AGROCHEMICAL AND BIOCHEMICAL PROPERTIES OF TIPICAL CHERNOZEM SOIL UNDER SUNFLOWER AND VETCH+OATS IN CROP ROTATION IN FUNCTION OF THE FERTILIZATION SYSTEM

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Abstract
The aim of research was to study the impact of two fertilization systems on the agrochemical and biochemical properties of soil fertility. And how do they change under the influence of fertilizers use in crop rotation in time and space for 2 years. As the object of study was typical chernozem soil from long-term experiment (of 19 years, Belti steppe, RM) cultivated with vetch+oats and sunflower. It was used two fertilization systems: i) Organic – 15 t manure/ha of rotation surface, ii) mixed Mineral + Organic fertilizers (NPK 75, 130, 175 kg / ha, and 15 t manure / ha). Analyzed agrochemical parameters included: soil organic matter, ammoniacal and nitric nitrogen; those biochemical –soil basal respiration, nitrogen mineralization capacity of soil, dehydrogenase and urease activity. According to the results of the investigation both fertilization systems generate positive changes in the properties of chernozem soil compared with control–unfertilized soil. Manure application and the same amount of manure together with mineral fertilizers ensure expanded reproduction of the typical chernozem's organic matter. Agrochemical and biochemical properties of soil were lower in the Mineral+Organic than in the Organic fertilization system. The values of the majority of investigated biochemical parameters were reduced in the soil cultivated with vetch+oats, which follows sunflower in crop rotation. This can be explained by the necessary of changes which occurs in the functional structure of microbial communities when management type changes from the conventional to ecological agriculture or from one culture to another.

Key words: typical chernozem, crop rotation, fertilization systems, sunflower, vetch+oats

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