



Microbial composition in microcosms amended with natural and mineral fertilizers under different water regimes

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Twenty microcosm enclosures containing two types of soil (i.e. a rich Chernozemic and a poorer soil) were fertilized with mineral (NPK-complex) and organic (Gülle, manure and a green fertilizer) materials and placed under dry and wet water regimes. After 10, 20 and 30 days of the experiment, soil samples were analyzed for the structure and composition of microbial communities using next generation sequencing techniques (Illumina) and statistical analysis. The differences between bacteria communities in different soil types, and in different fertilization and hydric treatments were analyzed using quantitative phylogenetic distances and the ANOSIM test. The two types of soil especially selected for the structure of microbial communities, while moisture and the type of fertilizer appeared to have a smaller influence on microbial diversity in microcosms. The alpha-diversity indices (species richness, evenness and phylogenetic diversity) had higher values for the poorer soil compared to the rich Chernozemic soil. For both soil types, the highest bacteria diversity values were obtained after fertilization with manure. The microbial communities in the analyzed soils were complex and dominated by sequences belonging to Actinobacteria, Proteobacteria, Acidobacteria and Firmicutes.