World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:11, No:10, 2017

Growing Vetiver (Chrysopogon zizanioides L.) on Contaminated Soils with Heavy Metals in Bulgaria

Authors : Violina Angelova, Huu Q. Lee

Abstract : A field study was conducted to evaluate the efficacy of Vetiver (Chrysopogon zizanioides L.) for phytoremediation of contaminated soils. The experiment was performed on agricultural fields contaminated by the Non-Ferrous-Metal Works near Plovdiv, Bulgaria. The experimental plots were situated at different distances (0.5, 3.5, and 15 km) from the source of pollution. The concentrations of Pb, Zn, and Cd in vetiver (roots and leaves) were determined. Correlations between the content of the heavy metal mobile forms extracted with DTPA and their content in the roots and leaves of the Vetiver have been established. The Vetiver is tolerant to heavy metals and can be grown on soils contaminated with heavy metals. Plants are characterized by low ability to absorb and accumulate Pb, Cd, and Zn and have no signs of toxicity (chlorosis and necrosis) at 36.8 mg/kg Cd, 1158.8 mg/kg Pb and 1526.2 mg/kg Zn in the soil. Vetiver plants can be classified as Pb, Cd and Zn excluder, therefore, this plant has the suitable potential for the phytostabilization of heavy metal contaminated soils. Acknowledgements: The authors gratefully acknowledge the financial support by the Bulgarian National Science Fund (Project DFNI 04/9).
Keywords : contaminated soils, heavy metals, phytoremediation, vetiver
Conference Title : ICESE 2017 : International Conference on Environmental Science and Engineering
Conference Location : Chicago, United States
Conference Dates : October 26-27, 2017