

HYDROLYTIC ENZYME ACTIVITIES IN *TRICHODERMA* SPP.

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Some *Trichoderma* spp. can hydrolyse the cell walls and other components of root pathogens by the production of extracellular hydrolytic enzymes, such as chitinase and cellulase. This could promote plant growth. The activities of chitinase and cellulase were measured in eight strains of *Trichoderma* (two each of *T. harzianum* and *T. pseudokoningii* and four of *T. koningii*). Cultures were grown in a synthetic medium supplemented with either chitin or carboxymethylcellulose at 30°C for three to six days. The fungal mycelium was separated by filtration, the dry weight of fungus determined at 60°C and the culture fluid used to assay the enzyme activities. Chitinase (*N*-acetyl β -D-glucosaminidase) and cellulase (β -glucosidase) were measured using *p*-nitrophenyl-*N*-acetyl β -D-glucosaminidine and *p*-nitrophenyl- β -D-glucopyranoside respectively in a 96-well microplate assay. Four *Trichoderma* strains produced greater levels of chitinase enzyme than the other four strains. Three strains produced significantly higher amounts of cellulase than the other five strains. One strain of *Trichoderma koningii* produced significant amounts of both enzymes and will be further evaluated for white clover growth promotion. The results indicate that enzyme activities in our strains were not species related and the microplate assay can be used as a simple convenient method for assaying these enzymes.

MYCORRHIZAL FUNGI IN WHANGAREI AVOCADO ORCHARDS

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Mycorrhizal fungi are known to assist some crop and weed species with nutrient uptake. White flushing roots of avocado (*Persea americana*) from three orchard weed management systems (undisturbed, herbicide strip and total canopy cover) were cut into 1 cm lengths, stained with cotton blue and examined for colonisation by vesicular arbuscular mycorrhizal fungi. Colonisation of the avocado roots was significantly greater in spring than in autumn. Tree roots obtained in autumn from orchards with undisturbed floor management had significantly more colonization than those from herbicide strip or total canopy cover systems. In spring, there were fewer significant differences in colonization of roots from undisturbed and from total canopy management systems. The undisturbed and herbicide strip categories both contained orchards of trees 5-7 or 8-15 years old, but in the total canopy category, all orchards had trees over 15 years old, thus total canopy and tree age were confounded. Nevertheless, the overall trend was for mycorrhizal colonization to decrease with tree age and this could explain the lower colonization in the total canopy orchards. The suitability of the laboratory techniques used and the practical implications of the results are discussed.