



A study on zinc distribution in calcareous soils for cowpea (*Vigna Unguiculata L.*) and barely (*Hordeum Vulgare L.*)

Naser Boroomand (1) and Mohammad Reza Maleki (2,3)

(1) Department of Plant Production, College of Agriculture, Shahid Bahonar University of Kerman, P.O. Box 76169-133, Kerman, Iran, (2) Department of Agricultural Machinery, College of Agriculture, Shahid Bahonar University of Kerman, P.O. Box 76169-133, Kerman, Iran, (3) Department of Biosystems, Division of Mechatronics, Biostatistics and Sensors (MeBIOS), Katholieke Universiteit Leuven, Kasteelpark Arenberg 30, B-3001, Leuven, Belgium, e-mail: MohammadReza.Maleki@biw.kuleuven.be

Compared to other cereals, such as wheat and barley cultivars which have low sensitivity to Zn deficiency, cowpea is sensitive to zinc (Zn) deficiency, however it extensively grows even in soils with deficient in Zn. A 8-week greenhouse experiment was conducted to study the response of cowpea and barely to Zn in calcareous soils with different DTPA- Zn. The soil samples were taken from soil surface up to 0.3 m in which their DTPA- Zn ranged from 0.5 to 3.5 mg kg⁻¹. Shoot dry matter, concentration and uptake of Zn were found to be significantly correlated with soil DTPA- Zn in cowpea and barely. Critical deficiency level of Zn in cowpea was 1.3 mg kg⁻¹ in soil and 28.5 mg kg⁻¹ in shoot dry matter, however, to barely symptoms of Zn deficiency was not observed and concentration of Zn was higher than the critical level reported in literatures. Organic carbon (OC), calcium carbonate equivalent (CCE), pH and field capacity soil moisture content(FC) were significantly correlated with plant responses to Zn which were the most influenced characteristics to Zn uptake by plants.