Third National Congress of Recycling and Reuse of Renewable Organic Resources in Agriculture
Islamic Azad University, Khorasgan Branch (Isfahan)
Agricultural Faculty, Waste and Wastewater Research Center
13-15 May 2008

Lead –Uptake with some vegetables in sewage sludge soil treated

M. Hoodaji[1] and M. Afyuni[2]
1. Assistant Professor of Soil Science Department, Islamic Azad University, Khorasgan Branch
2. Professor of Soil Science Department, Isfahan University of Technology

In recent decade sewage sludge application has becom very common in agricultural lands. Sewage sludge usage with high lead concentration increased lead concentration in soil, ground water and food chain. This study investigated the effects of sewage sludge on lead concentration in soil and plants. A field experiment was carried out in a completely randomized block design with three treatments including: control, sewage sludge (50 $ton.ha^{-1}$) and fertilizers (N: 150, P: 200 and K: 150 $kg.ha^{-1}$) and three replicates in clay soil. Cress, lettuce and spinach were planted. 80 days later soil samples were collected from 20,40,60,80,100 and 120 cm depth and plants samples were provided from shoots and roots. DTPA-Extra.Pb and lead concentration were determined in soil and plant samples respectively. The results show that sewage sludge application significantly (%1) increased dry matter yield and uptake index in all studied plants. Also the ratio of Pb in shoot to root in cress significantly (%1) increased due to sewage sludge application. Lead concentration in cress shoot significantly (5%) increased with sewage sludge usage. Our results show a positive linear regression between DTPA Extra.Pb and shoot Pb concentrations in cress and lettuce(r =0.9, 0.8 respectively). Also we show negative linear regression between DTPA Extra.Pb and root Pb concentrations in cress and lettuce (r =0.93 and 0.99 respectively).

Keywords: Lead, Vegetable, Sewage Sludge, Lead -Uptake

[1] Corresponding author Email: m_hoodaji@yahoo.com