previous studies show that the structural family of citronellol may have interesting antimicrobial activity. In order to tackle antibacterial resistance world-wide issue, the discovery of new bactericide molecules is utterly important. Despite such products from natural origin are credited with safety, citronellol shows some dermal and oral toxicity when tested at high concentrations in laboratory animals. Nevertheless, reports of its ecotoxicity in non-target organisms can hardly be found when citronellol is used as an active ingredient in biopesticides.This study assesses the antimicrobial activity of citronellol on a selection of gram-positive and gram-negative pathogenic bacteria, as well as its ecotoxicological effects on non-target soil organisms (*Eisenia fetida* and *Allium cepa L.*). *E. fetida* was exposed to different concentrations of citronellol ranged from 0.1 to 200 mg/L. *A. cepa* root grow was monitored after exposure to the following concentrations of citronellol: 300, 30, 3, 0.3 and 0.03 mg/L, measuring, therefore, the phytotoxicity on this vascular culture plant. The dose-response analysis allowed us to calculate the ecotoxicity of citronellol on *E. fetida*: LC_{50} = 12.07 mg /L (8.47-17.28) and LC_{10} = 3.36 (1.54-5.21); and over *A. cepa*: LC_{50} = 172.40 mg /L (122.91-252.50) and LC_{10} = 0.033 (0.018-0.054). These results show that citronellol is not harmless on non-target soil organisms and it may produce both ecotoxicity and phytotoxicity. These systematic studies are relevant since they provide valuable information about the effects of biopesticide compounds on the soil environment and especially in non-target organisms, when taking decisions on their commercialization. *The authors thank the financial support of Gobierno de Aragón-FSE-FEDER" Construyendo Europa desde Aragón" (Grupo E39_17R y RIS3 LMP28_18) and Catedra NOVALTIA.*

13.17 Bioaccumulation and Translocation of Cu, Cd, Zn, and As in Four Native Tree and Shrub Species Growing on Soils Contaminated by an Abandoned Gold Mine

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Plants are known to have the ability to bioaccumulate metal(loid)s in tissues and translocate them from roots to aerial biomass. Native plants grow in soil contaminated with mining waste in the town of La Planta (Caucete, San Juan, Argentina). The objective of this study was to evaluate the bioaccumulation and translocation capacity of Cu, Cd, Zn and As in *Prosopis flexuosa* (*Pf*), *Larrea cuneifolia* (*Lc*), *Bulnesia retama* (*Br*), and *Plectrocarpa tetracantha* (*Pt*) that grow in contaminated soil. Organ samples (leaf, branches, stem, bark and root) of 3 plants per species (n=12) were collected. Rhizospheric soil samples around each tree and shrub were taken from the first 20 cm of depth (n=12). Concentrations of metal(loid)s in organs and soil were determined. Samples were digested with a combination of HNO_3, H_2O_2 and HF, and quantifications were made using ICP-MS. Bioaccumulation Factor (BAF) and Translocation Factor (TF) were calculated. Results showed that the most concentrated metal(loid)s in *Lc*, *Pf* and *Br* were Cu and Zn, and in *Pt* were Zn, Cu and As ($p< 0.001$). BAF and TF values greater than 1 were obtained for the four species, indicating that these species are bioaccumulators. The highest BAF values was obtained for Cu in the four species ($p< 0.001$). Regarding TF, higher values of Zn were only observed in leaf of *Lc* ($p< 0.001$). The high concentrations of metal(loid)s measured in plant organs of the four native species plus the values of BAF and TF indicate a high potential for phytoextraction. Comparing bioaccumulation capacities, *Pt>Pf>Lc* for As, *Pf>Lc>Pt>Br* for Cu, *Pf>Pt>Lc>Br* for Zn, and only *Pt* was effective for Cd. Bioaccumulation capacity of Cu, Cd, Zn and As found in the native plants studied in this work, generates baseline information for the implementation of phytoremediation strategies. These species present anatomical, morphological and structural adaptations that allow them to survive adverse climatic conditions that characterize arid and semi-arid environments. This would avoid the use of exotic species that could generate disturbances in the polluted environment and a higher economic cost.

13.18 Acute Toxicity of Soils Contaminated With Waste From an Abandoned Gold Mine on Seeds of Prosopis Flexuosa and Larrea cuneifolia

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The presence of metal(loid)s in soil causes toxicity in plants such as physiological disorders, and alterations in growth and development. The objective of this study was to evaluate the acute toxicity of soils contaminated with mining waste on seeds of *Prosopis flexuosa* (*Pf*) and *Larrea cuneifolia* (*Lc*), two native species from the Monte region (La Planta, San Juan, Argentina). Seeds were collected in the surroundings of La Planta and soil samples were taken in two sites: contaminated (S1) and reference sites (S2). Seeds were exposed to 6 increasing concentrations of soil mixtures from Site 1 and 2: 0, 10, 25, 50, 70, and 100% (v/v), where 0 corresponds to S2 soil and 100% to S1 soil. Experimental unit consisted of 20 seeds placed on wet soil into a Petri dish, reaching a total of 5 repetitions per treatment. A pre-germination treatment was applied to the seeds to ensure the seedling emergence. Toxicity test was carried out in a germination chamber in darkness at 25±2 °C. Due to differences in germination time of each species, exposure of *Pf* and *Lc* lasted 7 and 15 d, respectively. Mean germination time (MGT), germination index (GI), relative growth index (RGI) and IC50 of root (r) and hypocotyl (h) length were estimated. The concentration of the main metal(loid)s in soils were: S1) As=6608 mg kg^{-1}; Zn=10892 mg kg^{-1}; Cu=260 mg kg^{-1}; Cd=90 mg kg^{-1}, and S2): Zn=46 mg kg^{-1}; As, Cu and Cd were not detected. For *Pf* a significant increase in MGT was observed from treatment 70%, whereas a significant decrease in RGI_r and RGI_h, and GI were observed from 50% S1 concentration ($p< 0.001$). $IC50_r$ and $IC50_h$ were estimated in 21.1 and 40.3%, respectively. For *Lc*, seed germination inhibition of 100% was observed from 70% S1 concentration. Statistical differences between the values of RGI_r, RGI_h, and GI for remaining treatments were obtained ($p< 0.001$), while MGT showed no significant differences. The strongest inhibition was observed in 50% S1 concentration. $IC50_r$ and $IC50_h$ were estimated in 27.7% and 15.1%, respectively. The values of the toxicity endpoints and the phytotoxicity indexes showed that these native species are more tolerant to contaminated soil of La Planta than horticultural species evaluated in previous studies ($IC50_r$ < 1% S1 concentration). In future studies, chronic effects should be evaluated to determine the underlying physiological mechanisms of the metal(loid) tolerance in *Pf* and *Lc*.