Effect of different levels of cadmium and sulfur on yield, cadmium concentration and micronutriets of corn (*Zea Mays* L.) leaves and roots under greenhouse conditions

H.Taji[1]* and A. Golchin[2]

(Received : 16 June 2010 ; Accepted : 25 December 2010)

Abstract

To investigate the potential of corn (*Zea Mays*) for cleaning of soils polluted by cadmium and the effect of different levels of sulfur (S) element on biomass and root and concentration of some micronutrients, a greenhouse experiment was performed in Zanjan University in 2008. In the completely randomized factorial design with three replications, three levels of elemental S (0, 1 and 2 ton ha^{-1}) and six levels of Cd (0, 50, 100, 150, 200 and 250 mg kg^{-1}) as cadmium sulphate were added to the pots. Seeds of SC 704 corn cultivar were sown in the pots. The results showed that Cd and S levels had significant effects ($P< 0.01$) on Cd concentration, fresh and dry weight, concentration of Zn, Fe and Mn of aerial parts and roots of plants. As the soil Cd concentration increased, the concentration of Cd in roots and aerial parts of the corn plants increased but fresh and dry weight of these parts was decreased. Application of S increased the concentration of Cd in the roots and aerial parts of corn, but it decreased the weights of these parts. Concentration of Zn, Fe, Cu and Mn in aerial parts was decreased by application of Cd and S. It seems that application of S enhances adsorption of Cd by plant roots.

Keywords: Phytoremediation, Corn, Cadmium, Sulfur, Zn, Fe, Cu, Mn.

1. MSc. Student, Dept. of Soil Science, Zanjan Univ., Zanjan, Iran.
2. Prof., Faculty of Agric., Zanjan Univ., Zanjan, Iran.
*: Corresponding Author, Email: hagartagi@ymail.com