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Calcium supplementation of soil augments the control of *Phytophthora cinnamomi* by phosphite

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Foliar application of phosphite, a systemic fungicide, to *Phytophthora cinnamomi* infected plants results in the control of disease symptoms and a reduction in the spread and impact of the pathogenic in native plant communities. Calcium ions have also been shown to affect the interaction between *Phytophthora* species and their plant hosts and to reduce the impact and spread of disease caused by soil-borne *Phytophthora* species. Calcium may enhance plant defence mechanisms or interfere with sporangial production, zoospore release and encystment on plant roots. Phosphite has been shown to have similar effects. The addition of calcium salts to soil inhibits the infection of plants by *P. cinnamomi*, and there is a correlation between the incidence in dieback disease caused by *P. cinnamomi* in natural ecosystems and the distribution of calcareous soil. This study used a susceptible Australian native plant species *Banksia leptophilia,* to investigate whether the disease control of *P. cinnamomi* by phosphite could be augmented by soil supplementation with calcium sulphate. The results showed that the effects of applying both calcium and phosphite were synergistic, and that the addition of calcium sulphate to the soil augmented and significantly prolonged the effect of foliar phosphite application. A mechanism involving the disruption of intracellular calcium signatures caused by phosphite induced accumulation of pyrophosphate in the cytosol of *P. cinnamomi* is discussed.

Poster 71

Phytophthora-baiting in Norwegian waterways

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In 2011, a *Phytophthora*-survey was carried out in some selected lakes, rivers and streams in southern Norway. We used rhododendron leaves from the cv. 'Cunningham's White' as baits. Prior to baiting, all leaves were surface sterilized with 70% ethanol and placed in perforated bags (2-3 leaves per bag), each with a styrofoam floater to keep the bait near the surface. The bags were anchored to the shore and left in the water for 6-8 days. All locations were recorded with a field mapping GPS-device. At many locations the leaves had dark and/or water soaked spots when removed from the water. Small sections from the leading edges of the spots were dissected and plated on *Phytophthora*-selective media (PARP or PARPH). We detected six *Phytophthora* spp.; *P. gonapodyides*, *P. lacustris*, *P. plurivora*, *P. pseudosyringae*, *P. ramorum*, and *P. syringae*. *P. plurivora* is known to damage beech (*Fagus sylvatica*) and Norway maple (*Acer platanoides*) on the west coast of Norway, *P. ramorum* has mainly been found outdoors on rhododendron, but is also confirmed on *Pieris japonica, Viburnum* spp., American oak (*Quercus* sp.), and bilberries (*Vaccinium myrtillus*) in Norway. Pathogenicity of all six *Phytophthora* spp. will be tested on beech in 2012, because *Phytophthora*-symptoms have been found on beech in the areas where we baited.

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