



## **Trade-offs between soil hydrology and plant disease effects after biochar amendment in sandy soil**

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Biochar can affect multiple soil-based ecosystem services to varying extents, leading to trade-offs. Improvements in plant-available water have predominantly been found at high biochar application rates in sandy soils. Reductions in plant diseases after biochar application have been found in various horticultural plants, and trees such as maple and oak, mostly at relatively low biochar application rates. Serious damage to *Eucalyptus globulus* has been reported since 1999 when frequent and severe defoliation of young trees was observed, and eucalypts are the major tree species in commercial forestry plantations of Portugal, forming an important economic activity. Here we investigated simultaneous effects on plant available water and on disease suppression of eucalypt, in a completely randomised full factorial greenhouse pot experiment, using a range of woody feedstock biochar concentrations in sandy soil. Treatments included plant inoculation with the fungus *Neofusicoccum kwambonambiense* and cycles of acute drought stress. Preliminary results showed delayed wilting for plants treated with 3-6% biochar, but also increased stem lesion length. These results suggest a trade-off between effects on water availability and disease for *Eucalyptus globulus* plants in the selected sandy soil amended with this specific biochar, at the selected application rates.