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Book of Abstracts**

Long-term effects of phytomanagement with *Populus* sp. on soil biodiversity

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Aim:

Soil metal contamination is a worldwide problem of great magnitude. Phytomanagement is based on the use of plants to reduce and control risks arising from soil pollution while at the same time restoring and generating other wider site services. The PHY2SUDOE project maintains a network of contaminated sites that have been under phytomanagement for many years in Portugal, Spain and France. The aim of this study was to evaluate the long-term effects of phytomanagement with *Populus* sp. on soil biodiversity and complexity at different levels of the trophic web.

Method:

Composite soil samples were taken in the contaminated sites ST Médard D'Eyrans (Gironde, FR), Chaban-Delmas (Gironde, FR), Borralha (Montalegre, PT), Ariñez (Vitoria-Gasteiz, ES) and Touro (Galicia, ES), both under phytomanagement and non-phytomanaged controls. Then, metabarcoding analyses of 16S rRNA, ITS, 18s rRNA y COI genes were carried out.

Results:

The diversity, composition and complexity of the soil prokaryotic, fungal and invertebrate communities were affected by the long-term phytomanagement practices. Site-specific soil characteristics also had a significant influence on the edaphic biota.

Conclusions:

Given the essential functions it performs in contaminated soils, phytomanagement practices should aim to restore soil biodiversity.



Long-term effects of phytomanagement with *Populus sp.* on soil biodiversity

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INTRODUCTION

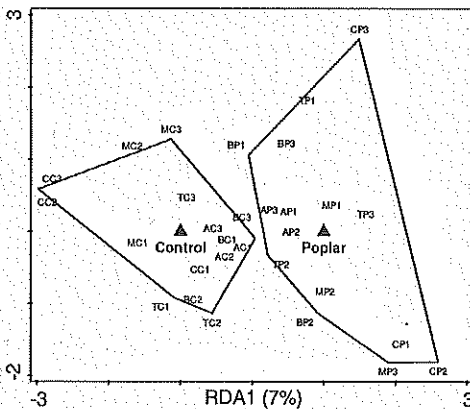
Soil metal contamination is a worldwide problem of great magnitude. Phytomanagement is based on the use of plants to reduce and control risks arising from soil pollution while at the same time restoring and generating other wider site services. The PHY2SUDOE project maintains a network of contaminated sites that have been under phytomanagement for between 5 and 14 years in Portugal, Spain and France. The objective of this study was to evaluate the long-term effects of phytomanagement with *Populus sp.* on soil biodiversity and complexity at different levels of the trophic web.

METHODOLOGY

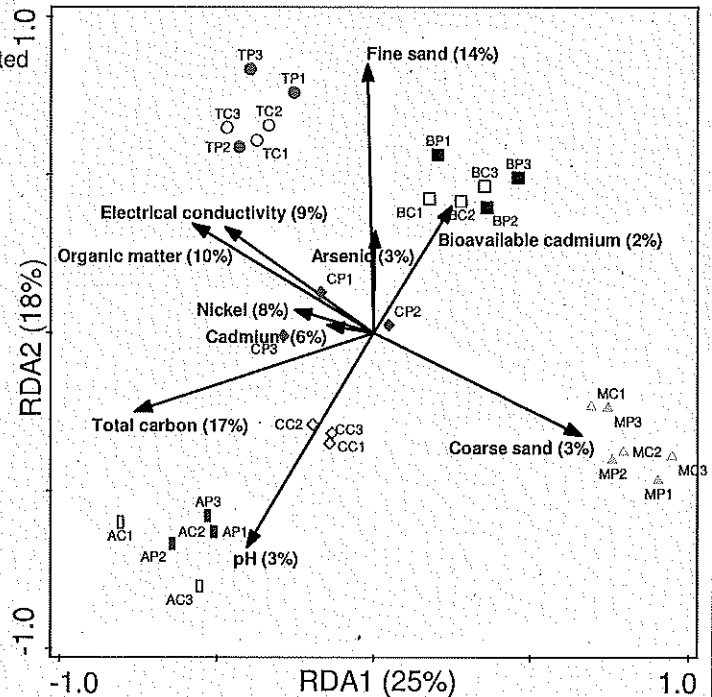
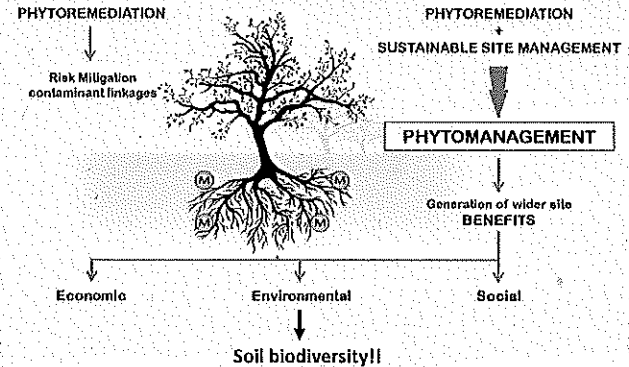
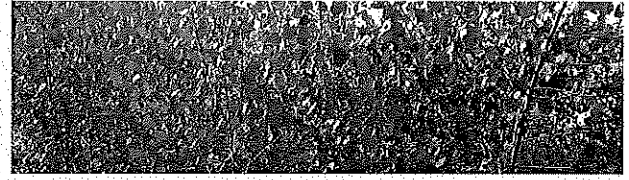
Composite soil samples were taken in the contaminated sites M_ST Médard D'Eyrans (Gironde, FR), C_Chaban-Delmas (Gironde, FR), B_Borralha (Montalegre, PT), A_Ariñez (Vitoria-Gasteiz, ES) and T_Touro (Galicia, ES), both under P_phytomanagement and C_non-phytomanaged controls. Then, metabarcoding analyses of 16S rRNA, ITS, 18s rRNA y COI genes were carried out. A complete physicochemical characterization of the samples was also performed.

RESULTS

The site-specific soil physicochemical properties had a major influence on the soil biota. In general, alpha diversity was not affected by phytomanagement with *Populus sp.* However, this treatment significantly explained a small % of the variability in composition.



Redundancy analyses performed on (right) fungal composition with significant physicochemical properties as explanatory variables ($p=0.002$) and (left) prokaryotic composition with phytomanagement treatment as explanatory variable and site as covariable ($p=0.028$).



NEXT STEPS

We are now looking for specific taxa influenced by the phytomanagement treatment. We also aim to evaluate trophic interactions.

CONCLUSIONS

Given the essential functions it performs in contaminated soils, phytomanagement practices should aim to restore soil biodiversity.

