



Trichoderma species for biological control of *Ganoderma boninense* Pat. on oil palm in Papua New Guinea

C. A. Pilotti and A. E. Gorea

PNG Oil Palm Research Association, Milne Bay Research Centre, Hagita, MBP. PNG.

Introduction

Trichoderma spp. are fungi commonly found in in the rhizosphere of most soils.

They are known to parasitise and compete with other fungi and have been exploited as biological control agents for a number of plant pathogens. In this study, naturally occurring indigenous species of *Trichoderma* have been used to develop a biological control agent for *Ganoderma*, the most important fungal disease of oil palm in PNG.

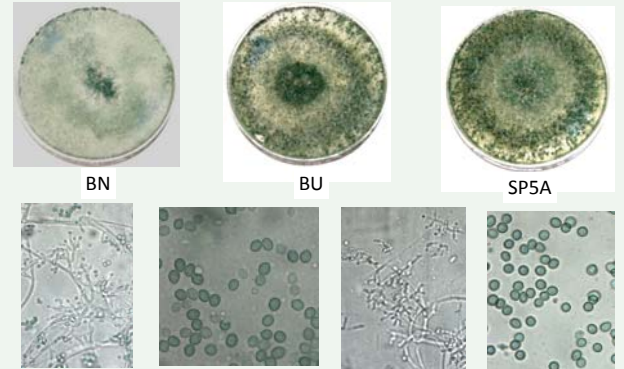


Figure 1 Some of the indigenous isolates of *Trichoderma* used in the research. Top: Cultures on PDA. Bottom: Microscopic features - spores and hyphae (Lower photos P. Jeffries).

Laboratory trials

In-vitro studies have demonstrated the ability of *Trichoderma* strains to antagonise and kill *Ganoderma* mycelium and spores (Figures 2 & 3). This phenomenon has led to the development of a pilot bioprocess system (Figure 4) that will assist in the control of *Ganoderma* in smallholder oil palm blocks.

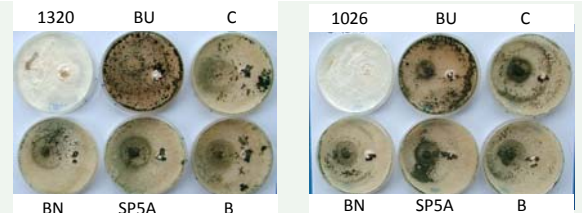


Figure 2 Cultures of *G. boninense* showing the strong antagonism by *Trichoderma* species.

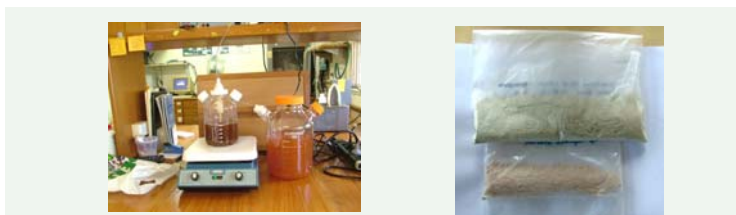


Figure 4 Batch processing and dried products of *Trichoderma* biocontrol agent in the laboratory in Milne Bay.



Figure 3 *Ganoderma* growing on oil palm rachis with and without (right) the presence of *Trichoderma*.

Field trials

Numerous trials have resulted in a suitable formulation for use in the field. *Trichoderma* is able to grow on felled logs and can prevent the growth and germination of *Ganoderma* spores (Figure 5).

Conclusions

The control of *Ganoderma* has been enhanced with this development which will benefit smallholder oil palm growers.



Figure 5 An oil palm log sprayed with *Trichoderma* biocontrol agent.

This work was funded by the AusAID Agricultural Innovations Grant Facility (AIGF).