Earthworm populations in *Eucalyptus* plantations and effects of two worm species on seedling growth

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Worldwide, earthworm populations have been assessed in approximately 30 sites with plantations of various *Eucalyptus* spp., of which more than half are in Brazil. At most sites, earthworms were identified to species level and the plantations consisted mainly of exotic species, and were notably dominated by the widespread pantropical *Pontoscolex corethrurus* and exotic megascolecid species (especially *Amynthas* spp.). The abundance of these exotic earthworms ranged from a few individuals up to >300 individuals m^{-2}, both in Brazilian sites and elsewhere in the world. Only at a few sites, such as in the interior regions of Santa Catarina (Brazil) and Orissa (India), native worms predominated. It is well known that *A. gracilis* and *P. corethrurus* have important effects on soil fertility and that these species can also affect plant growth. Assuming that the high abundance of exotic worms in these plantations might affect important ecosystem services such as plant growth, we performed three experiments to test the effects of *P. corethrurus* and *A. gracilis* on *Eucalyptus* spp. seedling growth, under greenhouse conditions. Seedlings of *E. grandis*, *E. benthamii* and *E. dunnii* were grown in a highly acid (pH 4.2), organic matter rich (3.2% C) cambisol for 50 d in presence of four *P. corethrurus* or two *A. gracilis*. There was complete mortality of *P. corethrurus* due to a severe frost, but only 10% of *A. gracilis* had died by the end of the trial. *Eucalyptus dunnii* was not affected by either earthworm species, but *E. benthamii* growth was increased 17% by *P. corethrurus* and *E. grandis* growth increased 13% with *A. gracilis*. This is the first study of which we are aware of the effects of earthworms on *Eucalyptus* spp. plants, and considering the variable results with the species tested, further trials are needed to clarify the mechanisms of the effects of these plant x worm interactions.