111. Decay resistance of plantation-grown and naturally regenerated *Eucalyptus regnans.*

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Comparisons of the decay resistance, *in vitro*, to the white pocket rotting fungus, *Perenniporia medulla-panis*, were made using the outer heartwood of *Eucalyptus regnans* sampled from young (47 years) and old (75 years) naturally regenerated forests and a 46 years-old plantation. No differences in decay resistance, measured both by weight loss or respiratory activity, could be detected in the inoculated wood blocks from the comparably aged plantation and naturally regenerated forest. However the heartwood samples from the older naturally regenerated forest showed significantly higher resistance to decay than the samples from the younger trees. Several wood and tree properties were measured their relationship with decay resistance was examined. The majority of the variation in decay resistance between wood samples and between stands was due to variation in the amount of methanol-soluble extractives. Increases in decay resistance due to the greater age of the 75 y.o. regrowth correspond with greater amounts of methanol soluble extractives.

Comparisons made between the two measures of decay resistance, weight loss and fungal respiratory activity showed respiration to be a more sensitive measure of decay in the early stages when initial increase in weight loss lags respiration. As decay progresses, however, respiration rates tend towards a maxima and weight loss becomes a more sensitive measure of decay.

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