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Coconut Risk Management and Mitigation Manual for the Pacific Region

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10. PESTS AND DISEASES IN NURSERIES

By R. Bourdeix and S. Boulekouran

Description

The risk is that diseases in nurseries may reduce the quality of seedlings delivered to farmers, and diseases may be transmitted from the infested nurseries to the farms.

Occurrence and severity

In the Solomon Islands, in 1979, an outbreak of disease in the Yandina commercial nursery was found to be associated with the presence of *Marasmiellus cocophilus (*Foale, 1987). This fungal organism was previously unrecognised in the Pacific and known only in Kenya and Tanzania. Seeds of the hybrid MRD x RIT (cross between the Malayan Red Dwarf and the Rennell Island Tall), which were produced in large quantities in Yandina, were banned from export after a recommendation from the SPC in Suva. In 1986 another recommendation to lift this ban was made after a period of 7 years during which the disease did not recur.

The coconut groves of French Polynesia are attacked by the *Brontispa longissima*, an insect pest attacking the very young coconut leaves. Biological control is ensured by the mass rearing of *Tetrastichus brontispae* (a parasitoid of Brontispa) which allows the release of coconut palms. In Tuamotu and Australes archipelagos, many farmers think that the beetle was introduced to their island because of the release of seedlings from the coconut nursery located in Raiatea Island. Most of these farmers no longer accept seednuts and seedlings from this nursery. We cannot confirm this disease transmission story but in 2006, when we visited the Raiatea nursery, it was full of brontispa. The beetle hides among very young leaves and may escape insecticide treatments.

In Samoa, serious seed germination problems arose due to the presence of *Marasmiellus inoderma* in the fruit husk. This fungus causes the death of the germinating seedling, often before the shoot emerges from the husk. The disease is known as coconut embryo rot, coconut pre-emergence shoot rot, banana sheath rot, taro corm rot or sheath rot of maize. Coconuts can be contaminated while still attached to bunches on coconut palms. According to Foale (1987), the plant pathologist E.H.C. McKenzie reported several findings about this disease: (1) No *Marasmiellus* is detectable in the husk of MRD X RIT hybrid seed when first harvested from the mother palms; (2) After 3 months in the nursery, up to 40% of nuts have *Marasmiellus* in the husk; (3) Seedling losses are variable depending on the variety, with greater sensitivity of the MRD x RIT hybrid compared to Samoa Local Tall.

In 2018 in Fiji, the nursery of Koronivia Research Station was contaminated by a disease, identified as leaf blight disease (*Cytospora palmarum*) by Dr Chowdappa, the Director of CPCRI, India. In some areas, the little fire ant (LFA*), Wasmania auropunctata* can colonize nurseries, care must be taken not to spread it during the distribution of seedlings.

Mitigation and adaptation

When installing a coconut nursery on a soil where other plants were previously growing, and especially on land previously covered by forest, old papers recommended a strong chemical disinfection of the soil before starting a nursery. This has environmental consequences and prevents the seednuts produced to be labelled as organic for at least three years.

All information related to nurseries is highly sensitive. A regular periodic report (per month or per semester) regarding the pest and disease status of national nurseries should be published online. This report must be signed by a designed service and a designed officer who will fully assume its contents. The report should also indicate, for each nursery and each crop, if the seednuts are organic or not.

A movie on coconut nursery was delivered by the CIDP project. The best technique, regularly resulting in a high germination rate, seems the one presently used in Côte d'Ivoire. In this country, the CNRA Agricultural Centre recommends that for a sandy soil the seeds are partially buried, watered regularly to efficiently control their hydration. Thus, for other countries, a solution for inland plantations could be to delimit the seedbed space with a concrete border, bring one or two trucks of sea sand, and filling the seedbed with a sand thickness of about 20 cm. Coconut was naturally selected to grow on sea sand!

From an island to the other, even in the same country, it is preferable to move seednuts rather than seedlings, and when feasible apply the same rules as in the case of international transfers.

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Plate 12. Preparation of transportation of coconuts from one island to another in Tuvalu. Even if in this case the transfer was well prepared (non-sprouted seednuts), there is a risk of disease or insect transmission from one island to another.

Actions to undertake

Collaborations between farmer groups and experts working on planting material and those working on coconut pests and diseases should be strengthened. Public awareness on the management of coconut pests and diseases should include recommendations on selecting good planting material, nursery management and planting.

The use of salt or brackish waters in the coconut nursery has been tested in Brazil on the Green Dwarf coconut variety. Using such salty water could help to reduce nursery diseases. This needs to be confirmed by further studies, devoted to how to disinfect seednuts and seedlings in an organic way.

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