

Age-related susceptibility of *Eucalyptus* species to *Phytophthora boodjera* prov. nom



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Since 2011 damping-off and mortality of *Eucalyptus* seedlings in Western Australian (WA) nurseries has been observed. The casual agent of this disease was identified as *Phytophthora boodjera* prov. nom based on morphology and a multi-gene phylogeny.

This study evaluated the age-related susceptibility of five species of *Eucalyptus* (*E. polybractea*, *E. kochii* subsp. *plenissima*, *E. kochii* subsp. *borealis*, *E. loxophleba* subsp. *lissophloia*, and *E. loxophleba* subsp. *gratae*) to *P. boodjera*, *P. arenaria* and *P. cinnamomi* in sterilised washed river sand-infestation pot trials. *Eucalyptus* species were inoculated with all *Phytophthora* species at 4, 12 and 52 weeks post-germination. The following measurements were included in data sets where applicable: root length, seedling height, total dry weight and dry root weight.

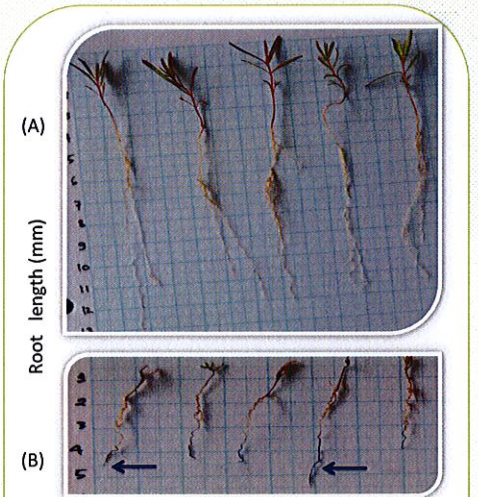


Figure 2. Root length of four week old seedlings of *E. kochii* ssp. *plenissima*: (A) control (B) inoculated with *P. boodjera*. Note necrotic root tips (arrows).

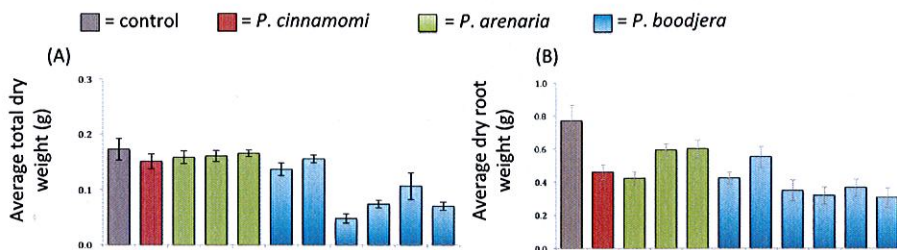


Figure 1. (A) Average total dry weight and (B) dry root weight of *E. kochii* ssp. *plenissima* inoculated with *Phytophthora* spp. Bars represent standard error of the mean.

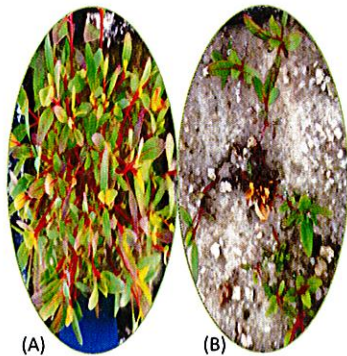


Figure 3. Four week old seedlings of *E. kochii* ssp. *plenissima*: (A) healthy (B) inoculated with *P. boodjera*



Figure 4. Three month old *E. kochii* ssp. *plenissima*



Figure 5. One year old *Eucalyptus* seedlings inoculated with *Phytophthora* species.

Results, conclusions and current work

- Susceptibility of *Eucalyptus* spp. to all *Phytophthora* species decreased with age.
- Damping-off and mortality occurred for four week-old seedlings (Figure 3), the average total dry weight (Figure 1A) and root length of any living inoculated seedling was shorter than those of the non-inoculated controls and root tips were necrotic (Figure 2).
- No *Eucalyptus* seedlings died in pots inoculated after 12 weeks. However, the dry root weight of seedlings treated with *Phytophthora* were significantly less than that of the controls (Figure 1B).
- *P. boodjera* caused the greatest reduction in dry root weight (Figure 4). Variability in susceptibility was observed between *Eucalyptus* species tested.
- The *Eucalyptus* species tested are more susceptible to *P. boodjera* (and other *Phytophthora* spp. tested) at one month post germination.
- Current work is examining the pathogenicity of *Phytophthora* species to one year old *Eucalyptus* species seedlings (Figure 5).

