## Root rot of SE Asian Acacia spp.

Root rot is a major disease problem of some *Acacia* species in SE Asian plantations, which can kill trees as young as 6 months old. There are two main types of root rot, being **red root disease** and **brown root disease**, which can be distinguished by the colour of the infected roots. Roots with red root rot have a wrinkled rhizomorphic skin and the red bark is white on the underside. Brown root rot is distinguished by rusty-brown velvety patches on the roots and in advanced stages there are honeycomb-like patterns of plates of hyphae in the wood.

Plantation trees of *A. mangium*, *A. aulococarpa*, *A. auriculiformis* and *A. crassicarpa* have been reported to be attacked by root rot. *Acacia mangium* is a widely planted species, for example, there are 800,000 ha of the species planted in Indonesia, and red root rot is the main disease in this species. Red root disease is caused primarily by *Ganoderma* species. Some samples have been identified as *G. philippii* and further research is being c onducted.

Root rot becomes more severe with successive plantation rotations, as there is a build-up of infected woody material which remains after harvest (roots, stumps and other debris). In parts of Sumatra (Indonesia) first rotation *A. mangium* is affected by root rot at 56 years old. In the second rotation tree death occurs by age 23, while in the third rotation, trees as young as 6 months can die. Tree death is usually preceded by foliage yellowing. A recent survey of root rot in Riau province in Sumatra found that root rot was affecting **up to 25% of trees** in a second rotation plantation (Irianto *et al.*, 2003).

**Controlling root rot** is difficult because the pathogen survives on the woody debris between rotations. Using a resistant tree species in alternate rotations with *Acacia mangium* presents one solution to slow the build-up of inoculum.

## Current research on root rot

An ACIAR Project "Heartrots in plantation hardwoods of SE Australia and Indonesia" is addressing some aspects of root rot within the project. This project is a collaboration between the University of Tasmania (Hobart, Australia), CSIRO Forestry and Forest Products (Perth, Australia) and the Forest and Nature Conservation R&D Centre (Bogor, Indonesia). For more information see <u>http://www.agsci.utas.edu.au/heartrot/index.asp</u>

## Reference

Irianto, R.S.B., Barry K.M., Santoso, E., Turjaman, M., Widyati, E. Sitepu, I. and C.L. Mohammed. 2003. Heart rot and Root rot Diseases of *Acacia mangium* plantations in Sumatra, Indonesia. *Proceedings of the International Congress of Plant Pathology*. Christchurch, NZ, Feb 2-8<sup>th</sup>.

## **Further reading**

Lee, S.S. 2000. The current status of root diseases of Acacia mangium Willd. In: *Ganoderma Diseases of Perennial Crops.* (Eds. J. Flood, P.D. Bridge, and M. Holderness). CAB International: Oxford, UK.

Old, K.M., Lee, S.S., Sharma, J.K. and Yuan, Z.Q. 2000. A manual of Diseases in Tropical Acacias in Australia, South-East Asia and India. CIFOR: Jakarta, Indonesia. 104 p.



Red root rot symptoms – red bark, white underside of bark and bleached wood.



Ganoderma fruit-body



Crown yellowing



Circle of missing trees which have previously died due to root rot