PESTICIDE COMPATIBILITY OF BACTERIAL BIOLOGICAL CONTROL AGENTS WITH THE POTENTIAL TO CONTROL APHANOMYCES ROOT ROT IN PEAS

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Aphanomyces euteiches Drechsler can cause severe root rot in peas. Previous research has identified two bacterial isolates, *Bacillus subtilis* LU1241 and *Paenibacillus polymyxa* LU1133, able to suppress aphanomyces root rot of peas. If these bacteria are to be used as biological control agents in the field, it is important to know whether their efficacy is affected by commonly used pesticides. An assay was developed to determine the effect of selected fungicides, insecticides and herbicides on populations (colony forming units) of the two potential biological control agents. None of the fungicides (cyproconazole, metalaxyl-M, azoxystrobin and sulphur) inhibited growth of *P. polymyxa* and all stimulated growth of *B. subtilis* compared with the non-fungicide control. The herbicides sethoxydim and bentazone had no effect on either bacterium and diquat significantly inhibited growth of *B. subtilis* but had no effect on *P. polymyxa*. The insecticides pirimicarb, lambda-cyhalothrin and diazinon had no effect on *B. subtilis*. Pirimicarb had no effect on *P. polymyxa*, but abnormal colony morphology with spreading growth was observed for both diazinon and lambda-cyhalothrin. Different sensitivity to the pesticides was observed with each bacteria species and this could influence the use of the biological control agents in a field environment.

OCCURRENCE AND DIVERSITY OF *TRICHODERMA* SPP. IN VEGETABLE CROPPING SYSTEMS

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The ecology and diversity of indigenous *Trichoderma* species needs to be better understood in order to achieve natural suppression of soil-borne plant pathogens in the field. Bulk, rhizosphere and rhizoplane soil samples from onion and potato plots located at Pukekohe Research Station were collected. At the beginning of the season *Trichoderma* numbers in bulk soil were 1.9×10^3 cfu/g soil. In the rhizosphere and rhizoplane of onions numbers were 2.7×10^3 and 3.7×10^3 cfu/g soil respectively, and on potatoes, numbers were 3.1×10^3 and 5.4×10^3 cfu/g soil respectively. At the end of the growing season, *Trichoderma* colonies in rhizosphere soil were lower under both onion and potato (9.1×10^2 and 1.7×10^3 cfu/g soil) although this was not significant. In the rhizoplane soil, *Trichoderma* colonies were not recorded from onions but in potatoes the population was higher (1.9×10^4 cfu/g soil) but this was not significant. *Trichoderma* levels remained constant throughout the season in the bulk soil. *Trichoderma* isolates were identified to species level using ITS-RFLP. *Trichoderma asperellum* and *T. harzianum* were the most prevalent species for onion and potato in both the rhizosphere and rhizoplane soil. This population study will be continued over the next 2 years.