Nickel Bioavailability Measured by Diffusive Gradient Thin-Films from a Four Year Fertilizer Field Dose Study

Angela L. Pérez and Kim A. Anderson

Two commercially available fertilizers were utilized in a four year field dose study to determine the bioavailability of nickel (Ni) in agricultural soils. Four sampling regions were selected, each with a distinct soil classification. A randomized treatment design consisting of four treatment levels each with four replicates was employed at all regions. Average Ni concentrations in the heavy metal rich fertilizer were 8-fold higher than the control fertilizer. Significant treatment effect was observed in Diffusive Gradient Thin-Films (DGT) measured labile Ni, and soil solution Ni. Results show significant Ni enrichment in potato and wheat for one region. Positive correlation between DGT, soil solution, and plant Ni, suggest that DGT may be a useful tool in determining Ni bioavailability in agricultural settings and for risk assessment.

Angela L. Pérez
Department of Environmental & Molecular Toxicology, Oregon State University, Corvallis, OR 97331, USA, heatera@onid.orst.edu, Telephone: 541-737-1766, fax: 541-737-0497

Kim A. Anderson
Department of Environmental & Molecular Toxicology, Oregon State University, Corvallis, OR 97331, USA, kim.anderson@oregonstate.edu, Telephone: 541-737-8501, fax: 541-737-0497

Presenting Author: Angela Pérez