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### 1. Microbiota-assisted Phytoremediation of Metal Contaminated Soils by Sunflower

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4. Heavy metal contamination is widespread due to natural and anthropogenic activities and is of particular concern, as metals are not degradable. Phytoremediation is a low cost alternative for soil requalification, as it establishes a vegetation cover with its associated microbiota which will allow for the stabilization of the target sites.

This work presents the results shown for the establishment and growth of combinations of sunflower (*Helianthus annuus L.*) and plant growth promoting microbiota both in agricultural and metal contaminated soils.

Harvested plant tissues were analysed and it was possible to observe that accumulation of metals was made mainly in the roots, followed by the stems and the flowers, with the values registered for plants grown in contaminated soils being higher than the reported phytotoxic

levels described in literature. Also, plants grown in the agricultural soil presented higher biomass rates.

Shifts in the soil bacterial community throughout the experiment were also monitored via next-generation sequencing (NGS). Results have shown that phytoremediation associated to plant growth promoting microbiota induced changes in the contaminated soils microbial community, with the agricultural soils presenting a more stable bacterial community throughout the experiment.

5. This presentation will help the audience to understand that the use of biomass grown in degraded and abandoned soils, not involving agricultural soils for energy crop cultivation, may increase the sustainability of utilizing biomass for energy generation, while it may allow for increasing the available agricultural soil through the consequent gradual decontamination of such brownfields.

6. Ana Marques has completed her PhD in Biotechnology and her postdoctoral studies from the Portuguese Catholic University. She has been involved in research activities since 2000, when she was a researcher at Technical University of Denmark working on the production of bioparticles for biofilm applications. Since 2002 she has been developing work at CBQF concerning the remediation of disturbed soils using plant-based technologies, with the application of biological tools. She has published 2 book chapters and 22 papers in international peer reviewed journals, participated in numerous conferences and has been serving as a reviewer in several reputed scientific journals.

7. Research interests concern the remediation of disturbed soils using plant-based technologies, with the application of biological tools (mycorrhizal fungi, plant growth promoting bacteria, endophytes, organic amendments, etc) and wastewater biological treatments. The fate and application of produced biomass in phytoremediation strategies is the most recent focus of research.

8. 2 book chapters and 22 papers in international peer reviewed journals; cited 620 times with an h-index of 14.

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