



Trace element forms in soils as affected by parent rock and soil properties

C. Kabala, A. Klodnicka

Agricultural University of Wrocław, Institute of Soil Science (kabala@ozi.ar.wroc.pl / Phone: +48 713205639)

Vertical distribution of Zn, Cu, Pb, as well as Fe and Al forms was studied in profiles of Cambisols developed of marl, granite, gneiss and sandstone regoliths in the Sudety Mountains.

Seven “operationally defined” metal fractions were separated by the method of Zeien and Bruemmer (1989): mobile, exchangeable, easily reducible, organically complexed, occluded on amorphous and crystalline iron oxides and residual. Metal concentration in extracts was measured using the FAAS and GF-AAS techniques. Simultaneously, the total concentration of metals in perchloric acid as well as selected physico-chemical soil properties were analysed.

Trace metals occur mainly in strongly bound “residual” fraction in the deeper C horizons of all soils, which is typical of non-contaminated, relatively young rock regoliths. In surface and subsurface horizons predominate more labile forms of metals. Organically complexed forms decide on vertical distribution of lead, while the distribution of zinc depends mainly on the concentration of iron oxides-occluded forms. The vertical distribution of copper is affected both by the organic matter and iron oxides concentration.