

## **FORMATION OF MICROBIAL COMPLEX OF CHERNOZEM REGRADED IN DIFFERENT FERTILIZER SYSTEMS**

**O. Tonha**, doctor of agricultural sciences

*E-mail: oksana16095@gmail.com*

**A. Balaev**, doctor of agricultural sciences, professor

*E-mail: bal\_grunt@ukr.net*

**O. Pikovska**, PhD in soil science, Associate Professor

*E-mail: pikovska\_olena@ukr.net*

*National University of Life and Environmental Sciences of Ukraine*

Improvement of the properties of chernozems regradovannyh and increase their productivity under the influence of anthropogenic factor is of particular importance at the present stage of intensification of agriculture. The biota is an indicator of changes occurring in soils and an indicator of their ability to self-healing.

***The purpose of the research*** was to establish the influence of fertilizer systems on the number of different groups of organisms of chernozem.

***Research methods.*** The research was conducted in a stationary field experiment of the Cherkasy State Agricultural Research Station NSC "Institute of Agriculture of NAAS". Soil - Chernozem by the non-humusful medium-sandy on the forest. The experiment involves short-term five-way crop rotation with the following alternating crops: peas-wheat winter-corn-soya-barley spring. Various fertilizer systems were studied in the experiment:

- organic fertilizer system without the use of mineral fertilizers, and the use of byproducts of the precursor as fertilizer and grain processing with nitrogen fixing, phosphoribilizing biological preparations, humates, regulators of plant growth;
- an intensive fertilizer system with mineral fertilizers.
- low-cost system.

***Results and discussion.*** An important role of soil microorganisms is due to their participation in the formation of soil fertility and, in particular, the transformation in the soil of nutrition elements, primarily the turn of nitrogen and

carbon. The turn of nitrogen consists of the microbial process of its fixation from the atmosphere and the inclusion of bound nitrogen in a small biological circle, which distinguishes the degradation of nitrogen-containing organic compounds to ammonia (ammoniation), oxidation of ammonia to nitrates (nitrification), subsequent restoration to free nitrogen (denitrification), which again enters the atmosphere. Microorganisms themselves have a major role in the transformation of nitrogen in the soil. In our researches, the amount of ammonifiers and amylolytic microorganisms in the chernozem depended on the option of crop rotation.

The largest number of microorganisms that decompose organic forms of nitrogen is obtained for the organic system, the smallest - for an intensive system. By the number of amylolytic microorganisms, the difference between the variants of systems did not exceed 5%. Evaluating the degree of enrichment by the number of ammonifiers by the method of D.G. Zvyagintseva it should be noted that all fertilizer variants are characterized as poor.

According to E. M. Mishustin [4], the correlation between the number of microorganisms that use mineral nitrogen forms to those that decompose organic forms of nitrogen is called the mineralization coefficient - immobilization and may indirectly indicate an increase in mineralization of organic matter. The higher the value of this indicator, the more intense is the transformation of organic matter. The highest figure is set for intense, and the smallest - for an organic fertilizer system. That is, the best conditions for the preservation of organic matter are formed according to the organic ( $K_{m.i.} = 0.45$ ) and low-cost ( $K_{m.i.} = 0.57$ ) systems. At the same time, for the given indicator for all variants of systems non-optimal conditions for the ratio C: N are formed.

According to G. O. Iutinskaya [5], in the decomposition of peripheral chains of humus molecules involved pedotrophic, and deep degradation is carried out by humaturizing microorganisms. The highest number of pedotrophic and humate-decomposing microorganisms was observed in the organic system, and the lowest was low-cost. The difference between the above systems was 88-111%. Consequently, for organic fertilizers to preserve the organic matter of the soil, the

best option is the organic system, and in their absence, a low-cost system. The coefficient of pedotropy shows the degree of development of organic matter. According to this indicator, the intensive and organic systems ( $K_p = 0,97-1,09$ ) on chernozem contributed to the development of autochthonous microbiota and increased mineralization processes from the general fund.

The largest number Micromycetes obtained organic system, which indicates good conditions for accumulation of humus for intensive and low-cost of the difference in size of the above microorganisms did not exceed 5%.

**Conclusions.** The use of organic fertilizer system has increased the number of all physiological groups of microorganisms in the soil compared with intensive fertilization system. Also, this system created the best conditions to preserve organic matter of chernozem.

**Keywords:** *chernozem, degraded, physiological groups of microorganisms, fertilizer systems, organic matter*

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