Geophysical Research Abstracts, Vol. 9, 10153, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-10153

Mining soil remediation using pig manure: an alternative for its sustainable reutilization

A. Faz (1), A. Zanuzzi (1), D. Carmona (1), A. Mermut (2)

(1) Soil and Water Use, Management and Remediation Research Group. Departamento de Ciencia y Tecnología Agraria. Universidad Politécnica de Cartagena. Paseo Alfonso XIII, 52. 30203 Cartagena, Murcia, Spain. (angel.fazcano@upct.es, andrea.zanuzzi@upct.es, dora.carmona@upct.es), (2) Harran University. Faculty of Agriculture. Department of Soil Science. 63040 Sanliurfa, Turkey. (mermut@harran.edu.tr)

Pig slurry creates an important environmental problem in Murcia Region, SE Spain. Large amount of slurry is produced without a proper planning of designated disposal areas. Another relevant issue in the Region is the extremely high amount of heavy metal accumulation in the environment as a consequence of the intense mining activity carried out in Cartagena-La Unión Mining District. With the aim of solving both problems, i.e. pig manure reutilization and mine soil reclamation, field experiments and undisturbed column leaching studies in the laboratory were carried out. Pig manure was used as soil amendment to reduce the acid mine drainage and heavy metal mobilization and improve soil conditions for enhanced plant establishment. Field experiments showed an increase in pH, total nitrogen, organic carbon, and equivalent calcium carbonate contents; a reduction of DTPA and water extractable metals; and an improvement of physical properties for plant establishment, as a result of the slurry application. The field results confirmed that with proper amount and a safe management the pig manure could be used for the reclamation of mine polluted soils. Columns studies showed that pH increased in mine soil amended with pig manure promoting decreasing metal mobility. Addition of 7 and 14 % of pig manure was insufficient to keep a neutral pH in the leachate. The column experiments indicated that continuous application of the pig manure may be advised and this is cretaes condition for further application.