
http://researchrepository.murdoch.edu.au/12464/

It is posted here for your personal use. No further distribution is permitted.
THE EFFECT OF PHOSPHITE (PHOSPHONATE) ON PHYTOPHTHORA CINNAMOMI ZOOSPORE PRODUCTION IN PLANTA

C. Wilkinsona, G.E. St. Hardya and B. L. Shearerb
aMurdoch University, Division of Science, South Street, Murdoch 6150, Western Australia
bCALM, Science and Information Division, Hayman road, Como 6152, Western Australia

INTRODUCTION

P. cinnamomi is a major pathogen in Western Australia's native vegetation. Phosphite is a cheap fungicide which is non-toxic to animals and has been shown to protect Western Australian plant species against P. cinnamomi (3). It is proposed to use phosphite in the Eucalyptus marginata forest and in rehabilitated minesites, to control spot infections of P. cinnamomi and to prevent the spread of the pathogen into non-infected plant communities.

Movement of zoospores downslope from an infected area via swimming and transport in surface and subsurface water is thought to be one of the main modes of spread by the pathogen (1). It is not known whether phosphite is able to inhibit or prevent P. cinnamomi from producing zoospores in planta. If the fungus is still able to produce large numbers of zoospores it may be capable of spreading even if an area has been sprayed with phosphite.

The aim of this experiment was to determine the effect of phosphite on the production of zoospores from E. marginata and Banksia grandis seedlings which were inoculated with P. cinnamomi.

MATERIALS AND METHODS

E. marginata and B. grandis seedlings were underbark inoculated using a Miracloth disc colonised with P. cinnamomi. Three days after inoculation the plants were sprayed with 0, 0.5 and 1% phosphite (Fosject 200, UIM Agrochemicals (Aust.) PTY. LTD.) containing 0.25% Synetrol Oil (Organic Crop Protectants, Australia). Two days after spraying the Miracloth discs were removed and the plants were placed in water tight vessels and flooded with deionised water above the soil line. After 24 hours the water above the soil line was sampled and subsamples were plated onto selective agar. The number of zoospores produced in the water used to flood Eucalyptus marginata and Banksia grandis seedlings inoculated with Phytophthora cinnamomi (n=10).

The results from this experiment indicate that if an area is infected with P.cinnamomi and sprayed with phosphite the fungus may still be able to spread from the plant to non-infected areas. Thus, current hygiene procedures for areas containing Phytophthora must be maintained. This work will need to be repeated in the field to confirm the glasshouse results.

ACKNOWLEDGMENTS

The authors would like thank Ian Colquhoun and Alcoa of Australia Limited for funding this work.

REFERENCES