Geophysical Research Abstracts,
Vol. 10, EGU2008-A-04629, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-04629
EGU General Assembly 2008

Biochemical and microbiological characterization of soil microbial community under fertilization with dairy sewage sludge and farmyard manure

S. Jezierska-Tys (1), **M. Frac** (2)

(1) Agricultural University in Lublin, (2) Institute of Agrophysics Polish Academy of Sciences in Lublin

Soil quality influences agricultural sustainability, environmental quality and consequently plant, animal and human health. Microorganisms are useful indicators of soil quality because they have key functions in the decomposition of organic matter, nutrient cycling and maintenance of soil structure. The aim of this study was to investigate the effect of fertilization with dairy sewage sludge and farmyard manure on soil microbial communities by direct counting of total bacteria, some taxonomic groups and fungi, and by determining respiration activity and the activity of some enzymes. The experimental design was set up on a grey-brown podzolic soil in the laboratory conditions. It covered the following treatments: 1 - control soil (without fertilization); 2 - soil fertilized with dairy sewage sludge at a dose of 6 t d.m. ha-1; 3 - soil fertilized with FYM 8.74 t d.m. ha-1; 4 - soil fertilized with dairy sewage sludge 3.3 t d.m. ha-1 and FYM 4.5 t d.m. ha-1. Analysis of variance (ANOVA) was used to detect significant differences between the effect of fertilization on parameters that were research. Tuke'y test was used for comparison of means. Correlations between the parameters were analyzed by Pearson correlation (Statistica software). The fertilization induced significant changes in some parameters related to composition and activity of soil microbial communities. In particular, enzymes activity detected variation induced by dairy sewage sludge fertilization and farmyard manure, but also counting of culturable microorganisms was affected by the incorporation of organic matter. The statistical correlations of the data indicates that enzymes activities are quite often related one each other. There is also a positive correlation between enzymatic activity

and the number of bacteria.