Name : **Dr. R. Manikandan**

Staff ID : **RCAS06023**

Designation : **Assistant Professor**

Department : **Biotechnology**

Experience : **6.5 Years**

Qualification : **M.Sc., M.Phil., Ph.D., PDF (CSU-China)**

Specialization : **Environmental Biotechnology, Soil Microbiology, Plant Biotechnology**

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ACADEMICS

Degree	Branch	Institution / University	Year of Completion
Ph.D.,	Biotechnology	Periyar University	2016
M.Phil.,	Biotechnology	Periyar University	2010
M.Sc.,	Biotechnology	Periyar University	2008
B.Sc.,	Microbiology	Bharathidasan University	2006

RESEARCH AND PUBLICATIONS

GRANTS

Title	Agency	Amount	Year	Status
Impending application of magnesite mine waste to augment the agricultural soil fecundity in and around the Salem magnesite mines	DST-SERB	Rs. 28.38 lakhs	2022-2025	Completed
Evaluation of low cost materials and bacterial strains isolated from contaminated industrial waste water to simultaneously biodegrade industrial dye effluents	Tamil Nadu State Council for Science and Technology	Rs. 0.075 lakhs	2023- 2024	Completed
One Day Research Facility Training Program On “Environmental Toxicology Analysis	DST – SERB	Rs. 0.010 lakhs	2023	Completed
Risk assessment of fluoride contamination in ground water in and around Salem District and screening of fluoride Hyperaccumulators - A green Phytoremediation Approach	Tamil Nadu State Council for Science and Technology	Rs. 0.075 lakhs	2022- 2023	Completed
Risk assessment of antibiotic residues in animal derived foods in and around Salem district and isolation of antibiotic degradation bacteria – A growing concern for food safety	Tamil Nadu State Council for Science and Technology	Rs. 0.075 lakhs	2021- 2022	Completed

GUIDANCE

Program	No. of Scholars	
	Completed	Pursuing
Ph. D.	**0**	**2**

Journal Publications

1. Lavanya M, **Manikandan R**, Vivekanandan K.E, Sabariswaran K, Gayathri K, Rathinam R, Kavitha R (2025) Amendment of biochar and thiourea-modified biochar to mitigate chromium bioavailability and toxicity by modulating oxidative stress system in Vigna radiata in chromium-contaminated agricultural soil. [Manuscript in press]. (IF.5.4)

2. P. Sowndriya and **R. Manikandan**, 2025. Assessment of soil fertility and heavy metal pollution using contamination factor, pollution load index and statistical analysis in agriculture soil nearby industrial area of Salem District, Tamil Nadu, India, Journal of Chemical Health Risk. (Accepted).

3. Dhivya, S., Kalaiarasi, K., Sowndarya, R., Valarmathi, R., Harikrishnaraj, R., **Manikandan, R.** (2024). Impact of mining activities on human health and agriculture soil fertility in and around the magnesite: A review of the current state of knowledge. Kristu Jayanti Journal of Core and Applied Biology, 4(1), 17–27.

4. A Sakthi Thesai, A., Ragavendra, C., Kamaraj, C., Sundaram, R., Mohankumar, P., **Manikandan, R.,** Ayyasamy, P. M., de Matos, L. P., & Malafaia, G. (2023). Studying the effects of Aspergillus niger (MF431834) dead biomass on water defluoridation in batch and bed column: Adsorption kinetics, characterization, genotoxicity studies. Journal of Water Process Engineering, 55, 104141. https://doi.org/10.1016/j.jwpe.2023.104141. (IF.6.7)

5. **Manikandan, R.,** Bharathi, S., Sajjad, M., Gadahalbasher, G., & Lee, J. (2022). Adsorption of As(III) and As(V) by Fe/C composite nanoparticles synthesized via a one-pot hydrothermal approach without the addition of carbon sources. Environmental Research, 214(2), 113899. https://doi.org/10.1016/j.envres.2022.113899. (IF.7.7)

6. Gnanaraj, M., Sneka, C., **Manikandan, R.,** & Muneeswaran, T. (2022). Polyethylene glycol induced somatic embryogenesis and plant regeneration from cotyledons of Vigna radiata (L.) Wilczek. South African Journal of Botany, 150, 721–730. https://doi.org/10.1016/j.sajb.2022.07.024. (IF.2.7)

7. Nair, R. V., **Manikandan, R.,** Mathanmohun, M., & Selvakumar, S. (2022). Isolation, screening and optimization of penicillin degrading bacterial strains from poultry manure, municipal and industrial waste. Research Journal of Agricultural Sciences, 13(1), 208–210.

8. Pan, W.-S., Wu, K.-K., **Manikandan R.,** Li, W.-C., & Wu, C. (2021). Manganese hyperaccumulators and their hyperaccumulating and tolerance mechanisms: A review of the current state of knowledge. Annals of Agricultural and Crop Science, 6(7), 1099. (IF.2.8)

9. Kabeerdass, N., Al Otaibi, A., **Manikandan R.,** Manikandan, A., Kashmery, H. A., Asiri, A. M., & Mathanmohun, M. (2021). Bacillus-mediated silver nanoparticle synthesis and its antagonistic activity against bacterial and fungal pathogens. Antibiotics, 10(11), 1334. https://doi.org/10.3390/antibiotics10111334. (IF.4.9)

10. Harikrishnaraj, R., Ramkumar, R., Valarmathi, R., Kalaiarasi, K., Ponmani, S., **Manikandan, R.,** & Natarajan, T. (2021). Application of antibiotics in food animals production and its impact on human health and bioremediation approaches: A review. Research Journal of Agricultural Sciences, 12, 1987–1992.

11. Ramsi Vakayil, K., Kabeerdass, R., **Manikandan R.,** Srinivasan, A., & Mathanmohun, M. (2021). Acorus calamus-zinc oxide nanoparticle coated cotton fabrics show antimicrobial and cytotoxic activities against skin cancer cells. Process Biochemistry, 111, 201–211. https://doi.org/10.1016/j.procbio.2021.06.015. (IF.4.0)

12. **Manikandan R.,** Shi, L., Wu, C., Li, W., An, W., Liu, Z., & Xue, S. (2019). Effect of sulfur and sulfur-iron modified biochar on cadmium availability and transfer in the soil-rice system. Chemosphere, 222, 314–322. https://doi.org/10.1016/j.chemosphere.2019.01.150. (IF.8.1)

13. **Manikandan R.,** An, W., Li, W., Perumal, V., Wu, C., Sahi, S. V., & Sarkar, S. K. (2019). A chromium detoxification mechanism induced growth and antioxidant responses in vetiver (Chrysopogon zizanioides (L.) Roberty). Journal of Central South University, 26, 489–500. https://doi.org/10.1007/s11771-019-4029-8. (IF.4.4)

14. **Manikandan R.,** Ezhili, N., & Venkatachalam, P. (2016). Phosphorus supplementation alleviates cadmium-induced toxicity by modulating oxidative stress mechanisms in vetiver grass (Chrysopogon zizanioides). Journal of Environmental Engineering, 142(2), C4016003. https://doi.org/10.1061/(ASCE)EE.1943-7870.0001044. (IF.1.8)

15. Wu, C., Shi, L., Xue, S., Li, W., Jiang, X., **Manikandan R.,** & Qian, Z. (2019). Effect of sulfur-iron modified biochar on the available cadmium and bacterial community structure in contaminated soils. Science of the Total Environment, 647, 1158–1168. https://doi.org/10.1016/j.scitotenv.2018.07.466. (IF.8.0)

16. Wang, J., Cheng, Q., Xue, S., **Manikandan R.,** Wu, C., & Liao, J. (2018). Pollution characteristics of surface runoff under different restoration types in manganese tailing wasteland. Environmental Science and Pollution Research, 25(28), 28334–28345. https://doi.org/10.1007/s11356-018-1338-2. (IF.5.4).

17. Wang, J., Luo, X., Zhang, Y., Huang, Y., **Manikandan R.,** & Xue, S. (2018). Plant species diversity for vegetation restoration in manganese tailing wasteland. Environmental Science

and Pollution Research, 25(32), 32401–32411. https://doi.org/10.1007/s11356-018-2275-9. (IF.2.7)

18. Liao, J., Jiang, J., Xue, S., Cheng, Q., Wu, H., **Manikandan R.,** Hartley, W., & Huang, L. (2018). A novel acid-producing fungus isolated from bauxite residue: The potential to reduce the alkalinity. Geomicrobiology Journal, 35(9), 749–759. https://doi.org/10.1080/01490451.2018.1479807. (IF.2.4)

19. Karpagam, P., **Manikandan R.,** & Selvakumar, S. (2019). Decolorization and bioremediation of textile dye effluent by bioreactors containing novel bacterial consortium (KDDB04, KDDB05, KDDB08 and KDDB11) and its effect on phytotoxicity. Research Journal of Chemistry and Environment, 23(3), 45–49. (IF.0.3)

20. **Manikandan R.,** Ezhili, N., Muthulakshmiandal, N., Favas, P. J. C., & Venkatachalam, P. (2016). Assessment of physicochemical characteristics and the level of nutrient contents as well as heavy metal ions in waters of three lakes at Coimbatore, Tamil Nadu, India. Journal of Materials and Environmental Science, 7(7), 2259–2266. (IF.2.7)

21. Venkatachalam, P., Jayaraj, M., **Manikandan R.,** Geetha, N., Rene, E. R., Sharma, N. C., & Sahi, S. V. (2016). Zinc oxide nanoparticles (ZnONPs) alleviate heavy metal-induced toxicity in Leucaena leucocephala seedlings: A physiochemical analysis. Plant Physiology and Biochemistry. https://doi.org/10.1016/j.plaphy.2016. (IF.5.7)

22. **Manikandan R.,** Selvakumar, S., Kalaichelvi, S., & Ezhili, N. (2016). Zooplankton diversity and seasonal variation of three lakes in Coimbatore, Tamil Nadu, India. Journal of Academia and Industrial Research, 5(3), 40–44.

23. **Manikandan R.,** Sahi, S. V., & Venkatachalam, P. (2015). Impact assessment of mercury accumulation and biochemical and molecular response of Mentha arvensis: A potential hyperaccumulator plant. The Scientific World Journal, 2015, Article 715217. https://doi.org/10.1155/2015/715217.

24. Malar, S., **Manikandan R.,** Favas, P. J. C., Sahi, S. V., & Venkatachalam, P. (2014). Effect of lead on phytotoxicity, growth, biochemical alterations and its role on genomic template stability in Sesbania grandiflora: A potential plant for phytoremediation. Ecotoxicology and Environmental Safety, 108, 249–257. https://doi.org/10.1016/j.ecoenv.2014.07.029. (IF.6.1)

25. **Manikandan R.,** Kalaichelvi, S., & Ezhili, N. (2014). Potential ecological assessment of sediment quality and heavy metals contamination in Kuruchi Lake, Tamil Nadu, India. Journal of Materials and Environmental Science, 5(4), 1119–1124.

26. Ilangovan, R., **Manikandan R.,** Ezhili, N., & Subramaniam, K. (2014). Studies on phytoplankton population and species diversity in three wetlands of Coimbatore, Tamil Nadu, India. International Journal of Current Research, 6(8), 7968–7972.

27. **Manikandan R.,** & Venkatachalam, P. (2013). Application of random amplified polymorphic DNA (RAPD) analysis to detect the genotoxic effect of mercury (Hg) heavy metal stress on Mentha arvensis seedlings. International Journal of Plant Cell Biotechnology and Molecular Biology, 14(3–4), 84–89. (IF.2.7)

28. Ezhili, N., **Manikandan R.,** & Ilangovan, R. (2013). Diversity and seasonal variation of zooplankton in Ukkadam Lake, Coimbatore, Tamil Nadu, India. International Journal of Current Research, 5(8), 2091–2094. (IF.2.7)

29. Showmya, J. J., Harini, K., Pradeepa, M., Thiyagarajan, M., **Manikandan R.,** Venkatachalam, P., & Geetha, N. (2012). Rapid green synthesis of silver nanoparticles using seed extract of Foeniculum vulgare and screening of its antibacterial activity. International Journal of Plant Cell Biotechnology and Molecular Biology, 13, 27–32. (IF.0.3)

30. **Manikandan R.,** & Venkatachalam, P. (2011). Risk assessment of mercury ion heavy metal exposure on physiological, biochemical changes and DNA damage using RAPD analysis in Mentha arvensis seedlings. Plant Cell Biotechnology and Molecular Biology, 11, 31–39. (IF.0.3).

Book Chapters

1. M. Gnanaraj, P. Samuel, T. Jebastin, M. Rajadurai, D. Rajasudhakar, and **R. Manikandan** 2025. Strategies for Precision Breeding of Medicinal Plants for Enhanced Secondary Metabolite Production. Taylor & Francis, DOI: 10.1201/9781003475491-3.
2. Gnanaraj, Muniraj, Sisubalan, **Manikandan Rajendran**. 2024. Gold Nanoparticles as Antibacterial and Antiviral Agents: Biomedical Applications and Theranostic Potential. Phytostabilization of metal mine tailings-a green remediation technology. Springer Nature Switzerland AG 2024 V. Kokkarachedu, R. Sadiku (eds.), Nanoparticles in Modern Antimicrobial and Antiviral Applications, Nanotechnology in the Life Sciences, https://doi.org/10.1007/978-3-031-50093-0_2.
3. Lavanya Muthusamy, **Manikandan Rajendran**, Kavitha Ramamoorthy, Mathiyazhagan Narayanan and Sabariswaran Kandasamy. 2022. Phytostabilization of metal mine tailings—a green remediation technology. Elsevier ISBN: 978-0- 323- 85763-5.
4. **Manikandan Rajendran**, R. Kavitha, Weisong Pan, M. Elanchezhian and S. Selvakumar. 2020. Biogenic Synthesis of Nanoparticles and Their Environmental Applications. CRC Press Taylor & Francis Group. ISBN: 13: 978-0-367-21069-4.

Proceedings

1. Ezhili, N., Manikandan R., & Venkatachalam, P. (2012, December 18–19). Effects of phosphorus on physiological, photosynthetic pigments and oxidative status in vetiver grass (Vetiveria zizanioides L.) under lead (Pb) treatment. International Conference on Biotechnology, Biological and Biosystems Engineering (ICBBBE’2012), Phuket, Thailand.
2. Manikandan R., & Venkatachalam, P. (2013). Combined effect of phosphorus and lead heavy metal ions on growth and biochemical changes in vetiver grass (Vetiveria

zizanioides). In Proceedings of New Horizons in Biotechnology and Bionanomedicines (NHBB 2013) (pp. 225–232).

PRESENTATIONS

	State Level	National	International
Conference	-	**5**	**7**
Seminar	-	**10**	**10**

PARTICIPATION

	State Level	National	International
Conference	-	**10**	**7**
Seminar	-	**10**	**10**
Workshop	-	**7**	**2**
Orientation	-	**1**	**0**
FDP/PDP	-	**6**	**2**

Events Organized (Seminar/Conference/Workshop)

1. Organised an International **Seminar on "Nuance in Life Sciences" (NLS - 2017)**" at Sri Ganesh College of Arts and Science, Salem on February 09th 2017.
2. Organised a National Seminar on **"Recent Trends In Environmental Microbial - Biotechnology"** at Padmavani Arts and Science College for Women, Salem-11 on March 18th 2022.
3. Organised a Two days State level workshop on "**EAT, CNA & SNA: Dos and Don'ts on PFMS**, Padmavani Arts and Science College for Women, Salem-11 on 19-20th May 2022.
4. Organised a **Hands - on Workshop on Molecular Biology Techniques** at Padmavani Arts and Science College for Women, Salem-11 on August 29th 2022.
5. Organised a DST – SERB Sponsored One Day Research Facility Training Program On "Environmental Toxicology Analysis, Padmavani Arts and Science College for Women, Salem-11 on 7th February 2023.
6. Organised a National Seminar on **"Next Gen Tech-Revolutionizing Agricultural**, **Health and Environment"** at Padmavani Arts and Science College for Women, Salem-11 on August 9th 2024.
7. Organised a National Seminar on ***"Environmental Microbiomes and Cervical Cancer: Biotech Insights"*** at Padmavani Arts and Science College for Women, Salem-11 on 25th February 2025.

Members in BoS/ Editorials/ Professional Bodies

1. Chemosphere (IF: 8.1)
2. Plant Physiology and Biochemistry (IF: 6.1)

3. Applied Soil Ecology (IF:4.8)
4. Plant Gene (IF: 2.2)
5. Chemical Engineering Journal (IF: 13.4)
6. Environmental technology and innovation (IF: 6.7)
7. Industrial Crops and Products (IF: 5.6)
8. Environmental Research (IF: 7.7).
9. International Journal of Phytoremediation (3.1)
10. Frontiers in Cellular and Infection Microbiology (IF: 4.8)

AWARDS, HONORS AND RECOGNITION

Awards / Honors /Recognition	Agency / Institution	Year of Award
Best Paper-second Award	Nesamony Memorial Christian College, Kanyakumari, Tamil Nadu	2025
Yong Researcher award	SRM Institute of Technology, Chennai	2024
Best Paper-second Award	Vel Tech High Tech, Chennai, Tamil Nadu	2022
Best Paper-First Award	Periyar University Salem	2012
Best Paper-second Award	Periyar University Salem	2009