Geophysical Research Abstracts
Vol. 12, EGU2010-5778, 2010
EGU General Assembly 2010

Ecological role of soil organic matter in a former mine site of NE Spain

Jaume Bech (1), Maria Sokolovska (2), Miglena Zhiyanski (2), Ekerina Filcheva (3), Núria Roca (1,4)

(1) University of Barcelona, Chair of Soil Science (Plant Biology), Barcelona, Spain (jbech@ub.edu), (2) Forest Research Institute - BAS, 132 "Kl. Ohridski" Blvd., 1756 Sofia, Bulgaria, (3) Institute of Soil Science "N.Poushkarov", 7 Shosse Bankya, 1000 Sofia, Bulgaria, (4) Facultad de Agronomía, Universidad Nacional del Centro de la Provincia de Buenos Aires, CC47, 7300 Azul (Argentina)

Humus substances are natural ligands in the bonding of elements to complexes. They play an important role in the processes of soil formation as well as in the accumulation and mobility of metal ions. The studied area shows high concentrations of heavy metals, such as (mg•kg-1): Cd: 1.03; Cu: 129; Fe: 40120; Mn: 472; Pb: 135 and Zn: 150 (determined by aqua regia extraction). This site consists of moderately acidic soils (pH ranged 5.2 to 6.2). These studied top soils in the region of the iron mine, exploited in Roman ages near to the Poblet monastery (Tarragona, Spain), have a low content of soil organic matter (mean %OC: 6.5) according to Orlov and Grishina (1985). The soil carbon extracted by a mixed solution of sodium pyrophosphate and sodium hydroxide is up to 44 % of the total soil organic carbon content. The level of humification is very high. The type of soil humus is humate – fulvatic in 4 of the studied soils and fulvo – humatic the other 5. There are no humic acids bonded with alkali ions. The only established humic acids are "free" or bonded with the mobile forms R2O, which indicates posible processes of soil organic matter migration toward deeper horizons. This is a prerequisite for the contamination of soils and subterranean waters by heavy metals.