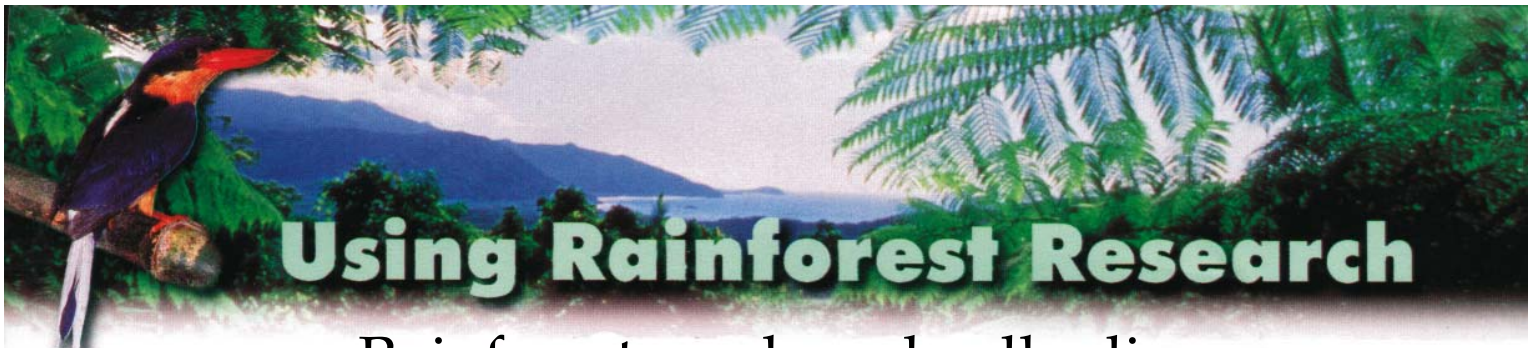


Rainforest masks a deadly disease

by Diane Daly
May 1998

Phytophthora cinnamomi is a fungal organism which has a destructive reputation of global proportions. It is blamed for "forest dieback" in native forests of Victoria and Western Australia and is responsible for millions of dollars of damage annually to the horticultural and forestry industries.

In fact, the potential damage is so severe that the Australian Government lists the disease as a key threatening process under the Endangered Species Protection Act.

One scientist likened the advance of the disease through the heathland as a 'front of death'. From the air, the scourge of *Phytophthora* is evident by the conspicuous patches of dead trees it leaves in its wake.

Research conducted in the 1970s and early 1980s by Dr Bruce Brown, a scientist with the Queensland Forestry Service, uncovered *Phytophthora cinnamomi* throughout the Wet Tropics rainforests. This threat to Australian rainforests, in its own soils, may have a more devastating effect than the latest bout of coral bleaching which is impacting the Great Barrier Reef.

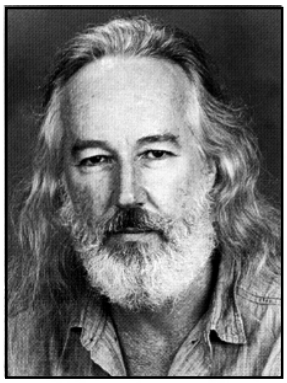
However, scientists have remained baffled for more than a decade by the fact the disease does not appear to be as rampant in the rainforests as elsewhere. Its impact seems to be limited to isolated patches of rainforest dieback.

Once conditions are right for its germination, *Phytophthora* invades its host plant through the root system. Having infused into the root tissue, the organism interferes with the host's ability to take in and circulate water, causing die back and eventual death.

One of the patches of tree dieback at Mt Lewis caused by Phytophthora cinnamomi.

The organism is very hardy and its infective agent can be carried on motor vehicle tyres and footwear. It can also be spread through ground water or by animals, including feral pigs. Once it finds a foot hold, it is nearly impossible to eliminate.

However, with increased demands for sustainable utilisation of Australia's rainforest resources, forest managers are worried that *Phytophthora* could hitch a ride elsewhere on the shoes or tyres of an unsuspecting visitor. Unfortunately, no new studies on *Phythophthora* in the rainforest have been undertaken in more than 15 years.



Dr Paul Gadek, of JCU's Cairns Campus, is setting up a new program of research to study Phytophthora *in the rainforests*

The Workshop

Against such a background, it is clear that there is an urgent need to update scientific knowledge of the biology and ecology of *Phytophthora* as it relates to wet tropical rainforests.

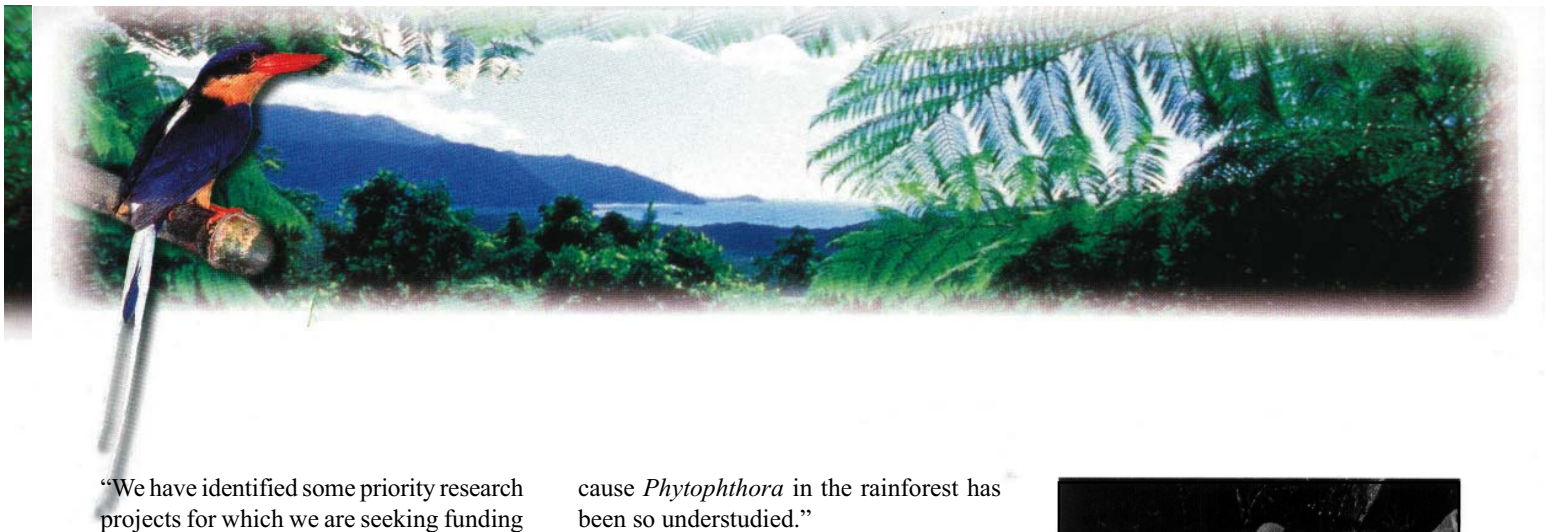
In late April, Rainforest CRC scientists joined university colleagues from around the country, landmanagers and representatives of the tourism industry to review the 'state of play' on *Phytophthora*. It was the first time a group of plant pathogen pundits and other interested parties had come together through a shared concern over this potent and potentially devastating disease.

Research projects identified

The opinion which emerged from this high level workshop was that a major research program needed to be urgently activated to clearly define the threat of *Phytophthora* to the Wet Tropics rainforests.

Workshop convenor and James Cook University scientist, Dr Paul Gadek, said funding would be sought for a series of research projects to increase understanding of the disease and contribute to future management plans.

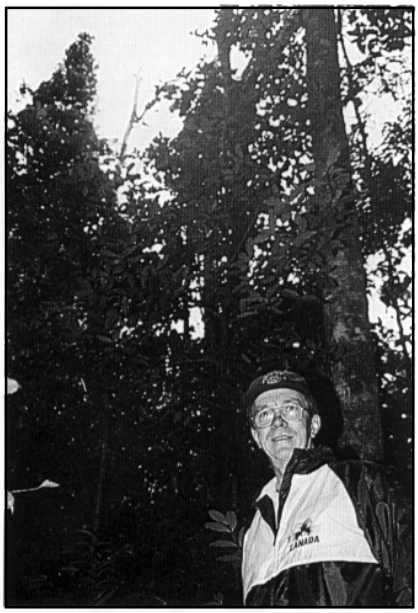
"The workshop was very timely, coming after a 16 year hiatus in the research effort into *Phytophthora cinnamomi* in the tropics," said Dr Gadek.



"We have identified some priority research projects for which we are seeking funding to answer specific questions, such as, "'where are the areas of the Wet Tropics that are most likely to have a problem with *Phytophthora cinnamomi*?', 'what plant communities are in danger?, and 'how do we monitor and isolate pathogens from the rainforest environment?'" Dr Gadek said.

The rainforest may hold the secret to controlling the devastation in other areas of Australia and even around the world.

"We know that *Phytophthora* exists in the rainforest but we don't know why it does not appear to be adversely affecting the trees and plant. It may be that native rainforest vegetation is immune to infestation," he added, "but that is difficult to say because *Phytophthora* in the rainforest has been so understudied."



Dr Bruce Brown, consulting pathologist, retired from the Queensland Forest Research Institute, was the first researcher to study Phytophthora cinnamomi *in tropical rainforests.*

Specific conditions – including human disturbance – might trigger the organism to produce its infective agent and kill trees. The workshop participants agreed that more needed to be known about the factors that trigger that reaction.

"If it is in the rainforest, we don't want to carry it out into areas of high risk such as fragile heathlands. On the other hand, if it is not native to the rainforests, we don't want to track it in from areas where it might be prevalent," said Dr Gadek.

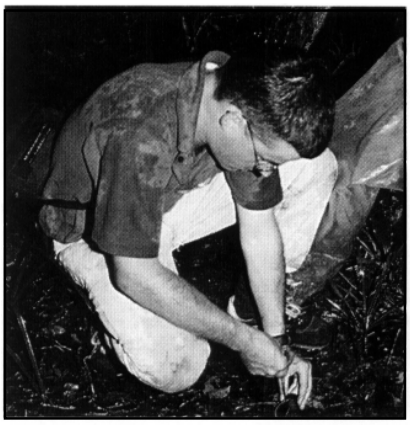
Nurseries and agricultural industries have applied practices of containment and mitigation – like injecting root systems with a retardant – but these would be impractical for native rainforests.

"We are told that once a tree is infected, you can't get rid of it. So the idea is to stop the infection happening in the first place," Dr Gadek said.

Tour operators supportive

Dr Gadek applauded the role being played by the tourism sector which has backed the concern over potential forest dieback with support for the *Phytophthora cinnamomi* workshop and the proposed research program.

"The tourism operators don't want to kill the goose that lays the golden egg. They use the Wet Tropics as part of their business. They, quite rightly, want to know as much about the disease as we do," Dr Gadek said.



Collecting soil samples to test for Phytophthora *in the rainforest.*

The workshop produced a volume of papers which will generate a technical report to support funding applications for *Phytophthora cinnamomi* research projects. The Rainforest CRC will seek funding to allow such projects to get underway later this year.

The research program will increase scientific knowledge on the 'front lines' to make sure the *Phytophthora* blight doesn't rear its ugly head in the Wet Tropics.

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PHOTOS: PETER LIK: WETROPICS