

THE ROLE OF BIOLOGICAL FERTILIZERS IN THE ENVIRONMENT

Sherkoziyeva G. F.

Toshpolatov B.

Fayziev O'. Q.

Daniyarova N. X.

Turakhodjaeva D.

Tashkent State Medical University

Abstract

Since biofertilizers also affect agricultural products, it is important to grow products that do not pose a risk to the health of the population. It was determined that the residue of the drug was retained in plants for 3-8 days after application, and this amount depended on the method of application of the drug. In particular, the highest residue was found in potatoes for 8 days at 2.9 mg/kg .

Keywords: Environment, biological fertilizers, preventive toxicology, ecology, soil, open water bodies, crops, potatoes, permissible concentration.

Introduction

The level of contamination of agricultural, farm crops and livestock products depends on the ecological and toxicological characteristics of agroecosystems. The use of chemicals in agriculture, in particular various pesticides, mineral fertilizers and plant protection products, leads to a deterioration of the ecological situation in the soil. Therefore, when assessing the quality of food products and feed, the standards for the permissible concentration (PRC) or the permissible residual amount (PRQM) or the maximum permissible level (MPEL) of harmful substances in their content are studied and established. Toxicants in food products and feed are determined by chemical toxicological analysis. Maintaining the level of residual harmful chemicals in the environment and in agricultural products within hygienic standards is the only way to protect human health.

In recent years, excessive use of nitrogen fertilizers has led to the accumulation of nitrates in the soil and agricultural plant organs. Under natural conditions, the nitrate content in plants is 1-30 mg/kg, while in cultivated plants it is 40-12000 mg/kg[2.5.8]. According to experts, by 2050 the world population is expected to reach 9.6 billion [3,5,7,9]. The average population is predicted to increase from 1 billion to 3 billion by 2050. The share of arable land has increased from 24% to 45.2% of the total arable land. Increasing demands for food quality, deterioration of the ecological state of the soil and a number of other problematic issues require reducing the amount of chemicals used in agricultural practice and replacing them with biological, or rather microbiological, preparations. Bacterial preparations are living organisms that do not retain nutrients in their composition, but they quickly convert the reserve nutrients in the soil into a mineral state and play an important role in the assimilation of atmospheric nitrogen, thereby improving the nutritional conditions of plants. The most common bacterial preparations include nitrugin, azotobacterin, phosphobacterin and silicobacterin.





Materials and methods

The object of our research is the biological fertilizer "Yer Malkham". The methodological instructions "For conducting research on the justification of the REK of environmental bioinsecticides" and "Instructions for a comprehensive hygienic assessment of new pesticides" were used to study the toxicity and the nature of the biological effect of biological fertilizers. The new biofertilizer is intended for pre-planting processing of seeds and seedlings of vegetables, technical crops, potatoes, young fruit tree seedlings, forest crops in order to accelerate plant growth, increase yield, improve its quality, and reduce phytopathogenic microflora. Based on the above, we studied the impact of the new biofertilizer "Yer Malkham", which is intended for use in agriculture, on environmental objects.

The results obtained

It was found that the drug pollutes the environment, especially atmospheric air, atmospheric air of the working environment, open spaces of the body of workers and special clothing when preparing working solutions of the drug, when processing seeds and seedlings of agricultural crops. In particular, the respiratory threshold of workers during the preparation of working solutions of the drug was determined at the highest concentration in atmospheric air. In the air of the working area when processing seeds and seedlings, the drug was detected in the amount of $2.1 \pm 0.14 \text{ mg / m}^3$ and $1.8 \pm 0.15 \text{ mg / m}^3$. When irrigating crops, the biological fertilizer "Yer malakhami" was detected in the air of the working area at $1.5 \pm 0.13 \text{ mg / m}^3$. When the drug was used in agriculture, the amount of residues in the air environment depended on the time of its use

It was found that the hands and face of the workers who prepared the working solution of the drug were especially contaminated with residual amounts of the drug 100 cm^2 31.4 ± 0.21 and $10.1 \pm 0.25 \text{ mg}$ on the surface. The workers' special clothing was found to be contaminated to the extent of $0.4 \pm 0.21 \text{ mg}$. In the throat and nasal cavities of the workers who came into contact with the drug, $0.35 \pm 0.018 \text{ mg}$ was detected, and in the oral mucosa - $0.21 \pm 0.10 \text{ mg}$. Among agricultural workers, the lowest concentration of the drug was detected in watermen, entomologists and agronomists. In the special clothing of agronomists, 2.1-2.9 mg was detected, in the hands - 1.2-2.1 mg, in the face - 0.96-1.4 mg, in the throat and nasal cavities - 0.07-0.09 mg.

In the treated soil for 10 days, the residue of "Yer malxami" was from 10.7 to 0.3 g/ kg, and in the soil at the edge of the field for 5 days, from 0.9 mg /kg to 0.11 mg / kg. When treated with the drug, 4.2 mg /l was detected in the ditch water, and by 3 days a small amount - 0.1 mg /l was detected. In cotton leaves and fiber for 3 days, 1.7-0.4 mg / kg and 0.3-0.07 mg / kg. In cottonseed, no residues were detected. In potato plants, residues ranging from 2.9 to 0.11 mg/kg were detected over a period of 8 days.

Conclusion

From the above results, it can be concluded that the biological fertilizer "Yer malxami" when used in agriculture causes low and short-term pollution of the environment. It was found that the residue of the drug was preserved in plants for 3-8 days after application, and this amount depended on the method of application of the drug. In particular, the highest residue was found in potatoes for 8 days at the level of 2.9 mg/kg.





References

1. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 343 dated 3.06.2021 "On further improving the system for assessing the level of environmental pollution" <https://lex.uz/uz/docs/-5442999?ONDATE=26.07.2022>.
2. Axmedova, P. B. (2025). Adenotomy in children with allergic rhinitis and bronchial asthma. Web of Medicine: Journal of Medicine, Practice and Nursing, 3(3), 459-466.
3. Khakimova, D., Sh, K., & Salomova, F. (2023). Results of hygiene assessment of food of school students. In International Scientific-Practical Conference "Only English: Advances in Medical Research and Practice Conference (Vol. 23, No. 2023, pp. 78-79).
4. Kobiljonova, S. R., Jalolov, N. N., Sharipova, S. A., & Mirsagatova, M. R. (2022). SPECTRUM OF CAUSE-SIGNIFICANT ALLERGENS CAUSING POLYNOSIS IN CHILDREN.
5. Mirkhamidova, S., Rustamova, H., Sharipova, S., Mamadjanov, N., Tuychieva, D., & Karimbayev, S. (2021). Methods of HIV infection prevention used by nurses. URL: <http://repository.tma.uz/xmlui/handle/1/1617>.
6. Ponomareva, L. A., Kazakov, E. K., Abduqodirova, L. K., Tuhtarov, B. E., Dravskix, I. K., Sharipova, S. A., & Sadullayeva, X. A. (2011). Umumiy gigiyena bilan ekologiya. Amaliy mashg'ulotlar uchun o'quv qo'llanma. Toshkent. Tafakkur-bo 'stoni.
7. Rahimov, B. B., Salomova, F. I., Jalolov, N. N., Sultonov, E. Y., & Obloqulov, A. G. (2023). O 'ZBEKISTON RESPUBLIKASI NAVOIY SHAHRI HAVO SIFATINI BAHOLASH: MUAMMOLAR VA YECHIM YOLLARI.
8. Salomova, F. I., Bobomuratov, T. A., Akhmadaliyeva, N. O., Imamova, A. O., & Niyozova, O. A. (2022, November). Formation of the principles of a healthy lifestyle in preschool children. In Uzbekistan-Japan International Conference «Energy-Earth-Environment-Engineering.
9. Salomova, F. I., Yuldasheva, F. U., Sherkuzieva, G. F., & Sharipova, S. A. (2024). STUDYING THE EFFECT OF IRRATIONAL NUTRITION ON THE STUDENT'S BODY.
10. Sharipova, S. A., & Ikramova, N. A. (2024). CONSEQUENCES OF NOT BREASTFEEDING FOR THE MOTHER AND INFANT.
11. Sharipova, S. A., & Muyassarova, M. M. (2019). Studying the level of medical activity of the rural population. European science, 2(44).
12. Sherkuzieva, G. F., Salomova, F. I., & Yuldasheva, F. U. (2023). RESULTS OF STUDYING THE INFLUENCE OF BIO-FERTILIZER "YER MALHAMI" ON THE QUALITY OF WATER BODIES. Central Asian Journal of Medicine, (4), 109-120.
13. Sherkuzieva, G. F., Salomova, F. I., Samigova, N. R., & Yuldasheva, F. U. (2023). RESULTS OF TOXICITY STUDY OF BIOLOGICAL FERTILIZER" YER MALHAMI. FOR INHALATION CHRONIC EFFECTS.
14. Toshmatova, G. A. (2019). Prevalence of mastopathy among women of Tashkent City. J Oncol Res Treat, 4(129), 2.
15. Миррахимова, М. Х., Садуллаева, Х. А., & Кобилжонова, Ш. Р. (2022). Значение экологических факторов при бронхиальной астме у детей (Doctoral dissertation, Россия). Рустамова, ХЕ, Нурмаматова, КЧ, & Машарипова, Р. Некоторые аспекты состояния здоровья населения Узбекистана. ББК, 51, 118.





16. Мусаева, О. Т., Шеркузиева, Г. Ф., Исмоилова, У. Б., & Эргашева, Ш. К. (2016). Особенности течения диффузного нетоксического зоба во время беременности. *International scientific review*, (7 (17)), 97-98.
17. Нурдинова, Г. У., Авезова, Г. С., Бердиева, Д. Б., & Шеркузиева, Г. Ф. (2016). Эпидемиология сахарного диабета. *International scientific review*, (7 (17)), 93-95.
18. Пирназаров, М. М., Садиков, А. А., Махмудов, Д. Э., & Хегай, Л. Н. (2021). Магнитно-резонансная томографическая визуализация повреждений коленных суставов. *Re-health journal*, (1 (9)), 152-159.
19. Равшанова, М. З., & Тошматова, Г. А. (2023). Влияние питание на здоровье школьников обучающихся в городских и сельских условия. In Соғлом турмуш тарзи” мавзусидаги халқаро илмий–амалий конференция материаллари тўплами.
20. Саломова, Ф. И. (2008). Особенности физического развития школьников с нарушениями осанки. *Вестник Санкт-Петербургской государственной медицинской академии им. ИИ Мечникова*, (4), 48-50.
21. Саломова, Ф. И., & Кобилжонова, Ш. Р. (2026). ФАКТИЧЕСКОЕ ПИТАНИЕ ДЕТЕЙ С ОЦЕНКОЙ БИОЛОГИЧЕСКОЙ И ПИЩЕВОЙ ЦЕННОСТИ РАЦИОНОВ У АЛЛЕРГИЧЕСКИХ ДЕТЕЙ ДОШКОЛЬНОГО ВОЗРАСТА. *Медицинский журнал молодых ученых*, (17 (03)), 384-389.
22. Саломова, Ф. И., Искандарова, Г. Т., Садуллаева, Х. А., Шарипова, С. А., Шеркўзиева, Г. Ф., Нурматов, Б. Қ., & Садирова, М. К. (2022). Атроф муҳит ва инсон саломатлиги мутахассислиги амалий кўникмаларни ўзлаштириш бўйича” услубий кўрсатма.
23. Саломова, Ф. И., Кобилжонова, Ш. Р., & Жалолов, Н. Н. (2023). Оценка эффективности диетотерапии при пищевой аллергии у детей в различные возрастные периоды. In *Вестник TMA SPECIAL ISSUE Dedicated to The 10th International Symposium On Important Problems of the Environmental Protection and Human Health*.
24. Саломова, Ф. И., Шеркушева, Г. Ф., Салуллаева, Х. А., Султанов, Э. Ё., & Облокулов, Л. Г. (2023). Загрязнение атмосферного воздуха города алмалык. *Медицинский журнал молодых ученых*, 5(01), 142-146.
25. Урманова, Л. Д., & Бекмуратова, С. Б. (2021). Проблемы качества питьевой воды. *Forcipe*, 4(S1), 237-238.
26. Халматова Б., Миррахимова М., Ташматова Г., Ольмосов Р. Эффективность применения антагонистов лейкотриеновых рецепторов у детей с бронхиальной астмой. В сборнике трудов Международного форума по современным глобальным вызовам междисциплинарных академических исследований и инноваций 2017 (стр. 291-296).
27. Шеркузиева, Г. Ф., Саломова, Ф. И., & Юлдашева, Ф. У. (2023). Токсичность “Ер талхами” при ингаляционном хроническом воздействии.
28. Шеркузиева, Г. Ф., Саломова, Ф. И., Самигова, Н. Р., & Хегай, Л. Н. (2022). Результаты исследований острой и хронической токсичности пищевой добавки" Fass hungel. In Сборник материалов республиканской научно-практической конференции с международным участием (pp. 442-447).





29. Шеркузиева, Г. Ф., Саломова, Ф. И., Самигова, Н. Р., & Юлдашева, Ф. У. (2023). Результаты изучения токсичности биологического удобрения «Ер малхами» при ингаляционном хроническом воздействии. Журнал новый день в медицине, 5, 55-58.
30. Шеркузиева, Г. Ф., Хегай, Л. Н., & Самигова, Н. Р. (2020). Токсичность и опасность пищевой смеси «МЕЛЛА КРУАССАН». In XIX-ая Международная научно-практическая конференция: Современный мир: Природа и человек: к (pp. 275-281).

