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# Bioimmobilization and bioremediation at an AMD contaminated site in Eastern Thuringia

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The residual contamination with heavy metals and the low pH affects the reestablishment of vegetation in AMD polluted areas. Bioremediation and bioimmobilization strategies can be developed, which alter element uptake into plant biomass with respect to planting regimes that maximize reduction of the ecotoxicological risk and input into food webs. The experimental site is a remediated site, disturbed by several decades of uranium leaching (Eastern Thuringia, Germany). On this site, the effect of 5cm topsoil and municipal compost addition on the plant availability of metals was investigated. Furthermore, the soil was inoculated with mycorrhizal fungi and soil bacteria. A soil characterization including sequential extraction was performed in the amended as well as in an untreated control plot to investigate possible shifts in metal availability/mobility as an effect of the amendments added. The results show that the bioavailable heavy metal fraction was lower resulting from binding metals to the organic fraction. Thus elements can no longer be transferred via the water path into plant biomass, or washed out into ground and surface waters, reducing the risk of future. The inoculation with microorganisms aided the treatment of the soil. Diversity and evenness of the plant community were increased and plant growth was increased with inoculation. Thus microbial aided revitalisation of disturbed soils as well as addition of soil amendments were used to combine metal immobilisation and enhanced biomass production. Future trials will test whether enhanced phytoextraction by remobilisation from the organic fraction and uptake into plant biomass under controlled conditions can be devised to promote future possible land-use.