CHANGES IN MICROORGANISMS ACTIVITY AS A RESULT OF SOIL POLLUTION WITH DOMESTIC WASTE

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The number and type of microorganisms in the soil are not always the same, they depend on the chemical composition of the soil, humidity, temperature, pH and other conditions. Soils with low moisture and nutrient content contain up to 105 bacteria per 1 g, and in cultivated soils - 108-109 bacteria. Most bacteria are found in the soil at a depth of 5-15 cm. Microbiological monitoring includes the study of the main groups of agronomically important soil microorganisms involved in the cycle of nitrogen, phosphorus, potassium, carbon and other microelements in the soil layer (0-30 cm) - ammonia esters, oligonitrophils, phosphorus-mobilizing bacteria, actinomycetes. and micromycetes.

Among the types of anthropogenic soil pollution, the following can be distinguished:

1) chemical - heavy metals, persistent organic pollutants; pesticides, petroleum products;

2) physical - thermal, light, radiation, noise, electromagnetic;

3) mechanical - dust, sediment;

4) biological - biotic, microbial.

Waste in the soil is decomposed by microorganisms to a certain extent, some waste remains undecomposed. Some microorganisms cause various diseases in humans and animals transmitted through the soil. Soil fertility directly depends on its physicochemical properties, humic and mineral substances, microorganisms, and biological activity. Soil fertility can be improved by multiplying microorganisms in the soil. The number of microorganisms in the soil is constantly changing, and their change depends on anthropogenic, natural, abiotic, and biotic factors. Heavy metals such as Cd, Cu, Cr, Ni, Co, Hg, As, Mn are the greatest threat to soil microorganisms. The process of self-purification of the soil is very slow, this leads to a gradual accumulation of harmful substances, which poses a threat to people, animals and plants over time. Soil microorganisms such as bacteria, actinomycetes, fungi are most susceptible to anthropogenic pollution. The number and type of microorganisms in the soil is not always uniform, it depends on the chemical composition, humidity, temperature, pH of the environment, the degree of soil pollution, the

presence of organic and mineral substances. Most bacteria in the soil are at a depth of 5-15 cm and are localized around the roots of plants. The use of microorganisms is recommended to increase the fertility of contaminated soils. Household waste damages plants, negatively affects the pH of the environment, nitrogen-fixing microorganisms and the activity of microorganisms. Today, one of the world's environmental problems is waste recycling and disposal in urban areas, where waste is often burned, which leads to significant environmental damage. There are areas that are homemade landfills with various types of waste (food waste, textiles, plastic, iron, paper, wood waste, etc.), affecting the ecological state of the soil. As a result of pollution by household waste, the content of heavy metals in the soil increases. The amount of heavy metals in the soil around household waste landfills exceeds the permissible limit, including the content of Cd exceeded by 4 times.

The selection, sorting and disposal of household waste is important to minimize the negative impact. The main sources of household waste are: residential buildings, farms, shops, catering establishments, hotels, construction work, educational institutions (universities, schools, kindergartens) clinics, industrial enterprises and agricultural activities. Based on the above literature analysis, the microbiological, chemical, physical and other properties of the soil change as a result of pollution by household waste. In this regard, it is advisable to study the soils scattered throughout the Akhangaran district of the Tashkent region, where household waste is collected.

Ash elements, various gases formed as a result of burning household waste penetrate into the soil under the influence of various factors. This process is fast or slow depending on the season. The number and type of microbes in the soil are not always the same and depend on the chemical composition of the soil, humidity, temperature, pH of the environment and other conditions. Most bacteria are found in the soil at a depth of 5-15 cm, and less deeper. Various autotrophs and heterotrophs, aerobic and anaerobic, thermo-, lyso- and psychrophilic bacteria live in the soil. These include free-living nitrogen-destroying azotobacteria, rhizobial bacteria of legumes, bacteria involved in the processes of denitrification, ammonification, etc. To determine the activity of microorganisms in the soil of the study area, Watson, Waterbourne, Omelyansky (anaerobic), Chapeika, fish penton agar and Ashby nutrient media were prepared and the number of total microorganisms in the soil was determined.

Based on the obtained results, it is possible to draw a conclusion about the presence of trends in the change in the number of microorganisms in the soil as

a result of the operation of the landfill. According to this, as a result of soil pollution under the influence of household waste, the number of microorganisms and the activity of enzymes playing an important role in soil fertility, including phosphorus-absorbing bacteria, changed differently (decreased and increased), an increase in the number of micromycetes, oligonitrophils, a decrease in the number of actinomycetes was observed. In this regard, when assessing soil productivity, it is advisable to take into account such characteristics as the level of soil pollution, the chemical composition of waste, and the amount of nutrients.

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