

Muhammad Farooq Qayyum
Associate Professor of Soil Science



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SUMMARY:

Qayyum, Muhammad Farooq

[Bahauddin Zakariya University, Multan, Pakistan](#) [55326034500](#) <https://orcid.org/0000-0002-5976-9880> [View more](#)

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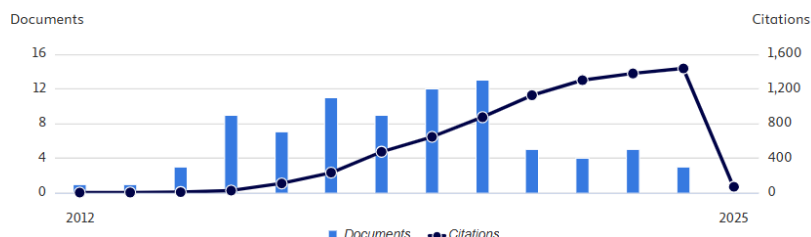


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Dr. Muhammad Farooq Qayyum obtained his Ph.D. from Justus Liebig University Giessen, Germany, in 2012, with research titled “Possibilities to Stabilize Organic Matter in Soil Using Various Biochars.” His doctoral research focused on carbon mineralization from different soils amended with a variety of organic amendments. Upon completing his doctorate, Dr. Qayyum joined the Department of Soil Science at Bahauddin Zakariya University (BZU) Multan, Pakistan, in 2012 as an Assistant Professor on the tenure track system. In 2019, he was promoted to Associate Professor (tenured). Over the years, Dr. Qayyum has dedicated himself to various aspects of carbon mineralization, solid waste management, soil carbon sequestration, remediation of metal-contaminated soils, plant growth enhancement, and the applications of nanomaterials in agriculture. His recent work involves mineralogical studies of contaminated soils, particularly those affected by sewage irrigation in peri-urban areas, which can alter the mineralogical behavior and properties of soils. Another significant aspect of his research focuses on soil remediation techniques, including the use of biochar (prepared from various organic wastes) and compost to mitigate the effects of heavy metal contamination and improve soil health. Throughout his career,

Dr. Qayyum has supervised 27 M.Phil. and 3 Ph.D. graduates, who are now contributing to various departments. He has secured research funding from multiple agencies, including the International Foundation for Science, Sweden, and the Higher Education Commission, Pakistan. Dr. Qayyum has published more than 70 peer-reviewed research articles and 8 book chapters, with his work being cited over 7,000 times. He has received the Research Productivity Award from the Pakistan Council for Science and Technology and a Best Research Paper Award from the HEC Pakistan.

EDUCATION:

🚦 2012 Ph.D. (Dr. Agriculture)

Thesis title: Possibilities to stabilize organic matter in soils using various biochars

Institute: Institute of Plant Nutrition, Justus Liebig University Giessen, Germany

PROFESSIONAL APPOINTMENTS:

🚦 2019-to date Associate Professor (Tenured)

🚦 2013-2019 Assistant Professor (Tenure Track System)

🚦 2012-2019 Assistant Professor (Contract)

Institute:

Department of Soil Science, Faculty of Agricultural Sciences & Technology, Bahauddin Zakariya University Multan, Pakistan

Key Responsibilities:

🚦 Teaching (undergraduate and postgraduate courses of Soil Science)

🚦 Research (Supervision of postgraduate students)

INSTITUTIONAL RESPONSIBILITIES:

🚦 2024- to date Secretary Examination Committee, Faculty of Agricultural Sciences & Technology

🚦 2024- to date Secretary Visiting Faculty Appointment Committee, Faculty of Agricultural Sciences & Technology

🚦 2024- to date Secretary Timetable Committee, Faculty of Agricultural Sciences & Technology

🚦 2023- to date Secretary Major Allotment Committee, Faculty of Agricultural Sciences & Technology

🚦 2019– to date Member Departmental Board of Studies

🚦 2015 – to date Secretary, Departmental PhD Synopsis Evaluation Committee

🚦 2013 – to date Member Departmental Purchase Committee

🚦 2013 – to date Secretary Departmental Timetable Committee

GRANTS AND FELLOWSHIPS:

Date of award	Title	Sponsoring Agency /Role	Amount
June 2024	Studying barriers and devising strategies for the adoption of sustainable residue management technologies for climate resilience in Pakistan	Leading House South Asia and Iran Role: 1. Dr. Stephanie Moser (Principal Investigator Switzerland) 2. Dr. Ghulam Haider, (Principal Investigator Pakistan) 3. Dr. Muhammad Farooq Qayyum, (Co-Principal Investigator Pakistan)	35,000 CHF
02-06-2018	Fate of Biochar-sorbed metal elements; focus on plant availability in growth medium	Higher Education Commission Pakistan Role: Principal Investigator	Rs. 8.7 million
02-11-2015	Thermochemical Conversion of Sewage-sludge into phosphorus enriched biochar cum Fertilizer	Higher Education Commission Pakistan Role: Principal Investigator	Rs. 2.58 million
15-08-2014	Immobilization of cadmium (Cd) in sewage irrigated soil by using biochar of agricultural wastes	International Foundation for Science, Sweden Role: Principal Investigator	6900 USD
19-12-2012	Biochar production, physicochemical characterization and evaluation as an organic amendment in Pakistani soils	Higher Education Commission Pakistan Role: Principal Investigator	Rs. 0.5 million

AWARDS AND HONOURS:

- ✚ Research Productivity award for the year 2015 (awarded by Pakistan Scientific and Research Council).
- ✚ Best research paper for the year 2017, awarded by the Higher Education Commission Pakistan.
- ✚ Performance-based annual increments for the year 2014-2021.

KEY PUBLICATIONS:

- ✚ **Qayyum, M. F.,** Khan, D., Alghanem, S. M. S., Sakit Alhaithloul, H. A., Alsudays, I. M., Rizwan, M., & Hong Yong, J. W. (2024). Agricultural waste-based modified biochars differentially affected the soil properties, growth, and nutrient accumulation by maize (*Zea mays* L.) plants. *BMC Plant Biology*, 24(1), 498. <https://doi.org/10.1186/s12870-024-05202-5>
- ✚ Muhammed, M., **Qayyum, M. F.,** Alotaibi, F., & Alharbi, S. F. (2023). Organic nitrogen fertilization minimizes requirement of inorganic fertilizers and improves growth and yield attributes of superior grapevines. *Journal of Plant Nutrition*, 46(17), 4171–4187. <https://doi.org/10.1080/01904167.2023.2222148>
- ✚ Chen, F., Li, Y., Irshad, M. A., Hussain, A., Nawaz, R., **Qayyum, M. F.,** Ma, J., Zia-ur-Rehman, M., Rizwan, M., & Ali, S. (2023). Effect of titanium dioxide nanoparticles and co-composted biochar on growth and Cd uptake by wheat plants: A field study. *Environmental Research*, 231(P1), 116057. <https://doi.org/10.1016/j.envres.2023.116057>
- ✚ Amin, M. A., Haider, G., Rizwan, M., Schofield, H. K., **Qayyum, M. F.,** Zia-ur-Rehman, M., & Ali, S. (2023). Different feedstocks of biochar affected the bioavailability and uptake of heavy metals by wheat (*Triticum aestivum* L.) plants grown in metal contaminated soil. *Environmental Research*, 217(September 2022), 114845. <https://doi.org/10.1016/j.envres.2022.114845>
- ✚ Chen, F., Bashir, A., Zia ur Rehman, M., Adrees, M., **Qayyum, M. F.,** Ma, J., Rizwan, M., & Ali, S. (2022). Combined effects of green manure and zinc oxide nanoparticles on cadmium uptake by wheat (*Triticum aestivum* L.). *Chemosphere*, 298(1), 134348. <https://doi.org/10.1016/j.chemosphere.2022.134348>
- ✚ Bashir, A., ur Rehman, M. Z., Hussaini, K. M., Adrees, M., **Qayyum, M. F.,** Sayal, A. U., Rizwan, M., Ali, S., Alsahli, A. A., & Alyemeni, M. N. (2021). Combined use of zinc nanoparticles and co-composted biochar enhanced wheat growth and decreased Cd concentration in grains under Cd and drought stress: A field study. *Environmental Technology & Innovation*, 23, 101518. <https://doi.org/10.1016/j.eti.2021.101518>
- ✚ Rehman, R. A., **Qayyum, M. F.,** Haider, G., Schofield, K., Abid, M., Rizwan, M., & Ali, S. (2021). The Sewage Sludge Biochar and Its Composts Influence the Phosphate Sorption in an Alkaline – Calcareous Soil. *Sustainability*, 13, 1779. <https://doi.org/doi.org/10.3390/su13041779>
- ✚ **Qayyum, M. F.,** Haider, G., Iqbal, M., Hameed, S., Ahmad, N., Rehman, M. Z. ur, Majeed, A., Rizwan, M., & Ali, S. (2021). Effect of alkaline and chemically engineered biochar on soil properties and phosphorus bioavailability in maize. *Chemosphere*, 266, 128980. <https://doi.org/10.1016/j.chemosphere.2020.128980>
- ✚ **Qayyum, M. F.,** Haider, G., Raza, M. A., Mohamed, A. K. S. H., Rizwan, M., El-Sheikh, M. A., Alyemeni, M. N., & Ali, S. (2020). Straw-based biochar mediated potassium availability and increased growth and yield of cotton (*Gossypium hirsutum* L.). *Journal of Saudi Chemical Society*, 24(12), 963–973. <https://doi.org/10.1016/j.jscs.2020.10.004>
- ✚ Ali, M. A., Ajaz, M. M., Rizwan, M., **Qayyum, M. F.,** Arshad, M., Hussain, S., Ahmad, N., & Qureshi, M. A. (2020). Effect of biochar and phosphate solubilizing bacteria on growth and phosphorus uptake by maize in an Aridisol. *Arabian Journal of Geosciences*, 13(9), 333. <https://doi.org/10.1007/s12517-020-05326-6>

- ✚ Bashir, A., Rizwan, M., Zia ur Rehman, M., Zubair, M., Riaz, M., **Qayyum, M. F.**, Alharby, H. F., Bamagoos, A. A., & Ali, S. (2020). Application of co-composted farm manure and biochar increased the wheat growth and decreased cadmium accumulation in plants under different water regimes. *Chemosphere*, 246, 125809. <https://doi.org/10.1016/j.chemosphere.2019.125809>
- ✚ Rehman, R. A., & **Qayyum, M. F.** (2020). Co-composts of sewage sludge, farm manure and rock phosphate can substitute phosphorus fertilizers in rice-wheat cropping system. *Journal of Environmental Management*, 259, 109700. <https://doi.org/10.1016/j.jenvman.2019.109700>
- ✚ **Qayyum, M. F.**, Abdullah, M. A., Rizwan, M., Haider, G., Ali, M. A., Zafar-ul-Hye, M., & Abid, M. (2019). Different nitrogen and biochar sources' application in an alkaline calcareous soil improved the maize yield and soil nitrogen retention. *Arabian Journal of Geosciences*, 12(21), 664. <https://doi.org/10.1007/s12517-019-4846-6>
- ✚ Azhar, M., Zia ur Rehman, M., Ali, S., **Qayyum, M. F.**, Naeem, A., Ayub, M. A., Anwar ul Haq, M., Iqbal, A., & Rizwan, M. (2019). Comparative effectiveness of different biochars and conventional organic materials on growth, photosynthesis and cadmium accumulation in cereals. *Chemosphere*, 227, 72–81. <https://doi.org/10.1016/j.chemosphere.2019.04.041>
- ✚ Rizwan, M., Noureen, S., Ali, S., Anwar, S., Rehman, M. Z. ur, **Qayyum, M. F.**, & Hussain, A. (2019). Influence of biochar amendment and foliar application of iron oxide nanoparticles on growth, photosynthesis, and cadmium accumulation in rice biomass. *Journal of Soils and Sediments*, 19(11), 3749–3759. <https://doi.org/10.1007/s11368-019-02327-1>
- ✚ Rizwan, M., Ali, S., Zia ur Rehman, M., Adrees, M., Arshad, M., **Qayyum, M. F.**, Ali, L., Hussain, A., Chatha, S. A. S., & Imran, M. (2019). Alleviation of cadmium accumulation in maize (*Zea mays* L.) by foliar spray of zinc oxide nanoparticles and biochar to contaminated soil. *Environmental Pollution*, 248, 358–367. <https://doi.org/10.1016/j.envpol.2019.02.031>
- ✚ Hafeez, F., Rizwan, M., Saqib, M., Yasmeen, T., Ali, S., Abbas, T., Zia-Ur-Rehman, M., & **Qayyum, M. F.** (2019). Residual effect of biochar on growth, antioxidant defence and cadmium (Cd) accumulation in rice in a Cd contaminated saline soil. *Pakistan Journal of Agricultural Sciences*, 56(1), 197–204. <https://doi.org/10.21162/PAKJAS/19.7546>
- ✚ Rehman, R. A., Rizwan, M., **Qayyum, M. F.**, Ali, S., Zia-ur-Rehman, M., Zafar-ul-Hye, M., Hafeez, F., & Iqbal, M. F. (2018). Efficiency of various sewage sludges and their biochars in improving selected soil properties and growth of wheat (*Triticum aestivum*). *Journal of Environmental Management*, 223, 607–613. <https://doi.org/10.1016/j.jenvman.2018.06.081>
- ✚ Abbas, T., Rizwan, M., Ali, S., Adrees, M., Mahmood, A., Zia-ur-Rehman, M., Ibrahim, M., Arshad, M., & **Qayyum, M. F.** (2018). Biochar application increased the growth and yield and reduced cadmium in drought stressed wheat grown in an aged contaminated soil. *Ecotoxicology and Environmental Safety*, 148, 825–833. <https://doi.org/10.1016/j.ecoenv.2017.11.063>
- ✚ Abbas, T., Rizwan, M., Ali, S., Adrees, M., Zia-ur-Rehman, M., **Qayyum, M. F.**, Ok, Y. S., & Murtaza, G. (2018). Effect of biochar on alleviation of cadmium toxicity in wheat (*Triticum aestivum* L.) grown on Cd-contaminated saline soil. *Environmental Science and Pollution Research*, 25(26), 25668–25680. <https://doi.org/10.1007/s11356-017-8987-4>

- ✚ Rizwan, M., Ali, S., Abbas, T., Adrees, M., Zia-ur-Rehman, M., Ibrahim, M., Abbas, F., **Qayyum, M. F.**, & Nawaz, R. (2018). Residual effects of biochar on growth, photosynthesis and cadmium uptake in rice (*Oryza sativa* L.) under Cd stress with different water conditions. *Journal of Environmental Management*, 206, 676–683. <https://doi.org/10.1016/j.jenvman.2017.10.035>
- ✚ Ali, S., Rizwan, M., **Qayyum, M. F.**, Ok, Y. S., Ibrahim, M., Riaz, M., Arif, M. S., Hafeez, F., Al-Wabel, M. I., & Shahzad, A. N. (2017). Biochar soil amendment on alleviation of drought and salt stress in plants: a critical review. *Environmental Science and Pollution Research*, 24(14), 12700–12712. <https://doi.org/10.1007/s11356-017-8904-x>
- ✚ Rehman, M. Z. ur, Khalid, H., Akmal, F., Ali, S., Rizwan, M., **Qayyum, M. F.**, Iqbal, M., Khalid, M. U., & Azhar, M. (2017). Effect of limestone, lignite and biochar applied alone and combined on cadmium uptake in wheat and rice under rotation in an effluent irrigated field. *Environmental Pollution*, 227, 560–568. <https://doi.org/10.1016/j.envpol.2017.05.003>
- ✚ Rizwan, M., Ali, S., **Qayyum, M. F.**, Ok, Y. S., Adrees, M., Ibrahim, M., Zia-ur-Rehman, M., Farid, M., & Abbas, F. (2017). Effect of metal and metal oxide nanoparticles on growth and physiology of globally important food crops: A critical review. *Journal of Hazardous Materials*, 322, 2–16. <https://doi.org/10.1016/j.jhazmat.2016.05.061>
- ✚ Abid, M., Danish, S., Zafar-ul-Hye, M., Shaaban, M., Iqbal, M. M., Rehim, A., **Qayyum, M. F.**, & Naqqash, M. N. (2017). Biochar increased photosynthetic and accessory pigments in tomato (*Solanum lycopersicum* L.) plants by reducing cadmium concentration under various irrigation waters. *Environmental Science and Pollution Research*, 24(27), 22111–22118. <https://doi.org/10.1007/s11356-017-9866-8>
- ✚ **Qayyum, M. F.**, Liaquat, F., Rehman, R. A., Gul, M., ul Hye, M. Z., Rizwan, M., & Rehman, M. Z. ur. (2017). Effects of co-composting of farm manure and biochar on plant growth and carbon mineralization in an alkaline soil. *Environmental Science and Pollution Research*, 24(33), 26060–26068. <https://doi.org/10.1007/s11356-017-0227-4>
- ✚ Younis, U., Malik, S. A., Rizwan, M., **Qayyum, M. F.**, Ok, Y. S., Shah, M. H. R., Rehman, R. A., & Ahmad, N. (2016). Biochar enhances the cadmium tolerance in spinach (*Spinacia oleracea*) through modification of Cd uptake and physiological and biochemical attributes. *Environmental Science and Pollution Research*, 23(21), 21385–21394. <https://doi.org/10.1007/s11356-016-7344-3>
- ✚ Rizwan, M., Ali, S., Adrees, M., Rizvi, H., Zia-ur-Rehman, M., Hannan, F., **Qayyum, M. F.**, Hafeez, F., & Ok, Y. S. (2016). Cadmium stress in rice: toxic effects, tolerance mechanisms, and management: a critical review. *Environmental Science and Pollution Research*, 23(18), 17859–17879. <https://doi.org/10.1007/s11356-016-6436-4>
- ✚ Rizwan, M., Ali, S., **Qayyum, M. F.**, Ibrahim, M., Zia-ur-Rehman, M., Abbas, T., & Ok, Y. S. (2016). Mechanisms of biochar-mediated alleviation of toxicity of trace elements in plants: a critical review. *Environmental Science and Pollution Research*, 23(3), 2230–2248. <https://doi.org/10.1007/s11356-015-5697-7>
- ✚ Younis, U., **Qayyum, M. F.**, Shah, M. H. R., Danish, S., Shahzad, A. N., Malik, S. A., & Mahmood, S. (2015). Growth, survival, and heavy metal (Cd and Ni) uptake of spinach (*Spinacia oleracea*) and fenugreek (*Trigonella corniculata*) in a biochar-amended sewage-irrigated contaminated soil. *Journal of Plant Nutrition and Soil Science*, 178(2), 209–217. <https://doi.org/10.1002/jpln.201400325>

- ✚ **Qayyum, M. F.**, Ashraf, I., Abid, M., & Steffens, D. (2015). Effect of biochar, lime, and compost application on phosphorus adsorption in a Ferralsol. *Journal of Plant Nutrition and Soil Science*, 178(4), 576–581. <https://doi.org/10.1002/jpln.201400552>
- ✚ Younis, U., Malik, S. A., **Qayyum, M. F.**, Raza Shah, M. H., Shahzad, A. N., & Mahmood, S. (2015). Biochar affects growth and biochemical activities of fenugreek (*Trigonella corniculata*) in cadmium polluted soil. *Journal of Applied Botany and Food Quality*, 88, 29–33. <https://doi.org/10.5073/JABFQ.2015.088.006>
- ✚ **Qayyum, M. F.**, Abid, M., Danish, S., Saeed, M. K., & Ali, M. A. (2014). Effects of various biochars on seed germination and carbon mineralization in an alkaline soil. *Pakistan Journal of Agricultural Sciences*, 51(4), 977–982.
- ✚ **Qayyum, M. F.**, Steffens, D., Reisenauer, H. P., & Schubert, S. (2014). Biochars influence differential distribution and chemical composition of soil organic matter. *Plant, Soil and Environment*, 60(8), 337–343. <https://doi.org/10.17221/768/2013-PSE>
- ✚ **Qayyum, M. F.**, Steffens, D., Reisenauer, H. P., & Schubert, S. (2012). Kinetics of Carbon Mineralization of Biochars Compared with Wheat Straw in Three Soils. *Journal of Environmental Quality*, 41(4), 1210–1220. <https://doi.org/10.2134/jeq2011.0058>

BOOKS/BOOK CHAPTERS:

- ✚ Wakeel, A., **Qayyum, M. F.**, Ishfaq, M., (2023). *Essentials of Soil Science*. PAS Forum.
- ✚ **Qayyum, M. F.** (2022). Organic Fertilization of Citrus. In *Citrus Production* (pp. 221–226). CRC Press. <https://doi.org/10.1201/9781003119852-15>
- ✚ Zia-Ur-Rehman, M., **Qayyum, M. F.**, Akmal, F., Maqsood, M. A., Rizwan, M., Waqar, M., & Azhar, M. (2018). Recent Progress of Nanotoxicology in Plants Muhammad. In *Nanomaterials in Plants, Algae, and Microorganisms* (Vol. 4, Issue 1, pp. 88–100).
- ✚ Rasul, F., Ahmad, A., Arif, M., Mian, I. A., Ali, K., **Qayyum, M. F.**, Hussain, Q., Aon, M., Latif, S., Sakrabani, R., Saghir, M., Pan, G., & Shackley, S. (2017). Biochar for Agriculture in Pakistan. In *Sustainable Agriculture Reviews* (pp. 57–114). Springer International Publishing Switzerland. https://doi.org/10.1007/978-3-319-48006-0_4
- ✚ Muhammad Zia-ur-Rehman, Murtaza, G., **Qayyum, M. F.**, Saqib, M., & Akhtar, J. (2017). Salt-affected Soils: Sources, Genesis and Management. In K. R. H. Muhammad Sabir, Javaid Akhtar (Ed.), *Soil Science Concepts and Applications* (pp. 191–216). University of Agriculture Faisalabad.
- ✚ Zia-ur-Rehman, M., Murtaza, G., **Qayyum, M. F.**, Saifullah, Rizwan, M., Ali, S., Akmal, F., & Khalid, H. (2016). Degraded soils: Origin, types and management. In *Soil Science: Agricultural and Environmental Prospectives* (pp. 23–65). https://doi.org/10.1007/978-3-319-34451-5_2

CONFERENCES:

Organized:

- ✚ Organized 02 days National Conference on Soil Degradation: Aa Alarming Threat to Food Security and Environment. March 3-4, 2022, Department of Soil Science, Faculty of Agricultural Sciences & Technology, Bahauddin Zakariya University, Multan, Pakistan.
- ✚ Organized, International seminar on use of Biochar in Changing Climate, 05 October 2018,

Department of Soil Science, Bahauddin Zakariya University Multan, Pakistan

- ✚ Organized an “Awareness seminar on Significance of Micronutrients in Crop Production, April 11, 2016. Department of Soil Science, Bahauddin Zakariya University Multan, Pakistan.
- ✚ Organized an “Awareness seminar on Potassium use in agriculture, December 04, 2014”. Venue. IMS executive Hall, Bahauddin Zakariya University Multan, Pakistan.

Participation:

- ✚ Guest speaker (Climate Change and Agriculture: Understanding and Reducing Greenhouse Gas Emissions). Online Lecture dated 16 October 2024. Government College Women University Sialkot.
- ✚ Keynote speaker (Biochar for Pollution and Contaminant Removal Program Biochar Academy NUST: A theory and practical guide to biochar production and artisanal carbon sink management method), Online Lecture dated 03 October 2024. NUST Islamabad Pakistan.
- ✚ Keynote speaker (Biochar Production and Utilization for Metal Removal from Agricultural Soils: A Decade-Long Journey in Soil Amendment and Environmental Protection). International Conference on Integrative Life Sciences, organized by the Atta-ur-Rahman School of Applied Biosciences (ASAB), NUST Islamabad from 25-27th September 2024.
- ✚ Oral Presentation and Poster Presentations at 20th International Congress of Soil Science, PMAS, Arid Agriculture University, Rawalpindi, Punjab, PAKISTAN, (20 – 22 February 2024).
- ✚ Keynote speaker (Fate of Biochar-sorbed metals in soils: Influence on Plant Uptake of Plant Nutrients) at International Conference on Climate Change: Impact and Solutions, 07-09 November 2022.
- ✚ Oral presentation (Effect of different organic feedstocks biochar on potentially toxic elements in a 20-years long sewage water irrigated soil) at 19th International Congress of Soil Science, UAF Faisalabad, 9-11 March 2022.
- ✚ Poster presentation and abstract published in proceedings. 17th International Congress of Soil Science. March 13-15, 2018. Serena Faisalabad Pakistan, Soil Science Society of Pakistan.
- ✚ Oral presentation and abstract published in proceedings. Influence of Acidified Biochar on Soil properties, seed germination and phosphorus Bioavailability to maize in a calcareous soil. Institute of Environmental Sciences and Engineering IESE-NUST Islamabad. 22-23 February 2017.
- ✚ Oral presentation and abstract published in proceedings. International Conference on Soil Sustainability for Food Security. Effect of co-composted biochar and farm manure on plant growth and carbon mineralization. University of Agriculture Faisalabad. 15-17 November 2015.
- ✚ Oral presentation and abstract published in proceedings. Possible perspectives of biochar production and use as an organic amendment in Pakistan. International Workshop on Biochar in Pakistan: Opportunities and Potential, University of Agriculture Faisalabad-Pakistan. March 24-27, 2014.
- ✚ Oral presentation and abstract published in proceedings. Carbon mineralization kinetics of

various biochars in an alkaline soil. 2nd National Conference on Advancement in Sciences & Research, COMSATS Institute of Information Technology Vehari Campus. March 17, 2014.

- Oral presentation and abstract published in proceedings. Production and evaluation of different biochars as an organic amendment. 2nd International Conference on Global Environmental Changes, Department of Environmental Sciences, G.C. University Faisalabad, Pakistan. February 25-26, 2014.

INTERNATIONAL TRAININGS

- Summer School on “Improving Mechanistic Understanding of Greenhouse Gas Emission and Measurement Techniques”, at Geisenheim University, Germany, from 21.06.2024 to 01.07.2024.
- Obtained XRD training from Olympus Singapore in 2019.
- International DAAD-Alumni-Seminar “Quality management along organic agri-value chains in developing countries – production, post-harvest technology, processing, marketing and trade”. February 02 to February 13, 2015. University of Kassel, Germany

TEACHING EXPERIENCE:

Ph.D. Soil Science (Role as supervisor)

Sr. No.	Name of Student	Year of Completion	Thesis Title
1)	Muhammad Ahmar Amin	2023	Fate of metals in biochar-amended sewage-irrigated soil and effect on wheat growth
2)	Rabia Abdur Rehman	2021	Phosphorus dynamics and phytoavailability in a calcareous soil applied with composts of sewage sludge and biochar
3)	Rahmat Ullah	2020	Evaluation of composting method using different organic raw materials for improving tomato (<i>Lycopersicum esculentum</i>) productivity

M.Sc. (Hons) Soil Science (Role as supervisor)

Sr. No.	Name of Student	Year of Completion	Thesis Title
1)	Alishba Aslam	2024	Interactive effect of biochar and microplastics on straw carbon mineralization in soil
2)	Muhammad Moin -ud-Din	2023	Uptake of Cadmium and Lead by Wheat (<i>Triticum aestivum</i>) in Response to Biochar
3)	Hafiz Muhammad Shoaib	2022	Evaluating the Effect of Zinc Oxide Nanoparticles on Rice Under Field Conditions
4)	Iqra Batool Qasim	2022	Effect of Iron Oxide Nanoparticles for Seed Priming and Foliar Application on Rice

5)	Hafiz Muhammad Zubair	2021	Interactive Effect of Soil Applied Biochar and Foliar Applied Iron and Zinc Oxide Nanoparticles on Wheat Growth in Heavy Metal Contaminated Soil
6)	Muhammad Ahmad Bilal Khalid	2020	Interactive Effect of Biochar and Iron Oxide Nanoparticles on Growth and Yield Attributes of Cotton
7)	Sajid Hussain	2020	Comparison of Sewage sludge, Sewage sludge biochar and Single supper phosphate for their influence on cotton (<i>Gossypium hirsutum</i>) growth, yield, and phosphorus uptake
8)	Zubair Ahmad	2020	Phosphorus Availability and Uptake by Wheat Crop Grown in Sewage-Irrigated Soil Amended With Rice Straw Biochar
9)	Muhammad Usman Akhter	2019	Use of straw-based biochars for increasing potassium availability to maize
10)	Fizza Kalim	2019	Effect of Biochar and Iron Nanoparticles on maize (<i>Zea mays</i>) growth under saline conditions
11)	Sidra Chaudri	2019	Influence of carbon-nanoparticles on Cd availability to maize (<i>Zea mays</i>) crop
12)	Mobeen Younas	2019	Effect of biochar types on seed germination and growth of wheat (<i>Triticum aestivum</i>) under saline conditions
13)	Muhammad Salman Sattar	2018	Effect of organic and inorganic amendments for their influence on wheat growth and soil properties
14)	Shehla Kiran	2018	Comparison of sewage sludge, biochar, farm manure and rock phosphate for their effect on rice growth and soil properties
15)	Sajidah Hameed	2017	Influence of various biochars on phosphorus adsorption isotherms in soil
16)	Maria Iqbal	2017	Influence of acidified designer biochar on phosphorus bioavailability in calcareous soil
17)	Muhammad Raza Ali	2017	Effect of biochar on potassium bioavailability to cotton
18)	Mehak Ameer ABdullah	2017	Effect of various sources of biochar on nitrogen bioavailability to maize
19)	Aurangzaib	2017	Does biochar mitigate salinity stress?
20)	Dur-e-Sameen Khan	2017	Effect of protonated biochar on seed germination, plant growth and soil properties
21)	Seemab Liaquat	2016	Cadmium bioavailability to spinach (<i>Spinacia oleracea</i>) as affected by cotton-rice straw derived biochars
22)	Noshaba Amin	2016	Effect of biochar on phosphorus bioavailability to maize in calcareous soil
23)	Rabia Abdur Rehman	2016	Immobilization of cadmium in calcareous soil using synthetic polymer and biochar
24)	Muhammad Ikram	2016	Effect of biochar on growth and cadmium uptake to spinach (<i>Spinacia oleracea</i>) in sewage and normal irrigated fields

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