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MICROBIOLOGICAL PROPERTIES OF HUNGRY BARK SOILS

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Abstract
In this article, the microbiological properties of protected light gray soils distributed in the study area were studied, and it was found that in some samples the content of micromycetes exceeds the norm. It has been established that ammonifying bacteria are more often found in the soil layer of 16-30 cm than in the layer of 0-15 cm. It has been established that in the layer of 0-15 cm there are an order of magnitude more actinomycetes than in the layer of 16-30 cm.

Keywords: Enzymatic, microorganisms, physicochemical, hydrophysical, biological, ammonifiers, aerobic and anaerobic, bacteria, actinomycetes, fungi, oligonitrophils, nitrogen fixation.

Introduction

In each type of soil formation, it is possible to distinguish between more general processes and specific, specific processes. Commons include cyclical processes of entry and decomposition of organic matter, biological accumulation and removal of substances from the soil, decomposition and synthesis of minerals. For each species, the processes of the formation of mold and the accumulation of humus, the decomposition of primary minerals and the formation of new secondary minerals are specific. Among the proprietary processes that form soil, macro and microprocesses are distinguished. The first cover the entire soil thickness and provoke the formation of a soil profile, the second accumulate in microzones, individual hearths, which is especially characteristic of some microbiological changes. Processes on a horizon are sometimes referred to as mesoprocesses [1].

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Varying degrees of enzymatic activity of saline soils, which are common in the lead areas, varied with salinity levels and seasons, and the activity of the enzymes catalase, peroxidase, and polyphenoloxidase belonging to the group of oxidases was determined. The seasonal dynamics of enzyme activity were manifested by the fact that they reach their peak in spring, gradually decreasing in summer, and increasing slightly in autumn. It turns out that in the optimal conditions of the soils under study, favorable conditions for the development of microorganisms are favored by an increase in the activity of enzymes. Thus, as the salinity rate increased, the enzymatic activity of the soils fell to the minimum values [1.]

Fertility and effective properties of soil are closely related to the development and activity of soil microorganisms, have high biochemical energy and are actively involved in soil processes. They perform the basic soil biological process, decomposing organic residues and forming a sediment of new organic matter. In addition, in the process of their life, using plant residues and cleaning the environment, creating conditions for optimal growth and development of grown crops.

Zhen Liu, Yanfei Sun, Yuqing Zhang, Shugao Qin, Yong Sun, Henan Mao, Lin Miao stated that the composition of soil microflora as well as the metabolism of microorganisms and their interaction with the ore and organic parts of the soil during the studies revealed the metabolism of microorganisms and their interaction with the ore and organic parts of the soil. At the same time, the alkalinization of pollinators, the biochemical activity of microorganisms and the activity of microscopic organisms, the physical and chemical properties of soil, hydrophysical procedure are influenced.

The process of soil formation and increase in its fertility is mainly directly related to microorganisms. The main body of the organic mass falling into the soil is formed by the roots of plants, and as a result of their rotting occurs, mildew appears in the soil. The role of microorganisms in the occurrence of this process is infinitely limitless.

Decomposition of organic matter occurs due to biological assisorption of organic matter from the soil by microorganisms. In the soil, a huge number of different microorganisms live: bacteria, actinomycetes, fungi, algae, lichens, and simple, indigenous animals. Their amount is incredibly variable, with 1 gram of the number in the soil in a million and billions. reaches 1000. Also, through the microbiological activity of the soil, its properties, regimes and fertility are formed. It is important to know the causes of the processes in the soil, the properties, the regimen, and the current state of fertility, and to study the microbiological activity of the soil in order to assess fertility and manage it accordingly. [8].]

In soils, proteins break down most intensively, constituting up to 50% of the dry mass of cells. Proteins are broken down by ammonifiers - aerobic and anaerobic bacteria, actinomycetes, and fungi. As a result of the breakdown of proteins by these microorganisms, nitrogen is decomposed in the form of ammonia. The process of ammonification plays a great role in the nutrition of plants. Oligonitrophils - Plays an important role in the transformation of nitrogen and carbon in soils. This group of microorganisms breaks down the carbon portion of the most important organic matter. Nitrogen-fixing bacteria have the property of absorbing nitrogen in the atmosphere. Their accumulation in the soil can cause it to be saturated with a certain amount of nitrogen [5.].

Object and subject: Guzar district is the territory of JTL, The influence of protected hungry marsh soils spread in the study area on the microbiological properties of soils has been revealed.

Methods:
The microbiological properties of light-colored gray soils distributed in the Guzar massif were carried out in generally accepted methods [3; 4; 6; 7.].

Progress of the work and results:
The influence on the microbiological properties of open-skinned marsh soils scattered in the study area was determined (Fig. 1). According to the results, the GTL plant, which is spread on the west side, is derived from light-colored gray soils 1; 2; On average in sections 3 and 4, respectively, Micromycytes 1.1x102-1.7x103 CHB cells/g in layers 0-15 cm, 1.1x103 - 1.7x10 3 CHB cells/g in layers 16-30 cm, actinocytes 1.2x102 - 3.5x10 4 CHB cells/g in layers 0-15 cm , 2.2x103 - 3.2x104 CHB cells/g in layers 16-30 cm , Ammonifiers 1.1x108- 3.7x107 CHB cells/g, Phosphorus-degrading bacteria are in the range of 0x10 2.2x105 -5.2x104 CHB cells/g, 1.2x105 -5.2x104 CHB cells/g in 16-30 cm layers, Oligonitrophils in 0-15 cm layer are in the range of 2.1x10 6-7.5x106 CHB cells/g, Oligonitrophils in 0-15 cm layer are in the range of 6.1x10 6-7.5x106 CHB cells/g, 3.4x106- 6.4x106 CHB cells/g, in 16-30 cm layer (Table 1).

Table 1. The amount of microorganisms in the soils of the GTL plant, western and southern parts.

Cut, No.	Qatlam , sm	Micromi-cytes	Actinomy-cytes	Аммони-фикатор	Phosphorus-degrading bacteria	Oligonitro-phylls
GTL Factory, West						
1-cut	**0-15 sm**	**1,1x102**	2,2x103	1,5x107	5,2x104	3,0x106
	16-30 sm	**1,1x103**	3,2x104	1,4x108	5,5x104	3,7x106
2-cut	**0-15 sm**	**1,3x102**	1,2x102	3,0x107	4,5x104	3,9x106
	16-30 sm	**1,2x102**	2,2x103	4,0x107	3,2x104	2,2x106
3-Cutting	**0-15 sm**	**1,5x103**	3,5x104	3,7x107	2,4x104	7,5x106
	16-30 sm	**1,7x103**	2,5x103	2,7x108	1,2x105	6,4x106
4-Cutting	**0-15 sm**	**1,5x104**	2,2x104	1,1x108	2,2x105	2,1x106
	16-30 sm	**1,4x103**	2,2x104	1,4x108	1,5x105	3,4x106
GTL Factory, South Part						
5-Cutting	**0-15 sm**	**4,5x105**	6,5x105	6,7x107	3,7x104	5,2x106
	16-30 sm	**3,5x105**	7,5x104	5,9x108	3,1x105	6,7x106
6-Cutting	**0-15 sm**	**2,1x102**	4,2x103	2,3x106	6,3x105	3,3x106
	16-30 sm	**1,8x103**	5,2x104	2,4x107	7,3x104	3,4x106
7-Cutting	**0-15 sm**	**3,0x102**	3,1x103	4,3x107	6,1x104	3,2x106
	16-30 sm	**2,1x104**	2,1x104	3,4x108	7,1x104	3,1x106
8-Cutting	**0-15 sm**	**2,5x104**	1,2x104	4,1x108	5,2x105	6,1x106
	16-30 sm	**2,2x103**	1,3x104	3,2x107	3,3x104	7,3x106

On average, according to sections 6 and 8, Micromysites 2.1x102 - 4.5x10^5 KHB cells/g in 0-15 cm layers, 1.8x103- 3.5x10 5 CHB cells/g in 16-30 cm $^{\text{layers}}$, actinomycetes 1.2x104 - 6.5x10 5 CHB cells/g in 0-15 cm layers, 1.3x104 - 7.5x10 4 in 16-30 cm layers, 1.3x104 - 7.5x10^4 CHB cell/g, Ammonifiers 2.3x106 - 6.7x$10^{7\text{KHB cells}}$ /g in layers 0-15 cm, 2.4x107 - 5.9x10 8 KHB cells/g in layers 16-30 cm, Phosphorus-degrading bacteria 3.7x104-6.3x105KHB cells/g in layers 0-15 cm, 3.1x105- 7.3x10 4KHB cells/g in layers 16-30 cm, Oligonitrophils in layers 0-15 cm 3.2x106 - 6.1x10^6 KHB cells/g, 3.1x106 - 7.3x10 6 in layers 16-30 cm CHB is observed in the cell/g range (Table 2).

Table 2. Amount of microorganisms in the soils of the eastern and northern parts of the SHGKM.

Cut, No.	Qatlam, sm	Micromi-cytes	Actinomy-cytes	Аммони-фикатор	Phosphorus-degrading bacteria	Oligonitro-phylls
East-North part of SHKM						
9-Cutting	**0-15 sm**	**7,1x102**	4,2x104	5,5x108	3,0x105	9,0x105
	16-30 sm	**6,1x103**	3,2x104	4,0x108	2,3x105	8,0x105
10-Cutting	**0-15 sm**	**5,2x105**	5,5x105	3,1x108	1,9x105	4,2x106
	16-30 sm	**4,2x105**	4,5x105	5,1x108	2,9x105	5,2x106
11-Cutting	**0-15 sm**	**3,2x105**	3,2x104	4,2x106	4,2x104	4,1x105
	16-30 sm	**2,5x105**	2,2x104	3,2x107	3,0x104	3,3x105
SHKM North						
12-Cutting	**0-15 sm**	**3,2x105**	6,2x104	5,2x108	4,2x105	4,5x105
	16-30 sm	**2,5x103**	5,2x104	4,3x108	3,5x105	3,5x105
13-Cut	**0-15 sm**	**3,3x102**	4,5x104	7,5x107	5,0x104	8,6x106
	16-30 sm	**4,5x103**	6,2x104	7,1x108	6,7x104	9,0x105
14-Cut	**0-15 sm**	**5,3x102**	5,2x104	7,3x107	4,0x104	7,6x106
	16-30 sm	**4,0x104**	4,2x104	6,1x108	5,7x104	8,0x105
15-Cut	**0-15 sm**	**4,2x105**	5,5x105	6,7x107	3,7x104	5,2x106
	16-30 sm	**3,5x105**	6,4x104	5,9x108	2,1x105	6,7x106

On average, according to sections 10 and 11, Micromycetes are 3.2x105-7.1x102 CHB cells/g in 0-15 cm layers, 2.5x105-3 6.1x10 3KHB cells/g in 16-30 cmlayers, actinomycetes 3.2x104-5.5x105 CHB cells/g in layers 0-15 cm, 2.2x104-4.5x105 CHB cells/g in layers 16-30 cm, Ammonifiers were recorded in the range of 3.1x108-5.5x108 CHB cells/g in layers 0-15 cm, 3.2x107-5.1x108 CHB cells/g in layers 16-30 cm, phosphorus-degrading bacteria in the range of 1.9x105 - 4.2x10 4 CHB cells/g in layers 0-15 cm, 2.3x105-3.0x104 CHB cells/g in layers 16-30 cm, Oligonitrophils in layers 0-15 cm 4.1x105- 9.0x105 CHB cells/g, 3.3x105- 8.0x105 CHB cells/g at layers 16-30 cm. (Figure 2).

On average in sections 13, 14 and 15 Micromysites 3.3x102-5.3x102 CHB cells/g in 0-15 cm layers, 2.5x103-4.5x103 CHB cells/g in 16-30 cm layers, actinomycetes 4.5x104-6.2x104 CHB cells/g in 0-15 cm layers, 4.2x104-6 CHB cells/g in 16-30 cm layers, 4x104KHB cell/g, Ammonifiers 5.2x108-7.5x107KHB cells/g in 0-15 cm layers, 4.3x108-7.1x108 CHB cells/g in 16-30 cm layers, Phosphorus-degrading bacteria 4.0x10 4-5.0x104 CHB cells/g in 0-15 cm layers, 2.1x10 5-6.7x104 CHB cells/g in 16-30 cm layers, Oligonitrophils in 0-15 cm layers 4.5x10 5-8.6x106 CHB cells/g, 33.5x10 5-9.0x105KHB cells/g in 16-30 cm layers

In conclusion, as a result of the study of the soil samples of the soil samples of the GTL plant, western and southern parts, east-north and northern parts of the SHGCM, the amount of ammonifier bacteria from the main physiological group microorganisms is normal in some samples, the amount of phosphorus-degrading and oligonitrophilic microorganisms is lower than the norm, actinomycetes are also less than the norm or do not occur at all observed. It was found that micromicrometes were higher than the norm in some samples. It has been found that ammonifier bacteria are more common in layers of 16-30 cm of soil than in layers of 0-15 cm. Actinomycetes, on the other hand, were observed that the soil is much more by one order at a layer of 0-15 cm than in a layer of 16-30 cm.

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