

DETECTION OF *FUSARIUM CIRCINATUM* IN SOIL

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Fusarium circinatum, the causal agent of pitch canker, attacks *Pinus* spp. in Mexico, Japan, South Africa, Chile, Spain and the United States. The pathogen was first recorded in conifer nurseries in South Africa and Chile. *Pinus radiata* is an economically important species in New Zealand and if *F. circinatum* were to establish here the impact could be severe. Therefore, the ability to identify *F. circinatum* in soil is essential for early detection and subsequent eradication of the pathogen. The object of this study was to ensure that *F. circinatum* could be readily isolated from soil using culturing and molecular techniques. Two samples of non-sterile commercial potting mix and two samples each of sterile and non-sterile nursery soil were inoculated separately and together with *F. circinatum* and *F. oxysporum* under strict quarantine conditions. *Fusarium circinatum* was re-isolated more frequently from the sterile soil than the non-sterile soil and very little *F. circinatum* was isolated from the potting mix. Molecular techniques were able to detect *F. circinatum* in soil and potting mix when the initial concentration of *F. circinatum* was high. Results suggest that *F. circinatum* is a poor competitor against other fungi in the soil environment.

EPIDEMIOLOGY OF *NECTRIA FUCKELIANA* IN *PINUS RADIATA*

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Nectria fuckeliana is the most common fungus associated with a canker disease of *Pinus radiata* in the southern part of the South Island. This northern hemisphere species is known in Europe and Scandinavia as a wound invader of spruce (*Picea*) and fir (*Abies*) but is not considered there to be a primary cause of serious disease. Preliminary results of inoculation experiments in *P. radiata* suggest that the type of wound and the season of wounding are important factors in the ability of *N. fuckeliana* to cause disease. Both naturally and artificially inoculated wood show strong activation of tree defensive responses (unusual production of resin canals, tannins, phenolics and other extractive chemicals). Studies of the basic biology of the fungus in New Zealand have shown that *N. fuckeliana* can grow over a broad temperature range, but the optimum for growth and spore germination is 18-25°C. Germination of ascospores from perithecia stored at 4°C for long periods was markedly greater than from those stored at room temperature indicating that a cold period may be required for maturity. Ascospores are present in all seasons of the year, but are released in wet weather and dispersed by rain and splashing water.