

TARIQ AZIZ, Ph.D.

Sustainable Agriculture | Nutrient Cycling | Climate-Smart Food Systems

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PROFILE

Agricultural scientist with over 18 years of experience in sustainable agriculture, climate-smart food systems, nutrient management, technology transfer, science-policy integration, and international development. Extensive experience in leading multidisciplinary programmes, building strategic partnerships, mobilizing resources, and translating scientific innovations into practical solutions for governments, development organizations, private sector partners, and farming communities.

Currently serving as Regional Director (South Asia) of the International Nitrogen Initiative (INI) and Steering Committee Member of the UNEP Global Partnership on Nutrient Management (GPNM). Proven track record in programme management, stakeholder engagement, policy dialogue, donor-funded projects, and capacity development across South Asia.

CAREER HIGHLIGHTS

Regional Director (South Asia)

International Nitrogen Initiative (INI)

Steering Committee Member

UNEP Global Partnership on Nutrient Management (GPNM)

Principal Investigator / Programme Lead

UKRI South Asia Nitrogen Hub (Pakistan)

Managed Development Projects Exceeding PKR 1.3 Billion

Built Partnerships with

UNEP • FAO • UKRI • ICARDA • CABI • Ministry of Climate Change, Govt of Pakistan • Fertilizer Industry, Ministry of Environment, Govt of Japan, SACEP

Technology Transfer Leader

Climate-Smart Agriculture • Nutrient Stewardship • Soil Health • Farmer Capacity Building

International Speaker

COP29 • UNEA-6 • UNFCCC Bonn • HLPF, New York • International Nitrogen Conferences and workshops, Plant Nutrition Workshops and Conferences, UNEP Nitrogen Working Groups, UNEP South East and Asia Pacific Group

Research Leadership

100+ Peer-reviewed Publications • 3 Books • 12 book chapters • International Assessments

CORE COMPETENCIES

Strategic Leadership

Technology Transfer

Climate-Smart Agriculture

Public–Private Partnerships

Donor & Government Engagement

Stakeholder Engagement

Monitoring & Evaluation

Programme Management

Agricultural Innovation

Food & Nutrition Systems

Resource Mobilization

Science–Policy Interface

Capacity Development

Team Leadership

PROFESSIONAL EXPERIENCE

Associate Professor

University of Agriculture, Faisalabad

2013 – Present

- Lead research, outreach, and international collaboration programmes.
- Develop and manage multidisciplinary projects in sustainable agriculture and nutrient management.

- Supervise postgraduate research and mentor early-career scientists. Produced 50 M.Sc. (Hons.) and 5 Ph.D. students in Soil Science
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Regional Director (South Asia)

International Nitrogen Initiative (INI)

2022 – Present

- Provide strategic leadership for sustainable nitrogen management across South Asia.
 - Coordinate regional initiatives involving governments, research institutions, and international organizations.
 - Lead policy dialogues and stakeholder engagement activities.
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Steering Committee Member

Global Partnership on Nutrient Management (UNEP)

- Advise on global nutrient management strategies.
 - Support international collaboration and policy development.
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Principal and Project Director

University of Agriculture Faisalabad – Sub Campus Depalpur

2016–2023

- Led institutional administration and strategic development.
 - Managed infrastructure and academic development projects worth over **PKR 1.3 billion**.
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INTERNATIONAL LEADERSHIP

- Regional Director (South Asia), International Nitrogen Initiative
- Steering Committee Member, UNEP GPNM
- Pakistan Lead, South Asia Nitrogen Hub (UKRI)

- Member, International Nitrogen Management System (INMS)
- Organizer of international policy dialogues, webinars, and capacity-building programmes
- National focal role in science–policy initiatives on sustainable nutrient management

PROGRAMME MANAGEMENT

Programme	Role	Budget	Donor
South Asia Nitrogen Hub	Pakistan Lead	£19.6 Million Consortium	UKRI
UAF Development Project	Project Director	PKR 889 Million	HEC
Punjab Development Project	Project Director	PKR 454 Million	Government of Punjab
Engro Fertilizer Forecasting	Principal Investigator	PKR 3 Million	Engro Fertilizers
Bio-nanofertilizer Project	Principal Investigator	PKR 3.65 Million	HEC

SELECTED IMPACT

- Led national and international programmes on sustainable agriculture and nutrient management.
- Built partnerships with UN agencies, CGIAR centres, universities, government organizations, and the private sector.
- Organized major international policy dialogues and stakeholder consultations.
- Contributed to international assessments and guidance documents on sustainable nutrient management.
- Delivered training and technology transfer programmes benefiting researchers, extension workers, and farmers.

SELECTED PUBLICATIONS

- **100+** peer-reviewed journal articles
 - **3** books
 - **15+** book chapters
 - Contributor to the **Global Nitrous Oxide Assessment (UNEP/FAO)**
 - Editor of **Nitrogen Assessment: Pakistan as a Case Study** (Elsevier)
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EDUCATION

Postdoctoral Fellow – University of Western Australia, Australia

PhD – Soil Science, University of Agriculture, Faisalabad

Postgraduate Training – Justus Liebig University, Germany

MSc (Hons.) – Soil Science

BSc (Hons.) – Agriculture

SALIENT PUBLICATIONS

BOOKS

1. Abbas, A., Yang, A., Aziz, T., Wakeel, A. (2024) Pakistan Nitrogen Policy Report: Scientific Evidence, Current Initiatives and Policy Landscape. South Asia Nitrogen Hub (SANH) Policy Paper PP2. Faisalabad.
2. Brownlie, W.J., Aziz, T., Sutton, M.A., and Yan, X., (2024) Nitrogen Mitigation. INMS Guidance Document on Measures for Sustainable Nitrogen Management. INMS Guidance Document Series (Series Editors: M.A. Sutton, M. Schlegel, J. Baron and H.J.M. Van Grinsven). International Nitrogen Management System, UK Centre for Ecology & Hydrology, Edinburgh, UK. ISBN: 978-1-906698-90-4. DOI: 10.5281/zenodo.13831114.
3. Tariq Aziz et al., (Eds) 2021. Nitrogen Assessment; Pakistan as a case study. Elsevier Academic Press Publishers, USA. ISBN: 9780128244173

BOOK CHAPTERS

1. Nitrous oxide scenarios and abatement measures. 2024. CHAPTER 3 in: United Nations Environment Programme and Food and Agriculture Organization. 2024. Global Nitrous Oxide Assessment. Nairobi. <https://doi.org/10.59117/20.500.11822/46562>. pp.65-86.
2. Awan, M.I, M. I. Sohail, S. Hussain, M.A. Maqsood, M Nasim, and Tariq Aziz. 2024. Nitrogen Use Efficiency and Agricultural Sustainability. In: Rehman, M., J.C. Biswas and R.S. Meena Eds., Climate Change and Soil-Water-Plant Nexus, Agriculture & Environment. Springer Nature, Singapore. <https://doi.org/10.1007/978-981-97-6635-2>
3. Aziz T., A. Wakeel, A.N. Shahzad, R Rees and M. Sutton. 2021. Rethinking nitrogen use: need to plan beyond present. In: Nitrogen Assessment; Pakistan as a case study. Elsevier Publishers, USA. Pp.1-10
4. Awan, M.I., S. Raza, A Farooq, A. Nawaz and T. Aziz. 2021. Drivers of increased nitrogen use in Pakistan. In: Nitrogen Assessment; Pakistan as a case study. Elsevier Publishers, USA. Pp. 53-68.
5. Singh, B., H. M Bilal and T. Aziz. 2021. Nitrogen use efficiency in crop production: issues and challenges in South Asia. In: Nitrogen Assessment; Pakistan as a case study. Elsevier Publishers, USA. Pp.127-143.
6. Watto, M.A. T. Aziz, A Wakeel, W Ahmad, Abdul Jalil Marwat and Munir Hussain Zia. 2021. Pathways to sustainable nitrogen use and management in Pakistan. In: Nitrogen Assessment; Pakistan as a case study. Elsevier Publishers, pp. 177-189.
7. Maqsood, M.A., **T. Aziz**, M. Sabir, A. Wakeel, M. Sanaullah and M.Z. Rehman. 2017. Soil Organic Matter: Significance, Sources and Functions. Ch. 8. In: Soil Science, concepts and applications. Ed. Sabir et al. Managing Ed. Khan, and Farooq. University of Agriculture, Faisalabad. Pakistan.
8. Wakeel, A., M. Yaseen, M. A. Maqsood, M. Sanaullah and **T. Aziz**. 2017. Plant Nutrients and Soil Fertility Management. Ch. 7. In: Soil Science, concepts and applications. Ed. Sabir et al. Managing Ed. Khan, and Farooq. University of Agriculture, Faisalabad. Pakistan.
9. **Tariq Aziz**, M. A. Maqsood, S. Kanwal, S. Hussain, H.R. Ahmad and M. Sabir. 2015. Fertilizers and Environment: Issues and Challenges. In: Crop Production and Global Environmental Issues. pp 575-598. Ed. Hakim, K.R. ISBN: 978-3-319-23161-7 (Print) 978-3-319-23162-4 (Online). Springer International Publishing Switzerland
10. Ahmad, H.R., **Tariq Aziz**, M. Z. Rahman and Saifullah. 2015. Spatial mapping of metal contamination, In: Soil Remediation and Plants, Prospects and Challenges Elsevier. pp 415-431. K.R. Hakeem et al. (Ed.) Academic Press, Elsevier. USA. ISBN: 978-0-12-799937-1
11. **Aziz, T.**, M. Sabir, M. Farooq, M.A. Maqsood, H.R. Ahmad. 2014. Phosphorus deficiency in plants; Responses, adaptive mechanisms and signaling. In: Plant Signaling; Understanding the molecular cross-talks, Hakim et al. (Ed.) pp. Springer.

RESEARCH ARTICLES IN PEER REVIEWED INTERNATIONAL JOURNALS

2025

- 1 Wakeel, A., A. Qadeer, Z. Bano, M.R. Shahid, M. Rizwan, A. Kiran, M. Sanaullah, T. Aziz, R.M. Rees, A. Bhatia and J. Drewer. 2025. Managing Fertilizer Rates and Tillage Depth to Improve Nitrogen Use Efficiency and Soil Health. *Journal of Soil Science and Plant Nutrition* 25, 2937–2947 <https://doi.org/10.1007/s42729-025-02310-5> Journal ISSN 0718-9508 Impact Factor 3.1 ISSN 0718-9516
- Naqshe Zuhra, M. A. Maqsood, T. Aziz and M.I. Awan. 2025. Effect of feed and manure management on nitrogen footprints of commercial dairy farms: A survey study of Central Punjab. *Soil Environ.* 44(1): 104-113, 2025. <https://doi.org/10.25252/SE/2025/253789> ISSN 2075-1141

2024

- 1 Rasheed, N., M.A. Maqsood, T. Aziz, M.I. Ashraf, I. Saleem, S. Ehsan, A. Nawaz, H.M. Bilal and M. Xu. Zinc portioning and allocation patterns among various tissues confers variations in Zn use efficiency and bioavailability in lentil genotypes. *Frontiers Plant Sci.* 14; 1325370, doi.org/10.3389/fpls.2023.1325370 **1664-462X Impact Factor 4.8**

2023

- 1 Farooq, A., B. Saeed, H.M. Bilal, M.A. Maqsood, M. Nasim, T. Aziz and X. Mingang. 2023. Solubilization and uptake of phosphorus (P) by wheat and maize crops from indigenous rock phosphate applied with biogas slurry and bagasse ash. *Water, Air, Soil Pollution* 234:709. 1573-2932
- 2 Möhring, N., Kanter, D., Aziz, T. et al. Successful implementation of global targets to reduce nutrient and pesticide pollution requires suitable indicators. *Nat Ecol Evol* (2023). 7, 1556–1559 <https://lnkd.in/eZTchKcX> **2397-334X**
- 3 Amin, S., T. Aziz, M. Z. Rehman, I. Saleem, M. Rizwan, A. Ashar, H. A. Mussawar, M.A. Maqsood. Zinc oxide nanoparticles coated urea enhances nitrogen efficiency and zinc bioavailability in wheat in alkaline calcareous soils. *Environmental Science and Pollution Research* 30: 70121-70130 <https://doi.org/10.1007/s11356-023-27209-5> 0944-1344

- 4 Ashraf, N., C. Hu, X. Xu, **Tariq Aziz**, L. Wu, M. A. Waqas, M. Farooq, X. Hu, W. Zhang, M. Xu. Long-term manure application increased soil organic carbon and nitrogen mineralization through the accumulation of unprotected and physically protected carbon fractions. **Pedosphere** **Volume** **33**, **(2)**, **343-354**
<https://doi.org/10.1016/j.pedsph.2022.06.047> 1002-0160

2022

- 1 Abrar et al., 2022. Long-term manure application enhances organic carbon and nitrogen stocks in Mollisol subsoil. *Land Degradation & Development*. 34(3): 815-832
<https://doi.org/10.1002/ldr.4498> 1099-145X
- 2 Saeed, M.T. et al., 2022. Nutrient Accumulation During Vegetative and Reproductive Growth Affected by Endogenous and Exogenous Phosphorus Applications in Maize Crop. *Commun. Soil Sci. Plant Analysis* 54(7): 895-909.
<https://doi.org/10.1080/00103624.2022.2137180>
- 3 Ehsan, S., M. A. Maqsood, A. Muhmood, G. W. Price and Tariq Aziz. Recycled biowaste improved soil physical properties of alkaline soil and wheat performance, *Arabian Journal of Geosciences* (2022) 15:1282 <https://doi.org/10.1007/s12517-022-10558-9>.
- 4 Hameed, M.K. et al., 2022. Differential Metabolic Responses of Lettuce Grown in Soil, Substrate and Hydroponic Cultivation Systems under NH₄⁺/NO₃⁻ Application. *Metabolites* 12(5): 444 [DOI: 10.3390/metabo12050444](https://doi.org/10.3390/metabo12050444)
- 5 Raghuram N, **Tariq Aziz** , S. Kant , J. Zhou and S. Schmidt. Editorial: Nitrogen Use Efficiency and Sustainable Nitrogen Management in Crop Plants. **Front. Plant Sci.** doi: 10.3389/fpls.2022.862091
- 6 Sohail, M.I., M.Z. Rehman, **T. Aziz**, et al. Iron bio-fortification and heavy metal/(loid)s contamination in cereals: successes, issues, and challenges. **Crop & Pasture Science** <https://doi.org/10.1071/CP21771>

- 7 Bansal et al. Long-term trends of direct nitrous oxide emission from fuel combustion in South Asia". **Environ. Res. Lett.** 17 045028. 10.1088/1748-9326/ac5cf7
- 8 Umar, W., I. Czinkotaa, M. Gulyásb, **Tariq Aziz**, M. K. Hameed. Development and characterization of slow-release N and Zn fertilizer by coating urea with Zn fortified nano-bentonite and ZnO NPs using various binders. **Environmental Technology & Innovation** <https://doi.org/10.1016/j.eti.2021.102250>.
- 9 Saqib, M., A. Khaliq, A. Tanvir and **Tariq Aziz**. Impact of different nitrogen management options and weed competition periods on weed dynamics, productivity, and profitability of bread wheat. *Arabian J Geosciences* 15(9):865 10.1007/s12517-022-10146-x

2021

- 1 Nawaz, A., M.A. Maqsood, M.I. Awan and **Tariq Aziz**. Comparative efficacy of natural and synthetic nitrification inhibitors for nitrogen release in alkaline calcareous soils. *Pak J Agric Science* 58(5), 1473-1482; DOI: 10.21162/PAKJAS/21. 58, 5(2021).
- 2 Ashraf et al., 2021. Soil microbial biomass and extracellular enzyme-mediated mineralization potentials of carbon and nitrogen under long-term fertilization (> 30 years) in a rice-rice cropping system. **Journal of Soils and Sediments** 21: 3789-3800 <https://doi.org/10.1007/s11368-021-03048-0>.
- 3 Umar, W., M. K. Hameed, **Tariq Aziz**, et al. Synthesis, characterization, and application of ZnO nanoparticles for improved growth and Zn biofortification in maize, *Archives of Agronomy and Soil Science*, 67:9, 1164-1176, DOI: 10.1080/03650340.2020.1782893.
- 4 Ehsan, S., T. Aziz, M. A. Maqsood and A. Jabbar. 2021. Potential impact of bioenergy wastes as fertilizer supplement on soil properties. *Pak. J. Agri. Sci.*, 58(3), pp. 891–904
- 5 Qudsia et al., 2021. Variation in growth, physiology, yield, and quality of wheat under the application of different zinc coated formulations. *Appl. Sci.* 2021, 11(11), 4797; <https://doi.org/10.3390/app11114797>
- 6 Fatima, S., M. Sabir, T. Aziz et al., 2021. Comparison of fine and coarse rice varieties for nickel accumulation and growth response at different levels of nickel. *Clean - Soil, Air, Water* 2021, 49(6), 2000336 <https://doi.org/10.1002/clen.202000336>

- 7 Saleem, I., M.A. Maqsood, T. Aziz, I.A. Bhatti and A. Jabbar. 2021. Potassium ferrite nano coated DAP fertilizer improves wheat (*Triticum aestivum* L.) growth and yield under alkaline calcareous soil conditions. Pak. J. Agric. Sciences. Pak. J. Agri. Sci., Vol. 58(2), 485-492; 2021
- 8 Saleem, I., M.A. Maqsood, Z. Rehman, **T. Aziz**, I.A. Bhatti and S. Ali. 2021. Potassium ferrite nanoparticles on DAP to formulate slow release fertilizer with auxiliary nutrients Ecotoxicology and Environmental Safety (215): 1, 112148 <https://doi.org/10.1016/j.ecoenv.2021.112148>
- 9 Qudsia et al., 2021. Efficiency of various formulations of urea coated with bioaugmented (*Bacillus* sp.) ZnO to improve growth, yield and Zn contents of wheat grains. **Pol. J. Environ. Stud.** Vol. 30, No. 1 (2021), 1-9.
- 10 Abrar, M.M., H. Xu, T. Aziz et al., 2021. Carbon, nitrogen, and phosphorus stoichiometry mediate sensitivity of carbon stabilization mechanisms along with surface layers of a Mollisol after long-term fertilization in Northeast China. Journal of Soils and Sediments **21**, 705–723 <https://doi.org/10.1007/s11368-020-02825-7>

2020

- 1 Ashraf et al. 2020. Soil and microbial biomass stoichiometry regulate soil organic carbon and nitrogen mineralization in rice-wheat rotation subjected to long-term fertilization. **Journal of Soils and Sediments** 20, 3103–3113
- 2 Abrar, M., et al. Variations in profile distribution and protection mechanisms of organic carbon under long-term fertilization in a Chinese Mollisol. **Science Total Environment** 723: <https://doi.org/10.1016/j.scitotenv.2020.138181> (10.75)
- 3 Irfan, M., **Aziz, T.**, Maqsood, M.A. et al. Phosphorus (P) use efficiency in rice is linked to tissue-specific biomass and P allocation patterns. **Sci Reports (Nature)** 10, 4278 (2020). <https://doi.org/10.1038/s41598-020-61147-3> (4.99)
- 4 Sabir, M., M. Z. Rehman, **T. Aziz**, H.R. Ahmad, Saifullah & E. A. Waraich. Comparative residual effect of activated carbon and other organic amendments on immobilization and phytoavailability nickel and other metals to Egyptian Clover (*Trifolium alexandrinum*) in contaminated soil. **Int. J. of Phyto-remediation.** 22(7): 687-693 DOI: 10.1080/15226514.2019.1707165

- 5 Ali, M., Maqsood, M. A., Aziz, T., & Awan, M. I. (2020). Neem (*Azadirachta indica*) oil coated urea improves nitrogen use efficiency and maize growth in an alkaline calcareous soil. *Pakistan Journal of Agricultural Sciences*, 57(3), 675-684. <https://doi.org/10.21162/PAKJAS/20.9850>
- 6 Rashid, N., M.A. Maqsood, **T. Aziz**, et al. Characterizing lentil germplasm for zinc biofortification and high grain output. **J. Soil Sci. Plant Nutr.** **20**, 336–1349 (2020)