Geophysical Research Abstracts
Vol. 16, EGU2014-14160, 2014
EGU General Assembly 2014

The study of the cumulative effects of the application of urban sewage sludge on an eroded soil cultivated in the Algerian steppe

Ahmed Boutmedjet (1), Nassira Boukkaya (2), zohra Houyou (3), Mohamed Ouakid (4), and Charles Bielders (5)

(1) (boutmedjet_ahmed@yahoo.fr). Mechanics Laboratory, University Amar Telidji Laghouat Laghouat BP37G 03000.Algéria, (2) boukaya.nassira@gmail.com. Mechanics Laboratory, University Amar Telidji Laghouat Laghouat BP37G 03000.Algéria, (3) zohrahouyou@yahoo.fr. Mechanics Laboratory, University Amar Telidji Laghouat Laghouat BP37G 03000.Algéria, (4) ouakidmomo@yahoo.fr. Department of Biology, University of Annaba.Algéria, (5) charles.bielders@uclouvain.be. Catholic University of Louvain, Belgium.

Since the seventies, desertification is one of the major problems faced by the Mediterranean climate regions. These problems are inherent in the soil and climate characteristics of these regions, but their magnitude and acuity depend mainly on human activities. The process of desertification that affects more and more land is more pronounced as soil degradation, which accelerates constantly reduced resources farmland and pasture. Especially in areas bordering the Sahara, as the Algerian steppe, a real belt between the Sahara and the Algerian tell
As part of the study of the cumulative effect of the application of urban sewage sludge on sandy soil and culture that is a cereal (barley), we had results that enabled us to identify some precepts,.
The short-term effects studied in this experiment indicate that the amendment of the sewage sludge had a beneficial effect on the fertilizing qualities of the soil and therefore the performance of barley.
To observations of Culture (barley), indicate that the best grain yield was obtained with D3 (28.76 quintals / ha) and D2 (33.91 quintals / ha). This is due to the effect of the sludge by the addition of required nutrients crop production. The lowest yield (24.11 quintals / ha) being obtained for the control (D0). It is the same for straw yield, with 47.5 quintals / ha in D2. The D3 treatment (30 t / ha) has previously presented the best results, but after 3 years we noticed that the best yields are obtained with D2 (10 t / ha).
Except the pH and the rate of limestone that are related to changes in the characteristics of the site, there was an improvement in some physical and chemical properties of the soil. The contributions of sewage sludge amended greater quality soil biology D2 (number and effective species collected).
Increasing the organic matter content (1.45%) and electrical conductivity (0.18 microseconds / cm) in the soil is only significant for the highest dose (30t/ha), although a tendency to enrichment in proportion to the dose appears clearly (except for nitrogen with a maximum of 0.066% in D3). The content of nitrogen increases less than organic carbon, which results in an increase of the C/N in the processing D2, justifying a biological activity which allows a soil structure, ensuring protection against leaching and challenging creating conditions favorable for crop development.
So opportunities for agricultural use of sewage sludge exist for the rehabilitation of degraded sites (revegetation), while remaining in an application under controlled and regulated. These pathways underused in Algeria may comprise an interesting alternative to overcome the lack of organic matter, and even conserve soil areas subject has often destructive climatic and anthropogenic conditions.