Quality of Soils Developed on Anthropogenic Substrates. (S03-machulla073922-Poster)

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Abstract:

The former state of East Germany was the largest producer of lignite in the Wold with previously mining over 300 million tones per annum. Fly ash, bottom ash and boiler slag are the major solid by-products produced when the coal is burned for generation of electricity. In Saxony-Anhalt, such anthropogenic substrates like lignite mine spoil material and lignite ash derived substrates cover the areas of about 23,000 ha and 6,000 ha, respectively. In the present study selected mine soils and soils developed on lignite ash varying in age and vegetation were sampled and analyzed microbiologically. Simultaneously some standard physical and chemical soil properties were determined. By all indices, microbial biomass and activity were higher and deeper disturbed through the profile in soils de-veloped on ash than in mine soils. The microbial C was closely correlated with (K2SO4) soluble organic C (r=0.81, P<0.001), total N (r=0.62, P<0.01), plant available K (0.94, P<0.01), and silt content (r=0.50, P<0.01). However, after 30 years of pedogenesis the soils developed on spoil material as well as on lignite ash have still clear different attributes compared to the typical arable soils of Saxony-Anhalt.

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