



Management strategies for Acacia plantation diseases in Indonesia and Vietnam

Overview

In tropical southeast Asia, plantation forests of Australian acacia and eucalypt species now exceed 7 million ha. These plantations are managed on short rotations, mainly to supply wood for the wood processing industries throughout the region.

Indonesia's forest industries are dominated by the pulp and paper sector. To make these industries more sustainable and less reliant on sourcing pulpwood from native forests, Indonesia's Ministry of Forestry has promoted policies that encourage the development of a plantation-based wood supply. Three species, *Acacia mangium*, *A. crassicarpa* and *Eucalyptus pellita* and hybrids currently account for most plantings because of their superior performance. Two significant diseases are causing significant losses of planted trees in Indonesia.

Vietnam has approximately 0.2 million ha eucalypt and 1.2 million ha of acacia plantations. About half of the plantation estate is managed or co-owned by smallholder farmers. The fungal disease *Ceratocystis* has recently caused up to 20 per cent mortality of some acacia plantations in Vietnam.

Threats from pests and diseases in non-native Australian plantation trees will only increase in the future, which is why effective disease and pest management, with a balance between research, extension and capacity building, is so important if plantation forest productivity is to be sustained.



KEY FACTS

ACIAR Project No. FST/2014/068

Duration: August 2015 to July 2019 (4 years)

Target areas: Indonesia and Vietnam

Budget: AU\$1,711,269

Project leader

Assoc Prof Caroline Mohammed, University of Tasmania

Key partners

- Australian Forest Operations Research Alliance (AFORA)
- New South Wales Department of Primary Industries
- Centre for Forest Biotechnology and Tree Improvement, Forestry Research and Development Agency, Indonesia
- Gadjah Mada University
- Vietnamese Academy of Forest Sciences (VAFS)
- Forestry and Agricultural Biotechnology Institute

ACIAR Research Program Manager

Dr Nora Devoe

Research/Objective

The project aims to reduce the impacts of diseases currently limiting the productivity of acacia plantations and build capacity and collaboration on forest health in Indonesia, Vietnam and neighbouring SE Asian countries.

The specific objectives are to:

- Reduce the impact associated with *Ganoderma* root rot disease in *A. mangium* plantations.
- Reduce the impact associated with *Ceratocystis* canker and wilt disease in *A. mangium* plantations.
- Build capacity in forest pathology and forest health management within SE Asia.

Expected scientific results

- Identification of the insect vectors involved in the dissemination of *Ceratocystis* in acacia plantations.
- Identification of major phenolic compounds involved in the response of acacia to *Ceratocystis* infection.
- Reduced plantation losses due to biological control systems for *Ganoderma* based on basidiomycete biological control agents, and a wider range of management options available for disease management.
- Evaluation of other types of biological control systems (other than those based on basidiomycetes) being explored in Indonesia and Vietnam for *Ceratocystis* and *Ganoderma*.
- Disease tolerant germplasm identified for deployment in plantations.
- A workshop and manual to inform how unmanned aerial vehicle (UAV) sensor-based platforms can provide data to improve inventory and forest health management.

Expected outcomes

- Widespread understanding of health constraints (beyond study areas) to forest production at regional level (SE Asia), and adoption of practices (appropriate management, good biosecurity) to overcome constraints.
- Public and private sectors in Indonesia, Vietnam and neighbouring SE Asian countries empowered to carry out collaborative and proactive research to protect forest resources.
- Impacts due to major forest health issues reduced, and the perception that such problems will only get worse and not better no longer a factor.
- Communities and downstream processing industries benefiting from the increase in available high-quality wood resources, and pressure reduced on native forests.

