UDC: **631.81**

INFLUENCE OF SOIL FERTILIZATION ON THE TYPICAL CHERNOZEM MICROBIOME

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The aim of the work was to study the microbiome of the typical chernozem depending on the type of fertilization (post action). The research was carried out in the long-term field experiment on the "Biotron" Experimental Station of the Academy of Sciences of Moldova in two crop rotations (with and without alfalfa). Characterization of the compositional diversity of the soil microbiome was achieved by sequencing amplicons targeting the 16s rDNA gene of prokaryotes (Scientific Center "Genomic Technologies, Proteomics and Cell Biology" of FSBSI ARRIAM, St. Petersburg, Russia).

Soil fertilization used in agriculture has an important impact on soil and plant microbiomes. Chemical fertilization pollutes the environment and unbalances the soil microbiome. Long-term organic amendments contribute to a stronger functional potential and more interactions within soil microorganisms' communities than chemical fertilization, lead to a significant decrease in the relative abundance of fungal plant pathogens.

The microbiome of the organically fertilized soil contained microorganisms from 17 phyla, while that with mineral fertilization contained only 16 phyla. Representatives of the phylum Halobacteriota (Archaea) were detected only in the organically fertilized soil. The Shannon diversity index was higher for the organically fertilized soil microbiome. Genus richness in the alfalfa rotation as a function of fertilization was 83 genera in the mineral fertilization variant and 89 genera in the organic fertilization variant. In the rotation without alfalfa the richness of genera was lower, 50 and 64 genera, respectively. Soils with different types of fertilization were also characterized by certain specific genera. In the alfalfa rotation, the soil microbiome contained 18 specific genera in the variant with mineral fertilization and 22 in the variant with mineral fertilization. In the rotation without alfalfa, 18 genera were specific to the variant with mineral fertilization, and 20 to the variant with organic fertilization. Most of the genera specific to the fertilization variants differ in the 2 rotations. The specific genres, common to both crop rotations are the following: variant mineral fertilization: *Micrococcus (Actinobacteriota)*, *Fusobacterium (Fusobacteriota)* and variant organic fertilization: *Nonomuraea*, unclassified_*Thermoleophilia (Actinobacteriota)*; *Alloiococcus, Paenibacillus (Firmicutes)*. Mineral and organic fertilization leads to a significant increase in the abundance of some bacteria with copiotrophic nutrition strategies and a decrease in the abundance of oligotrophic ones.

Acknowledgments: the work was carried out within the project 20.80009.5107 «Efficiency of the use of soil resources and microbial diversity by applying the elements of biological (organic) agriculture», funded by NARD (ANCD)

Keywords: *soil microbiome, fertilization, microbiome diversity, genera richness.*