

[TU_SE_P14]

Earthworms (*Pontoscolex corethrurus* and *Amyntas gracilis*) effects on *Eucalyptus* spp. seedling growth

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Several *Eucalyptus* species are grown in Brazil as a source of pulpwood for cellulose and for bio-energy. *Eucalyptus* plantations presently occupy ≈4.8 million ha in Brazil and are growing annually. However, little is known of the effects of these plantations on soil animals and likewise, little is known of the potential effects of soil animals on *Eucalyptus* growth. Therefore, the present experiment was undertaken to evaluate the effects of two common widespread tropical earthworm species (*Amyntas gracilis*, *Pontoscolex corethrurus*) on seedling growth of three *Eucalyptus* species. Previous studies had identified these species are the main inhabitants of *Eucalyptus* plantations at the Embrapa Florestas research station in Colombo, Paraná, Brazil. *Eucalyptus* (*E. grandis*, *E. dunnii*) seedlings were planted in plastic pots (20 cm diam.) in 4 kg (air dry) of an acid (pH 4.2), humic (3.2% C) Cambisol collected with and without *A. gracilis*, while *E. benthamii* and *E. dunnii* seedlings were planted with and without *P. corethrurus*, to assess initial establishment in field soil (like transplanting in field plots). Each pot received only one seedling and two *A. gracilis* (1.9-2.2 g pot⁻¹) or four *P. corethrurus* (1.8-2.1 g pot⁻¹). The worm densities added were comparable to those found in field conditions for *P. corethrurus*, but not for *A. gracilis* that is much less abundant under *Eucalyptus*. All treatments were replicated 10 times. After 50 days, earthworm survival and biomass, soil fertility and seedling diam., height, above and below-ground plant biomass were assessed. Due to a cold snap, all inoculated *P. corethrurus* died, leaving only cocoons in the soil. On the other hand, *A. gracilis* mortality averaged only 10% in both treatments, although their biomass significant decreased (to 1.4-1.6 g pot⁻¹) at the end of the trial. Neither species of earthworm affected the growth of *E. dunnii*. However, *P. corethrurus* increased the height of *E. benthamii*, but had no significant effect on the other plant parameters, while *A. gracilis* increased both diam. and above ground biomass of *E. grandis*. Therefore, earthworms may have important effects on the establishment of *Eucalyptus* seedlings in the soil, also aiding in their initial growth. Another experiment is presently underway (ending in May) to confirm the effects of living and dead worms on *Eucalyptus*. The results of this and the former experiments will be presented in the poster.