FIRST RECORD OF *PYCNOPORUS* ON *PAULOWNIA* TREES

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INTRODUCTION

Paulownia fortunei and *P. tomentosa* are currently being grown for high quality timber production in a number of private and public Australian plantations. The trees originated in China where they have been grown for many centuries, relatively free of disease. In the Mediterranean environment of Australia *Paulownia* appear to be more susceptible to infection by a range of pathogens.

The wood-rot fungus *Pycnoporus* is a widely spread saprotroph, and is also used commercially for the degradation of lignin and other biotechnological applications (1). It has previously been identified on dead *Paulownia* trees and tree stumps (N. Malajczuk, pers. comm.). This is the first report of *Pycnoporus cinnabarinus* on living *Paulownia* trees. Preliminary results from a trial assessing potential fungicides for control of this pathogen are also presented.

MATERIALS AND METHODS

Isolation and Identification Mature fruiting bodies were removed from 5-6 year old *P. fortunei* trees at two separate commercial plantations. The fruiting bodies were dissected into small pieces (5mm^2), surface sterilized and plated onto 2% malt extract agar.

DNA was extracted from the mycelia of 14-day-old cultures using the MoBio UltraClean 15 DNA purification kit (www.mobio.com). The ITS region was amplified using primers ITS 1 and 4 and the PCR product purified and sequenced. Sequences were compared to those lodged in GenBank.

Pathogenicity tests *Plugs of mycelium approx. 5mm^2 in diameter were taken from the edge of actively growing cultures. Incisions were made under the bark of 12-month-old* P. fortunei *trees with a sterile blade and the plug of mycelium inserted. The wound site was wrapped with parafilm for approx. 3 days before being removed. Plants were arranged in a randomized design and maintained in a glasshouse with temperatures of 30/17°C (day/night).*

***In vitro* fungicide trials.** Cultures were established on $^1/_2$ PDA containing 5, 10 or 20 mg/L of contact or systemic fungicide (Table 1). Cultures were grown at 20°C for 14 days and the diameter of growth measured and compared against the control on un-amended $^1/_2$ PDA.

Table 1. Fungicides used in *in vitro* trials

Fungicide	Chemical Group
Mancozeb	Dithiocarbamate (Y)
Chorus	Anilinopyrimidine (I)
Flint	Strobilurin (K)
Benlate	Benzimidole (A)
Kocide	Copper (Y)

RESULTS

Trees at two plantations were observed to have mature fruiting bodies erupting through the bark, which readily peeled away to expose the rotting wood beneath (Fig. 1). Based on ITS-PCR the fungus was identified as *Pyc. cinnabarinus*.

Under-bark inoculation of *Paulownia* with mycelium resulted in the production of dark lesions. These trees are still being observed to determine if fruiting bodies will be produced.

Two systemic fungicides, Benlate and Chorus, were the most effective at inhibiting the growth of *Pyc. cinnabarinus* on agar.

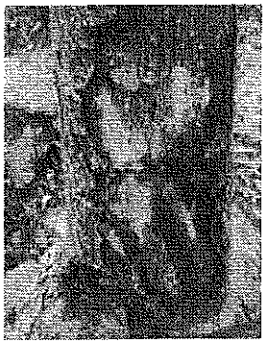

Figure 1 Bark peeling away to reveal white rot caused by *Pycnoporus cinnabarinus* on *P. fortunei* trees at a commercial plantation.

DISCUSSION

Whilst other wood and butt rot-associated basidiomycetes (eg *Heteroporus biennis* (2)) have been recorded on *Paulownia* this is the first report of *Pycnoporus cinnabarinus* infecting these trees.

Pycnoporus is causing major damage to the trees, and is very widely spread. It is likely to result in major losses in timber production and will cause significant numbers of tree deaths.

Further trials now need to be conducted in the field to determine whether the fungicides tested are able to control the fungus in heavily infected trees in the field.

ACKNOWLEDGEMENTS

This work was funded by the Australian Research Council (LP0349226), Environmental Forest Farms Ltd., and Westeq Ltd.

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