

MULCH SOURCE VARIATION IN CELLULASE PRODUCTION A-3

Ben Faber¹ and Michael Spiers²

¹ University of California Cooperative Extension. 669 County Square Dr. Ventura. CA 93003. USA.
E-mail: bafaber@ucdavis.edu

² HortResearch. Ruakura. Hamilton. New Zealand. E-mail: mspiers@hortresearch.co.nz

Phytophthora cinnamomi has been shown to be controlled by organic mulches. The mechanism for this control is varied, but enzyme production of cellulase by the large microbial population supported by the mulch can degrade the cell walls of the pathogen. Samples of 23 sources of mulch representing a wide range of materials were set out in plots at two sites for two years. Rate of decomposition, as measured as change in depth, and cellulase activity in the mulch, at the mulch-soil interface and in the soil were assayed. Mulches with a low rate of decomposition tended to have low levels of cellulase activity, whereas mulches that decomposed rapidly varied in their cellulase activity. *Leptospermum scoparium* and *Eucalyptus globulus* mulches had the highest cellulase activities. Cellulase activity in the soil 5cm below the mulches was not increased by any of the mulches. Mulches taken from an avocado orchard had similar cellulase activities to mulches from the trial plots, but fresher samples (four months cf. two years) had lower activities. These findings need to be extended by establishing the level of cellulase necessary in the mulch to give control of the root rot fungus.