Geophysical Research Abstracts
Vol. 15, EGU2013-11981, 2013
EGU General Assembly 2013

Microbial effects on two tropical soils amended with different types of biochar

Jorge Paz (1), Ana Méndez (2), Shenglei Fun (3), and Gabriel Gascó (1)

(1) Universidad Politécnica de Madrid, ETSI Agrónomos, Departamento de Edafología, Madrid, Spain (gabriel.gasco@upm.es), (2) Universidad Politécnica de Madrid, ETSI Minas, Departamento de Ingeniería de Materiales, Madrid, Spain., (3) South China Botanical garden, Chinese Academy of Sciences, Guangzhou, China

There is an increasing interest in using biochar as soil amendment due to its potential to reduce greenhouse gas emissions from soils and to mitigate heavy metal pollution. In addition, sometimes biochar has been found to increase soil productivity due to its favourable effect on soil aggregation and water holding capacity. However, results obtained can differ greatly depending on the type of biochar utilised. On the other hand, the response of the microbial community to biochar addition is not so well understood.

In our experiment we have sampled two soils, differing in their fertility status. A greenhouse pot experiment was established to see the effect of adding four different biochars, differing on their feedstock (Miscanthus, sewage sludge, paper mill waste and pinewood). Additionally, half of the samples excluded soil earthworms, while the other half had 3 individuals of the earthworm Pontoscolex corethrurus. Pots, containing 400 g of soil, were planted with proso millet.

Assessed parameters included millet height, soil microbial biomass and soil enzymatic activity related to different biogeochemical cycles (invertase, B-glucosaminidase, B-glucosidase, urease, phosphomonoesterase, arylsulphatase)

The effects of biochar on soil biological properties depended on the type of feedstock used for biochar production and pre-existent soil parameters such as soil fertility status. Earthworm presence generally had a positive effect on soil microbial properties.