as banana, cocoa, etc. Thus, having a good source of organic coconut seedlings is not a major priority.

The countries where advanced coconut seednuts and seedlings are produced are Papua New Guinea, Fiji and Vanuatu (Hybrids and Dwarf varieties). All these seedlings are presently produced in an inorganic way, using mineral fertilizers to boost parent palm production. So, organic farmers who want organic seednuts can only plant traditional Tall-type varieties.

In many Pacific countries, seednuts and seedlings are taken mainly from uncertified farmers fields and there is no recording whether these producing farmers use organic cultivation or not.

Mitigation and adaptation

Convince leading countries, policy makers and heads of research centres that the first government sites to be organic certified should be the places where seednuts are produced.

Local stakeholders (men and women farmers, private enterprises, NGOs and CSOs) should be encouraged to become more involved in supplying organic and good quality planting material. Farmers and other stakeholders should be taught how to autonomously produce organic seedlings of hybrids and other varieties, using the Polymotu concept or any other accepted method.