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Jackson, T, Burgess, T. and Hardy, G.E.St.J. (1997) ***Phosphite concentration required for the control of Phytophthora cinnamomi in clonal Eucalyptus marginata, resistant and susceptible to P. Cinnamomi.*** **In: 11th Biennial Conference of the Australasian Plant Pathology Society, 29 September - 2 October, Perth, Western Australia, pp 184.**

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PHOSPHITE CONCENTRATION REQUIRED FOR THE CONTROL OF *PHYTOPHTHORA CINNAMOMI* IN CLONAL *EUCALYPTUS MARGINATA*, RESISTANT AND SUSCEPTIBLE TO *P. CINNAMOMI*.

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INTRODUCTION

The fungicide phosphite has potential to control the soilborne plant pathogen *P. cinnamomi* in native plant communities (1). Although phosphite is considered environmentally benign (2), phytotoxicity symptoms have been reported in a range of plants as a result of foliar sprays (3). The aim of the current study was to determine the optimal phosphite concentration required to restrict the growth of *P. cinnamomi* in the stems of clonal jarrah, resistant and susceptible to *P. cinnamomi* without inducing severe phytotoxicity symptoms.

MATERIALS AND METHODS

Phosphite was applied as a foliar spray at concentrations of 0, 0.25, 0.5, 1, 2 and 4%. Fourteen days after phosphite application, the stems of the resistant and susceptible clonal jarrah were inoculated with *P. cinnamomi*. Lesion development and pathogen colonisation of the stems were assessed seven days after inoculation.

RESULTS AND DISCUSSION

The leaf morphology influenced the degree of phosphite-induced phytotoxicity with the thinner leaves of the resistant clone exhibiting more severe symptoms of phytotoxicity than the thicker leaves of the susceptible clone (Table 1).

Phosphite application significantly reduced lesion development in the stems of resistant and susceptible clonal jarrah at all concentrations (Figure 1). Lesion development was most effectively restricted without inducing severe phytotoxicity symptoms at 0.5% and 1% phosphite in resistant and susceptible clonal plants, respectively (Figure 1). At 2% phosphite, the resistant clonal jarrah developed larger lesions than the susceptible clones. This may be attributed to phosphite-inducied phytotoxicity which disrupted the translocation of phosphite throughout the plant.

CONCLUSIONS

Symptoms of phytotoxicity were more severe in the leaves of the resistant jarrah clone.

The decrease in lesion development was directly proportional to an increase in phosphite concentration, although the higher concentrations induced more severe phytotoxicity symptoms.

Further studies into cuticle thickness and leaf morphology are required in order to determine the factors influencing the sensitivity of individual jarrah plants to foliar applications of phosphite.

% phosphite	resistant	susceptible
0	none	none
0.25	slight	none
0.5	slight	slight
1.0	moderate	slight
2.0	severe	moderate
4.0	extreme	severe

Table 1. Severity of phytotoxicity symptoms on the leaves of clonal *E. marginata*, resistant and susceptible to *P. cinnamomi*, after treatment with various concentrations of phosphite.

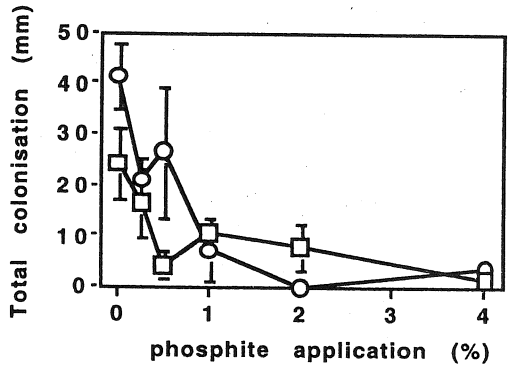

Figure 1. Total colonisation in stems *E. marginata*, resistant (□) and susceptible (○) to *P. cinnamomi* before and after foliar treatment with 0 0.25, 0.5, 1, 2 and 4% phosphite.

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