Geophysical Research Abstracts
Vol. 19, EGU2017-13325-1, 2017
EGU General Assembly 2017

Total content and bioavailability of plant essential nutrients and heavy metals in top-soils of an industrialized area of Northwestern Greece

Pantelis Barouchas (1), Pavlos Avramidis (2), Georgios Salachas (1), Athanasios Koulopoulos (1), Kyriaki Christodoulopoulou (1), and Aglaia Liopa-Tsakalidi (1)

(1) Department of Agricultural Technology, Technological Educational Institute of Western Greece, Amaliada Greece (pbar@teiwest.gr), (2) Department of Geology University of Patras, 26504 Rio-Patras, Greece

Thirty surface soil samples from northwestern Greece in the Ptolemais-Kozani basin, were collected and analyzed for their total content in thirteen elements (Al, Ca, Fe, K, Mg, Mn, Na, P, Cd, Cr, Cu, Ni, Pb, Zn) by ICP-AES and bioavailable content from a plant nutrition scope of view for (Ca, Fe, K, Mg, Mn, Na, P, Zn) by AAS and colorimetric techniques. Particle size distribution, Cation Exchange Capacity (CEC) and the magnetic susceptibility, in a low and a high frequency (at 47kHz and 0.47kHz), of soil samples were measured also in order to correlate the results. Total carbonates were tested by the pressure technique (BD Inventions, FOGII digital soil calcimeter). The concentrations of these elements were compared with international standards and guidelines. The results indicated that Cu, Cd, Zn and Pb are found enriched in the top soils of the study area, mainly as a consequence of natural processes from the surrounding rocks. Moreover, the bioavailability of some of these elements with a plant nutrition interest was tested and results indicate that they do not pose an immediate threat to the environment or crops as it all demonstrated values in an adequate range. Magnetic susceptibility in low and high frequency was correlated with clay content.