

Abstract

Microbial diversity plays an important role in the decomposition of soil organic matter. However, the drivers of this dependence still remain unclear. The work is based on long-term monitoring of soils of different successional stages of different diversity. Soil sampling was conducted on two dumps after brown coal mining in the Sokolov. Soils were X ray sterilized and inoculated by inoculum from both soils in two inoculation density which create gradient of microbial diversity. Then microbial respiration was measured in either supplied or not supplied by litter of *Calamagrostis epigejos*. Results showed a strong positive correlation between the microbial diversity and decomposition of organic matter if the microbial community is limited by available carbon. If there isn't carbon limit available, the decomposition rate is controlled by the amount of microbial biomass. Results demonstrated positive correlation between the rate of decomposition and the amount of fungal biomass. The soils with the addition of leaf litter showed priming effect in the initial stage of decomposition. In the control samples without addition of litter priming effect wasn't observed. Increasing humidity led to increase of decomposition rate. We can conclude with a clear conscience that similarly conclusive results associated with the microbial community diversity due to the decomposition of soil organic matter are sporadic in the scientific sphere.