[**Dr. Vishnu D. Rajput**](https://sites.google.com/view/vishnurajput/home)

Leading Researcher,

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Dr. Vishnu D. Rajput is working as a Leading Researcher at Sothern Federal University, Rostov-on-Don, Russia. His ongoing research is based on toxic effects of bulk- and nano-forms of metals, and investigating the bioaccumulation, bio/geo-transformations, uptake, translocation, and toxic effects of bulk- and nano-forms of metals on plant physiology, morphology, anatomy, the ultrastructure of cellular and subcellular organelles, cytomorphometric modifications, and DNA damage. He is also discovering the possible remediation approaches such using biochar/nano-biochar based sorbents and nanotechnology.

With long experience and experimental work, he comprehensively detailed the state of research in environmental science in regard to “how nanoparticles/heavy metals interact with plants, soil, microbial community, and the larger environment as well as possible remediation technology using nanoparticles/nano-biochar. He has published (total of 283 scientific publications) 163 peer-reviewed full-length articles, 14 books (Springer, Elsevier, CRC-press, Nova-USA), 60 chapters (Scopus indexed), 33 conference articles and achieve **h-index: 18** by Scopus with **1233** citations and **h-index: 21** by Google scholar with **1823** citations, till March 2022. He is an internationally recognized reviewer, reviewed 175 manuscripts and received an outstanding reviewing certificate by Elsevier, Springer & Plants-MDPI.

**Awards:** Received “**Certificate for Appreciation 2017, 2019** and **2021**”, “**Certificate of Honor 2020**”, **Diploma Award 2021** by Southern Federal University, Russia, for outstanding contribution in academic, creative research, and publication activities.

**Educational background**

**Doctor of Science**

University of Chinese Academy of Sciences, Beijing 100049, China

**M.Sc. Agricultural Biotechnology**

Chander Shekhar Azad University of Agriculture & Technology, Kanpur-208002, India.

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Google scholar: https://scholar.google.ru/citations?user=DDXokDYAAAAJ&hl=en

Publons: https://publons.com/researcher/1212994/vishnu-dayal-rajput/

**Media Coverage Links (In russian):**

Постдок ЮФУ получил награду и звание «Выдающийся рецензент»

https://sfedu.ru/press-center/news/67848

### Ученые ЮФУ доказали влияния факторов окружающей среды на передачу вируса SARS-CoV-2

### https://sfedu.ru/press-center/news/67902

Постдок ЮФУ получил награду и звание «Выдающийся рецензент»

https://sfedu.ru/press-center/news/67848

В большой команде ЮФУ трудятся и зарубежные учёные. Раджпут Вишну

https://dontr.ru/novosti/yufu-ispolnilos-105-let-ob-istorii-vuza-i-sovremennykh-razrabotkakh/

**Last 3 years publications (March 2020-2022)**

**Publications**

 **Full-length Articles**

 **2022**

1. 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 <https://doi.org/10.1016/j.envres.2022.112891>
2. Ahmed, B., Rizvi, A., Syed, A., Rajput, V.D., Elgorban, A.M., Al-Rejaie, S.S., Minkina, T., Khan, M.S., Lee, J. 2022. Understanding the phytotoxic impact of Al3+, nano-size, and bulk Al2O3 on growth and physiology of maize (Zea mays L.) in aqueous and soil media. Chemosphere, 134555. https://doi.org/10.1016/j.chemosphere.2022.134555
3. Ghani, M. I., Saleem, S., Rather, S. A., Rehmani, M. S., Alamri, S., **Rajput, V.D.**, Kalaji, H. M., Saleem, N., Sial, T. A. and Liu, M. (**2022**) 'Foliar application of zinc oxide nanoparticles: An effective strategy to mitigate drought stress in cucumber seedling by modulating antioxidant defense system and osmolytes accumulation', ***Chemosphere***, 289, pp. 133202. https://doi.org/10.1016/j.chemosphere.2021.133202
4. Dmitriev, P., Kozlovsky, B., Minkina, T., Rajput, V.D., Dudnikova, T., Barbashev, A., Ignatova, M.A., Kapralova, O.A., Varduni, T.V., Tokhtar, V.K., Tarik, E.P., Akça, I., Sushkova S. 2022. Hyperspectral imaging for small-scale analysis of Hordeum vulgare L. leaves under the benzo[a]pyrene effect. ***Environmental Science and Pollution Research***. <https://doi.org/10.1007/s11356-022-19257-0>
5. Awasthi, G., Nagar, V., Mandzhieva, S., Minkina, T., Sankhla, M. S., Pandit, P. P., Aseri, V., Awasthi, K. K., **Rajput, V. D.**, Bauer, T. and Srivastava, S. (**2022**) 'Sustainable Amelioration of Heavy Metals in Soil Ecosystem: Existing Developments to Emerging Trends'. ***Minerals***, 12(1). https://doi.org/10.3390/min12010085
6. Azarin, K., Usatov, A., Minkina, T., Plotnikov, A., Kasyanova, A., Fedorenko, A., Duplii, N., Vechkanov, E., **Rajput, V.D.**, Mandzhieva, S., and Alamri, S. (**2022**). Effects of ZnO nanoparticles and its bulk form on growth, antioxidant defense system and expression of oxidative stress related genes in *Hordeum vulgare* L. ***Chemosphere*** 287, 132167. <https://doi.org/10.1016/j.chemosphere.2021.132167>
7. Naz, M., Shabbir, R., Verma, K.K., Rastogi, A., Rajput, V.D., Javed, T., Raza, M.A., Asif, K., Iqbal, M.A., Imran, M., Islam, M.S., Hakeem, K.R., Baran, M.F., Sabagh, A.E. 2022. Recent Developments to Mitigate Selenium Deficiency in Agricultural Eco-Systems. ***Phyton-International Journal of Experimental Botany***, 91, 5, 915-927, <https://doi.org/10.32604/phyton.2022.018688>
8. Ranjan, A.; Rajput, V.D.; Kumari, A.; Mandzhieva, S.S.; Sushkova, S.; Prazdnova, E.V.; Zargar, S.M.; Raza, A.; Minkina, T.; Chung, G. Nanobionics in Crop Production: An Emerging Approach to Modulate Plant Functionalities. Plants 2022, 11, 692. <https://doi.org/10.3390/plants11050692>
9. Kumari, A.; Rajput, V.D.; Mandzhieva, S.S.; Rajput, S.; Minkina, T.; Kaur, R.; Sushkova, S.; Kumari, P.; Ranjan, A.; Kalinitchenko, V.P.; Glinushkin, A.P. Microplastic Pollution: An Emerging Threat to Terrestrial Plants and Insights into Its Remediation Strategies. ***Plants*** 2022, 11, 340. <https://doi.org/10.3390/plants11030340>
10. 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. <https://doi.org/10.3390/nano12050769>
11. Yadav, M.R.; Choudhary, M.; Singh, J.; Lal, M.K.; Jha, P.K.; Udawat, P.; Gupta, N.K.; Rajput, V.D.; Garg, N.K.; Maheshwari, C.; Hasan, M.; Gupta, S.; Jatwa, T.K.; Kumar, R.; Yadav, A.K.; Prasad, P.V.V. Impacts, Tolerance, Adaptation, and Mitigation of Heat Stress on Wheat under Changing Climates. ***Int. J. Mol. Sci***. 2022, 23, 2838. <https://doi.org/10.3390/ijms23052838>
12. Mohapatra, K., Singh, S., Patra, A., Jatav, S., Rajput, V., Popova, V., Puzikova, O., Nazarenko, O., Sushkova, S., 2022. Biogeoaccumulation of zinc in hybrid rice (Oryza sativa L.) in an Inceptisol amended with soil zinc application and its bioavailability to human being. Eurasian J. Soil Sci. https://doi.org/10.18393/ejss.1057928
13. Dmitriev, P. A., Kozlovsky, B. L., Kupriushkin, D. P., Lysenko, V. S., **Rajput, V. D.**, Ignatova, M. A., Tarik, E. P., Kapralova, O. A., Tokhtar, V. K., Singh, A. K., Minkina, T., Varduni, T. V., Sharma, M., Taloor, A. K. and Thapliyal, A. (**2022**) 'Identification of species of the genus Acer L. using vegetation indices calculated from the hyperspectral images of leaves'. ***Remote Sensing Applications: Society and Environment***, pp. 100679. https://doi.org/10.1016/j.rsase.2021.100679
14. Elbasiouny, H.; El-Ramady, H.; Elbehiry, F.; Rajput, V.D.; Minkina, T.; Mandzhieva, S. 2022. Plant Nutrition under Climate Change and Soil Carbon Sequestration. Sustainability 14, 914. https://doi.org/10.3390/su14020914
15. Verma, K. K., Song, X.-P., Joshi, A., Tian, D.-D., **Rajput, V. D.**, Singh, M., Arora, J., Minkina, T. and Li, Y.-R. (**2022**) 'Recent Trends in Nano-Fertilizers for Sustainable Agriculture under Climate Change for Global Food Security'. ***Nanomaterials***, 12(1). https://doi.org/10.3390/nano12010173

 **2021**

1. **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). <https://doi.org/10.3390/nano11071722>
2. **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. https://doi.org/10.3390/plants10122727
3. **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*** 0, <https://doi.org/10.1128/AEM.01390-21>
4. **Rajput, V. D.**, Minkina, T., Kumari, A., Harish, Singh, V. K., Verma, K. K., . . . Keswani, C. (**2021**). Coping with the Challenges of Abiotic Stress in Plants: New Dimensions in the Field Application of Nanoparticles. ***Plants***, 10(6). <https://doi.org/10.3390/plants10061221>
5. **Rajput, V.**, Minkina, T., Kumari, A., Sudhir S., S., Ranjan, A., Faizan, M., Barakvov, 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.*** <https://doi.org/10.18393/ejss.990605>
6. **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-3.796 <https://doi.org/10.3390/biology10040267>
7. **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. <https://doi.org/10.3390/biology10080791>
8. Kolesnikov, S., Timoshenko, А., Minnikova, T., Minkina, T., **Rajput, V. D.**, Kazeev, K., Feizi, M., Fedorenko, E., Mandzhieva, S. and Sushkova, S. (**2021**) 'Ecotoxicological assessment of Zn, Cu and Ni based NPs contamination in Arenosols'. ***Sains Tanah - Journal of Soil Science and Agroclimatology*** 18(2), pp. 9. https://doi.org/10.20961/stjssa.v18i2.56697
9. Dilnashin, H., Birla, H., **Rajput, V. D.**, Keswani, C., Singh, S. P., Minkina, T. M. and Mandzhieva, S. S. (**2021**) 'Economic Shock and Agri-Sector: Post-COVID-19 Scenario in India'. ***Circular Economy and Sustainability***, 1(4), pp. 1479-1490. https://doi.org/10.1007/s43615-021-00134-w
10. Chaplygin, V.A., Minkina, T.M., Mandzhieva, S.S., Nazarenko, O.G., Zimulina, I.V., Bauer, T.V., Litvinov, Yu. A. **Rajput. V.** (**2021**). Heavy metals in agricultural crops of Rostov region through the example of soft wheat (Triticum aestivum). ***IOP Conf. Ser.: Earth Environ. Sci.*** 624 012204 <https://doi:10.1088/1755-1315/624/1/012204>
11. Burachevskaya M; Minkina T; Fedorenko A; Fedorenko G; Chernikova N; **Rajput V.D.**; Mandzhieva S.; Bauer T. (**2021**). Accumulation, translocation, and toxicity of arsenic in barley grown in contaminated soil. ***Plant and Soil***. <https://doi.org/10.1007/s11104-021-05067-9>
12. Bezuglova, O.S., Minaeva, E.N., Morozov, I. V., Mandzhieva, S.S., **Rajput, V.D**., Boldyreva, V.E. (**2021**). Origin of the gypsum-bearing horizon of CalcicChernozems in the South of Russia. ***Eco. Env. & Cons.*** 27 (2): 2021; pp. (396-402). Q-4.
13. Burachevskaya, M., Mandzhieva, S., Bauer, T., Minkina, T., **Rajput, V.**, Chaplygin, V., Fedorenko, A., Chernikova, N., Zamulina, I., Kolesnikov, S., Sushkova, S., and Perelomov, L. (**2021**). The Effect of Granular Activated Carbon and Biochar on the Availability of Cu and Zn to Hordeum sativum Distichum in Contaminated Soil. ***Plants*** 10 (5), 841; <https://doi.org/10.3390/plants10050841>.
14. Burachevskaya, M., Minkina, T., Mandzhieva, S., Bauer, T., Nevidomskaya, D., Shuvaeva, V., Sushkova, S., Kizilkaya, R., Gülser, C., **Rajput, V.** (**2021**). Transformation of copper oxide and copper oxide nanoparticles in the soil and their accumulation by Hordeum sativum. ***Environmental Geochemistry and Health***. Q-1, IF-3.47 <https://doi.org/10.1007/s10653-021-00857-7>
15. Faizan, M., **Rajput, V. D.**, Al-Khuraif, A. A., Arshad, M., Minkina, T., Sushkova, S., & Yu, F. (**2021**). Effect of Foliar Fertigation of Chitosan Nanoparticles on Cadmium Accumulation and Toxicity in *Solanum lycopersicum*. ***Biology***, 10(7). <https://doi.org/10.3390/biology10070666>
16. Kolesnikov, S., Tsepina, N., Minnikova, T., Kazeev, K., Mandzhieva, S., Sushkova, S., Minkina, T., Mazarji, M., Singh, R. K., and **Rajput, V.D.** (**2021**). Influence of Silver Nanoparticles on the Biological Indicators of Haplic Chernozem. ***Plants*** 10. <https://doi.org/10.3390/plants10051022>
17. Srivastav, A.; Ganjewala, D.; Singhal, R.K.; **Rajput, V.D.**; Minkina, T.; Voloshina, M.; Srivastava, S.; Shrivastava, M. (**2021**). Effect of ZnO Nanoparticles on Growth and Biochemical Responses of Wheat and Maize. ***Plants***, 10, 2556. https://doi.org/10.3390/plants10122556
18. Keswani, C., Dilnashin, H., Birla, H., Roy, P., Tyagi, R. K., Singh, D., **Rajput, V. D.**, Minkina, T., Singh, S. P. (**2021**). Global footprints of organochlorine pesticides: a pan-global survey. ***Environmental Geochemistry and Health***. <https://doi.org/10.1007/s10653-021-00946-7>
19. Kumari, A., Kumari, P., **Rajput, V.D.**, Sushkova, S. N., Minkina, T. (**2021**). Metal(loid) nanosorbents in restoration of polluted soils: geochemical, ecotoxicological, and remediation perspectives. ***Environmental Geochemistry and Health***. <https://doi.org/10.1007/s10653-021-00996-x>
20. Kumari, S., Phogat, D., Sehrawat, K. D., Choudhary, R., **Rajput, V.D.**, Ahlawat, J., . . . Minkina T., Sehrawat, A. R. (**2021**). The Effect of Ascophyllum nodosum Extract on the Nutraceutical Antioxidant Potential of Vigna radiata Sprout under Salt Stress. ***Plants***, 10(6). <https://doi.org/10.3390/plants10061216>
21. Shende, S., **Rajput, V.**, Gade, A., Minkina, T., Sushkova, S. N., Mandzhieva, S. S., Boldyreva, V. E. (**2021**). Metal-based Green Synthesized Nanoparticles: Boon for Sustainable Agriculture and Food Security. ***IEEE Transactions on NanoBioscience***, 1-1. <https://doi.org/10.1109/TNB.2021.3089773>
22. Ranjan, A., **Rajput, V.D.**, Minkina, T., Bauer, T., Chauhan, A., Jindal, T. (**2021**). Nanoparticles induced stress and toxicity in plants. ***Environmental Nanotechnology, Monitoring & Management*** 15, 100457. <https://doi.org/10.1016/j.enmm.2021.100457>
23. Lysenko, V., Kosolapov, A., Usova, E., Tatosyan, M., Varduny, T., Dmitriev, P., **Rajput V.**, Krasnov, V., Kunitsina, A. (**2021**). Chlorophyll fluorescence kinetics and oxygen evolution in *Chlorella vulgaris* cells: blue vs. red light. ***Journal of Plant Physiology***, 153392. <https://doi.org/10.1016/j.jplph.2021.153392>
24. Jatav, H., Singh, S., Jatav, S., **Rajput, V.D.**, Sushkova, S. (**2021**). Feasibility of sewage sludge application in rice-wheat cropping system. ***Eurasian Journal of Soil Science***, <https://doi.org/10.18393/ejss.880677>
25. Shekhawat, G. S., Mahawar, L., Rajput, P., **Rajput, V.D.**, Minkina, T., & Singh, R. K. (**2021**). Role of Engineered Carbon Nanoparticles (CNPs) in Promoting Growth and Metabolism of *Vigna radiata* (L.) Wilczek: Insights into the Biochemical and Physiological Responses. **Plants**, 10(7). <https://doi.org/10.3390/plants10071317>
26. Ujjainiya, P., Choudhary, M., Jatav, H. S., Tokala, V. Y., **Rajput, V.D.**, and Minkina, T. (**2021**). Impact of Weed Management Practices on Soil Microflora and Dehydrogenase Enzyme Activity Under Varying Levels of Nitrogen in Winter Season Onion (*Allium cepa* L.). ***Bulletin of Environmental Contamination and Toxicology***. <https://doi.org/10.1007/s00128-021-03265-w>
27. Verma Y, Singh, SK, Jatav, HS, **Rajput V.D.**, Minkina T. (**2021**). Interaction of zinc oxide nanoparticles with soil: Insights into the chemical and biological properties. ***Environmental Geochemistry and Health****.* <https://doi.org/10.1007/s10653-021-00929-8>
28. Sushkova, S., Minkina, T., Dudnikova, T., Barbashev, A., Popov, Y., **Rajput, V.**, Bauer, T., Nazarenko, O., Kızılkaya, R., (**2021**). Reduced plant uptake of PAHs from soil amended with sunflower husk biochar. ***Eurasian J. Soil Sci.*** <http://ejss.fess.org/10.18393/ejss.935397>
29. Singh A, **Rajput V**, Rawat S, Singh AK, Bind A, Singh AK, Chernikova N, Voloshina M, Lobzenko I. (**2021**). Monitoring Soil Salinity and Recent Advances in Mechanism of Salinity Tolerance in Plants. ***Biogeosystem Technique*** 66-87, <https://doi.org/10.13187/bgt.2020.2.66>
30. Ghazaryan, K. A., Movsesyan, H. S., Minkina, T. M., Nevidomskaya, D. G., and **Rajput, V.D.** (**2021**). Phytoremediation of copper-contaminated soil by Artemisia absinthium: comparative effect of chelating agents. *Environmental Geochemistry and Health*. https://doi.org/10.1007/s10653-021-01151-2
31. Srivastava, S., Shukla, A., **Rajput, V.D.**, Kumar, K., Minkina, T., Mandzhieva, S., Shmaraeva, A., and Suprasanna, P. (**2021**). Arsenic Remediation through Sustainable Phytoremediation Approaches. ***Minerals*** 11(9), 936; <https://doi.org/10.3390/min11090936>
32. Karimi, H., Mahdavi, S., Asgari Lajayer, B., Moghiseh, E., **Rajput, V.D.**, Minkina, T., and Astatkie, T. (**2021**). Insights on the bioremediation technologies for pesticide-contaminated soils. ***Environmental Geochemistry and Health***. <https://doi.org/10.1007/s10653-021-01081-z>
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35. Ahmed, B., Shahid, M., Syed, A., **Rajput, V.D.**, Elgorban, A. M., Minkina, T., Bahkali, A. H., and Lee, J. (**2021**). Drought Tolerant Enterobacter sp./Leclercia adecarboxylata Secretes Indole-3-acetic Acid and Other Biomolecules and Enhances the Biological Attributes of *Vigna radiata* (L.) R. Wilczek in Water Deficit Conditions. ***Biology*** 10, 1149. https://doi.org/10.3390/biology10111149
36. Kolesnikov, S., Minnikova, T., Minkina, T., **Rajput, V.D.**, Tsepina, N., Kazeev, K., Zhadobin, A., Nevedomaya, E., Ter-Misakyants, T., Akimenko, Y., Mandzhieva, S., Sushkova, S., Ranjan, A., Asylbaev, I., Popova, V., and Tymoshenko, A. (**2021**). Toxic Effects of Thallium on Biological Indicators of Haplic Chernozem Health: A Case Study. ***Environments*** 8. https://doi.org/10.3390/environments8110119
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38. Keswani, C., Singh, S. P., García-Estrada, C., Mezaache-Aichour, S., Glare, T. R., Borriss, R., **Rajput, V.D.**, Minkina, T. M., Ortiz, A., and Sansinenea, E. (**2021**). Biosynthesis and beneficial effects of microbial gibberellins on crops for sustainable agriculture. ***Journal of Applied Microbiology*** 1-19. https://doi.org/10.1111/jam.15348
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