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THE EFFECT OF INOCULATION OF *EUCALYPTUS MARGINATA* WITH *PHYTOPHTHORA CINNAMOMI* AT VARIOUS TIME INTERVALS AFTER TREATMENT WITH PHOSPHITE.

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INTRODUCTION

The fungicide phosphite has been successful in the control of *P. cinnamomi* (1). However, the timing between foliar applications of phosphite and effective lesion reduction in roots has not yet been determined. Therefore, the aim of the current study was to examine the effect of the time interval between phosphite application and inoculation in protecting *E. marginata* roots from *P. cinnamomi* invasion.

MATERIALS AND METHODS

Seven-month old clonal *E. marginata* plants, resistant to *P. cinnamomi* were grown in an aeroponics system to promote root growth. The roots were inoculated with a zoospores of *P. cinnamomi* 4 days prior and 0, 2, 5, 8 and 14 days after a foliar application of 0.5% phosphite. The roots were marked with a vital stain approximately 2 cm above the root tip before inoculation. The roots were harvested 4 days after inoculation. Lesion development and phosphite and phenolic levels were determined.

RESULTS AND DISCUSSION

Phosphite application reduced lesion development and root extension (Figure 1a). Lesion development decreased with increasing phosphite concentrations within the roots (Figure 1c). Lesion development was most effectively reduced in roots inoculated 14 days after phosphite application, at which time phosphite concentrations within the roots was highest.

The level of host defences and accumulation of soluble phenolics peaked in roots inoculated 2 to 5 days after phosphite application, at which time the phosphite concentration within the roots was relatively low at about 2 mg g<sup>-1</sup> (Figure 1b, c).

When phosphite concentrations within the roots were low, the action of phosphite in reducing lesion development was via the interaction between the pathogen which stimulates the host defences. Alternatively, at high phosphite concentrations, phosphite acted directly on the pathogen killing it before it established an association with the host and therefore the host defences remained unchanged.

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REFERENCES

1. Guest, D.I. & Grant, B.R. (1991). The complex action of phosphonates as antifungal agents. *Biological Review* 66, 159-187.

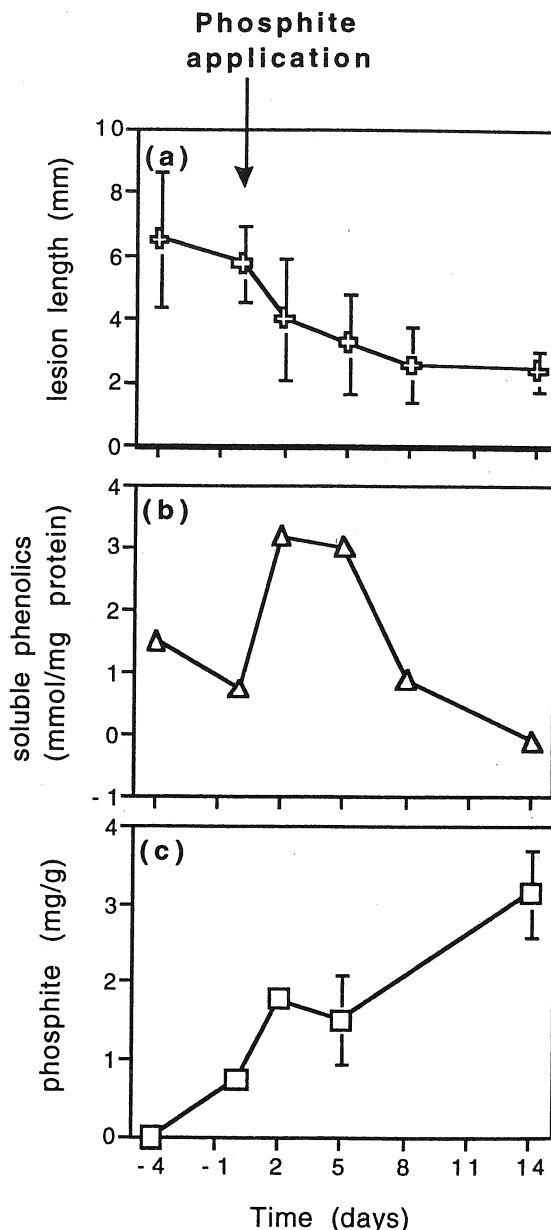


Figure 1. (a) Lesion development (b) difference between non-inoculated and inoculated levels of soluble phenolic and (c) phosphite concentration in roots inoculated 4 days prior and 0, 2, 5, 8 and 14 days after a foliar application of 0.5% phosphite.