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SOME FACTORS INFLUENCING THE
SUDDEN DEATH SYNDROME IN
CUT FLOWER PLANTS

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of the requirements for the degree of
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ABSTRACT

Soil/root mixes from plants with the Sudden Collapse Syndrome of cut flower plants were tested for *Phytophthora* infection using a lupin (*Lupinus angustifolius*) baiting technique. *Boronia heterophylla* and *Leucadendron* 'Wilson's Wonder' root samples both caused the lupin seedlings to exhibit symptoms of *Phytophthora* infection.

The efficacy of phosphorous acid (Foschek® 500 at 1000 ppm and 2000 ppm) and a combination of phosphorous acid and an additional product (Foschek® 500 and C408 at 1000/200 ppm and 2000/400 ppm) in controlling *Phytophthora cinnamomi* root infections of *L.* 'Wilson's Wonder', *B. heterophylla* and *B. megastigma* rooted cuttings was compared with fosetyl-Al (Aliette® 80 SP at 1000 ppm and 2000 ppm) under conditions of high disease pressure.

The fungicides were applied as a root drench 7 days prior to the roots being inoculated by a split wheat technique and the effect of the fungicides and their concentrations on the rate of plant mortality was measured.

The results were species dependent. The treatments delaying plant mortality most effectively were fosetyl-Al at 2000 ppm on *L.* 'Wilson's Wonder', phosphorous acid at 2000 ppm on *B. heterophylla* and both fosetyl-Al at 1000 or 2000 ppm and phosphorous acid at 2000 ppm on *B. megastigma*.

The allelopathic activity of the root bark of *Protea cynaroides*, L. 'Wilson's Wonder', *Macadamia* 'Beaumont' and *Knightia excelsa* was evaluated as a growth inhibitor for *Phytophthora cinnamomi*.

The results indicate that by day 4 the root bark of *M.* 'Beaumont' reduced the growth rate of *Phytophthora cinnamomi* by 76.8% while that of *Protea cynaroides* inhibited the growth totally. The root bark of L. 'Wilson's Wonder' had no effect on the growth rate but that of *K. excelsa* enhanced the growth rate by 128% by day 4.

The root bark of *Protea cynaroides* plants previously infected with an unnamed, indigenous *Phytophthora* species provided greater resistance to the growth rate of *Phytophthora cinnamomi* than the root bark of uninfected plants. On the corn meal agar, the leachate of the infected *Protea cynaroides* root bark exhibited a 'zone of inhibition' which prevented the growth of *Phytophthora cinnamomi*. Possible reasons for this are discussed.

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