New Agriculturist, **23**(1) : 59–62, 2012

Heavy metal contamination in sewage sludge applied clay-loam soil and uptake by spinach

Rajdhar Pandey and D.P. Sharma

Received January 25, 2012 and Accepted March 28, 2012

ABSTRACT : A field experiment was conducted in clay-loam soil in RBD to study the effect of sewage-sludge amended with lime, red mud and PSB on nutrient status and sorption of heavy metals (Cd, Pb and Zn) by spinach. Sludge application improved physico-chemical properties of the soil but increased Cd, Pb and Zn content 0.85, 0.78 and 1.62 ml/kg at T_2 (SS 20 t/ha) levels sludge application. Lime ($CaCO_3$) 20 kg/ha with SS decreased 1.5 times Cd and Pb in post harvest spinach soil. Application of red mud and PSB were also found beneficial in immobilization of these metal cations. The uptake of these metal cations were of high magnitude but liming resulted in reduction of 50% Cd, Pb and Zn uptake by the crop. Chemical reaction forming polymetric hydroxo complexes with metals and in soluble metal carbonates were found responsible for the mechanism.

Key Words: Sewage sludge, Hydroxo-complex, speciations of metal, DTPA, Red mud, PSB, Lime.