ASSESSMENT OF THE ENERGY PRODUCTION POTENCIAL FROM SUNFLOWER PHYTOREMEDIATION DERIVED BIOMASS

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There are presently more than 3 million contaminated sites all over EU, according to the EEA (report 25186 EN). Heavy metal (HM) contamination is of particular concern, as metals are not degradable. Phytoremediation is gaining attention from the public and is an attractive low cost alternative for soil requalification, by establishing a vegetation cover which will stabilize the site, avoiding dispersion of contamination and simultaneously removing pollutants. Although the fate of harvested biomass is a common obstacle for its implementation, it may represent an opportunity for producing energy. However, and although it has been proposed theoretically as an excellent option, the information available in literature concerning practical applications is scarce, despite the considerable degree of success reported.

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.

This work presents a novel integrated strategy comprising the utilization of all plant parts for the generation of biodiesel. Combinations of sunflower and plant growth promoting microbiota were assessed growing in agricultural and metal contaminated indutrial soils, and monitored to further understand the effects on crop productivity and soil remediation. Harvested plant tissues were used for oil extraction and bioethanol production. The quality of the generated products was assessed to understand the effect of the HM soil contamination.

Biography

Ana Marques has completed her PhD in Biotechnology and her potdoctoral 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 everal reputed scientific journals.