

BIOREMEDIATION OF PESTICIDES: A REVIEW

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ABSTRACT

Pesticides are something of a persistent organic pollutant that is a source of worry because of its presence in a variety of ecosystems. Agrochemicals are exposed to physical, chemical, and biological breakdown processes in nature, yet they remain in the environment owing to their high stability and water solubility. With the advent of the industrial revolution and the manufacturing of different pesticides, our agricultural yields have undoubtedly increased, and our majority of crops have been protected against pests. We can't afford to lose the bulk of our crops to bugs. Pesticides now serve an essential function in increasing production and providing a financial advantage to our farmers, but their usage in agricultural areas is currently a significant source of worry. Increased soil contamination has been a major source of worry. A large number of pollutants, one of which is a pesticide, have posed a significant danger to human health and the natural environment. The existing techniques (physical and chemical) are either insufficient or too expensive. Bioremediation is a new instrument or method in this regard. Pesticide detoxification may be done in an environmentally acceptable, cost-effective, and efficient manner via bioremediation.

KEYWORDS: *Bioremediation, Detoxification, Fertilizers, Pesticides, Pollution.*

REFERENCES:

1. Review on Bioremediation of Pesticides. J Bioremediation Biodegrad. 2016;
2. Mir MA, Verma P. Use of polyethylene waste with stone dust in flexible pavement. Int J Sci Technol Res. 2019;
3. Shaida MN, Singla S. Global biomedical waste management issues and practices. Int J Innov Technol Explor Eng. 2019;
4. Maqbool Z, Hussain S, Imran M, Mahmood F, Shahzad T, Ahmed Z, et al. Perspectives of using fungi as bioresource for bioremediation of pesticides in the environment: a critical review. Environ Sci Pollut Res. 2016;
5. Bapat MS, Singh H, Shukla SK, Singh PP, Vo DVN, Yadav A, et al. Evaluating green silver nanoparticles as prospective biopesticides: An environmental standpoint. Chemosphere. 2022;
6. Khan UJ, Oberoi A, Gill J. Hybrid Classification for Heart Disease Prediction using Artificial Intelligence. In: Proceedings - 5th International Conference on Computing Methodologies and Communication, ICCMC 2021. 2021.
7. Wani IA, Sheikh IM, Maqbool T, Kumar V. Experimental investigation on using plastic

wastes to enhance several engineering properties of soil through stabilization. In: *Materials Today: Proceedings*. 2021.

8. Spina F, Cecchi G, Landinez-Torres A, Pecoraro L, Russo F, Wu B, et al. Fungi as a toolbox for sustainable bioremediation of pesticides in soil and water. *Plant Biosyst*. 2018;
9. Alvarez A, Saez JM, Davila Costa JS, Colin VL, Fuentes MS, Cuozzo SA, et al. Actinobacteria: Current research and perspectives for bioremediation of pesticides and heavy metals. *Chemosphere*. 2017.
10. Meena AK, Yadav A, Singh U, Singh B, Sandeep, Kiran, et al. Evaluation of physicochemical parameters on the fruit of *Terminalia bellirica* Roxb. *Int J Pharm Pharm Sci*. 2010;
11. Sharma RK, Sharma J, Rai D V., Zafar M. Cod reduction from industrial wastewater using thermal liquid-phase oxidation technique. *Int J Chem Sci*. 2013;
12. Scott C, Pandey G, Hartley CJ, Jackson CJ, Cheesman MJ, Taylor MC, et al. The enzymatic basis for pesticide bioremediation. *Indian Journal of Microbiology*. 2008.
13. Chandra H, Singh C, Kumari P, Yadav S, Mishra AP, Laishevtcev A, et al. Promising roles of alternative medicine and plant-based nanotechnology as remedies for urinary tract infections. *Molecules*. 2020.
14. Sharma Y, Kumar S. Effect of power avaricious attack on MANET routing protocols. In: *ICECT 2011 - 2011 3rd International Conference on Electronics Computer Technology*. 2011.
15. Helbling DE. Bioremediation of pesticide-contaminated water resources: The challenge of low concentrations. *Current Opinion in Biotechnology*. 2015.
16. Sah MK, Gupta DK, Rani P. Energy Efficient Routing Protocol for Wireless Sensor Networks with Multiple Sinks. In: *Proceedings - 2015 2nd IEEE International Conference on Advances in Computing and Communication Engineering, ICACCE 2015*. 2015.
17. Al-Bahri B, Noronha H, Pandey J, Singh AV, Rana A. Evaluate the Role of Big Data in Enhancing Strategic Decision Making for E-governance in E-Oman Portal. In: *ICRITO 2020 - IEEE 8th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions)*. 2020.
18. Kumar R, Ailawalia P. Moving load response in micropolar thermoelastic medium without energy dissipation possessing cubic symmetry. *Int J Solids Struct*. 2007;
19. Khatri M, Kumar A. Stability Inspection of Isolated Hydro Power Plant with Cuttlefish Algorithm. In: *2020 International Conference on Decision Aid Sciences and Application, DASA 2020*. 2020.
20. Hassen W, Neifar M, Cherif H, Najjari A, Chouchane H, Driouich RC, et al. *Pseudomonas rhizophila* S211, a new plant growth-promoting rhizobacterium with potential in pesticide-bioremediation. *Front Microbiol*. 2018;
21. Odukkathil G, Vasudevan N. Toxicity and bioremediation of pesticides in agricultural soil. *Reviews in Environmental Science and Biotechnology*. 2013.
22. Singh DK. Biodegradation and bioremediation of pesticide in soil: Concept, method and recent developments. *Indian Journal of Microbiology*. 2008.

- 23.** Prabha R, Singh DP, Verma MK. Microbial interactions and perspectives for bioremediation of pesticides in the soils. In: Plant-Microbe Interactions in Agro-Ecological Perspectives. 2017.