عنوان مقاله:

Bioaccumulation of Nickel and Lead by Bermuda Grass (Cynodon dactylon) and Tall Fescue (Festuca arundinacea) from Two Contaminated Soils

محل انتشار:

مجله علوم زیستی خاورمیانه, دوره 7, شماره 2 (سال: 1388)

تعداد صفحات اصل مقاله: 12

نویسندگان:

M. Soleimani - Dept. of Soil Science, Isfahan University of Technology, Isfahan, ۸۴۱۵۵-۸۳۱۱۱, Iran. soleimani۵۷@yahoo.com

M.A. Hajabbasi - Soil Science Department, College of Agriculture, Isfahan University of Technology, Isfahan ۸۴۱۵۴, Iran

A.H. Charkhabi - Soil Conservation and Watershed Management Research Institute, Tehran, ۱۳۴۴۵-۱۱۳۶, Iran

.H. Shariatmadari - Dept. of Soil Science, Isfahan University of Technology, Isfahan, ۸۴۱۵۵-۸۳۱۱۱, Iran

خلاصه مقاله:

Soil and sediments of the estuaries and wetlands in Northwest of Persian Gulf are recently polluted with different heavy metals because of municipal and industrial wastewaters. Therefore an urgent soil cleaning up and remediation program is vital in this region. Consequently, this study was initiated to screen two plant species (Festuca arundinacea and Cynodon dactylon) for hyperaccumulation of nickel (Ni) and lead (Pb) as one of the candidate methods for cleaning-up soil and sediments of Shadegan wetland. Soil samples (۰-۳۰ cm) were collected from two sites in the wetland. The soil samples were treated with solutions of Ni and Pb separately which resulted into content of ۵۰ and ۱۰۰ mg kg-۱ of metals in each soil. Thereafter, the plants were sown in the soils under greenhouse conditions and harvested after ۱۰ weeks. Ni and Pb contents were measured in root and shoot of plants. Results showed that accumulation of Ni and Pb in tall fescue roots were significantly (P<۰.۰۵) greater than that in Bermuda grass. The amounts of Pb in root and shoot of plants were increased when soil Pb contents were increased from ۵۰ to ۱۰۰ mg kg-۱ while Ni contents were only increased in the roots in response to increase in soil Ni content. The comparing of the shoot-root ratio showed that Pb accumulation in the roots of both plants was higher than that in the shoots, while for Ni was reverse. Due to difference in backgrounds of soil metal contents and soil characteristics, accumulation of Ni and Pb by plants were different in two soils.
REFERENCES Abedi-Koupai, J. (۲۰۰۳) Potential Uses of Phytoremediation Technology for NickelPolluted Soils. ۶th International Conference on Civil Engineering (ICCE), Isfahan University of Technology, Iran. Alloway, B.J. and Jackson, A.P. (۱۹۹۱) The Behaviour of Heavy Metals in Sewage Sludge-Amended Soils. Sci. Total Environ. ۱۰۰: ۱۵۱-۱۷۶. Beeby, A. (۱۹۸۵) The Role of Helix aspersa as a Major Herbivore in the Transfer of Lead Through a Polluted Ecosystem. J. Appl. Ecol. ۲۲: ۲۶۷-۲۷۵. Begonia, M.F.T., Begonia G.B., Ighoavodha, M., Okuyiga-Ezem, O. and Crudup, B. (۲۰۰۱) Chelate-induced Phytoextraction of Lead from Contaminated Soils using Tall Fescue (Festuca arundinacea). J. Mississipi Acad. Sci. ۴۶: ۱۵. Begonia, M.T., Begonia, G.B., Ighoavodha, M. and Gilliard, D. (۲۰۰۵) Lead Accumulation by Tall Fescue (Festuca arundinacea Schreb.) Grown on a Lead-Contaminated Soil. Inter. J. Environ. Res. Pub. Health ۲: ۲۲۸-۲۳۳. Bell R.M. and Failey R.A. (۱۹۹۱). Plant Uptake of Organic Pollutants. In: K.C. Jones (Ed.), Organic ... .Contaminants in the Environment

کلمات کلیدی:

DTPA, extraction, Heavy metals, Hyperaccumulator, Phytoavailability, Phytoremediation, Pollution

لینک ثابت مقاله در پایگاه سیویلیکا: