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**Use of soil bacteria in bioremediation of soils contaminated with pesticides and heavy metals****Mahabat Makhabat***Kyrgyz-Turkish Manas University, Kyrgyzstan*

**Problem Statement:** Currently, there are obsolete pesticide storage facilities and heavy metal tailing ponds in which hazardous chemicals are stored in Kyrgyzstan. Even if these hazardous chemicals are removed and neutralized, the soil in which they were stored remains contaminated and poses a threat to the local population. The most natural and environmentally safe way to dispose of waste is through microbial bioremediation. Destructor microbes, for which the most toxic waste is a source of energy and nutrition. The aim of this study is to isolate the most active microorganisms from contaminated soils (obsolete pesticide storages, heavy metal tailings), screen and apply them in field experiments.

**Methodology and theoretical orientation:** the study used soil microbiology methods and identified to species by classical microbiological and PCR analysis. Soil samples taken from contaminated areas were analyzed for pesticide concentration (chromatography, Master GC). Elva X-ray fluorescence spectrometer (Toronto, Canada) was used to analyze the mass concentration of chemical elements in soil. To isolate and characterize bacteria with certain resistance to pesticides, soil from pest burial sites of Suzak district, where obsolete pesticides were buried, was sampled. And also, to the impact of heavy metals, contaminated soil was sampled in the area of Ak-Tyuz mining and metallurgical combine, where the environment, including soil, was subjected to long-term pollution with heavy metals as a result of mining and processing of minerals.

**Conclusions:** Bacteria were isolated from these locations, from which the most active bacteria resistant to chemicals were selected. Thus, for this experiment, meat-peptone broth with the addition of various chemicals was used. For bacteria that were isolated from the soils of pesticide burial grounds, DDT, etc. were added. And for the bacteria isolated from tailing dump, heavy metals like Pb, As, Co were added.

**Conclusion and Significance:** The studies carried out allowed the selection of active and tolerant to pesticides and heavy metals bacterial destructor species that can reduce and transform the concentration of hazardous chemicals. Agro technical and agrochemical measures to improve aeration, with optimal ambient temperature (27-28 °C), balance of chemical elements and pH (7.2-7.6) of soil are important in the field experiment.

**Biography**

Mahabat Konurbaeva scientific activity is related to soil microbiology, was engaged in research in the field of biodegradation of oil pollution, there is an author's certificate patent on hydrocarbon-oxidizing bacteria. In addition, research is conducted on bioremediation of pesticides (T. Doolotkeldieva, S. Bobushova, M. Konurbaeva, 2021). The obtained research data will help in the development of bioremediation technology for the method of microbial biodegradation of contaminated soils.