

Vishnu D. Rajput

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Vishnu D. Rajput working as “**Principal Scientist**” and Head of ‘**International Laboratory on Nanobiotechnology**’ at Southern Federal University, Rostov-on-Don, Russia. His ongoing research is based on the investigation of effective remediation approaches using biochar/nano-biochar based sorbents and nanomaterials. With long experience and experimental work, Dr. Rajput comprehensively detailed the state of research in environmental science about “how nanoparticles/heavy metals interact with plants, soil, microbial community, and the larger environment as well as possible remediation technology using nanoparticles/nano-biochar. Recently he is working nano-enhanced remediation of soil and water system. In recent work, he is working on nano-bioengineering for soil rhizospheric microbes and enhanced remediation using nanotechnology, CRISPR and metagenomics.

Educational Experience

- Doctor of Science in Natural Science (2012-2015)
University of Chinese Academy of Sciences, Beijing 100049, China
- M.Sc. Agricultural Biotechnology (2005-2007)
Chander Shekhar Azad University of Agriculture & Technology, Kanpur, Uttar Pradesh 208002, India.

Professional Experience

- **Principal Scientist**, (March 2024 continue)
Academy of Biology and Biotechnology, Southern Federal University, Rostov, Russia
Duties: Research & teaching (undergraduates & masters students)
- **Leading Researcher**, (June 2020 continue)
Academy of Biology and Biotechnology, Southern Federal University, Rostov, Russia,
Duties: Research & teaching (undergraduates & masters students)
- **Senior Researcher**, (March 2016 June 2020)
Academy of Biology and Biotechnology, Southern Federal University, Rostov, Russia,
Duties: Research & teaching (undergraduates & masters students)
- **Senior Research Fellow**, (2009-2012)
Central Soil Salinity Research Institute, Karnal-132001 Haryana, India, Duties: Research
- **Project Assistant**, (9 March to 31 May 2009)
Center for Plant Biotechnology, Hissar, Haryana, India, Duties: Research

Key achievements

- Observed influence of Biochar and heavy metal tolerant microbes on plant growth in polluted soil.
- Optimized safe application of metal-based nanoparticles for sustainable agriculture.
- Revealed the mechanism of nanoparticles translocation, effects and accumulation in plant tissues and discovered effective concentration of ZnO & CuO NPs for plant growth

- Developed nano-enhanced remediation technologies for heavy metal contamination, combined with metal tolerant microbes and hyperaccumulator plants.
- Fabricated biochars with various sizes such as nano-biochar, nanomaterial-enabled biochar, microbes-enriched biochar for soil health improvement.
- Developed methodology for rhizospheric microbes' modulation and bio-nanoengineering for soil microbes using metagenomic and CRISPR

International Matrices

Dr. Rajput published **581** (article: 252, review article: 123, book: 24, chapters: 131, conference/editorial: 40), H-index: **59**, Citations: **13,591**, FWCI: 3.182 as per **Scopus** (since June, 2025). Reviewed more than **225** research/review manuscript for various journals.

Attended **50+** international conferences and co-organized 5 international as a co-secretory and committee member under SfedU, priority_2030. Most popular book within students and research; Agriculture Science (book for competitive exam) and Scientific Writing.

Dr. Rajput is included the world's top **2% scientists** (Stanford University, 2023, 2024, 2025) and **0.5% potential scientists** in biological and environmental science, and secured **2nd top rank** in Environmental and Earth Science in Russian Federation. Received "**Highly Qualified Specialist**" status since 09.06.2020 to 14.02.2026.

Award and Recognition

Last five years, he received appreciation letters (**Letter of Gratitude, Certificate of Honor, Diploma Awards, Certificate of Appreciations**) by "Rector" of Southern Federal University for breakthrough research in environmental and soil science.

At International, Dr. Rajput received

- "**Breakthrough Research Award 2025**" by The Botany Scientist Awards, is a premier global event dedicated to the advancement of Botany Scientist Awards. This dynamic conference has been at the forefront of research, innovation, and collaboration in the ever-evolving field of Botany Scientist Awards (<https://botanyscientist.com/award-winners/>).
- "**Eminent Scientist of the Year Award 2025 (Nanobiotechnology)**" by Society of Agricultural Research and Social Development (New Delhi) confirmed by Organizing Committee of ICAN 2025 (https://www.agriculturalsociety.co.in/uploads/PDF_20250607_113558.pdf)
- "**Guest of Honor**" and "**Young Scientist Award**" by "Harvest-2025" organized at New Delhi, India (<https://www.agrimeet.in/>)
- "**Hindustan Harit Kranti Award-2022**" for outstanding contribution in agriculture by Hindustan Agri- Research Welfare Society, Govt. of India (<https://harws.com/>)
- "**Best Reviewer Award**" by Plants Journal with Cash price 500 USD.
- "**1st Diploma Award**" by Ministry of Science and Higher Education of the Russian Federation, Saint Petersburg State University. Institute of Earth Sciences, Dokuchaev Central Soil Science Museum – branch of FSBSI FRC V.V. Dokuchaev Soil Science Institute, ANO Preservation and development of Dokuchaev scientific heritage "Soil – life" Dokuchaev Society of Soil Science, Interregional CSO "Nature protection union.
- "**Appreciation Letter**" by Faculty of Science and Natural Resources Universiti Malaysia Sabah, Malaysia

Honorary Adjunct Faculty/Professor/Scientist

- **Honorary Adjunct Professor** at Bioengineering and Biosciences, Lovely Professional University, dated: 10/3/2023. Work is completed honorary for min of 1-2 weeks lectures and discussion per year.
- **Adjunct Research Faculty** at Center for Research Impact & Outcome, Chitkara University, Punjab, India, Nature of work: Honorary, 1 visit; online/offline per year (2024-2025)
- **Adjunct Professor** at School of Agriculture, Graphic Era Hill University, Dehradun, India, dated at 13, 2024, supervise students, guest lectures, joint publications etc.

Supervisor/mentor

Supervisor/mentor for M.Sc., PhD, Postdoc

- **Postdoctoral researcher (04)**

- Dr. Swarnendra Banerjee
- Dr. Pradeep Kumar
- Dr. Mehmood Nasir
- Dr. Manvendra Singh
- **Doctoral PhD student (02)** enrolled at SFedU
 - Mr. Vicky Anand,
 - Miss Bhawana Singh
 - *Interviewed several **Open-door Program** and **postdoc** applicants*
- Invited and supervised at SfedU **trainee** PhD Student, Monika Batta, Chandigarh University, India for 3 months (July-Sept, 2023) and Mr. Gaurav Sharma, Department of Agronomy, School of Agriculture, Lovely Professional University, Punjab, India for 3 months (Sept-Nov, 2024), and **visiting scientists** (Prof. Sudhir K Upadhyay, Dr. Hanuman Singh Jatav) and visiting scholars at Southern Federal University, Rostov-on-Don, Russia.
- **Supervised (02)** master students (Erasmus+), 2020-2021
 - Mr. Hazarat Amin,
 - Miss. Maria Belen Moya
- **Co-supervising PhD student (03) outside of SfedU**
 - **Miss. Sumaira Malik**, PhD scholar, Title: Synthesis, Characterization and Industrial Application of Biogenic Nanoparticles from Various Sources, Enrollment No.: UU2263520002, Discipline: Food Tech, Uttaranchal University, Premnagar-248007, Dehradun, Uttarakhand, India
 - **Miss. Sailaja P**, PhD scholar, Thesis on: Phytoremediation Potential of Various Ficus Species for Heavy Metal Removal, Registration No. 42200140, Lovely Professional University, Punjab, India.
 - **Mr. Rohit Thakur**, PhD Scholar, Thesis: Impact of Biochar-blended Urea on Plant Growth, Yield and Nitrogen Use Efficiency in a rice-wheat cropping system (registration No.: 12318114) registered at School of Agriculture, Lovely Professional University, Punjab, India
- **Collaboration performed with International Scientists:**

Most success and ongoing collaboration: **Prof. Ming Hung Wong** (Education University of Hong Kong) through Mega Project, **Prof. Yufei Zhao**, Beijing University of Chemical Technology, **Prof. Karen Ghazaryan**, Yerevan State University, Prof. Sudhakar Srivastava, Banaras Hindu University, **Prof. Jun Yao**, China University of Geosciences.

Effective collaboration: **Prof. Dr. Dinesh Mohan** (Top biochar scientist), Jawaharlal Nehru University, New Delhi, India, **Prof. Hassan El-Ramady**, Kafrelsheikh University, Egypt, **Dr. Hanuman Singh Jatav** (Young Soil Scientist, well connected with farmers), Sri Karan Narendra Agriculture University, India

Members of editorial board of peer-reviewed scientific journal (indexed in scopus/WoS)

- SAINS TANAH - Journal of Soil Science and Agroclimatology (ISSN 2356-1424).
- Eurasian Journal of Soil Science (2147-4249)
- Egyptian Journal of Soil Science (ISSN:0302-6701)
- Diyala Agricultural Sciences Journal (ISSN: 2073-9524)
- Biochar, (ISSN: 2524-7867)
- International Journal of Plant and Environment (ISSN: 2454-1117)

Membership in leading scientific world societies

- Honorary member of the American Chemical Society (Membership No. 32122551 Since: 8/26/2020).
- The member of “SCIENTIFIC COMMITTEE” The Federation of Eurasian Soil Science Societies (Member Countries: Turkey, Russia, Azerbaijan, Kazakhstan, Romania, Kyrgyzstan, Bosnia & Herzegovina, and Serbia).
- Member of organizing committee International Conference on Sustainable Nanotechnology and Nanomaterials (ICONN – 2022), Organized By- University Center for Research & Development (UCRD), Chandigarh University, India, In Association with National University of Singapore and University of Salento, Italy
- Organizing committee member of III International Scientific Conference "CURRENT STATE OF CHERNOZEMS" organized by Southern Federal University September 12-17, 2023.
- Organizing committee member of 1st ICOSATA 2022: International Conference of SAINS TANAH: Soil Science, Agriculture, & Environment (27-28 July 2022).

Popular Guest Lectures (50+ online/physical mode); selected is below

- Delivered lecture at Faculty of Science and Natural Resources Universiti Malaysia Sabah, Malaysia (7 May 2025)

- Delivered lecture at Agriculture Department, Lovely Professional University, India (15 April, 2025)
- Delivered lecture SR University, Telangana 506371, India, 21.12.2024.
- Delivered lecture in Faculty Development Program, organized by Department of Botany, Hansraj college, University of Delhi, 1-6 April 2024.
- Delivered lecture in International Agriculture Certificate Course-Cum-Training Program organized by ICAR, India 1-30 April 2024.
- Lectured for international students on the Mevlana exchange program with Selcuk University, Konya, Turkey, and for students of the Faculty of Soil Science and Land Resource Assessment 2017-2018 academic year.
- Delivered lectures in "15 Days Training –Cum–Certificate Programme on Trending Novel Technologies in Agriculture, Animal Husbandry, Fisheries Science and Their Allied Systems" January- 15-30, 2023 in Online Mode organized by Society of Agriculture Research and Social Development, College of Agriculture, Tripura (Lembuchera, West Tripura) & Malla Reddy University, Hyderabad" India
- A course of lectures on the English-language program "Plant Biotechnology" for graduate students at the Academy of Biology and Biotechnology of the Southern Federal University, Rostov-on-Don.
- A course of lectures for bachelors and undergraduates on the topic "Advanced methods of the molecular biology of soils and plants" and "International research funds and scholarships" for Russian and foreign students.
- A course of lectures "Chemical soil pollution" for bachelors from Spain under the Erasmus exchange program for one semester.
- Giving lectures on biotechnology to 1st year undergraduate students of the Faculty of Agriculture at the Phonics Group of Institutions in India, 2015.

Research work physically presented in Russian Federal; Saint-Petersburg University, Lomonosov Moscow State University, Kabardino-Balkarian State University, Tyumen State University, Maikop State Technological University, Kazan Federal University, Tula State Lev Tolstoy Pedagogical University, Don State Technical University

Social Work:

Frequently delivering **science motivational talks/videos/short summary** in simple world and connected thousands of agricultures and environmental students globally via social media.

Work in press (News): Number of Russian, english and Hindi media press covered our research work that can be search via keywords: Vishnu D. Rajput, вишну д. Раджпут and विष्णु डी. राजपूत

https://wikitia.com/wiki/Vishnu_D._Rajput

List of Publications

Full-length Articles

1. Rajput V, Chaplygin, V., Gorovtsov, A., Fedorenko, A., Azarov, A., Chernikova, N., Barakhov, A., Minkina, T., Maksimov, A., Mandzhieva, S., and Sushkova, S. (2020). Assessing the toxicity and accumulation of bulk- and nano-CuO in *Hordeum sativum* L. *Environmental Geochemistry and Health*, IF: 3.2, Q1 <https://doi.org/10.1007/s10653-020-00681-5>
2. Rajput V, Minkina T, Ahmed B, Sushkova S, Singh R, Soldatov M, Laratte B, Fedorenko A, Mandzhieva S, Blicharska E, Musarrat J, Saquib Q, Flieger J, Gorovtsov A. (2019). "Interaction of Copper Based Nanoparticles to Soil, Terrestrial and Aquatic Systems: *Critical Review of the State of the Science and Future Perspectives*". *Reviews of Environmental Contamination and Toxicology*, IF: 6.1, Q1 https://doi.org/10.1007/398_2019_34
3. Rajput V, Minkina T, Fedorenko A, Sushkova S, Mandzhieva S, Lysenko V, Duplii N, Fedorenko G, Dvadenko K, Ghazaryan K (2018). Toxicity of copper oxide nanoparticles on spring barley (*Hordeum sativum* distichum). *Science of the Total Environment* 645, 1103-1113. IF: 8.2, Q1 <https://doi.org/10.1016/j.scitotenv.2018.07.211>
4. Rajput V, Minkina V, Mazarji M, Shende S, Sushkova S, Mandzhieva S, Burachevskaya M, Chaplygin V, Singh A, Jatav H (2020) Accumulation of nanoparticles in the soil-plant systems and their effects on human health. *Annals of Agricultural Sciences*, 65, 137-143. IF: 3.5, Q1 <https://doi.org/10.1016/j.aoas.2020.08.001>
5. Rajput V. (2019). Nano-Particles: An emerging concern. *Vigyan Pragati* pp 38-39. (In hindi). <http://nopr.niscair.res.in/handle/123456789/47025>
6. Rajput V. (2019). Nanoparticles: Can be dangerous in Food-Packing. *Vigyan Pragati* pp 58-59. (In hindi) <http://nopr.niscair.res.in/handle/123456789/50595>

7. Rajput V., Minkina, T., Sushkova, S., Behal, A., Maksimov, A., Blicharska, E., Ghazaryan, K., Movsesyan, H., and Barsova, N. (2019). ZnO and CuO nanoparticles: a threat to soil organisms, plants, and human health. *Environmental Geochemistry and Health*, IF: 3.2, Q1 <https://doi.org/10.1007/s10653-019-00317-3>
8. Rajput VD, Chen Y, Ayup M (2015). Effects of high salinity on physiological and anatomical indices in the early stages of *Populus euphratica* growth. *Russian Journal of Plant Physiology*, 62(2): 229–236. IF: 1.1, Q3 <https://doi.org/10.1134/S1021443715020168>
9. Rajput VD, Gorovtsov AV, Fedorenko GM, Minkina TM, Fedorenko AG, Lysenko VS, Sushkova SS, Mandzhieva SS, Elinson MA (2020). The influence of application of anatomical parameters biochar and metal tolerant bacteria in polluted soil on morpho-physiological and of spring barley. *Environmental Geochemistry and Health*. IF: 3.2, Q1 <https://doi.org/10.1007/s10653-019-00505-1>.
10. Rajput VD, Minkina T, Ahmed B, Singh VK, Mandzhieva S, Sushkova S, Bauer T, Verma VK, Shan S, Hullebusch ED, Wang B. (2022). Nano-biochar: A Novel Solution for Sustainable Agriculture and Environmental Remediation. *Environmental Research*, 210, 112891. IF: 7.7, Q1 <https://doi.org/10.1016/j.envres.2022.112891>
11. Rajput VD, Minkina T, Fedorenko A, Mandzhieva S, Sushkova S, Lysenko V, Duplii N, Azarov A, Chokheli V (2018). Destructive effect of copper oxide nanoparticles on ultrastructure of chloroplast, plastoglobules and starch grains in spring barley (*Hordeum sativum* Distichum). *International Journal of Agriculture and Biology*, <https://doi.org/10.17957/IJAB/15.0877>
12. Rajput VD, Minkina T, Sushkova S, Tsitsuashvili V, Mandzhieva S, Gorovtsov A, Nevidomskyaya D, Gromakova N (2017). Effect of nanoparticles on crops and soil microbial communities. *Journal of Soils and Sediments*, 1-9. IF: 2.8, Q1 <https://doi.org/10.1007/s11368-017-1793-2>
13. Rajput VD, Minkina T, Sushkova S, Mandzhieva S, Tsitsuashvili V, Chaplignin V, Fedorenko A (2018). Effect of copper nanoparticles (CuO NPs) on crop plants a mini review. *BioNanoScience*, 8(1) 36-42. IF: 3.0, Q3 <https://doi.org/10.1007/s12668-017-0466-3>
14. Rajput VD, Minkina T, Yaning C, Sushkova S, Chaplignin VA, Mandzhieva S (2016). A review on salinity adaptation mechanism and characteristics of *Populus euphratica*, a boon for arid ecosystems. *Acta Ecologica Sinica*, 36: 497–503. Q2 <https://doi.org/10.1016/j.chnaes.2016.08.001>
15. Rajput VD, Minkina TM, Behal A, Sushkova SN, Mandzhieva S, Singh R, Gorovtsov A, Tsitsuashvili VS., Purvis WO, Ghazaryan K A, Movsesyan HS (2017). Effects of zinc-oxide nanoparticles on soil, plants, animals and soil organisms: a review. *Environmental Nanotechnology, Monitoring & Management*, 9: 76-84 Q1 <https://doi.org/10.1016/j.enmm.2017.12.006>
16. Rajput, V. D., Minkina, T., Fedorenko, A., Chernikova, N., Hassan, T., Mandzhieva, S., ... Burachevskaya, M. (2021). Effects of Zinc Oxide Nanoparticles on Physiological and Anatomical Indices in Spring Barley Tissues. *Nanomaterials*, 11(7). IF: 4.4, Q1 <https://doi.org/10.3390/nano11071722>
17. Rajput, V. D., Minkina, T., Kimber, R., Singh, V. K., Shende, S., Behal, A., Sushkova, S., Mandzhieva, S., and Lloyd, J. R. (2021). Insights into bio-synthesis of nanoparticles by *Shewanella* genus. *Applied and Environmental Microbiology*, IF: 5.01, Q1 <https://doi.org/10.1128/AEM.01390-21>
18. Rajput, V., Minkina, T., Kumari, A., Sudhir S., S., Ranjan, A., Faizan, M., Barakov, A., Gromovik, A., Gorbunova, N., Rajput, P., Singh, A., Khabirov, I., Nazarenko, O., Sushkova, S., Kızılkaya, R., (2021). A review on nanobioremediation approaches for restoration of contaminated soil. *Eurasian J. Soil Sci.* Q3 <https://doi.org/10.18393/ejss.990605>
19. Rajput, V., Minkina, T., Semenov, I., Klink, G., Tarigholizadeh, S., and Sushkova, S. (2020). Phylogenetic analysis of hyperaccumulator plant species for heavy metals and polycyclic aromatic hydrocarbons. *Environmental Geochemistry and Health*, 1-26. IF: 3.2, Q1 <https://doi.org/10.1007/s10653-020-00527-0>
20. Rajput, V.D., H., Singh, R.K., Verma, K.K., Sharma, L., Quiroz-Figueroa, F.R., Meena, M., Gour, V.S., Minkina, T., Sushkova, S., Mandzhieva, S. (2021). Recent Developments in Enzymatic Antioxidant Defence Mechanism in Plants with Special Reference to Abiotic Stress. *Biology*, 10(4), 267. Q-1, IF-3.6 <https://doi.org/10.3390/biology10040267>
21. Rajput, V.D., Singh, A., Minkina, T., Rawat, S., Mandzhieva, S., Sushkova, S., Shuvaeva, V., Nazarenko, O., Rajput, P., Komariah, Verma, K.K., Singh, A.K., Rao, M., Upadhyay, S.K. 2021. Nano-enabled products: Challenges and opportunities for sustainable agriculture. *Plants*, 10(12). IF: 4.0, Q1 <https://doi.org/10.3390/plants10122727>
22. Rajput, V.D.; Kumari, A.; Minkina, T.; Barakhov, A.; Singh, S.; Mandzhieva, S.S.; Sushkova, S.; Ranjan, A.; Rajput, P.; Garg, M.C. A practical evaluation on integrated role of biochar and nanomaterials in soil remediation processes. *Environmental Geochemistry and Health* 2022, IF: 3.2, Q1 <https://doi.org/10.1007/s10653-022-01375-w>
23. Rajput, V.D.; Kumari, A.; Upadhyay, S.K.; Minkina, T.; Mandzhieva, S.; Ranjan, A.; Sushkova, S.; Burachevskaya, M.; Rajput, P.; Konstantinova, E.; et al. Can Nanomaterials Improve the Soil Microbiome and Crop Productivity? *Agriculture* 2023, 13, 231. IF: 3.3, Q1 <https://doi.org/10.3390/agriculture13020231>
24. Rajput, V.D.; Minkina, T. Editorial for Special Issue “Nano-Bioremediation Approaches for Degraded Soils and Sustainable Crop Production”. *Nanomaterials* 2023, 13, 1138. IF: 4.4, Q1 <https://doi.org/10.3390/nano13071138>
25. Rajput, V.D.; Minkina, T.; Feizi, M.; Kumari, A.; Khan, M.; Mandzhieva, S.; Sushkova, S.; El-Ramady, H.; Verma, K.K.; Singh, A.; Hullebusch, E.D.v.; Singh, R.K.; Jatav, H.S.; Choudhary, R. (2021). Effects of Silicon

- and Silicon-Based Nanoparticles on Rhizosphere Microbiome, Plant Stress and Growth. *Biology* 10, 791. **IF: 3.6, Q1** <https://doi.org/10.3390/biology10080791>
26. Rajput, V.D.; Minkina, T.; Upadhyay, S.K.; Kumari, A.; Ranjan, A.; Mandzhieva, S.; Sushkova, S.; Singh, R.K.; Verma, K.K. Nanotechnology in the Restoration of Polluted Soil. *Nanomaterials*, 2022, 12, 769. **IF: 4.4, Q1** <https://doi.org/10.3390/nano12050769>
 27. Rajput, V.D.; Singh, A.; Minkina, T.; Rawat, S.; Mandzhieva, S.; Sushkova, S.; Shuvaeva, V.; Nazarenko, O.; Rajput, P.; Komariah; Verma, K.K.; Singh, A.K.; Rao, M.; Upadhyay, S.K. (2021). Nano-Enabled Products: Challenges and Opportunities for Sustainable Agriculture. *Plants* 10, 2727. **IF: 4.0, Q1** <https://doi.org/10.3390/plants10122727>
 28. Rajput, P., Kumar, P., Priya, A.K., Kumari, S., Shiade, S.R.G., Rajput, V.D., Fathi, A., Pradhan, A., Sarfraz, R., Sushkova, S., Mandzhieva, S., Minkina, T., Soldatov, A., Wong, M.H., Rensing, C. 2024. Nanomaterials and biochar mediated remediation of emerging contaminants. *Science of The Total Environment*, 916, 170064. **IF: 8.2, Q1** <https://doi.org/10.1016/j.scitotenv.2024.170064>.
 29. Rajput, V. D.; Chernikova, Natalya; Minkina, Tatiana; Gorovtsov, Andrey; Fedorenko, Alexey; Mandzhieva, Saglara; Bauer, Tatiana; Tsitsuashvili, Victoria; Beschtnikov, Vladimir; Wong, Ming Hung; Biochar and metal-tolerant bacteria in alleviating ZnO nanoparticles toxicity in barley. *Environmental Research*, 115243, 2023. **IF: 7.7, Q1** <https://doi.org/10.1016/j.envres.2023.115243>
 30. Rajput, V. D.; Kumari, Smita; Minkina, Tatiana; Sushkova, Svetlana; Mandzhieva, Saglara; Nano-Enhanced Microbial Remediation of PAHs Contaminated Soil. *Air, Soil and Water Research*, 16, 1.17862E, 2023. **IF: 3.5, Q2** <https://doi.org/10.1177/11786221231170099>
 31. Rajput VD, Singh N (2010). Studies on in vitro regeneration and direct organogenesis in pea (*Pisum sativum* L). *Indian Journal of Plant Physiology*, 15(3): 246-249.
 32. Rajput VD, Yaning C (2015). Biosorption of heavy metals using agrowaste: a review. *Pollution Research*, 4(1): 31-38.
 33. Rajput VD, Yaning C, Ayup M, Minkina T, Sushkova S, Mandzhieva S (2017). Physiological and hydrological changes in *Populus euphratica* seedlings under salinity stress. *Acta Ecologica Sinica*, 37: 229-235. **Q2** <https://doi.org/10.1016/j.chnaes.2017.02.005>
 34. Rajput, S., Kumari, A., Rajput, V.D., Mandzhieva, S.S., Minkina, T., Arora, S., Kaur, R. (2023). Current scenario, services, concerns, and restoration perspectives of ponds in India [Review]. *Sains Tanah Journal of Soil Science and Agroclimatology*, 20(1): 19-31. (Q3) <https://doi.org/10.20961/stjssa.v20i1.64190>
 35. Rajput, S., Kumari, A., Sharma, R., Rajput, V.D., Minkina, T., Arora, S. & Kaur, R. (2023). Seasonal fluctuations in phthalates' contamination in pond water: A case study. *Eurasian Journal of Soil Science (EJSS)* 12, 19–27. **Q3**
 36. RAJPUT, P., Kumar, P., Priya, A. K., Kumari, S., Shiade, S. R. G., RAJPUT, V. D., Fathi, A., Pradhan, A., Sarfraz, R., Sushkova, S., Mandzhieva, S., Minkina, T., Soldatov, A., Wong, M. H., & Rensing, C. (2024). Nanomaterials and biochar mediated remediation of emerging contaminants. *Science of The Total Environment*, 916, 170064. **IF- 8.2 Q1**, <https://doi.org/https://doi.org/10.1016/j.scitotenv.2024.170064>
 37. RAJPUT, P., Singh, A., Agrawal, S., Ghazaryan, K., RAJPUT, V. D., Movsesyan, H., Mandzhieva, S., Minkina, T., & Alexiou, A. (2024). Effects of environmental metal and metalloid pollutants on plants and human health: exploring nano-remediation approach. *Stress Biology*, 4(1), 27. **Q1**, <https://doi.org/10.1007/s44154-024-00156-y>
 38. Choudhary, R., RAJPUT, V. D., Ghodake, G., Ahmad, F., Meena, M., Rehman, R. u., Prasad, R., Sharma, R. K., Singh, R., & Seth, C. S. (2024). Comprehensive journey from past to present to future about seed priming with hydrogen peroxide and hydrogen sulfide concerning drought, temperature, UV and ozone stresses- a review. *Plant and Soil*, 500(1), 351-373. **IF- 3.9, Q1**, <https://doi.org/10.1007/s11104-024-06499-9>
 39. El-Ramady, H., Prokisch, J., Sári, D., Singh, A., Ghazaryan, K., RAJPUT, V. D., & Brevik, E. C. (2024). Nanotechnology in the soil system: An ecological approach towards sustainable management. *Applied Soil Ecology*, 204, 105669. **IF- 4.8, Q1**, <https://doi.org/https://doi.org/10.1016/j.apsoil.2024.105669>
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