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The Importance Of Microbiology In Agriculture And Soil Fertility

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Annotation: *This article describes in detail the importance of microorganisms in agriculture, including the assimilation of undigested nitrogen and other elements in the soil with the participation of microorganisms and the growth and development of plants.*

Keywords: Microbiology, bacteria, nitrogen, microorganisms

I.INTRODUCTION

Microbiology is the study of the shape, size, growth, and life processes of tiny living things that cannot be seen with the naked eye using a variety of methods. Microbiology is a Greek word meaning microscopic, bios-life and logos-science. This group of organisms includes bacteria that multiply by simple division, the smallest viruses and bacteriophages, as well as some representatives of microorganisms close to bacteria, actinomycetes and some fungi. Microbiology studies the morphology, systematization, and physiology of microorganisms. It examines the general conditions under which they live, and explains the role of microorganisms in the change of various substances in the nature that surrounds us.

II. METHODOLOGY

Much of the biochemical changes that take place in soil and in nature are due to the participation of these tiny organisms. These microorganisms can perform a wide range of beneficial functions throughout their lifestyles, as well as harmful ones that lead to ugly consequences. Therefore, it is effective to study all microorganisms on separate branches without a uniform approach. For this reason, it is divided into technical (industrial) microbiology, water microbiology, geological microbiology, medical microbiology, sanitary microbiology, livestock microbiology, soil or agricultural microbiology. Technical (industrial) microbiology studies the use of microorganisms in the production of beer, wine, bakery, agricultural and other dairy products, as well as in the production of lactic acid, fatty acids, acetic acid, alcohol, dietary protein, vitamins, enzymes, antibiotics and so on. Aquatic microbiology is the study of oceans, seas, rivers, ash, water bodies, ditch water, the distribution of microorganisms in wetlands, and water bodies. The treatment of drinking water, including ways to treat toxic wastes in industrial water (wastewater), the use of microorganisms in the preparation of food reserves for aquatic animals, and many other problems are also closely linked with this area. As information, we can say that even petroleum products can be cleaned in the presence of bacteria. Agricultural microbiology is one of the most widely covered disciplines. It deals not only with the types and biology of microorganisms present in the soil, but also with information about the role of microorganisms in the relationship between these microorganisms and the plant, in nature, between the atmosphere and the soil. The diversity of soil microorganisms, their role in increasing soil fertility, the role of microorganisms in the assimilation of water-insoluble substances by plants are also relevant in this area. We also learn that phosphorus and sulfur compounds in the nitrogen metabolism of soil microorganisms are recycled and assimilated into plants. In agricultural microbiology, haylage is introduced to the types and activities of microorganisms involved in the formation of biologically active substances in the preparation of silage, as well as in the preparation of microbiology, ie bacterial fertilizers. On this basis, the issues of industrial production of bacteriological fertilizers in order to increase soil fertility and high yields will be studied.

The role of nodular bacteria in the assimilation of nitrogen in the soil is also invaluable. Rhizobium is a group of aerobic bacteria that accumulate in the roots of legumes and assimilate nitrogen from the air. They enrich the soil with nitrogen. Young tuber bacteria enter the root hairs and provide them with nitrogen, affect the rapid division of stem cells, receive carbon and mineral metabolism products from plants. Complete bacteria form bacterioids that rapidly attach to molecular nitrogen, thicken, and branch out.

III. ANALYSIS AND RESULTS

Legumes with root buds accumulate more than 10 kg of nitrogen per hectare per year from the air. Nitragin, a special bacterial fertilizer used to enrich the soil with Tuganak bacteria, is produced on the basis of these bacteria. In the assimilation of nitrogen in the soil in the presence of bacteria, it is also advisable to alternate planting of legumes, including soybeans, peas, beans. The nature of the soybean root and the presence of tyganak bacteria in it make this plant one of the most nitrogen-fixing plants. Soybeans are also of agro-technical importance. As a legume, soybeans enrich the soil with nitrogen, accumulating an average of 70-100 kg of nitrogen per hectare per year. After shade, the field is much cleared of weeds, and shade can be a very good precursor for many crops.Soybeans are also of agro-technical importance. As a legume, soybeans enrich the soil with nitrogen, accumulating an average of 70-100 kg of nitrogen per hectare per year. After shade, the field is much cleared of weeds, and shade can be a very good precursor for many crops. Soybean is also used as a siderate crop. In addition, the biological nitrogen generated in this way is environmentally friendly, it is not toxic to soil, groundwater, consumers, and it does not accumulate in fruits, such as artificial nitrogen fertilizers.

IV. DISCUSSIONS

In short, the study of soil microbiology and the rational use of the activity of microorganisms in it is a key factor in increasing soil fertility, high yields from plants and the production of other necessary microbiological drugs.

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