MUHAMMAD ASHRAF

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BIOGRAPHY

Being a professionally qualified Soil Scientist, I am working on plant–soil interactions, particularly effect of soil salinity, drought and metal toxicity on plant growth, physiological, biochemical and fruit quality characteristics, and a reciprocal effects of different plant species and varieties on soil health and properties. I did B.Sc. (Hons) Agriculture in 1994, M.Sc. (Hons) Soil Science in 1996, and Ph.D. Soil Science in 2008 from University of Agriculture, Faisalabad, Pakistan. During PhD studies, I worked on how different sugarcane genotypes interact with soil salinity and what is the role of potassium and silicon to mitigate the deleterious effects of salt ions on sugarcane growth, yield and juice quality. In 2014, I have been awarded Endeavour Fellowship, and completed Post-doctorate from School of Biological Sciences, University of Western Australia, Australia. During Postdoc training, I studied the growth response of P*uccinellia ciliata to varying* levels of nitrogen, potassium and sodium in hydroponics.

I joined Directorate of Land Reclamation, Irrigation & Power Department in 1997 and worked for 12 years on the rehabilitation of salt affected and waterlogged soils. In 2009, I joined University of Sargodha as Assistant professor and promoted to Professor of Soil Science in 2018. In 2023, I have been appointed as Chairman, Department of Soil & Environmental Sciences.

I possess strong analytical and problem solving skills with the ability to make well thought-out decisions. I am quite adept at reviewing literature for distilling relevant key concepts from complex information, integrating literature, documenting research and delivering projects outcomes under time pressure. I have strong ability to work independently and in collaborative format for achieving projects outcomes under competing timeframes. I use effective liaison and negotiation abilities to communicate with students, colleagues, collaborators and stakeholders. Having excellent verbal and written communication skills, I can explain complex ideas in a clear, concise and articulate manner. I am also involve in editorial activities of national and international research journals. In the recognition of significant contribution to the field of research,

I have been awarded Research Productivity Award and Best Research Paper Award for two times by Ministry of Science and Technology, Pakistan.

SUMMARY OF ACCOMPLISHMENTS

Total Published items	**123**	
Refereed Research Publications	**109**	
Q1 Publications	**53**	
Book Chapters	**06**	
Total Citations	**+5200**	
Average Citation per Publication	**27.0**	
Publications ≥ 20 Citations	**50.0**	
Highest Single Citation	**502**	
h-Index	**39**	
i10-Index	**82**	
Total Impact Factor	**310**	
Conference participation	**36**	
Conference/Seminar planned	7	
Total Experience (Yr)	**+27**	
Research Grants (3PI + 3Co-PI)	**06**	
Supervised Students	**MS**	**30**
	PhD	**03**

KEY SKILLS AND ATTRIBUTES

- Around 27 years of research and teaching experience and have supervised many graduate and post-graduate students.
- Good working experience in plant nutrition and stress physiology, particularly nutrient management under salinity, drought and heavy metal toxicity.
- Possess in-depth expertise in the designing and execution of lab and field experiments.
- Expertise in soil, plant, water and fertilizer analyses.
- Good command on atomic absorption spectroscopy, flame photometry, spectrophotometry and ion chromatography.
- Experienced in the nutrition of horticultural crops, particularly citrus and mango.
- Experienced in project management, evaluation and audits.
- Strong experience in editing and reviewing the literature, particularly research papers, reports, projects and book chapters.
- Excellent time management skills equipped with expert use of management tools and software.
- Have clear, concise, and logical verbal and written communication skills.
- Sound decision making skills based on evidence.
- Proven originality, creativity and innovation in solving problems by introducing new solutions.
- Experienced in shaping and developing the teaching courses, research methods and protocols.

EDUCATION AND QUALIFICATION

Post-doctorate — 2014
School of Plant Biology, University of Western Australia, Australia

Doctor of Philosophy (PhD) Soil Science — 2008
University of Agriculture, Faisalabad, Pakistan

Master of Science (Honours) Soil Science — 1996
University of Agriculture, Faisalabad, Pakistan

Bachelor of Science (Honours) Agriculture (Soil Science) — 1994
University of Agriculture, Faisalabad, Pakistan

RESEARCH THESIS

PhD Thesis Title

Differential salt tolerance in sugarcane genotypes and the role of potassium and silicon in enhancing their salt tolerance

MSc Thesis Title

Genetic differences among wheat cultivars in phosphorus utilization efficiency from phosphate rock

WORK EXPERIENCE

- Professor (August 2, 2018 – Present):
- Department of Soil & Environmental Sciences, Faculty of Agriculture, University of Sargodha, Pakistan
- Assistant Professor (March 4, 2009 – August 1, 2018): Department of Soil and Environmental Sciences, College of Agriculture, University of Sargodha, Sargodha, Pakistan.
- Assistant Land Reclamation Officer (March 2007 – February 2009): Directorate of Land Reclamation, Lahore, Pakistan
- Reclamation Supervisor (May 1997 – February 2007): Directorate of Land Reclamation, Lahore, Pakistan

ADMINISTRATION/ACADEMIC EXPERIENCE

- Chairman, Department of Soil and Environmental Sciences, Faculty of Agriculture, University of Sargodha
- Environmental Expert in the Department of Environmental Protection & Climate Change, Sargodha Division, Govt. of Punjab.
- Advisor of Punjab Public Service Commission, Lahore, Punjab
- Member, Advanced Studies and Research Board, University of Sargodha, Sargodha
- HEC Approved PhD Supervisor, Higher Education Commission of Pakistan
- Program Coordinator for M.Sc. (Hons) Agriculture (Soil Science) for the year 2020-2021.
- Chairman, Departmental Purchase Committee, Department of Soil Science, Bahauddin Zakariya University, Multan, Pakistan.

- Member, Departmental Discipline Committee, Department of Soil Science, Bahauddin Zakariya University, Multan, Pakistan.
- Member, Departmental Examination Committee, Department of Soil Science, Bahauddin Zakariya University, Multan, Pakistan.
- Member, Technical Review Committee, Department of Soil Science, Bahauddin Zakariya University, Multan, Pakistan
- Member, Departmental Committee for part-time teaching appointments, Bahauddin Zakariya University, Multan, Pakistan
- Member , Departmental Surveillance Committee, Bahauddin Zakariya University, Multan, Pakistan, Multan
- Chairman Admission Committee, College of Agriculture, University of Sargodha, Sargodha, Pakistan for the year 2013
- Senior Tutor, College of Agriculture, University of Sargodha, Sargodha, Pakistan.
- Convener of Scholarship and Fee Concession Committee, University College of Agriculture, University of Sargodha, Sargodha, Pakistan
- Member Faculty Board, Faculty of Agriculture, University of Sargodha, Sargodha, Pakistan.
- Member of Citrus Experts Committee, University of Sargodha, Sargodha, Punjab, Pakistan.
- Member of GRE Subject Test Committee, University of Sargodha, Sargodha, Punjab, Pakistan.
- Member, GRE Subject Test Committee, Higher Education Commission, Pakistan.
- Member, Departmental advisory Committee, University of Sargodha, Pakistan
- Member/Secretary, Board of Studies, Department of Soil Science, Bahauddin Zakariya University, Multan, Pakistan

EDITORIAL EXPERIENCE

- Editor-in-Chief, Journal of Environment and Agriculture (JEA) ISSN print 2517-9675 online 2518-2625.
- Managing Editor, International Journal of Agriculture and Applied Sciences (University of Sargodha Journal) from 2009-2014.
- Editor, Journal of Applied Agriculture and Biotechnology, PMAS Arid Agriculture University, Rawalpindi, Pakistan from 2017-To date.
- Editor, Journal of Soil and Plant Biology, Ocimum Scientific Publisher.
- Associate Editor, Pakistan Journal of Life and Social Sciences, SCImago.

RESEARCH INTEREST

- Plant-Soil Interactions
- Soil Fertility and Plant Nutrition
- Stress Physiology
- Salinity, Drought and Heavy Metal Toxicity
- Wastewater Utilization in Agriculture
- Brackish Water Management in Agriculture
- Phytoremediation of Metal-polluted Soils
- Recycling and Management of Organic Waste
- Nutrients Cycling in Agro-ecosystem

DISTINCTION

- World's top 2% Scientists for the year 2022 & 2023

ACCOMPLISHMENTS

1. RESEARCH PROJECTS/GRANTS

Name of Project	Status	Project No.	Amount (Million Rs.)
♦ Micronutrients Status and Management in Citrus Orchards under Different Agro-Climatic Conditions.	PI	F No. 4-76/2018 (ALP)-P&DD-Pakistan Agricultural Research Council	6.494/-
♦ Trace element balances of soils in wheat-maize rotation as influenced by irrigation water and green manuring.	Co-PI	20-17027/NRPU/R&D/HEC/2021 dated 23-12-2021	4.409/-
♦ Wastewater irrigation impacts on soil health, yield and food quality characteristics of selected vegetables under different management strategies.	PI	6705/Punjab/NRPU/R&D/HEC/2016	2.918/-
♦ Micronutrients management for improving growth, yield and fruit quality of citrus (*Citrus reticulata*).	PI	UOS/ORIC/2016/17	1.000/-
♦ Effectiveness of cotton stick biochar amended with beneficial rhizobacteria to improve wheat productivity and soil fertility under irrigated and rained agro-ecosystem.	Co-PI	10036/Punjab/NRPU/R&D/HEC/2017	2.061/-
♦ Breeding strategy for improving adaptation of okra (*Abelmoschus esculentus* L) to saline environment	Co-PI	9766/Punjab/NRPU/R&D/HEC/2017	2.005/-

2. STUDENTS SUPERVISION

Supervision	M.Sc. (Hons.)	Ph.D.
Supervisor-I	28	1
Supervisor-II	15	2

3. CONFERENCE/ SEMINAR CONDUCTED

- One day seminar on "**Healthy soils are indespensable for human health**" on May 06, 2024 in the Department of Soil & Environmental Sciences, College of Agriculture, University of Sargodha, Sargodha, PAKISTAN.
- One day seminar on "***Future of Soil and Water: Challenges, and Potential Solutions***" on December 5, 2023 in the Department of Soil & Environmental Sciences, College of Agriculture, University of Sargodha, Sargodha, PAKISTAN.
- 1st International Seminar on ***Environmental Pollution: Issues, Effects and Management*** *on* November 7, 2023 in the Department of Soil & Environmental Sciences, College of Agriculture, University of Sargodha, Sargodha, PAKISTAN.
- National Conference on "**Soil Degradation: An Alarming Threat to Food Security and Environment**". March 3-4, 2022 at Department of Soil Science, Faculty of Agricultural Sciences and Technology, Bahauddin Zakariya University, Multan, PAKISTAN.
- One Day Seminar on "Soil Health Deterioration: **A Major Challenge for Sustaining Food Security**" on December 5, 2018 at College of Agriculture, University of Sargodha, Sargodha, PAKISTAN.

4. PROFESSIONAL TRAININGS

- Five days' training on *"**Solid Waste Management**"* Government of Pakistan, Establishment Division, AKH National Centre for Rural Development, January 8-12, 2018, Islamabad, PAKISTAN.
- In-Service Short Term Training of ***"University and College Faculty on Andragogical and Communication Skills"*** held on May 16-20, 2016, organized by University of Sargodha, Sargodha, Punjab, PAKISTAN.
- Training on ***"Soil, Water and Plant Analysis"*** held on August 28-31, 2012, organized Nuclear Institute for Agriculture and Biology, Faisalabad, Pakistan.
- Workshop on ***"Medium Term Budgetary Framework***". November-December, 2008, Punjab Resource Management Program, Planning and Development Department, Government of the Punjab.

5. HONORS AND AWARDS

- Research Publication Award 2023 by University of Sargodha, Sargodha, PAKISTAN
- Appreciation Certificate in recognition to manage an event on "Climate-Resilient Agriculture: A key to Food Security and Sustainability" on 6 March, 2024 at University of Sargodha, Sargodha, PAKISTAN.
- Endeavour Research Fellowship 2014, Ministry of Education, Australia
- Out-standing Research Paper Award for the year 2013-14 by Higher Education Commission (HEC), Islamabad, PAKISTAN
- Research Productivity Award for the year 2011-12 by PAKISTAN Council for Science and Technology (PCST), Islamabad, PAKISTAN
- Research Productivity Award for the year 2012-13 by PAKISTAN Council for Science and Technology (PCST), Islamabad, PAKISTAN

6. PUBLICATIONS

Ashraf, M., F. Qamar, M. Mehran, S. Masood, S. M. Shahzad, M. S. Javed, M. T. Azhar. 2025. Zinc nutrition optimization for better cotton productivity on alkaline calcareous soil. Journal of Cotton Research 8:14. 10.1186/s42397-025-00218-0.

Piracha, M. A., **M. Ashraf**, R. Kausar, M. Asif, A. R. Siddiqi, S. A. Javed, A. Niaz, Z. Abbas, and S. Nazeer. 2025. Mitigating toxicity of arsenic in sunflower (*Helianthus annuus* L.) with phosphate rock and farmyard manure using contrasting soil textures. International Journal of Phytoremediation 1-13. https://doi.org/10.1080/15226514.2025.2493855.

Hayyat F., **M Ashraf**, A. Aziz, S. Hussain, M.S. Arif, and N Akhtar. 2025. Boron nutrition with NPs and H_3BO_3 to change its fractionation in soil and wheat (*Triticum aestivum* L.) productivity under alkaline calcareous conditions. Journal of Plant Nutrition. 10.1080/01904167.2025.2515267.

Masood, S., **M. Ashraf**, M. Hussain, M.F. Azhar, M. Zafar-ul-Hye, O. Farooq, M. Aon and M.T. Javed. 2025. Increasing Salinity and Cadmium Enhanced Leaf Membrane Damage and H_2O_2 Production Irrespective of Reduced Sodium and Cadmium Accumulation in Wheat (*Triticum aestivum* L.). Journal of Soil Science and Plant Nutrition **25:** 2116–2126 (2025). https://doi.org/10.1007/s42729-025-02260-y

Hayat F., **M. Ashraf**, S. Masood, M. Zafar-ul-Hye and S. Hussain. 2025. Wheat productivity and micronutrients availability in soil by the use of chemical and organic fertilizers under alkaline calcareous conditions. 44(1): 92-103.

Ashraf, M., A. Minhas, S. Masood, N. Akhtar, S.M. Shahzad and M. Asif. 2024. Soil characterization and plant nutrient indexing of citrus orchards in the central Punjab of Pakistan. Soil and Environment 43(1): 27-35. http://doi.org/10.25252/SE/2024/243148.

Latif F., M. Abid and·**M. Ashraf**. 2024. Silicon nutrition for ameliorating chromium toxicity in maize (Zea mays L.) by suppressing absorption and translocation to aerial plant tissues. Silicon 16: 2997-3010. https://doi.org/10.1007/s12633-024-02875-3.

Javed, S.A., M.T. Jaffar, S.M. Shahzad, **M. Ashraf**, M.A. Piracha, A Mukhtar, S.U. Rahman , H.S. Almoallim, M.J. Ansari, J. Zhang. 2024. Optimization of nitrogen regulates the ionic homeostasis, potassium efficiency, and proline content to improve the growth, yield, and quality of maize under salinity stress. Environmental and Experimental Botany. 226:105836. https://doi.org/10.1016/j.envexpbot.2024.105836.

Piracha M.A., **M. Ashraf**, S.M. Shahzad, S. Masood, N. Akhtar, R. Kausar and A. Shakoor. 2023. Arsenic fractionation and speciation in different textured soils supplied with farmyard manure and accumulation by sunflower under alkaline calcareous conditions. Environmental Science and Pollution Research. https://doi.org/10.1007/s11356-023-29659-3.

Ashraf M., S.M. Shahzad, M.A. Irshad, S.A. Javed, M. Asif and R. Kausar. 2023. Enhancing fruit yield and citrus quality through integrated application of organic fertilizers and zinc. Journal of Agriculture and Food. 3(2):62–77. https://doi.org/10.52587/JAF040202.

Ikram ul Haq, N. Azam, **M. Ashraf**, M.M. Javaid, G. Murtaza, Z. Ahmed, M.A. Riaz, R. Iqbal, M.H. Rahman, M.S. Alwahibi, M.S. Elshikh, M.U. Aslam and M Arslan. 2023. Improving the genetic potential of okra (Abelmoschus esculentus L.) germplasm to tolerate salinity stress. Scientific Reports. 13:21504. https://doi.org/10.1038/s41598-023-48370-4.

Masood, S., M Suleman, S. Hussain, M. Jamil, **M. Ashraf**, M. H. Siddiqui, R. Nazar, N. Khan, S. Jehan, K.S. Khan, and M. Tahir. 2023. Fertilizers Containing Balanced Proportions of NH4 + -N and NO3 –-N Enhance Maize (Zea mays L.) Yield Due to Improved Nitrogen Recovery Efficiency. Sustainability 2023, 15, 12547. https://doi.org/10.3390/su151612547.

Mehran M., **M. Ashraf,** S.M. Shahzad, M.S. Shakir, M.T. Azhar, F. Ahmad, and A. Alvi. (2023). Growth, yield and fiber quality characteristics of Bt and non-Bt cotton cultivars in response to boron nutrition. Journal of Cotton Research, 6:1. DOI:10.1186/s42397-023-00138-x.

Hussain S. S. Nanda, **M. Ashraf**, A.R. Siddiqui, S. Masood, M.A. Khaskheli, M. Suleman, L. Zhu, C. Zhu, X. Cao, Y. Kong, Q. Jin and J. Zhang. (2023). Interplay impact of exogenous application of abscisic acid (ABA) and brassinosteroids (BRs) in rice growth, physiology, and resistance under sodium chloride stress. Life, 13, 498. https://doi.org/10.3390/life13020498.

Ashraf M., S.M. Shahzad, M. Abid, K. Mehmood, A. Aziz, A. Sarwar, N. Akhtar and M. Mehran. (2022). Ionic homeostasis and growth characteristics of tomato (*Solanum lycopersicum* L.) grown with municipal wastewater by supplying silicon, farmyard manure and plant growth promoting rhizobacteria. Silicon, 14:12855–12867 https://doi.org/10.1007/s12633-022-01961-8.

Hussain S., **M. Ashraf,** S. Masood, M. Suleman, S. Hussain and M. Abid. 2022. Nutrient stoichiometry and growth characteristics of wheat (*Triticum aestivum* L.) grown with various combinations of nitrogenous and phosphatic fertilizers under alkaline conditions. Soil and Environment, 41(2): 103-113. doi:10.25252/SE/2022/242861.

Javed S.A., S.M. Shahzad, **M. Ashraf,** R. Kausar, M.S. Arif, G. Albasher, A. Shakoor. (2022). Interactive effect of different salinity sources and their formulations on

plant growth, ionic homeostasis and seed quality of maize. Chemosphere, DOI: 10.1016/j.chemosphere.2021.132678.

Piracha M.A., **M. Ashraf,** S.M. Shahzad, M. Imtiaz, M.S. Arif, M.S. Rizwan, A. Aziz, S. Tu, G. Albasher, S. Alkahtani, A. Shakoor. (2022). Alteration in soil arsenic dynamics and toxicity to sunflower (*Helianthus annuus* L.) in response to phosphorus in different textured soils. *Chemosphere,* 287: 132406. DOI: 10.1016/j.chemosphere.2021.132406.

Younas H.S., M. Abid and **M. Ashraf.** (2022). Ameliorating detrimental effects of water deficit stress in maize by foliarally applied silicon and chitosan. *Pakistan Journal of Botany,* 54(2): DOI: http://dx.doi.org/10.30848/PJB2022-2(33).

Shakoor A., A.A. Dar, M.S. Arif, T.H. Farooq, T. Yasmeen, S.M. Shahzad, M.A. Tufail, W. Ahmed, G. Albasher, and **M. Ashraf.** (2022). Do soil conservation practices exceed their relevance as a countermeasure to greenhouse gases emissions and increase crop productivity in agriculture? *Science of the Total Environment,* 805: 150337. DOI: 10.1016/j.scitotenv.2021.150337.

Masood S., K.S. Khan, **M. Ashraf,** M. Iqbal, and M. Jamil. (2022). Iron supply confers tolerance in rice *(Oryza sativa* L.) to NaCl stress due to up-regulation of antioxidative enzymatic activity. *South African Journal of Botany,* 151(A): 315-324. DOI: 10.1016/j.sajb.2022.10.012.

Younas H.S., M. Abid, **M. Ashraf** and M. Shaaban. (2022). Seed priming with silicon and chitosan for alleviating water stress effects in maize (*Zea mays* L.) by improving antioxidant enzyme activities, water status and photosynthesis. *Journal of Plant Nutrition,* 45(15): 2263-2276. DOI: 10.1080/01904167.2022.2046070

Hussain M., A. Aziz, M.M. Javaid, **M. Ashraf,** A. Wasaya, M.Z. Majeed, N. Akhtar, M. Asif, M. Adnan and A. Bhatti. (2022). Evaluating the phytotoxic effects of some plant species of semi-arid regions. *Plant Cell Biotechnology and Molecular Biology,* 23(1and2):1-18. DOI: 10.56557/pcbmb/2022/v23i1-27376.

Suleman M., **M. Ashraf,** Q.U.A. Raza, M.A. Bashir, S.U. Rahman, M. Aon, S. Ali, S.M. Shahzad, M.U. Khalid, H.M.A. Raza, A. Rehim and Z. Du. (2022). Determining the cadmium accumulation in maize (Zea mays L.) and soil influenced by phosphoric fertilizers in two different textured soils. *Land,* 11, 1313. DOI: 10.3390/land11081313.

Aziz A., A. Khan, M. Asif, M.A. Nadeem, **M. Ashraf,** A. Raza, M.M. Javaid, T. Abbas, N. Akhtar, S. Munir. (2022). Impact of organic mulches on weed dynamics and productivity of rainfed wheat (*Triticum aestivum* L.). *Pakistan Journal Weed Science Research,* 28(1): 1-17. DOI: 10.28941/pjwsr.v28i1.942.

Siddiqui A.R., S.M. Shahzad, **M. Ashraf,** T. Yasmeen, R. Kausar, G. Albasher, S. Alkahtani, A. Shakoor. 2021. Development and characterization of efficient K-

solubilizing rhizobacteria and mesorhizobial inoculants for chickpea. *Sustainability,* 13: 10240. https://doi.org/10.3390/ su131810240.

Shakoor A., M.S. Arif, S.M. Shahzad, T.H. Farooq, F. Ashraf, M.M. Altaf, W. Ahmed, M.A. Tufail and **M. Ashraf**. (2021). Does biochar accelerate the mitigation of greenhouse gaseous emissions from agricultural soil? A global meta-analysis. *Environmental Research,* 202: 111789. https://doi.org/10.1016/j.envres.2021.111789.

Javed S.A., M.S. Arif, S.M. Shahzad, **M. Ashraf,** R. Kausar, T.H. Farooq, M.I. Hussain, A. Shakoor. (2021). Can Different salt formulations revert the depressing effect of salinity on maize by modulating plant biochemical attributes and activating stress regulators through improved N supply? *Sustainability,* 13, 8022. https://doi.org/ 10.3390/su13148022

Ashraf M, U Naz, M Abid, SM Shahzad, A. Aziz, N. Akhtar, A. Naeem and K.H. Muhling. (2021). Salinity resistance as a function of NH_4^+: NO_3^- ratio and its impact on yield and quality of tomato (*Solanum lycopersicum* L.). *Journal of Plant Nutrition and Soil Science,* 184(2): 246-254. https://doi.org/10.1002/jpln.202000257.

Ashraf M, M.A. Aziz, S.M. Shahzad and A. Aziz. (2021). Soil and plant nutrient dynamics in response to manuring with different organic wastes under alkaline conditions. *Annals of Agriculture and Crop Science,* 6(1): 1067. DOI: 10.26420/annagriccropsci.2021.1067

Younas H.S., M. Abid, **M. Ashraf** and Muhammad Shaaban. (2021). Growth, yield and physiological characteristics of maize (*Zea mays* L.) at two different soil moisture regimes by supplying silicon and chitosan. *Silicon,* 14, 2509-2519; https://doi.org/10.1007/s12633-021-01033-3.

Ashraf M., M.B. Ahmad, S.M. Shahzad, M. Imtiaz, M. Atif, M. Asif and A. Aziz. (2021). Characterization of wastewater and soil and vegetable plants exposed to long-term wastewater irrigation. *Soil and Environment,* 40(1): 85-94. DOI:10.25252/SE/2021/152228.

Shakoor A., S. Shakoor, A. Rehman, F. Ashraf, M. Abdullah, S.M. Shahzad, T.H. Farooq, **M. Ashraf,** M.A. Manzoor, M.M. Altaf and M.A. Altaf. (2021). Effect of animal manure, crop type, climate zone, and soil attributes on greenhouse gas emissions from agricultural soils. - A global meta-analysis. *Journal of Cleaner Production,* 278(2021): 124019; https://doi.org/10.1016/j.jclepro.2020.124019. 278:124019.

Rizwan M.S., M. Imtiaz, J. Zhu, B. Yousaf, M. Hussain, L. Ali, A Ditta, M.Z. Ihsan, G. Huang, **M Ashraf,** H. Hu. (2021). Immobilization of Pb and Cu by organic and inorganic amendments in contaminated soil. *Geoderma,* 385: 114308. https://doi.org/10.1016/j.geoderma.2020.114803.

Younas H.S., M. Abid, M. Shaaban, **M. Ashraf.** (2021). Influence of silicon and chitosan on growth and physiological attributes of maize in a saline field. *Physiology and Molecular Biology of Plants,* 27: 387-397; https://doi.org/10.1007/s12298-021-00940-4.

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Aziz A., H.H. Tajaah, U. Shahid, A. Tanveer, M. Asif, A. Wasaya, **M. Ashraf,** A. Raza, N. Akhtar, S.M. Shahzad, M.S. Munir, M.E. Safdar and M.M. Javaid. (2021). Identification and validation of anti-microbial properties of some tropical folklore medicinal plant species against some multi-resistant bacterial pathogens. *Pakistan Journal of Agricultural Sciences,* 58(5): 1581-1594. 10.21162/PAKJAS/21.1052

Ashraf M., A. Atta, M.H. Almas, S.M. Shahzad, M. Imtiaz and A. Aziz. (2020). Silicon nutrition effects on growth, yield and metal accumulation in radish (*Raphanus sativus* L.) grown with municipal wastewater. *Journal of Soil Plant Biology,* 2020(1): 129-137. DOI: 10.33513/JSPB/2001-16.

Shakoor A, M. Shahbaz, T.H. Farooq, N.E. Sahar, S.M. Shahzad, M.M. Altaf, **M. Ashraf.** (2020). A global meta-analysis of greenhouse gases emission and crop yield under no-tillage as compared to conservation tillage. *Science of the Total Environment,* (2020), https://doi.org/10.1016/ j.scitotenv.2020.142299.

Ullah N., A. Ditta, A. Khalid, S. Mehmood, M.S. Rizwan, **M. Ashraf,** F. Mubeen, M. Imtiaz, M.M. Iqbal. 2020. Integrated effect of algal biochar and plant growth promoting rhizobacteria on physiology and growth of maize under deficit irrigations. *Journal of Soil Science and Plant Nutrition*, 20, 346-356. 10.1007/S42729-019-00112-0

Ashraf M., S.M. Shahzad, A. Aziz, N. Akhtar, M.B. Ahmed, S. Munir, R. Kausar, A.A. Sheikh, M.A. Irshad, S. Nawaz. 2020. Efficient wastewater utilization in agriculture: A promising option to address future water scarcity crisis. *Journal of Environment and Agriculture,* 5(1): 433-444.

Aziz A., N. Akhtar, M. Asif, **M. Ashraf,** M.A. Bhatti, M.Z. Majeed, M. Adnan, K. Ali, A. Munawar. (2020). Phytoregulatory effects of foliar applied aqueous extracts of three weed species on seedling growth of barley, mustard and sesame. *Journal of Environment and Agriculture,* 5(2): 468-475.

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7. BOOK CHAPTERS /BOOKS

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8. PUBLICATIONS IN PROCEEDINGS

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Sustainable Agriculture Water Management in a challenging environment: A Special Focus on Olive Tree" held on Sep. 30-Oct 2, 2015 by Department of Environmental Sciences, at PMAS-AAUR-Punjab, Pakistan.

9. ABSTRACTS IN CONFERENCES

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Siddiqui, A.R., L.M. De Oliveira, S. Das, S.M. Shahzad, **M. Ashraf,** S. Nazeer, B. Rathinasabapathi and L.Q. Ma. (2016). Potassium Solubilizing Rhizobacteria: An Eco-Friendly and Sustainable Agricultural Approach. Southeast Region of the Society of Environmental Toxicology and Chemistry (SOUTHEAST SETAC) Meeting" September 22-24, 2016 conducted by College of Public Health and Health Professions, University of Florida, Gainesville, USA.

Iqbal, M.M., G. Murtaza, G.D. Laing, T. Naz, M. Afzal, Z. Iqbal, G. Sarwar, **M. Ashraf,** S.M. Shahzad, M.A. Tahir. (2016). Pb fractionation and redistribution as affected by applied inorganic amendments under different soil moisture regimes and incubation time in normal and salt affected Pb contaminated paddy soil. 16th International Congress of Soil Science "Healthy Soils for Food Security" held on March 15-17, 2016 at PMAS Arid Agriculture University, Rawalpindi, PAKISTAN

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Siddiqui, A.R., S.M. Shahzad, **M. Ashraf** and M.S. Arif. (2015). Synergistic association between potassium solubilizing rhizobacteria (KSR) and rhizobia improve symbiotic performance of chickpea (*Cicer arietinum* L.) under varying levels of

potassium fertilizer. Proceeding (International Conference on "Soil Sustainability for Food Security", November 15-17, 2015: 39-40.

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10. WORKSHOP/CONFERENCE PARTICIPATION

- National Citrus Conference on "Challenges in Citrus Production" on 5 March 2024 at University of Sargodha, Sargodha, Pakistan.
- 8th International Horticulture Conference on "Innovation in Sustainable Horticulture" 26-28 February 2024 at The Islamia University, Bahawalpur, Pakistan.
- 20th International Congress of Soil Science on "Soil Health: A Key to Food Security" 20-22 February 2024 at PMAS-Arid Agriculture University, Rawalpindi, Pakistan.
- International Congress of Soil Science on Soil Health and Sustainable Development Goal. March 9-11, 2022. University of Agriculture, Faisalabad, Pakistan.
- International Conference on Veterinary, Agriculture and Life Sciences (ICVALS) held on October 26-29, 2018 in Antalya, Turkey.
- Training and Capacity Building in Sustainable Agricultural Water Management to Address Food Security and Social Instability in Pakistan. Department of Environmental Sciences, PMAS Arid Agriculture University, Rawalpindi, June 27-29, 2018, Pakistan.
- National Conference on Recent Trends and Opportunities to Enhance Citrus Production and Export, May 3-4, 2018, Department of Horticulture, Faculty of Agriculture, University of Sargodha, Sargodha.
- International Workshopon Development of Youth at HEIs conducted on April 18-19, 2018, University of Sargodha, Subcampus Bhakkar.
- 17th International Congress of Soil Science on Soil: Ultimate Solution of Food Security and Climate Change. Soil Science Societ of Pakistan, March 13-15, 2018, Serena, Faisalabad, Pakistan.
- International Training on Innovative and Sustainable Water Harvesting Techniques for Agriculture, March 08-10, 2018, Department of Environmental Sciences PMAS-Arid Agriculture University, Rawalpindi, Pakistan.

- International Symposium on Innovative Trends in Agricultural Sciences:Way Forward to Sustainable Development, November 23-25, 2017, Faculty of Agriculture, University of Sargodha, Sargodha
- National Symposium on Emerging Trends in the Extraction of Plant Bioactives for Nutra-pharmaceutical Developments, November 1-2, 2017, Department of Chemistry, University of Sargodha, Sargodha
- One-day Training Workshop on Approaching Towards Comprehensive Elimination of Persistent Organic Pollutants (Pesticides) in Pakistan, August 13, 2017. Ministry of Climate Change, Environment and Climate Change Unit, UNDP, Islamabad, Pakistan.
- International Symposium on seed Quality and Certification: Implications for Agricultural Extension, April 13, 2017, College of Agriculture, University of Sargodha, Sargodha.
- 1st International Wheat Conference. November 29-30, 2016. University of Sargodha, PAKISTAN
- 1st International Salinity Conference (ISC-2016), December 19-21, 2016. Islamia University, Bahawalpur, Pakistan
- International Conference on significance of potash in PAKISTAN Agriculture. November 24-26, 2016, Institute of Agricultural Sciences, University of the Punjab, PAKISTAN
- Soil Sustainability for Food Security. November 14-15, 2015. Institute of Soil and Environmental Sciences, University of Agriculture, Faisalabad, PAKISTAN
- International Training Workshop on Sustainable Agriculture Water Management held on September 30, 2015 to October 02, 2015, organized by PMAS-Arid Agriculture University, Rawalpindi, PAKISTAN
- Higher Education Commission of PAKISTAN (Training) "How to Change the Mind-set of Researchers in Higher Learning Environment" held on September 25-26, 2012 at the University College of Agriculture, University of Sargodha, Sargodha, PAKISTAN
- PAKISTAN Science Foundation (Workshop) "Project Formulation Workshop" held on October 10-11, 2012 at the University College of Agriculture, University of Sargodha, Sargodha, PAKISTAN
- Participation in International Symposium on "Strategies for overcoming food security problems through utilization of rain-fed areas" held on March 26-28, 2014, organized by Department of Agronomy, University College of Agriculture, University of Sargodha, Sargodha, PAKISTAN
- Mechanisms of silicon-mediated alleviation of detrimental effects of salinity in plants. International Conference on Management of Soil and Ground water Salinization Arid Regions, 11-14 January 2010 Muscat, Sultanate of OMAN
- Efficient resource management for sustainable agriculture 13th Congress of Soil Science, 24-27 March 2010, Faisalabad, PAKISTAN
- International Training Workshop on "Plant Conservation and Reversing Desertification" held on October 12-13, 2009, organized by PMAS-Arid Agriculture University, Rawalpindi, PAKISTAN
- International Conference on Sustainable Crop Production on salt affected land, December 04-06, 2006, Faisalabad, PAKISTAN

- National Seminar on Nutrient Management for Sustainable Agriculture, Faisalabad, PAKISTAN held on 10-12 October 2005
- National Seminar on Nutrient Management for Sustainable Agriculture, Faisalabad, PAKISTAN held on 10-12 October 2005

COMMUNITY SERVICE

- I am affiliated with various national and International Journals as "Reviewer":
- Member of university outreach team to train the local farming community for efficient utilization of farming land.

MEMBERSHIP

- Soil Science Society of America (SSSA)
- American Society of Agronomy (ASA)
- Crop Science Society of America (CSSA)
- International Water Association (IWA)
- Soil Science Society of PAKISTAN (SSSP)
- PAKISTAN Agricultural Scientists Society (PASS)

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