Dr. Zain Mushtaq

Father name	Mushtaq Ahmad
Date of birth	03-07-1992
CNIC no.	32203-2264471-9
Domicile	Punjab
Marital status	Single
Nationality	Pakistani
Postal address	Munawar Hussain, 199 B1, Johar Town, Lahore, Pakistan
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Academic Qualification

Degree title	Subject	University/Board	Passing year	Marks/cgpa	Division	Percent Age
Ph.D. Agriculture	Soil Science	University of Agriculture, Faisalabad Pakistan	2021	-	-	-
M. Sc. (Hons) Agriculture	Soil Science	University of Agriculture, Faisalabad Pakistan	2017	3.87/4.00	1ST	80.85%
B. Sc. (Hons) Agriculture	Soil Science	University of Agriculture, Faisalabad Pakistan	2015	3.64/4.00	1ST	78.21%
F. Sc.	Pre-medical	B.I.S.E., D.G. KHAN, Pakistan	2010	905/1100	1ST	82.27%
Matriculation	Science	B.I.S.E., D.G. KHAN, Pakistan	2008	768/850	1ST	90.35%

Experience

1) **Assistant Professor** at Department of Soil Science, University of the Punjab from 11 July 2023 to till date.
2) **Visiting Assistant Professor** at Department of Soil Science, University of the Punjab from 01 September 2021 to July 2023.
3) One-year experience as **Research Fellow** in HEC Funded research project entitled "Synergistic use of plants and microbes to improve health of lead contaminated soils" run by Dr. Hafiz Naeem Asghar in the Institute of Soil and Environmental Sciences, University of agriculture, Faisalabad.
4) Six months **Teaching Assistantship** at Institute of Soil and Environmental Sciences, University of Agriculture, Faisalabad under the supervision of Dr. Hafiz Naeem Asghar.
5) One-year experience as **President** of Soil and Environmental Sciences Students Society Regd. at Institute of soil and environmental sciences, University of agriculture, Faisalabad.
6) Four months **Internship** at Soil Chemistry Section, Ayyub Agricultural Research Institute, Faisalabad, Pakistan.

Research Completed

1. **B.Sc. (Hons)**
   "Analysis of soil and plant samples from different areas of Pakistan"
2. **M. Sc. (Hons)**
   "Cumulative effect of PGPR and press mud on growth and yield of okra in chromium contaminated soil."
3. **Ph.D.**
   "Interaction of microbial consortium and auxin to enhance the Iron uptake and yield of Potato."
4. **HEC Project**
   "Synergistic use of plant and microbes to improve plant growth under lead contaminated soil"

Distinction

1. Ph.D. Indigenous scholarship under HEC, Ph.D. Fellowship Program for 5000 scholars, Phase II Batch-v.
2. First division throughout the carrier
3. First Position in school in matriculation

Publications

(a). Research papers

1. F. Ahmad, **Z. Mushtaq**, W. Anwar, A. Nazir, A. Akhtar, M. Liaquat, M.T. Jaffar, A. Chaudhry, I. Saeed, & H.A.A. Khan. (2023). Impact of siderophore producing rhizobacteria on growth and iron content in potato. *Pakistan Journal of Science*, *75*(02), 338–344. https://doi.org/10.57041/pjs.v75i02.876.

2. **Mushtaq, Z**., Liaquat, M., Nazir, A., Liaqat, R., Iftikhar, H., Anwar, W. and Itrat, N., 2022. Potential of plant growth promoting rhizobacteria to mitigate chromium contamination. *Environmental Technology & Innovation*, p.102826. https://doi.org/10.1016/j.eti.2022.102826. **(IF: 7.548).**

3. **Mushtaq, Z.,** Nazir, A., Asghar, H.N. 2022. Interactive Effect of Siderophore-Producing Bacteria and L-Tryptophan on Physiology, Tuber Characteristics, Yield, and Iron Concentration of Potato. *Potato Res.* https://doi.org/10.1007/s11540-022-09565-w. **(IF: 2.70).**

4. **Mushtaq, Z**., Anwar, W., Zohaib, K.A., Akhter, A. and Ahmad, F., 2022. Interaction Between Mycorrhizae and Organic Amendments to Improve Growth and Phosphorus Uptake in Brinjal. Plant Protection, 6(3), pp.233-238. https://doi.org/10.33804/pp.006.03.4277

5. **Mushtaq, Z**., H.N. Asghar, Z.A. Zahir and M. Maqsood. 2021. The Interactive Approach of Rhizobacteria and l-tryptophan on Growth, Physiology, Tuber Characteristics, and Iron Concentration of Potato (Solanum tuberosum L.). Journal of Plant Growth Regulation. https://doi.org/10.1007/s00344-021-10395-2. **(IF: 4.64).**

6. **Mushtaq, Z**., H.N. Asghar and Z.A. Zahir, 2021. Comparative growth analysis of okra (Abelmoschus esculentus) in the presence of PGPR and press mud in chromium contaminated soil, Chemosphere. https://doi.org/10.1016/j.chemosphere.2020.127865 **(IF: 8.943).**

7. **Mushtaq, Z**., H.N. Asghar, Z.A. Zahir and M. Maqsood. 2021. Characterization of rhizobacteria for

growth promoting traits and their potential to increase potato yield. Pak. J. Agri. Sci., Vol. 58(1): 61-67. DOI:10.21162/PAKJAS/21.1024. **(IF: 0.856).**

8. **Mushtaq, Z**., 2020. Present role, mechanism of action and future prospects along bottlenecks in commercialization. International Journal of Environmental Quality, 41: 9-15. https://doi.org/10.6092/issn.2281-4485/11103.
9. **Mushtaq, Z** and A. Nazir. 2021. Biofortification: way forward toward micronutrient deficiency. EQA - International Journal of Environmental Quality ISSN 2281-4485. 42 (2021): 36-41. https://doi.org/10.6092/issn.2281-4485/11598.
10. Faiza, S., Hafiz, N.A., **Zain, M**., Amina, H., Naqshe, Z., Rizwan, A. and Muhammad, A.A., 2020. Role of endomycorrhizae, rhizobacteria and compost to improve phosphorus availability in onion. Asian Journal of Agriculture and Biology, 8(2): 194-200. 10.35495/ajab.2019.12.553.
11. Itrat, N., Nazir, A., Ali, M., Ahmad, U. and **Mushtaq, Z**. 2021. Acquisition of Hordeum vulgare (Beverage) prospective against adiposity among female trial. Pure and Applied Biology. 11(3): 755-761.
12. Nazir, A., Itrat, N., Saleem, M.A., Nisa, M.U., Shahid, A., **Mushtaq, Z.** and Rafey, H.A., 2021. Functional Foods as the Prospective Therapeutic Option in Chronic Diseases. A Systemic Review. *Journal of Plant and Environment*, *3*(2): 159-169.
13. Shafiq. M., Zaka., **Mushtaq. Z**., Ahmad. F., Anwar. W and A. Akhtar. Prevalence of Aspergillus species in Covid-19 patients: A survey study". Biological and Clinical Sciences Research Journal. 2022

(b). Book Chapters

1. Nazir, A., Itrat, N., Shahid, A., **Mushtaq, Z**., Abdulrahman, S.A., Egbuna, C., Adetuyi, B.O., Khan, J., Uche, C.Z. and Toloyai, P.E.Y., 2022. Orange Peel as Source of Nutraceuticals. In Food and Agricultural Byproducts as Important Source of Valuable Nutraceuticals (pp. 97-106). Springer, Cham.
2. Nazir., A., Itrat. I., **Mushtaq, Z** and Habib. A. 2022. ROSEMARY (*SALVIA ROSMARINUS* L.) SCHEID: AROMATIC PLANT. In Food and Agricultural; Nutraceuticals (pp. 94-124). Cham.

(C). Abstracts

1. **Mushtaq, Z**., H.N. Asghar and Z.A. Zahir. 2020. PGPR: present role, mechanism of action and future prospects along bottlenecks in commercialization. Abst. In: 18 th International Congress of Soil Science, February 11-13, 2020. Karachi, Pakistan.
2. Shahzad, F., H.N. Asghar, M. Naveed, **Z. Mushtaq**, A. Haddayat and M.A. Ali. 2020. Interaction of endomycorrhizae, rhizobacteria and compost on phosphorus availability in onion. Abst. In: 18 th International Congress of Soil Science, February 11-13, 2020. Karachi, Pakistan.
3. Shabaan, M., H.N. Asghar, Z.A. Zahir, **Z. Mushtaq**, M.J. Sarwar, M. Nadeem and M.A. Ayub. 2018. Bioaugmentation with Metal Resistant Rhizobacteria to Regulate Pea Growth in Lead (Pb) Contaminated Soil. Abst. In: 17th International Congress of Soil Science, 13-15 March, 2018. Faisalabad, Pakistan.

4. Bukhari. T.A., **Z. Mushtaq**, H.N. Asghar and Z.A. Zahir. Cumulative Effect of PGPRand Press Mud on Growth and Yield of Aloe Vera in Nickel Contaminated Soil. Abst. In: 17th International Congress of Soil Science, 13-15 March, 2018. Faisalabad, Pakistan.

5. Ejaz. M, S. Bashir, H. N. Asghar, Z. Aslam, N. K. Niazi, Z. A. Saqib, **Z. Mushtaq**, M. Shabaan and M. A. Ahmad. 2017. Use of bacterial isolates to improve soil health and plant growth in crude oil contaminated soil. Int. conference on Advances in Agriculture Resource Management (April 5-7). Institute of Soil and Environmental Sciences and Department of Agronomy, University of Agriculture, Faisalabad, Pakistan.

(C). Scientific paper presentation

1. **Mushtaq. Z**., H. N. Asghar and Z. A. Zahir. 2017. Cumulative effect of PGPR and press mud on growth and yield of okra in chromium contaminated soil. Int. conference on Advances in Agriculture Resource Management (April 5-7). Institute of Soil and Environmental Sciences and Department of Agronomy, University of Agriculture, Faisalabad, Pakistan.

Courses Taught

1. Soil Microbiology (SS-309)
2. Physical Properties of Soil (SS-301)
3. Trace Elements in Agriculture (SS-411)
4. Introductory Biochemistry

Analytical Techniques

Have experience to work on autoclave, Biosafety cabinet, Micro Centrifuge Machine, Desiccator, Micropipettes, Incubator, Incubating Shaker, Digital Balance, Laminar Flow Cabinet, Microscope, Flame Photometer, Hot plate, OD Meter, SPAD Chlorophyll Meter, Digital Conductivity Meter, Portable photosynthesis system CIRAS- 3, Digital Colony Meter, pH Meter, Micro-plate Reader, Kjeldhal's Apparatus, Spectrophotometer, Freeze dryer, etc.

Microbiological Techniques

Isolation, Purification, Preservation and Inoculation of microbial strains, Gram Staining, Sterilization, Oxidase activity, Catalase activity, Chitinase activity, Exopolysaccharide production assay, Siderophore production assay, Phosphate solubilization assay, Indole 3-acetic acid assay, etc.

Languages

I have a good capability in reading, writing, listening, and speaking the international language, English. Urdu is my national language and Punjabi is my mother tongue.

Computer Skills

I am proficient in the use of Microsoft Office suite, in effectively presenting research findings. I can use online resources in gathering appropriate information for research and investigation.

Membership of Societies

1) Member of Soil Science Society of Pakistan (Regd.) (Membership No. Std-1079).
2) Member of "Soil and Environmental Sciences students society (Regd.)".
3) Member of The Agrarian Society (Regd.)

Extracurricular activities

- **Nomination** from University of Agriculture, Faisalabad for participating in Dawn Pakistan and Agri Expo-2019
- **Oral paper presenter** in international conference on Advances in Agriculture Resource Management" held at University of Agriculture, Faisalabad.
- Certificate of Distinction in Cricket on annual sports program (2015), University of Agriculture, Faisalabad.
- Certificate of participation on International Workshop on "Current status of Fertilizer Use in Pakistan", (2015) University of agriculture, Faisalabad.
- Certificate of appreciation at spring festival 2015.
- Certificate of appreciation for contributing in DICE Agriculture and Food Science, 2016.
- Certification of appreciation for contributing in Agri./Textile Exhibition during Rabi Festival 2016.
- Certification of appreciation for contributing in Agri. Exhibition during spring festival 2016.
- Certification of appreciation for participation in annual function of ISES (2016).
- Certification of appreciation for contributing as Vice President of Soil and Environmental Sciences Students Society, Regd (2017-2018).
- Certificate of appreciation for contributing in Agricultural Exhibition 2017.
- Certificate of appreciation for contributing in All Pakistan DICE-AFS Agriculture and Food Science (Innovation event, 2017).
- Certification of appreciation for participating in International Seminar on POTASSIUM FOR SUSTAINABLE CROP PRODUCTION IN PAKISTAN, 2017.
- Certification of participation in International Workshop on Potential & Limitations for Mungbean Production, 2017.
- Certification of participation in International Conference on Advances in Agricultural Resource Management, 2017.
- Certification of participation in Capacity Building Workshop "Biosafety Measures in Agriculture, 2017.
- Certification of appreciation for successful holding the 17th International congress of Soil Science. 2018.
- Certification of appreciation for contributing in 1st Entrepreneurs Festival Faisalabad, 2018.

References: will be furnished if required.