Biogeochemical processes of trace metallic elements in the rhizosphere of phytostabilizing plants.

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Many former mining sites present highly contaminated soils by a mixture of trace metallic elements (TME). Available physicochemical remediation techniques can drastically affect soil functioning. Phytoremediation technologies based on combined beneficial effects of plants and associated soil microorganisms could be an alternative strategy for an environmental friendly soil restoration. In a context of assisted phytostabilisation, we investigated in a pot experiment the effect of *Salix viminalis* (willow) and *Lolium perenne* (ray grass) together with an organic amendment (biochar) on TME (zinc, lead, cadmium, and arsenic) availability. The TME fate (characterization, speciation, mobility) under rhizosphere influence was explored. Biochar improved the survival and the growth of willow and ray grass. This amendment could indeed act on TME accumulation of plant rhizosphere, on TME fate and on TME sorption on soil phases. This experiment allowed unraveling rhizospheric effects on the ecodynamics of TME in comparison to bulk soils and the importance of the plant development.