ASSESSMENT OF PESTICIDE RISK INDICATORS IN SOIL

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Abstract: In this article, it is discussed about the risk assessment of pesticides in the soil, the impact on soil microflora and agriculture.

Key words: soil pollution, pesticide safety, assessment of pesticide, soil microflora, pesticides, microorganisms, soil fertility.

One of the negative problems of the present time is the global chemical pollution of different types of soil and biosphere in the cultivated fields of our Republic, which raises reasonable concerns about the possible disturbance of the ecological balance in individual ecosystems. Unnatural synthetic, chemical compounds and substances entering various parts of nature as a result of human economic activity are especially dangerous. An important place among them is occupied by chemical means of protection of plants and animals - pesticides.

The use of pesticides to increase the productivity of agricultural crops and livestock leads to an increase in their production volume and assortment. The second half of the 20th century is the era of synthetic compounds completely alien to wild nature. Since the problem of soil pollution and degradation has always been relevant, now anthropogenic factors have a great impact on nature and are only growing. After all, the soil is one of the main sources of food and clothing for human life, and they should have a harmonious relationship.

Regardless of the forms and methods of application, pesticides continue to enter the soil, accumulate in it, and negatively affect microbial communities. In separate literature, it was determined that the response of soil microorganisms to the effects of pesticides is very diverse and depends on many factors, including the resistance

of chemical preparations, soil and climate characteristics, and others.

The need to study the interaction of pesticides with soil microflora is related to the important role of microorganisms in maintaining soil fertility and optimizing plant growth conditions. Therefore, it is important to develop a microbiological method of cleaning the soil from pesticides.

It should be noted that widespread use of microorganism-based remediation method in reducing and eliminating the toxic effects of pesticides on the environment is of great interest because it is convenient, environmentally friendly, and at the same time effective. Therefore, it is important to use microorganisms with high activity in the process of breaking down pesticides and to put them into practice.

In the world, many scientific studies are conducted on the isolation and identification of microorganisms that break down pesticides, and the use of microorganisms in bioremediation processes. In particular, by sorting and separating microorganisms capable of degrading pesticides from soils contaminated with various pesticides, wastewater, activated sludge from treatment facilities, and other sources, and determining the optimal conditions for them (temperature, pH, humidity, pesticide concentration, etc.) selection of representatives with high destructive properties is one of the most important processes. Then, to analyze the obtained microorganisms using various modern methods, to determine their growth and reproduction activities in nutrient media with high amounts of pesticides, as well as to determine the activity of degrading pesticides by introducing these microorganisms into pesticide-contaminated environments (soil, water). special attention is paid to the identification. Accordingly, the isolation of microorganisms with destructive activity and the improvement of the biotechnology of breaking down various pesticides from them are of great scientific and practical importance.

Pesticides are widely used in most sectors of the agricultural production to prevent or reduce losses by pests and thus can improve yield as well as quality of the produce, even in terms of cosmetic appeal, which is often important to consumers. Pesticides can also improve the nutritional value of food and sometimes its safety. There are also many other kinds of benefits that may be attributed to pesticides, but these benefits often go unnoticed by the general public. Thus, from this point of view, pesticides can be considered as an economic, labor-saving, and efficient tool of pest management with great popularity in most sectors of the agricultural production.

Despite their popularity and extensive use, pesticides serious concerns about health risks arising from the exposure of farmers when mixing and applying pesticides or working in treated fields and from residues on food and in drinking water for the general population have been raised. These activities have caused a number of accidental poisonings, and even the routine use of pesticides can pose major health risks to farmers both in the short and the long run and can degrade the environment. In developing countries, farmers face great risks of exposure due to the use of toxic chemicals that are banned or restricted in other countries, incorrect application techniques, poorly maintained or totally inappropriate spraying equipment, inadequate storage practices, and often the reuse of old pesticide containers for food and water storage. Obviously, exposure to pesticides poses a continuous health hazard, especially in the agricultural working environment. By their very nature most pesticides show a high degree of toxicity because they are designed to kill certain organisms and thus create some risk of harm. Within this context, pesticide use has raised serious concerns not only of potential effects on human health, but also about impacts on wildlife and sensitive ecosystems. Often, pesticide applications prove counterproductive because they kill beneficial species such as natural enemies of pests and increase the chances of development of pest resistance to pesticides. Furthermore, many end users have poor knowledge of the risks associated to the use of pesticides, including the essential role of the correct application and the necessary precautions. Even farmers who are well aware of the harmful effects of pesticides are sometimes unable to translate this awareness into theirpractices.

Although pesticides have been developed to function with reasonable certainty and minimal risk to human health and the environment, the published results are not always in agreement with this fact. Even though the development of toxicity reference levels for pesticides incorporates uncertainty factors that serve to achieve this regulatory standard, in reality, we may never know whether a pesticide is safe under all circumstances, nor can we predict with certainty its performance in hypothetical situations. Scientific investigation is bound by the tools and the techniques that are available and therefore new developments continually redefine our capabilities. Despite many studies on the fate and toxicity of pesticides, there are research gaps causing uncertainty in the predictions of their long-term health and environmental effects. On the basis of these contradictory results of the literature, discussions among scientists and the public focused on the real, predicted, and perceived risks that pesticides pose to human health (worker exposure during pesticide use and consumer exposure to pesticide residues found

in fresh fruit, vegetables and drinking water) and the environment (water and air contamination, toxic effects on non-target organisms) are fully justified.

REFERENCES

1. Kruglov Yu.V. Soil microflora and pesticides. - M.: Agropromizdat, 1991.- 128 p.
2. Vashkov V.I., Sukhova M.N., Kerbabaev E.B., Schneider E.V. Insecticides and their use in medical practice. -M.: Medicine, 1965. - 524 p.
3. Shustov S.B., Shustova L.V. Chemical foundations of ecology. - M., 1995. - 240 p.
4. Ermakov N.M., Korneev G.A. and others. Nonspecific prevention of zooanthroponotic infections (disinsection), ways of its development // Sat. "Entomological and parasitological studies in the Volga region." - Saratov, 2001. - Issue. 1. - From 66 - 69
5. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3108117/
6. Adhamovich, I. A., & Rakhmatovna, A. Z. (2023). ANALYSIS OF SALINITY LEVELS AND MICROBIOLOGICAL CONDITIONS OF SOME SOILS CONTAMINATED WITH PESTICIDES. Science and innovation, 2(Special Issue 8), 1427-1433.
7. Ahmedova Saodat Tashboltayevna, Xolbekov Baxtiyor Baymanovich, & Tojiddinov Davronbek Ulug‘bek o‘g‘li. (2024). HYGIENIC ANALYSIS OF SOIL COMPOSITION. *International Conference on Multidisciplinary Science*, *2*(1), 15–17. Retrieved from http://mjstjournal.com/index.php/icms/article/view/700