



Mine soils amended with pig manure: leaching and retention organic matter

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Metal mining activity in southeast Spain has generated high amounts of waste materials from many years; these wastes are accumulated in pyramidal structures called silt ponds. Abandoned mining areas have scarce vegetation due to very poor properties such as extremely low soil organic matter (SOM) (< 0.6 g carbon kg⁻¹ soil), low pH, high salinity and very high metal contents. This study will present the results of a leaching experiment to assess the retention and release of carbon from undisturbed column of mine soils amended with pig manure (PM). We had taken some columns (15-cm diameter and 35-cm length) from two representative sites located in Mazarron and La Union (Descargador) mining areas. The columns were amended with 7 % (by mass) of pig manure, and leached weekly with distilled water for 11 weeks to simulate annual rainfall events in the study areas. We limit this work to compare dissolved organic carbon (DOC) in leachates and total organic carbon (TOC) retained in both mine soils treated. Results showed that after addition of pig manure in the soil surface, pH increased two unites after 11 leaching in both mine soils. Leachates had significantly weekly release of total dissolved organic carbon (DOC) during the first 6 weeks of leaching, given a maximum content of 43 mg L⁻¹ in Mazarron and 32 mg L⁻¹ in Descargador area. Significant increased were observed in total carbon contents, 2,400 % and 2,100 % respectively, compared with control mine soil. These results suggest that addition of PM may help build up the SOM in mine soils. Additions of 7 % (weight basis) of pig manure in mined soils could be potential use for future applications in the field for reclamation of mined sites.