Phosphorous acid for controlling *Phytophthora* taxon Agathis in kauri: field trials

I.J. Horner and E.G. Hough

The New Zealand Institute for Plant & Food Research Limited, Private Bag 1401, Havelock North, New Zealand

Corresponding author: ian.horner@plantandfood.co.nz

Phytophthora taxon Agathis (PTA) threatens the health and survival of New Zealand kauri trees. Long-term trials testing phosphite (phosphorous acid) for control of PTA in infected kauri were established in four Auckland and Northland forest sites in January 2012. All 160 trial trees (girths from 40 to 120 cm) showed symptoms of PTA infection. At the start of the trial, tree canopy health was assessed, basal trunk lesions were measured and marked, and reference photographs were taken. Trees were injected with either high (20%) or low (7.5%) concentrations of phosphite (20 ml/20-cm trunk circumference) or left untreated. Treatment with the higher concentration resulted in moderate phytotoxicity symptoms, with leaf yellowing, browning and some premature twig drop. These symptoms were no longer apparent in most trees after a few months. Re-assessments of canopy health and trunk lesion activity or spread are being made 6-monthly. One year after initial treatment application, canopy health was generally similar to or slightly worse than at the start of the trial (using baseline photographs), regardless of treatment. On average, more lesions were active (expressing fresh ooze) in untreated controls than in phosphite-treated trees. Lesion advance was greater in untreated trees than in phosphite-injected trees. Phosphite applications will continue either annually or at longer intervals in various treatment regimes.

Screening supplements to enhance the biological control activity of HR42 against *Colletotrichum acutatum*

M.J. Vergara, N.J. Larsen, I.P.S. Pushparajah and K.R. Everett

The New Zealand Institute for Plant & Food Research Limited, Private Bag 92169, Mt Albert, Auckland 1142, New Zealand

Corresponding author: Kerry.Everett@plantandfood.co.nz

Ten compounds were evaluated for their effects on the efficacy of the bacterial biological control agent (BCA) HR42 against the avocado postharvest rot fungus, *Colletotrichum acutatum*. The effects of the 10 compounds (chitin, D-glucose, glycol chitosan, L-serine, L-aspartic acid, calcium chloride, calcium carbonate, potassium chloride, ammonium molybdate and sodium carbonate) at four different concentrations (1, 10, 100 and 1000 mM) were tested separately on bacterial and fungal growth. L-serine, L-aspartic acid and calcium chloride all stimulated growth of HR42 and suppressed mycelial growth of *C. acutatum*. The BCA and these compounds were then tested in combination on detached avocado fruit for their ability to inhibit lesion development following wound-inoculation. A high concentration of HR42 (10^7 cfu/ml) significantly inhibited the development of lesions caused by 10^5 and 10^7 conidia/ml of *C. acutatum*. There was no improvement of control by the addition of any of the three compounds. These results show that HR42 has biocontrol activity against *C. acutatum* in a detached fruit test, but there was no enhancement of control by the addition of supplements.