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DECONTAMINATION OF POLLUTED SOIL WITH CADMIUM AND ZINC USING GREENHOUSE PHYTOREMEDIATION

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Abstract

The paper presents studies concerning the decontamination of the soil samples polluted with cadmium and zinc, collected around the metal plating factory from Iasi County, Romania, using phytoremediation. Plants involved in the phytoremediation process (indian mustard, salad, spinach, wheat, rape, hemp and fescue) were grown in enameled steel pots in greenhouse conditions, being irrigated with constant amounts of water at every three days, during the entire experimental period of 70 days. Every plant species have been sowed in four replicate using the selected seeds. The main objective of this study is to show the removal performances toward cadmium and zinc ions, of the plants involved in soil decontamination and to establish the corresponding experimental conditions. Harvesting of plants was made at the end of vegetation period and distribution of cadmium and zinc ions content in roots, shoots and leaves was pointed out. The main investigations carried out in order to establish the heavy metals removal performances of each studied plant were: seed germination, shoot length, the heavy metal total content of each plant, and the total quantity of biomass production. The contents of cadmium and zinc in both soil and plants samples were determined using Atomic Absorption Spectrometry. Tacking into consideration the best removal performances and the biomass production, the recommended plants for phytoremediation of soil polluted with cadmium and zinc, under the green house conditions are rape and fescue.

Key words: cadmium, fescue, phytoremediation, rape, zinc

Received: December, 2010; *Revised final:* February, 2011; *Accepted:* March, 2011

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