Effect of Vermicompost, Pistachio Kernel and Shrimp Shell on Some Growth Parameters and Availability of Cd, Pb and Zn in Corn in a Polluted Soil

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Abstract

This experiment was conducted to evaluate the effect of vermicompost, pistachio kernel and shrimp shell on the immobilization and availability of Cd, Pb and Zn in corn in polluted soils. Treatments consisted of two levels of pistachio kernel, shrimp shell and vermicompost (5 and 10 % w/w). In control treatment, no amendment was added to the soil. The experiment was carried out as a completely randomized design with 3 replications. Plants grew for two months in the greenhouse. Then, all the plants were harvested and their shoots and roots were separated, washed with distilled water and oven dried at 65 °C to a constant mass. The measured characteristics were dry weight of shoots and roots, leaf area, greenness index, chlorophyll fluorescence, maximal quantum yield of PS photochemistry (Fv/Fm), performance index (PI), and total concentrations of Cd , Pb and Zn in shoots and roots. Results showed that plant growth parameters (dry weight of shoots and roots, leaf area) and photosynthetic characteristics (chlorophyll fluorescence, Fv/Fm, and PI) were higher in plants grown in vermicompost and pistachio kernel treatments as compared to those grown in control. Plants died in shrimp shell treatment after two weeks. The concentration of Cd, Zn and Pb in shoots and roots of plants grown in vermicompost and pistachio kernel treatments were lower than those grown in control.

Keywords: Pollution, Environment, Remediation, Heavy metals.

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