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PROGRESS OF BIOLOGICAL PROCESSES IN TYPICAL GRAY SOILS IRRIGATED

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ABSTRACT:

When the development of our country has reached a high stage and the introduction of intensive agricultural technologies, the problem of increasing soil fertility and conservation is one of the most important issues in agriculture.

Keywords: agricultural development, soil fertility, bacteria, actinomycetes, fungi, algae.

INTRODUCTION:

Today, in the world, "lands damaged by washing and water erosion account for 10.9 million / ha (56%), lands eroded by wind 5.5 million / ha (28%), chemically degraded (reduced humus and biogenic substances, saline, polluted and others) 2.4 million / ha (12%), physically degraded (compacted, swampy, sedimentary, etc.) lands 0.8 million / ha (4%), the total area is 19.6 million hectares »[1] . Therefore, in the countries of the world it is important to maintain, increase and improve the fertility of land degraded by natural and anthropogenic factors.

It is known that the absorption of minerals by plants in irrigated lands, that is, the production of high and quality crops, is closely linked with the vital activity of microorganisms in the soil. Therefore, the question of the relationship between the development of agricultural culture and the composition and quality of mineral fertilizers applied to the land is being studied. This is why the issue of production and application of biological fertilizers attracts the attention of many scientists abroad and at home.

A number of scientific studies are currently being conducted around the world to analyze the agrochemical, physical and chemical properties of soils, the state of humus and the interaction of soil biological activity with environmental factors. Special attention is paid to the identification of the initial stage of soil degradation using modern technologies and scientific and practical work to increase soil fertility, organic farming, production of high quality and ecologically pure products from biological crops by biological methods.

OBJECT OF RESEARCH AND METHODS USED:

The research was conducted under typical irrigated gray soils in Piskent district. The research used standard methods generally accepted in the field of soil science and microbiology in the field and in the laboratory. The amount of microorganisms in the soil was carried out according to the instructions of D.G. Zvyagintsev "Methods of soil microbiology and biochemistry."

RESULTS AND THEIR DISCUSSION:

The process of soil formation and increase in its fertility is mainly directly related to microorganisms. The main part of the organic mass that falls into the soil is the roots of plants, and as a result of their decay, humus is formed in the soil. The role of microorganisms in the occurrence of this process is infinite.

Decomposition of organic matter occurs due to the biological absorption of organic matter in the soil by microorganisms. The soil is home to a large number of different microorganisms: bacteria, actinomycetes, fungi, algae, lichens, and simple, low-lying animals. Their amount is extremely variable, reaching 1 million and billions in 1 gram of soil.

Also, through the microbiological activity of the soil, its properties, regimes and fertility are formed. One of the important issues is to know the causes of current processes in soil, properties, regimes and fertility, and to study soil microbiological activity in order to assess fertility and steer it in the right direction.

In soils, proteins break down most rapidly and make up 50% of the dry mass of the cell. Proteins are broken down by ammonifiers - aerobic and anaerobic bacteria, actinomycetes, as well as fungi. Nitrogen is released in the form of ammonia as a result of the breakdown of proteins by these microorganisms. The process of ammonification plays an important role in plant nutrition. Oligonitrophils are important in the transformation of nitrogen and carbon in the soil. This group of microorganisms breaks down the carbon part of the most important organic matter. Nitrogen-fixing bacteria have the property of assimilating nitrogen from the atmosphere. Their accumulation in the soil can lead to its enrichment with a certain amount of nitrogen.

According to the results of the study, the amount of microorganisms in typical gray soils irrigated is given in Table 1.

The main physiological group in typical gray soils irrigated is the amount of microorganisms

№ examples	Types of microorganisms				
	Ammonifiers	Phosphorus-degrading bacteria	Oligonitrophils	Micromycetes	Actinomycetes
1	$2,4x10^7$	$3x10^5$	$3x10^5$	$4,5x10^4$	did not occur
2	$9x10^6$	$1,5x10^5$	$1,5x10^5$	$3,0x10^4$	did not occur
3	$4,5x10^7$	$7,5x10^5$	$6,9x10^5$	$7,5x10^4$	$1,5x10^3$

As a result of microbiological analysis, the amount of ammonia is 24,000,000-45,000,000 million / g (2.4-4.5x107 and 9x106 KOE) cells / g in small and moderately degraded soils, and less than 45,000,000-100 in washed soils. 000 000 (4.5x107 KHB cells / g).

The amount of phosphorus-degrading bacteria was found in the same order in all soil samples and was found to be 150,000 and 750,000 million / units (1.5–7.5x105 and 7.5x105 KOE) per cell / g.

The number of oligonitrophilic microorganisms growing in a nitrogen-free environment was one order of magnitude higher in washed-out and washed-out soils than in washed-out soils and amounted to 690,000 (6.9x105 KOE) cells / g.

The amount of micromycetes was found to be 3,000–45,000 (3.0–4.5x104) in low- and moderately washed soils and 75,000 (7.5x104) cells / g in washed-out soils.

Actinomycetes were only 1500 (1.5x103) cells / g in washed-out soils, whereas they were not found at all in less washed and moderately washed soils.

CONCLUSION:

In summary, the study of the microflora of these soils showed that actinomycetes were rare and almost non-existent in terms of the amount of microorganisms of the main physiological group. Taking into account the properties and characteristics of typical

irrigated gray soils, creating optimal conditions for the activity of microorganisms living in the soil by improving their reclamation status ensures the complete and efficient conduct of biological processes in them. This will allow to properly organize the agro-technical measures applied to the soil to further increase the biological activity of the soil, and thus to obtain high and ecologically clean yields from agricultural crops on farms.

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