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MOLECULAR ANALYSIS OF PROKARYOTIC MICROBIAL COMMUNITIES IN A TYPICAL CHERNOZEM

Frunze Nina
Institute of Microbiology and Biotechnology, Chisinau, Republic of Moldova
E-mail: ninafrunze@mail.ru

The works were carried out in 2021 in the Biotron long-term stationary experiment. 4 variants of chernozem of two land use systems were studied: arable land of fodder crop rotation with alfalfa: 1 - control, without fertilizers, 2 - mineral background, 3 - organic background (cattle manure) and a forest belt located nearby. Molecular genetic analysis was performed using the equipment of the Central Collective Use Center "Genomic Technologies, Proteomics and Cell Biology" of the All-Russian Research Institute of Microbiology, St. Petersburg, Russia.

High-throughput pyrosequencing of amplified DNA (sequencing of the M4 variable region of the 16S rDNA gene) revealed 12 types of *Bacteria* (*Proteobacteria, Actinobacteriota, Bacteroidota, Firmicutes, Acidobacteriota, Verrumicrobiota, Planctomycecota, Myxococcota, Nitrospirota, Fibrobacteriota, Gemmatimonadota, Chloroflexi*) and 1 type *Archaea* (*Crenarchaeota*). The largest number of phyla (13) was noted in the soil of the control and in the soil of the mineral background. There were 12 of them in the soil of the organic background, and 11 in the soil of the forest belt. The dominant position (abundance over 10%) was occupied by 3 phyla, including 2 phyla of *Bacteria*: *Proteobacteria* and *Actinobacteriota* and archaeotes: *Crenarchaeota.* In all cases, the strongest competition between bacteria and archaea is observed, and despite the fact that archaeota are qualitatively smaller, they are in the lead everywhere, except for the soil of the forest belt. The contribution of commonly found phyla (1-5%) was 9.2-14.1% with the largest values in the soil of the organic background (14.1%) and the smallest in the soil of the forest belt (9.2%). These are usually 5 phyla: *Firmicutes, Acidobacteriota, Plactomycecota Myxococcota*, and *Bacteroidota*. The total participation of rare phyla ranged from 0.98 to 1.6%. The lowest abundance was recorded by phyla of the unfertilized background, then organic and mineral backgrounds. They were 4-5 phyla: *Myxococcota, Nitrospirota, Gemmatimonadota, Fifrobacteriota*, and in some cases *Chloroflexi.*

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