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The Effect of Winter Lentil (Lens Culinarius L) on the Microbiological Activity of Irrigated Light Sierazem Soils

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Annotation. The article describes the role of the winter lentils to increase the fertility of old-irrigated light sierazem soils. When growing winter lentils, the microbiological activity of the studied soils increases markedly compared with the control variant.

Introduction. Today, at the time of increasing environmental changes and the soil productivity, rational and efficient use, and protection from degradation processes is one of the urgent problems of the world. In the following years, the irrigated land used for agricultural purposes will decrease per capita. Naturally, such a situation requires a change in the attitude to agriculture, rational use of land and land resources in farming. The use of biological methods to prevent and combat the degradation of the irrigated soil cover of our republic, in particular, winter grain-legume crops, is the basis for improving the physical, physico-chemical, microbiological properties and biological activity of the soil [3,5]. As a result, the ecological condition of the soil stabilizes and soil fertility increases. In the science of soil science, soils are recognized as living bodies. It is determined by the amount of microorganisms in it and their activity. That is, all the biochemical processes that take place in the soil are closely related to them.

According to V. V. Dokuchaev, the living and dead parts of nature are genetically connected with soil, microorganisms and plants. On the one hand, microorganisms determine soil fertility. The amount of microorganisms changed depending on the degradation processes. Microorganisms have high biological activity and constantly break down a large amount of organic and mineral substances in the soil and synthesize their new forms. During these processes, the main biogenic elements are cycled, biologically active substances are released [1,2,3,4].

Material and Methods. The object of research is in the soils of the Namangan Scientific Experiment Station of the Scientific Research Institute of Cereals and Legumes, Uychi District, Namangan Region. The Sarbon variety has been included in the State Register since 2017. Authors: Mannopova M, Yakubov 3, Sattarova Sh, Ashitosh S.

Results. Microorganisms play a major role in increasing soil fertility. With their participation, processes of accumulation of mineral elements necessary for plants take place in the soil. Also, microorganisms are of great importance in increasing soil fertility and obtaining abundant harvests from agricultural crops. Soil is a natural habitat and mass breeding environment for various microorganisms. Also, soil formation, i.e., biological decomposition, takes place with the participation of microorganisms.

The circulation cycle of nitrogen-retaining compounds in the soil is closely related to the development and biochemical activity of ammonifying microorganisms. Many nitrogenous organic compounds in the soil are decomposed by these microorganisms into ammonia, which is important for nitrogen nutrition of plants. Quantitative changes of ammonifiers in the area planted with winter lentils compared to the control option are presented in diagram 1. Their amount changes in tilled and under-tilled soils. In the control version, there were 1,125,000 cells in 1 g of soil in the upper layer (0-15 cm), 993,000 cells in (15-30 cm), and 664,000 cells in the lower layer (30-50 cm). The amount of ammonifiers in the soil obtained from the field of winter lentils was 2110 thousand cells per 1 g of soil in the upper layer (0-15 cm), 1793 thousand cells in (15-30 cm), and 1060 thousand cells in the lower layer (30-50 cm).

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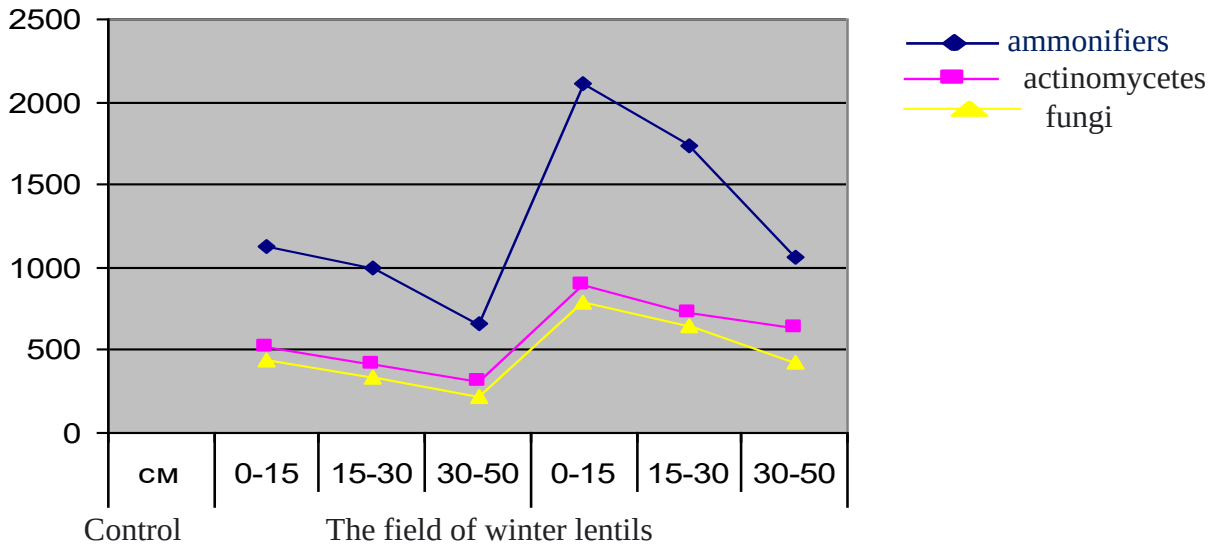
1 - diagramma

Microorganisms in the soil of the area planted with winter lentils (in the count of thousands of pieces per 1g of soil)



Control The field of winter lentils

A group of microorganisms that use organic compounds as a carbon source includes actinomycetes and fungi. They have the ability to decompose complex compounds into clay, lignin and humus substances in the soil. Many actinomycetes are antigenic, pathogenic and phytopathogenic. Therefore, the ratio of these groups in soil is of great interest [2,5].

According to the received data, there are changes in the amount of actinomycetes. The number of actinomycetes in the soil of the control option was slightly lower, that is, in the upper (0-15 cm) layer it was 552 thousand cells per 1 g, and in the lower 30-50 cm layer it was 311 thousand cells/g. In the area planted with lentils, the amount of actinomycetes in the layer (0-30 cm) was 890,000/g and decreased to 630,000/g in the lower layer.

Soil fungi are an ecological group that plays an important role in the mineralization of plant and animal organic residues and in the formation of humus. Fungi are abundant in the soil and may be in the form of spores or physiologically active mycelia. Most of them are saprophytes and are of great importance in soil formation. Along with other microorganisms in the soil, soil microscopic fungi play an important role in soil fertility. A large number of their species actively participate in the decomposition of plant residues in the soil.

Soil fungi are not only involved in biological processes in the soil, but also have a great importance in the life of plants. However, it should be noted that among the soil fungi there are also phytopathogens that have a negative effect on the yield of plants. The importance of the flora of fungi in nature and in human economic activity is enormous. Therefore, the study of soil fungi is not only of scientific and worldly importance, but also of great practical importance.

According to our research, the number of fungi is not high in the soils of the studied area, and it was observed that it varies from 441,000 to 224,000 in 1 g of soil along the soil profile. In the area planted with lentils, it was observed that it changed from 786,000 to 430,000 per 1g of soil along the soil profile. It was observed that the number of fungi, as well as other types of microorganisms, decreases towards the subsoil layer of the soil.

Conclusion. Lentil is a plant belonging to the group of grain-leguminous crops. It is a dietary product rich in protein, high-quality protein, nutritious green food from the stem, hay equal to the nutritional value of alfalfa, and also enriches the soil with nitrogen and improves its biological properties. increases. As a result, all the properties of the soil are slightly improved.

In the lentil-planted options, the humus condition of the soil and the increase of total nitrogen at the end of the growing season will at least stabilize their reserves. From this point of view, we recommend

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planting, cultivating, and planting winter grain legumes as a successor crop. Through this crop, the soil's humus and aggregate condition, as well as its nutritional status, are improved.

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