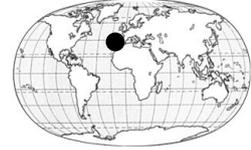


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## EXOTIC ACACIA SPECIES ALTER SOIL PROPERTIES AND INVASIVE SUCCESS IN COASTAL SAND DUNES

In Portugal, in the past, *Acacia* species were introduced with the objective to stabilize sand dunes. However, in some places *Acacia* became invasive, menacing native flora, with some areas being dominated by acacia monocultures. As coastal sand dunes are ecosystems with typically low nutrient, this work was established to test two hypotheses. Our first hypothesis was that the presence of *Acacia* lead to a change in soil abiotic and biotic properties, along the years. In order to demonstrate this, a survey was conducted on soil properties, including nutrient availability and microorganisms functional diversity, and on plant nutrient and mycorrhizal status, both on *Acacia* and native species. Two distinct areas located at the south and center-north of Portugal were chosen to perform this survey, both with a mesomediterranean climate, but with different annual precipitation values. The second hypothesis was that the impact of *Acacia* in the soil, including on soil biotic communities, may mediate impacts not only in native vegetation but also in *Acacia* itself. In order to demonstrate this later hypothesis we performed a laboratory experiment, where we evaluated *Acacia* germination and growth on two distinct types of field soils: the one collected under *Acacia* and the other from outside *Acacia* stand. In order to separate biotic from abiotic factors, each type of soil was either sterilized or non-sterilized. Significant differences were found in *Acacia* germination and growth according to the type of soil tested. The data suggest a negative effect of *Acacia* presence on its own germination rates but a positive effect on its own growth rates. Possible explicative mechanisms will be discussed in order to explain the low demographic status of present day acacia stands, particularly in the southern region of coastal sand dunes.

keywords: *Acacia*, dunes, soil, microbiota