ABSTRACT BOOK

SETAC EUROPE 33RD ANNUAL MEETING

30 APRIL–4 MAY 2023 | DUBLIN, IRELAND + ONLINE

"DATA-DRIVEN ENVIRONMENTAL DECISION-MAKING"

Abstract Book

SETAC Europe 33rd Annual Meeting

Table of Contents

This book compiles the abstracts from the 33rd annual meeting of the Society of Environmental Toxicology and Chemistry – Europe (SETAC Europe), conducted from 30 April–4 May 2023 in Dublin, Ireland, and online.

The abstracts are reproduced as submitted by the author and accepted by the scientific Committee. They appear in order of abstract code and alphabetical order per presentation type. The poster spotlight abstracts are included in the list of poster abstracts. The presenting author of each abstract is highlighted in bold.

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Society of Environmental Toxicology and Chemistry Europe (SETAC Europe)

4.04.P-Th273 Testing Organic Amendment, *Populus nigra* Plantation and Bioinoculation on Mine Polluted Soil Material for Phytoremediation Optimization Purposes

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Mine driven trace elements' pollution entails serious environmental risks and can cause an overall reduction in soil fertility. In the last decades, *in situ* techniques such as phytoremediation have become increasingly important as ways to tackle these negative impacts. The aim of this study was to test the individual and combined effects of different phytoremediation techniques. For this, 64 pots were prepared with mine polluted soils from a mine polluted site from the Phy2SUDOE network (SOE4/P5/E1021). In 4 of them the soil was left untreated, while in the remaining 60 pots compost was applied as an organic amendment in a 1:10 (w:w) ratio. No plant thrived in the bare mine soil. Three culture patterns (NP, P and PT: not planted, planted with *Populus nigra* and *P. nigra* planted in co-culture with *Trifolium repens*) with 4 inoculation patterns (NI, BAC, MYC and MIX: no inoculation, plant growth promoting rhizobacteria, mycorrhizae and the previous two mixed) were tested in the amended pots, obtaining a total of 12 different treatments (x5 replicates). After 110 days of plant development, the substrates were collected on the one hand and the plants on the other, separating them into roots, stems and leaves. In the substrates, physicochemical (pH, CEC_e, total C, total N, Olsen's P, pseudo-total and available elements) and microbiological (metabolic footprint: activity, richness and diversity) parameters were determined. Whereas in plants, observable biometric and phytopathological parameters (stem height, root depth, wilting, chlorosis, pests) were recorded and elemental composition was determined. Multiple 1-ANOVA tests were performed to verify the statistical significance of the differences between groups. The use of the amendment, *P. nigra* plantation and bioinoculation with rhizobacteria turned out to be the best techniques to reduce toxicity and improve soil fertility, as well as to increase the survivability and productivity of the plant itself. Metabolic footprint is markedly different between planted and non-planted soils, and between planted soils inoculated or not with bacteria, which suggests that plant growth regulates the configuration of a microbial community in which the inoculated bacteria thrive comparatively the better. Under the conditions of this study, the use of an organic amendment, a tolerant plant, and plant growth promoting rhizobacteria reduce environmental risk and corrects the infertility of soils impacted by mining activity.