

TRACKING EXTRA-CELLULAR ENZYME PRODUCTION BY *TRICHODERMA HARZIANUM* IN THE RHIZOSPHERE

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The exact role of extra-cellular enzyme production in the activities of *Trichoderma harzianum* as a biological control agent are much debated. Production of such enzymes as cellulase, proteinase, endoglucanase, (glucosidase and chitinase has been linked to biological control *in vitro* experiments (Elad et al, 1982, Ahmad & Baker, 1988a,b) but it has been difficult to prove that these enzymes are important *in vivo*. Baker (1991) demonstrated that mutant strains of *Trichoderma* with improved rhizosphere competence had higher extracellular cellulase production than wild types strains, and he speculated that enhanced cellulase production might lead to better utilisation of rhizosphere substrates and thus improved colonisation of the resource. However, it has been recently shown that rhizosphere competence of *Trichoderma* strains is not always associated with improved *in vitro* production of extracellular enzymes (de Melo, Faull, J,L, and Graeme-Cook, 1997).

In order to extend this work to the soil environment we have developed a sensitive, quantifiable assay for extra-cellular enzymes that uses a fluorescent substrate to detect enzyme activity in soil. Using a number of different strains of *Trichoderma* with known *in vitro* extra-cellular enzyme production patterns (both high and low) we will demonstrate differences in the production of enzymes in the rhizosphere with varying soil depth. We will attempt to relate these differences to the root colonisation ability of the *Trichoderma* strain.