Ministry of Education and Science of Ukraine
State Biotechnological University
Department of Land Management, Geodesy and Cadastre

PROCEEDINGS OF THE
INTERNATIONAL SCIENTIFIC AND PRACTICAL CONFERENCE







“PLANNING AND USE OF TERRITORIES WITHIN THE CONTEXT OF INCLUSIVE DEVELOPMENT”

KHARKIV, UKRAINE
2023

GEOLOGICAL ACTIVITY OF MICROORGANISMS

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This article describes a number of issues such as soil formation as a result of the activity of living organisms, increasing soil fertility, and obtaining high yields from plants.

Before life appeared on earth, all substances were dissolved and water accumulated in the body of plants until a certain amount was reached. In this way, living organisms use P, S, C, Ca in water to build their bodies. and used other macro and micro elements. After these plants became perished, they formed layers such as oil, limestone, sulfur, and coal. While a group of microorganisms formed rocks, on the other hand, they decomposed them. For example, smaller granites are decomposed by water or other chemical factors and form water-soluble carbonate salts of K or Na. A small amount of organic matter falling on graphite particles also causes the emergence of saprophytic bacteria. Carbon dioxide is produced as a result of the activity of saprophytic bacteria. Carbon dioxide quickly erodes rocks. Saprophytic bacteria are followed by some green algae, then lichens, mosses, and slowly higher plants begin to appear. In this way, the right rocks are eroded and a humus layer of the soil is formed, because saprophytic microorganisms break down plant residues and form humus.

GUMUS is Latin name of soil. Humus is a complex of organic substances formed as a result of biological and biochemical changes of dead plant and animal organisms.

Soil contains a large number of microorganisms, that is, 1 g of soil contains billions of different types of bacteria, molds, yeasts, algae and simple animals.

Microbiological analyses:

1. Bacterial count-Meat peptone agar
2. Number of fungi – in Chapek environment

3. Actinomycetes count - Starch - ammonia agar
4. The number of nitrogen fixers- in Ashby environment
5. Number of ammonifiers – Meat peptone agar
6. Number of denitrifiers - in Giltay environment
7. Nitrifiers - on the Vinogradsky plate

The distribution of microorganisms in the soil depends on the characteristics of the soil, for example, on factors such as physical and chemical properties of the soil, climatic conditions. Microorganisms multiply greatly due to plant and animal remains that fall into the soil. Microorganisms are especially abundant in the upper part of the soil, and the number decreases as they go down, the reason being that the upper part of the soil is fertile, and there is enough nutrients and moisture. [1, 2, 3] There are many bacteria especially around the root system of the plant, most of them are aerobic, reducing organic substances and synthesizing vitamins that are necessary for plant life and that they can absorb.

In order to calculate the number of soil microorganisms, several scientists have conducted scientific research. An example of this is the summary of S. N. Vinogradsky's work aimed at counting microorganisms in 1924. [4, 5, 6] In this case, a certain amount of soil is taken and a thin layer of soil is prepared for analysis, then it is stained with erythrosine and the number of microorganisms is counted under a microscope. But since this method is not accurate enough, this bacterioscopic method is further improved by F. N. Germanov. In this case, Germanov affects the soil particle with table salt, as a result, the bacteria in the soil particles come out. [1, 2, 3, 4]

Using this method, Germanov determined that the number of bacteria in 1 g of soil reached 10 billion and proved that the number of bacteria increases if the soil is properly cultivated. Such experiments have been performed and proven by many scientists.

In our country, a number of works are being carried out in order to increase soil fertility and improve the natural condition of the land, but there are also a number of unsolved tasks.

Table 1. Effect of salinity on the number of bacteria in irrigated meadow alluvial soils, million/g of soil

t/r	Salinity level	Soil horizons, cm											
		0-30 cm			30-50 cm			50-70 cm			70-100 cm		
		In the spring	in the summer	in the fall	in the spring	in the summer	in the fall	in the spring	in the summer	in the fall	in the spring	in the summer	in the fall
1	Unsalted	25	30	27	17	19	16	8	10	7	5	6	5
2	Lightly salted	21	23	19	14	15	13	6	7	6	4	5	3
3	Moderately salty	14	12	10	11	10	8	2	1	1	0.5	0.3	0.2
4	Strongly salted	10	9	8	8	8	6	1	0.5	0.5	0.2	0.1	0.1

In solving these tasks, the use of a complex of rhizosphere microorganisms, which have a positive effect on the accumulation of nutrient elements for plants in the soil and the growth of plants, is highly effective. As a result of the further development of agricultural production, various highly toxic mutagenic drugs have been applied to the earth in recent years. Ecologically clean, completely harmless to human life, economically cheap It is possible to find a solution to such problems by using biological preparations and, most importantly, biotechnology methods. Currently, microbial preparations are widely used in order to obtain high yields from agricultural crops, increase soil fertility, and protect plants from various diseases. Such preparations are mainly produced and used in large quantities in countries such as Russia, Japan, and the Czech Republic. By using microbial preparations, an increase in plant yield by 10-15% was achieved. Currently, microbial preparations are widely used in order to protect children from various diseases. Such preparations are mainly produced and used in large quantities in countries such as Russia, Japan, and the Czech Republic. By using microbial preparations, an increase in plant yield by 10-15% was achieved. Currently, microbial preparations are widely used in order to protect children from various diseases. Such preparations are mainly produced and used in large quantities in countries such as Russia, Japan, and the Czech Republic. By using microbial preparations, an increase in plant yield by 10-15% was achieved.

By influencing the microbial communities in the soil, it is possible to improve the growth and development of agricultural crops and obtain high quality and high yields. Currently, the use of microorganism regulators is very effective. The amount of macro and micro elements needed for plant growth varies depending on the type of soil. For example, one of the main factors limiting the development of plants is their insufficient supply with nitrogen compounds. Mobile nitrogenous compounds are mainly found in large quantities in black soils, and their amount fully meets the plant's needs for high yield.

The high yield of our plants depends on the soil in addition to macro and micro elements, micro preparations. For this, it is necessary to properly cultivate the land. For example, it is necessary to plow the land with good quality, clean the field from weeds, cultivate and properly water it. If such agricultural engineering measures are carried out correctly, Good conditions for the growth of plants will be created, and abundant quality crops will be grown from them. Only in this way can economic benefits be obtained from each hectare of land. This leads to an increase in income.

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