

## **Distribution of Metals in Cultivated Soils from Hungary**

*T. Horvath*

University of Veszprem

Veszprem, Hungary

In our experiments we selected three representative soils in Hungary. The samples were separated into eight particle size fractions. Mineralogical and chemical compositions were studied using X-ray analytical methods (XRD and XRF). Speciation of elements was determined by the AAS method. In all samples the main components and the trace elements were examined as a function of grain size distribution and mineralogical composition. Examination of trace element distribution of grain-size-fractionated soil samples showed how the measured elements connect to the mineralogical phases. In the case of all examined soil types, trace elements are enriched in the smallest grain size fraction. They are adsorbed onto clay minerals surfaces or built in the interlayer space. Silica was found in the largest amount among the major elements. It binds to the sand fraction (to the quartz) similarly to the sodium. Distribution of the later element depends on the feldspar distribution. Al, K and Fe are enriched in the finest fraction thus their amount correlates to the most major and minor elements. In the case of dolomite-derived soils, Ca and Mg were found in significant amounts belonging to the finest fraction. As far as S concerned it appears mainly in the form of organic complexes and in very small quantity in the case of all measured samples. Ba shows some biophile character. The distribution of Cu could be influenced by dissolution-precipitation processes in soil water. Zr appears as the main constituent of zircon. According to the AAS measurements the trace elements were connected to organic complexes, amorphous hydroxides and clay minerals.