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PHYTOEXTRACTION OF HEAVY METALS FROM INDUSTRIALLY POLLUTED ZONE USING *Lolium perenne* AND *Lemna minor*

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Abstract

The paper intends to contribute to the stages of bioremediation technologies elaboration, by means of experiments and efficiency demonstrations of adequate biological depollution and ecological reconstruction methods. During the 2009-2011 period, heavy metals and metalloids, etc phytoextraction tests were performed with *Lolium perenne* L, from tailing samples collected from waste heaps and tailings dams of the mining exploitations (Rodna, Bistrița-Năsăud, Fundu-Moldovei, Suceava, Aurul in Baia-Mare), and with *Lemna minor* L, on samples of polluted waters resulting from the mining and chemical industry activities (platform of the Târnăveni Chemical Facility, Mureș). The tests were performed within the Biotechnologies Laboratory, at the Faculty of Environmental Sciences and Engineering, Babeș-Bolyai University of Cluj-Napoca. In order to check the phytoextraction, bioaccumulation and bioremediation potential of the species *Lolium perenne* and *Lemna minor*, the comparative analysis of the green tissue samples of the plants obtained in the experimental options was performed, based on the determination of microelements by inductively-coupled plasma atomic emission spectrometry at the Research Institute for Analytical Instrumentation –Cluj-Napoca.

The results prove the efficiency of the testing and biomonitoring methods of the ecotoxicity of heavy metals, metalloids etc. polluted substrata by phytoextraction and bioaccumulation in *Lolium perenne* and *Lemna minor* plants; as well as the significance of the bioremediation method of heavy metals and metalloids contaminated lands and waters etc., resulting from the mining and chemical industry using the *Lolium perenne* (for polluted lands, waste heaps), respectively *Lemna minor* (for toxic waters storage pits, tailings dams, chemical wastes platforms etc.) plants.

Key words: bioremediation, heavy metals, *Lolium perenne*, *Lemna minor*, phytoextraction

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