

EPIDEMIOLOGY OF ALTERNARIA BLIGHT OF PAULOWNIA

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INTRODUCTION

Paulownia trees are indigenous to China, where they are found in all regions from the sub-tropical south, to the plains and mountainous areas in the north. In Australia, a number of Paulownia plantations have been established in recent years as the timber is a valuable resource with strong export potential. The main species grown are *P. fortunei* and *P. tomentosa*.

In Western Australia, major plantations have been established to the north of Perth, in a Mediterranean environment with irrigation and fertigation over the summer months. At some sites the trees are subject to strong winds that can cause significant physical damage to the large leaves, and sunscald also has a major impact on tree growth.

In addition to abiotic factors affecting the health of the trees, foliar diseases are also present. *Alternaria* blight (1) and a phytoplasma-associated disease (2) have been reported, and other pathogens are regularly being identified. Here we outline some of the major findings from research being conducted on *Alternaria* blight of Paulownia in Western Australia.

MATERIALS AND METHODS

Isolates of *Alternaria*

Isolates were collected and identified by Ray *et al* (1).

Epidemiology of *Alternaria* blight

A spore trap was established in the field in 2003 to monitor the number of *Alternaria alternata* spores in relation to environmental conditions. Weather data were obtained from a weather station on site and from the Bureau of Meteorology.

A range of experiments were also conducted on excised leaves *in vitro* to determine the role of temperature, humidity, and free moisture on development of lesions by *Alternaria*. Host factors including leaf age and the presence of wounds were also assessed.

RESULTS AND DISCUSSION

Spore numbers in the field varied over time (Figure 1), and there was some correlation with environmental conditions such as humidity and rainfall. This study will be confirmed following a third season of spore trapping.

Experiments conducted *in vitro* confirmed that the optimum conditions for lesion development were incubation at 25°C with 98-100% relative humidity. Wounded leaf tissue was significantly more susceptible to infection than non-wounded leaf tissue and senescent leaves were more susceptible than newly-emerged leaves. These results correlate well with field observations.

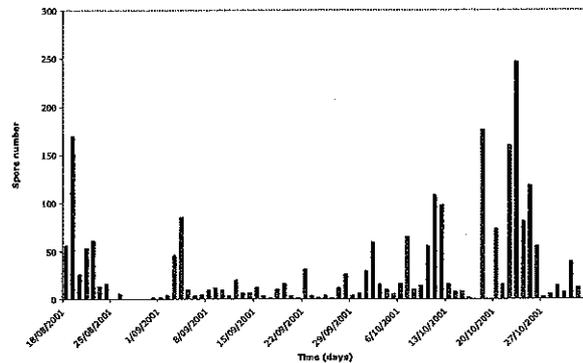


Fig. 1 Number of *Alternaria alternata* spores trapped in the field, August-October 2004.

CONCLUSIONS

The observations in this study have implications for management of *Alternaria* blight of Paulownia in Australian plantations. Management strategies may include the establishment of windbreaks around plantations, and rigorous insect control to minimize physical damage and wounding of leaves. Further work is continuing to investigate other factors influencing the epidemiology of this disease and possible methods of control.

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REFERENCES

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