

THE INFLUENCE OF ANTHROPOGENIC FACTORS ON PROPERTIES OF ORDINARY CHERNOZEM

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The study of changes in agrochemical properties of ordinary hard loamy black soils under the influence of anthropogenic factors prolonged action. For this purpose, a comparative assessment of two soil profiles in arable land and virgin soil was conducted. In the arable land was seen the agrochemical properties deterioration, especially in the upper layers.

Soil, fertilizer, degradation, fertility

Agricultural activity has long become a human soil-forming factor. Now, from a man depends largely on the fate of arable soils, their development and fertility. This conscious direction impact on soil caused a change in its properties and modes that occur much more rapidly than under the influence of natural soil-forming process [1,5,6,8].

Among all types of soils are the most fertile black soil. These soils are truly a national treasure of the country in which they are available. These countries belong to Ukraine. According to statistics in our country, these soils occupy 44% of the total area of Ukraine, which is 6.7% of world reserves chernozems [3,7].

Black soil on the territory of the steppe zone of Ukraine formed over thousands of years (estimates vary from 5 to 10 thousand. Years ago) in a temperate climate favorable to the flat relief, under the cover of grass, mainly cereal grasses [2,4].

In the view of many people, including professionals in the field of agriculture, there is a perception of very high fertility of black soil. In a popular lecture for zemstvo officials Poltava province in June 1900, VV Dokuchaev called black earth "king of the soil." We also know that in Paris Chamber of Weights and Measures retained soil monolith typical chernozem selected in Poltava province.

The purpose of research - to establish the influence of agricultural use of chernozem soil on the change in the level of fertility in comparison with virgin soils.

Materials and methods of research. Experiments were carried out on an experimental basis of the Institute of Agriculture of the steppe zone of Ukraine NAAS - Erastovskoy Experimental Station, where soils - ordinary black humus loamy loess on. In topsoil humus content of 3.8 - 4.1% (Tyurin method), total nitrogen of 0.22 - 0.23, P 0.12 - 0.13, potassium 2.0 - 2.1%. The reaction of the soil solution neutral ($rN_{vodn.} = 7.0$). Absorption capacity of 30 - 35 mg. eq. 100 g of soil.

To study the changes that have occurred in the ordinary chernozems under the influence of long-term exposure to anthropogenic factors, it has been two soil profiles: the first - on the Jilin area near the village Baykovka Piatykhatsky Raion Dnepropetrovskoy area, and the second - a distance of 300 m from the first to the field, which is being processed. On the territory of these two sections were placed so that when the sun describe fully lit front wall section.

Starting from the top of the cuts through 5 cm and to a depth of 2 m was collected soil samples, which defines the basic agrochemical parameters. Selection, storage and preparation of samples was carried out by standard methods. In a sample of soil humus content was determined by a modification of Turin Simakov, total nitrogen - Kjeldahl method (DSTU 26107-84), total phosphorus - distillation method (DSTU ISO 11261-2001) Colorimetric photoelectrocolorimeter CK-2 with the use of ascorbic acid (GOST 26216), the gross potassium – by flame photometer Flafo-5 (DSTU 4288).

The content of mobile phosphorus and potassium were determined by Chirikov, in the first case, the KFK-2, and the second - on the flame photometer Flafo-5. Potentiometric method determines the pH of the aqueous extract.

Statistical analysis was performed by the method of analysis of variance and correlation using standard of Computer programs (Statistica 6.0; Microsoft Office, Excel 2003-2007).

Conclusions

1. Under the influence of long-term treatment of ordinary chernozems they begin to develop the processes of human degradation, which are expressed primarily in reducing the content of humus and nitrogen.

2. The content of phosphorus and potassium in cultivated soils more determined by the system of fertilizer.

3. Given that the current use of organic and mineral fertilizers are carried out in minimal volumes, expect a significant improvement in agro and agro-chemical properties of the soils without changing the existing system of agriculture is not necessary.

4. The above material clearly demonstrate the need for a comprehensive monitoring of the soil condition and of comparing the data obtained with the standard natural (virgin). All these experimental materials will create an objective basis for evidence-based discussions of human evolution ordinary chernozems, management theory and practice agrophysical and agrochemical parameters of soils, their ecological and productive functions.

5. Conduct a similar comparison of agrochemical parameters cultivated areas with virgin needs to be done in addition to the ordinary chernozems and all other types and subtypes of soils of Ukraine.

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