

Dr. MD. MEZANUR RAHMAN

Email me: mrahman@gau.edu.bd; mdmerahm@ttu.edu

Call me: +1 (806) 224-4606

[ResearchGate](#); [LinkedIn](#)

Address: Knoxville, TN 37919

SHORT BIO

Dedicated and accomplished Plant Scientist with 10 years of experience in physiological, biochemical, and molecular investigations of abiotic stress tolerance in major crops and tree species. Expertise includes photosynthetic research, plant-microbe interactions, tree-crop interactions, phytohormone signaling, stress-response mechanisms, nanotechnology applications, and signaling molecule applications. Proven track record of securing research funding, leading interdisciplinary projects, and publishing high-impact scientific papers. Highly skilled in lesson planning, presenting, and mentoring students, demonstrating well-rounded expertise in fostering a secure and stimulating learning environment. Seeking a tenure-track Assistant Professor, Researcher, or Postdoctoral position to drive cutting-edge discoveries and inspire the next generation of scientists.

RESEARCH EXPERTISE

- **Abiotic Stress Tolerance:** Salinity, drought, heat, nutrient deficiency, heavy metals, submergence, and waterlogging stress studies in maize, sorghum, wheat, rice, soybean, cotton, forest trees, and horticultural crops.
- **Tree-Crop Interaction:** Agroforestry research focused on tree-crop interactions involving fruit species such as guava, jackfruit, jujube, and citrus, as well as forest species including eucalyptus and acacia.
- **Climate change:** Investigating the influence of climatic parameters such as temperature, humidity, and rainfall on the yield of major crops.
- **Plant-Microbe interactions:** Investigations into the role of *Bacillus* spp. and *Rhizobium japonicum* in enhancing root system architecture in soybean, coupled with reciprocal grafting approaches to elucidate source-sink relationships influencing yield modulation under drought and heat stress.
- **Phytohormone and Signaling Molecules:** Functional roles of strigolactones, karrikins, abscisic acid, salicylic acid, jasmonic acid, hydrogen sulfide, melatonin, silicon, glutathione, acetic acid, ethanol, and nanoparticles in stress adaptation.
- **Omics Approaches:** Application of transcriptomics, metabolomics, and hormonomics in stress physiology.
- **Molecular Biology:** Gene expression analysis (qRT-PCR) and DNA/RNA extraction.
- **Photosynthesis Research:** Investigation of photosynthetic efficiency, electron transport chain dynamics, chlorophyll fluorescence, and carbon assimilation under stress conditions.
- **Plant Physiology & Biochemistry:** Gas exchange measurements (Li-6800), water potential assessments (615D Pressure Chamber), oxidative stress marker quantification, and analysis of enzymatic and non-enzymatic antioxidants.
- **Analytical Techniques:** Spectrophotometry, ICP-MS, and fluorescence microscopy.
- **Greenhouse and Field Research:** Designing and executing stress-response experiments under controlled greenhouse and field conditions.

PROFESSIONAL EXPERIENCE

- **Postdoctoral Research Associate (Nov 2025 to till now)**
Plant Systems Biology Group, Oak Ridge National Laboratory (ORNL), Oak Ridge, TN, USA.
- **Major responsibilities**
 - Conducting integrative research on plant-microbe interactions, multi-omics approaches, and stress physiology in model and crop plants.
 - Collaborating with interdisciplinary teams to explore microbiome functions, photosynthetic resilience, and genetic mechanisms underlying stress adaptation.
- **Graduate Research Assistant (September 2021 to June 2025)**
Department of Plant and Soil Science, Institute of Genomics for Crop Abiotic Stress Tolerance, Texas Tech University, USA
- **Major responsibilities**

- Led research projects investigating the effects of signaling molecules and phytohormones on crop tolerance to individual and combined abiotic stresses, contributing to advancements in agricultural resilience.
 - Explored the role of *Bacillus* spp. and *Rhizobium japonicum* in enhancing root system architecture and nodulation in soybean plants, combined with reciprocal grafting approaches to elucidate source–sink relationships influencing yield under drought and heat stress.
 - Conducted multi-omics data analysis for technical reports and peer-reviewed publications.
 - Supervised graduate and undergraduate researchers, providing mentorship in experimental design, data analysis, and manuscript preparation.
 - Assisted in preparing grant proposals by conducting extensive literature research and drafting documents, contributing to the successful acquisition of \$400K in research funding from organizations such as the United Soybean Board and Cotton Incorporated.
- **Researcher (July 2015 to June 2021)**
CIFOR-ICRAF Bangladesh, GAU Campus, Gazipur 1706, Bangladesh
- **Major responsibilities**
- Led studies on exogenous chemical applications by designing and executing laboratory and field trials to evaluate plant responses under abiotic stress, identifying stress mitigation strategies that improved agricultural practices.
 - Conducted field research on farmers' lands to elucidate interactions between fruit trees and/or forest trees with high-value crops, aiming to maximize land use efficiency and enhance the benefit–cost ratio for farmers.
 - Collected germplasm of medicinal plants and fruit tree species from various regions across Bangladesh.
 - Established fruit tree orchards to study long-term tree–crop interactions.
 - Performed geospatial mapping to analyze land-use and land-cover changes.
 - Coordinated international research projects with collaborators from the USA, South Korea, Japan, Nepal, and Sri Lanka, managing cross-institutional activities and facilitating knowledge exchange to strengthen research partnerships and increase publication output.
 - Assisted in preparing grant proposals, securing research funding from national and international agencies, and executing research across multiple environmental locations.
- **Research Collaborator (2017 to 2019)**
National and International Research Consortia (National Science Foundation, Asia-Pacific Network for Global Change Research, BSMRAU, Virginia Tech, Kansas State University)
- Performed research on climate resilience and soil-plant interactions by assisting in experimental design, data analysis, and manuscript preparation, generating findings that supported sustainable agriculture policy recommendations.

PROJECT WRITING/EXECUTING EXPERIENCE

- Role of PGPR, a biofertilizer in modulating soybean root traits and increasing yield potential under drought conditions. **Received grant (\$106,671) from United Soybean Board, USA. Ongoing**
- Combining chemical and genetic strategies for improvement of growth and yield potential in soybeans under drought stress. **Received grant (\$112,000) from United Soybean Board, USA. Completed.**
- Combining chemical and genetic strategies for improvement of growth and yield potential in soybeans under drought stress. **Received grant (\$100,000) from United Soybean Board, USA. Completed.**
- Improvement of cotton growth and yield performance under drought stress with the employment of zinc oxide nanoparticles. **Received grant (\$22,000) from Cotton Incorporated, USA. Ongoing.**
- A comprehensive multi-omics approach to elucidate signaling molecules-based drought tolerance mechanisms in sorghum. **Submitted to Department of Energy, USA.**
- Acetic acid application: an environmentally friendly chemical approach to improve drought resistance in maize under field conditions. **Submitted to Texas Corn Producers Board, USA.**
- Signaling molecule-based strategies for enhancing heat tolerance in elite wheat accessions. **Submitted to Foundation for Food and Agriculture Research, USA.**
- Combining chemical strategies with genetic potential of contrasting soybean varieties for improvement of growth and yield potential under drought stress. **Submitted to Southern Soybean Research Program, USA.**

RESEARCH PROFILE

Google Scholar: <https://scholar.google.com/citations?user=ck9VhfcAAAAJ&hl=en>

Research gate: https://www.researchgate.net/profile/Md_Rahman478.

ORCID: <https://orcid.org/0000-0001-8822-9683>

RESEARCH INTEREST

- Investigating plant–microbe interactions under combined abiotic stresses, such as drought and heat, drought and nutrient deficiency, salinity and drought, and salinity and waterlogging.
- Unveiling photosynthetic dynamics in C₃ and C₄ crops under real field conditions through the integration of omics approaches.
- Elucidating the impact of water and nutrient stresses on crops such as soybean, barley, chilli, and poplar under both field and greenhouse conditions.
- Exploring the functional roles and crosstalk of signaling molecules (e.g., nitric oxide, hydrogen sulfide, ethanol, melatonin, acetic acid) and hormones (e.g., strigolactones, karrikins, salicylic acid, auxins) in plant responses to abiotic stresses, including drought, salinity, heat, nutrient deficiency, waterlogging, and heavy metal toxicity.
- Discovery and functional characterization of novel genes for enhancing abiotic stress tolerance in crops and trees (e.g., soybean, cotton, sorghum, maize, rice, and poplar) through genetic engineering approaches.

PUBLICATIONS

MANUSCRIPT SUBMITTED

1. **Rahman MM***, Keya SS, Islam R, Raza A* (2025). Battling the sun's double-edged sword: Unraveling plant strategies against high light and temperature stress to safeguard photosynthesis and combat oxidative stress. Under review in **Plant Communications** Journal.
2. Hasan, M., Robyul, I., Roni, M.S., Keya SS., Rahman, M.A., and **Rahman, M.M.***. (2025). Unveiling mobile nutrients interactions with drought in Barley through nutrient dynamics and yield assessment. Submitted to **Plant Stress** Journal.
3. Hasan, M., Robyul, I., Roni, M.S., Keya SS., Rahman, M.A., and **Rahman, M.M.***. (2025). Elucidation of the role biochar and mulching in overcoming drought stress in chilli. Submitted to **Plant Stress** Journal.

ARTICLES IN PEER-REVIEWED JOURNALS

Total number: **76** (Research articles: **60**; Reviews: **14**; Book Chapter: **2**); First-author papers: **12**; Corresponding/Co-corresponding author papers: **8**, Total Impact Factor: **227.5**; Total Citations: **2465**, h-index: **27**, i10-index: **53** (as of July 2025, Google Scholar). For current citation metrics, please visit <https://scholar.google.com/citations?user=ck9VhfcAAAAJ&hl=en>.

2025

1. Ahsan, S. M., Keya, S. S., Injamum-Ul-Hoque, M., Howlader, N. C., Hasan, M. R., Haque, M. A., ... & **Rahman, M. M.** (2026). Epigenome Editing for Cannabinoid Yield: Targets, Tools, and Priorities in Cannabis sativa. *International Journal of Molecular Sciences*, 27(14), 6299.
2. Rakkammal, K., Muthuramalingam, P., Pandian, S., Rahman, M. A., **Rahman, M. M.**, Islam, S. S., ... & Ramesh, M. (2026). Integrative insights into abiotic stress tolerance in finger millet (*Eleusine coracana* (L.) Gaertn.): linking physiological, biochemical, and molecular perspectives for developing climate-smart cereals. *Frontiers in Plant Science*, 17, 1815325.
3. Ahmed, B., **Rahman, M. M.**, Roni, M. S., Chu, H. D., Hossain, M. S., Bashar, K. K., ... & Tran, L. S. P. (2026). Comprehensive Genome-wide Analysis of CBL and CIPK Genes in *Corchorus olitorius* and *C. capsularis*: Unveiling their Synergistic Roles in Stress Adaptation and Fiber Development. *Journal of Plant Growth Regulation*, 45(3), 2072-2093.
4. Bulle, M., **Rahman, M. M.**, Kota, S., Islam, M. R., Keya, S. S., Abbagani, S., & Kirti, P. B. (2026). Advancing chloroplast bioengineering: Innovations, regulatory challenges, and translational pathways for sustainable agriculture. *International Journal of Biological Macromolecules*, 150873.
5. Ahsan, S. M., **Rahman, M. M.**, Injamum-Ul-Hoque, M., Choi, H. W., & Rahman, M. A. (2026). Deciphering the role of melatonin in modulating root system architecture, endogenous hormones, plant development, and abiotic stress tolerance in horticultural plants. In *Melatonin in Horticultural Plants* (pp. 81-103). Academic Press.

2025

6. Tran, C.D., **Rahman, M.M.**, Chu, H.D., Nguyen, K.H., Watanabe, Y., Le, Q.T.N., La, H.V., Van Ha, C., Mochida, K., Li, W. and Tran, L.S.P., 2025. CaNAC67, a stress-responsive NAC transcription factor-encoding gene from chickpea (*Cicer arietinum*), improves drought tolerance in transgenic *Arabidopsis thaliana*. *Plant Physiology and Biochemistry*, p.110449.
7. Akter M, Keya SS, Gupta A, Islam R, Rahman A, Hussain MM, Kien NH, Tahiat T, Alam KA, Le TD, Ahmed M, Tran L-SP & **Rahman MM*** (2025). Exploring ion dynamics and translocation, gas exchange efficiency, antioxidant response, and osmoprotectants in contrasting soybean genotypes under combined salinity and waterlogging stresses. Accepted in **Plant Science** Journal.
8. Bulle M*, **Rahman MM***, Islam I, Abbagani S. Developing climate-resilient chili peppers: Targeting transcription factors through CRISPR genome editing. *Planta* **262**, 30 (2025). <https://doi.org/10.1007/s00425-025-04747-5>
9. **Rahman, M.M.***, Keya SS., Bulle, M., Ahsan S.M., Rahman, M.A., Roni, M.S., Noor, M.M.A., and Hasan, M. (2025). (2025). Past trauma, better future: how stress memory shapes plant adaptation to drought. Accepted in **Functional Plant Biology** 52, FP24355. doi:10.1071/FP24355
10. Raza, A., Khare, T., Zhang, X., **Rahman, M.M.**, Hussain, M., Gill, S.S., Chen, Z.-H., Zhou, M., Hu, Z. and Varshney, R.K. (2025), Novel Strategies for Designing Climate-Smart Crops to Ensure Sustainable Agriculture and Future Food Security. *Journal of Sustainable Agriculture and Environment*, 4: e70048. <https://doi.org/10.1002/sae2.70048>
11. Rahman, M. A., Lee, S. H., Park, H. S., Min, C. W., Woo, J. H., Choi, B. R., ... **Rahman MM** & Lee, K. W. (2025). Light Quality Plays a Crucial Role in Regulating Germination, Photosynthetic Efficiency, Plant Development, Reactive Oxygen Species Production, Antioxidant Enzyme Activity, and Nutrient Acquisition in Alfalfa. *International Journal of Molecular Sciences*, 26(1), 360.
12. Ke Malani, S., Ravelombola, W., Manley, A., Pham, H., Brown, M., **Rahman, M. M.** (2025). Genome-Wide Association Study for Nodule Traits in Guar. *Current Issues in Molecular Biology*, 47(3), 151.

2024

13. Keya SS, Islam R, Bulle M, Pham H, Patwary A, Razi MA, Hemel FH, Ghosh TK, Rossi NH, Hawa Z, Rahman MA & **Rahman MM*** (2024). Thirsty, soaked, and thriving: Maize morpho-physiological and biochemical responses to sequential drought, waterlogging, and re-drying. *Plant Stress*, 15, 100722. (IF: 6.8)
14. Ahsan SM, Hoque MI, Shaffique S, Ayooobi A, Rahman MA*, **Rahman MM*** & Choi HW* (2024). Illuminating *Cannabis sativa* L.: The Power of Light in Enhancing C. sativa Growth and Secondary Metabolite Production. *Plants*, 13, 2774. (IF: 4.0)
15. Rahman MA, Das AK, Riyadh ZA, Suhag M, **Rahman MM*** (2024). Eucalyptus in Agriculture: Friend or Foe? Analyzing its impact on crop yields, soil dynamics, and farmers' perceptions in Bangladesh. *Agroforestry Systems*, 1-20. (IF: 2.0)
16. **Rahman MM**, Ghosh PK, Akter M, Al Noor MM, Rahman MA, Keya SS, Roni MS, Biswas A & Bulle M (2024). Green vanguards: Harnessing the power of plant antioxidants, signal catalysts, and genetic engineering to combat reactive oxygen species under multiple abiotic stresses. *Plant Stress*. 23:100547. (IF: 6.8)
17. **Rahman MM**, Keya SS, Sahu A, Gupta A, Dhingra A, Tran LSP & Mostofa MG (2024). Acetic acid: a cheap but chief metabolic regulator for abiotic stress tolerance in plants. *Stress Biology*. 4(1), 34.
18. Das AK, Ghosh PK, Nihad SAI, Sultana S, Keya SS, Rahman MA, ... & **Rahman MM*** (2024). Salicylic acid priming improves cotton seedling heat tolerance through photosynthetic pigment preservation, enhanced antioxidant activity, and osmoprotectant levels. *Plants*. 13(12), 1639. (IF: 4.0)
19. Gupta A, Watanabe Y, Van Ha C, Abdelrahman M, Li W, **Rahman MM**, Keya SS, Nigam D, Jiao Y, Anik TR & Saha G (2024). Disruption in jasmonic acid biosynthesis influences metabolism of other hormones in *Arabidopsis*. *Journal of Plant Growth Regulation*. 31:1-6. (IF: 3.9)
20. Ahsan SM, Injamum-UI-Hoque M, Das AK, **Rahman MM**, Mollah MM, Paul NC & Choi HW (2024). Plant–entomopathogenic fungi interaction: recent progress and future prospects on endophytism-mediated growth promotion and biocontrol. *Plants*. 13(10):1420. (IF: 4.0)
21. Ahsan SM, Choi HW, Injamum-UI-Hoque M, **Rahman MM**, Hritik TH, Mahamud AS, Sarker A, Tusher TR. Valorization of Agro-food Wastes and Byproducts into Bioactive Peptides. In *Agro-waste to Microbe Assisted Value Added Product: Challenges and Future Prospects: Recent Developments in Agro-waste Valorization Research 2024* Jun 1 (pp. 61-92). Cham: Springer Nature Switzerland.
22. Ghosh PK, **Rahman MM**, Saha AK, Ashrafuzzaman M, Tofazzal Islam M & Siddiqui MN (2024). Mechanistic Insight into the Physiological and Biochemical Traits Improvement by Mycorrhiza Biofertilization in Soybean Under Phosphorus-Starved Conditions. *Journal of Plant Growth Regulation*. 1-14. (IF: 3.9)
23. Bulle M, Venkatapuram AK, **Rahman MM**, Attia KA, Mohammed AA, Abbagani S & Kirti PB (2024). Enhancing drought tolerance in chilli pepper through AdDjSKI-mediated modulation of ABA sensitivity, photosynthetic preservation, and ROS scavenging. *Physiologia Plantarum*. 176(3), e14379.

(IF: 5.4)

24. Ghosh PK, Sharmin Sultana S, Keya SS, Nihad SAI, Shams S-N-U, Hossain MS, Tahiat T, Rahman MA, **Rahman MM*** & Raza A* (2023). Ethanol-mediated cold stress tolerance in sorghum through photosynthetic adaptation, antioxidant defense, and osmoprotectants enhancement. *Plant Stress*. 11, 100401. (IF: 6.8)
25. Honey O, Nihad SAI, Rahman MA, **Rahman MM**, Islam M & Chowdhury MZR (2024). Exploring the antioxidant and antimicrobial potential of three common seaweeds of Saint Martin's Island of Bangladesh. *Heliyon*. 10(4). (IF: 3.4)

2023

26. Hasan MM, Rahman MA, Corpas FJ, **Rahman MM**, Jahan MS, Liu X-D, Ghimire S, Alabdallah NM, Wasseem M, Alharbi BM, Raza A & Fang X (2023). Salt stress tolerance in rice (*Oryza sativa* L.): A proteomic overview of recent advances and future prospects. *Plant Stress*. 100307. (IF: 6.8)
27. **Rahman MM**, Gupta A, Keya SS, Mostofa MG, Ghosh PK, Abdelrahmana M & Tran LSP (2023). Jasmonic acid augments the antioxidant defense system to alleviate the combined drought and heat stress effects in soybean. *Plant Physiology and Biochemistry*. 206, 108193. (IF: 6.1)
28. **Rahman MM**, Das AK, Sultana S, Ghosh PK, Islam MR, Keya SS, Ahmed M, Khan MAR, Lovell M, Rahman MA, Anik TR, Fnu P, Ahsan SM, Tran LSP & Mostofa MG (2023). Biochar potentially enhances maize tolerance to arsenic toxicity by improving physiological and biochemical responses to excessive arsenate. *Biochar*. 5(1), 71. (IF: 13.1)
29. Sultana S, **Rahman MM**[†], Das AK, Haque MA, Rahman MA, Islam SMN, Ghosh PK, Keya SS, Tran LSP & Mostofa MG (2023). Role of salicylic acid in improving yield of two promising mung bean genotypes under waterlogging stress through antioxidant defense and osmoprotectant levels modulation. *Plant Physiology and Biochemistry*. 206, 108230. (IF: 6.1)
30. Miah MG., Islam MR, Roy J, **Rahman MM** & Abdullah HM (2023). A changing coastal ecosystem: Cox's Bazar in south-eastern coastal region of Bangladesh. *Environment, Development and Sustainability*. 25(7), 6141-6165. (IF: 4.70).
31. Keya SS, Mostofa MG, **Rahman MM**, Das AK, Sultana S, Ghosh PK, Anik TR, Ahsan SM, Rahman MA, Jahan N & Tran LSP (2023). Salicylic acid application improves photosynthetic performance and biochemical responses to mitigate saline stress in cotton. *Journal of Plant Growth Regulation*. 42(9), 5881-5894. (IF: 3.9)
32. Younes NA, Anik TR, **Rahman MM**, Wardany AA, Dawood MFA, Tran LSP, Latef AAHA & Mostofa MG (2023). Effects of microbial biostimulants (*Trichoderma album* and *Bacillus megaterium*) on growth, quality attributes, and yield of onion under field conditions. *Heliyon*. 9(3). (IF: 3.4)
33. Islam SMN, Paul N, **Rahman MM**, Haque MA, Rohman MM & Mostofa MG (2023). Salicylic acid application mitigates oxidative damage and improves the growth performance of barley under drought stress. *Phyton* (0031-9457). 92(5). (IF: 1.3)
34. Morshed MN, Mamun MAA, Nihad SAI, Rahman MM, Sultana N & Rahman MM (2023). Effect of weather variables on seasonal abundance of rice insects in southeast coastal region of Bangladesh. *Journal of Agriculture and Food Research*. 11 (2023) 100513. (IF: 4.8)

2022

35. Mostofa MG, Abdelrahman M, **Rahman MM**, Cuong TD, Nguyen KH, Watanabe Y, Itouga M, Li W, Zhe W, Mochida K & Tran LSP (2022). Karrikin receptor KAI2 improves salt tolerance by regulating ionic homeostasis, oxidative stress mitigation and phytohormonal gene expressions in *Arabidopsis*. *Plant and Cell Physiology*. 63(12), 1927-1942. (IF: 3.9)
36. Mostofa MG, **Rahman MM**, Ghosh TK, Kabir AH, Abdelrahma M & Tran LSP (2022). Potassium in plant physiological adaptation to abiotic stresses. *Plant Physiology and Biochemistry*. 186, 279-289. (IF: 6.10)
37. Keya SS, Mostofa MG, **Rahman MM**, Das AK, Rahman MA, Anik TR, Sultana S, Khan MAR & Tran LSP (2022). Effects of glutathione on waterlogging-induced damage of sesame crop. *Industrial Crops and Products*. 185, 115092. (IF: 5.60)
38. **Rahman MM**, Mostofa MG, Das AK, Anik TR, Keya SS, Ahsan SM, Khan AR, Hossain MM, Allah EFA & Tran LSP (2022). Ethanol application positively modulates photosynthetic traits, antioxidant defense and osmoprotectant levels to enhance drought acclimatization in soybean. *Antioxidants*, 11(3), 516. (IF: 6.00)
39. Islam MR, **Rahman MM**, Mohi-Ud-Din M, Akter M, Zaman E, Keya SS, Hasan M & Hasanuzzaman M (2022). Cytokinin and gibberellic acid-mediated waterlogging tolerance of mung bean (*Vigna radiata* L. Wilczek). *PeerJ*. 10, e12862. (IF: 2.30)
40. Das AK, Anik TR, **Rahman MM**, Keya SS, Islam MR, Rahman MA, Sultana S, Ghosh PK, Khan S, Ahamed T, Ghosh TK, Tran LSP & Mostofa MG (2022) Ethanol treatment enhances physiological and biochemical responses to mitigate saline toxicity in soybean. *Plants*. 11, 272. (IF: 4.00)

2021

41. Mostofa MG, Ha CV, **Rahman MM**, Nguyen KH, Keya SS, Watanabe Y, Itouga M, Hashem A, Abd_Allah EF, Fujita M & Tran LSP (2021). Strigolactones modulate cellular antioxidant defense mechanisms to mitigate arsenate toxicity in rice shoots. **Antioxidants**. 1412120. (IF: 6.00)
42. Ghosh TK, Tompa NH, **Rahman MM**, Mohi-Ud-Din M, Al-Meraj SMZ, Biswas MS & Mostofa MG (2021). Acclimation of liverwort *Marchantia polymorpha* to physiological drought reveals important roles of antioxidant enzymes, proline and abscisic acid in land plant adaptation to osmotic stress. **PeerJ**. 9: e12419. (IF: 2.30)
43. **Rahman MM**, Mostofa MG, Keya SS, Siddiqui MN, Ansary MMU, Das AK & Tran LSP (2021). Adaptive mechanisms of halophytes and their potential in improving salinity tolerance in plants. **International Journal of Molecular Sciences**. 22, 10733. (IF: 4.90)
44. Das AK, Rahman MA, **Rahman MM**, Saha SR, Keya SS, Suvoni SS, Miah MG, Current D & Rizvi J (2021). Scaling up of jujube-based agroforestry practice and management innovations for improving efficiency and profitability of land uses in Bangladesh. **Agroforestry Systems**. 96(2), 249-263. (IF: 2.00)
45. Saha G, Mostofa MG, **Rahman MM** & Tran LSP (2021). Silicon-mediated heat tolerance in higher plants: A mechanistic outlook. **Plant Physiology and Biochemistry**. 166, 341-347. (IF: 6.10)
46. Younes NA, **Rahman MM**, Wardany AA, Dawood MF, Mostofa MG, Keya SS, Abdel Latef AA & Tran LSP (2021). Antioxidants and bioactive compounds in licorice root extract potentially contribute to improving growth, bulb quality and yield of onion (*Allium cepa*). **Molecules**. 26, 2633. (IF: 4.20)
47. Mostofa MG, **Rahman MM**, Nguyen KH, Li W, Watanabe Y, Tran CD, Zhang M, Itouga M, Fujita M & Tran LSP (2021). Strigolactones regulate arsenate uptake, vacuolar-sequestration, and antioxidant defense responses to resist arsenic toxicity in rice roots. **Journal of Hazardous Materials**. 415, 125589. (IF: 12.20)
48. Mostofa MG, **Rahman MM**, Ansary MMU, Keya SS, Abdelrahman M, Miah MG & Tran LSP (2021). Silicon in mitigation of abiotic stress-induced oxidative damage in plants. **Critical Reviews in Biotechnology**. 41, 918-934. (IF: 8.10)
49. Hosseini MS, Samsampour D, Zahedi SM, Zamanian K, **Rahman MM**, Mostofa MG & Tran LSP (2021). Melatonin alleviates drought stress impact on growth and essential oil yield of lemon verbena by enhancing antioxidant responses, mineral balance, and abscisic acid content. **Physiologia Plantarum**. 172, 1363-1375. (IF: 5.40)
50. Siddiqui MN, Mostofa MG, **Rahman MM**, Tahjib-Ul-Arif M, Das AK, Mohi-Ud-Din M, Rohman MM, Hafiz HR, Ansary MM & Tran LSP (2021). Glutathione improves rice tolerance to submergence: insights into its physiological and biochemical mechanisms. **Journal of Biotechnology**. 325, 109-118. (IF: 4.10)

2020

51. **Rahman MM**, Mostofa MG, Keya SS, Rahman MA, Das AK, Islam MR, Abdelrahman M, Bhuiyan MSU, Naznin T, Ansary MMU & Tran LSP (2020). Acetic acid improves drought acclimation in soybean: an integrative response of photosynthesis, osmoregulation, mineral uptake, and antioxidant defense. **Physiologia Plantarum**. 172, 334-350. (IF: 5.40)
52. Mostofa MG, **Rahman MM**, Siddiqui MN, Fujita M & Tran LSP (2020). Salicylic acid antagonizes selenium phytotoxicity in rice: selenium homeostasis, oxidative stress metabolism and methylglyoxal detoxification. **Journal of Hazardous Materials**. 394, 122572. (IF: 12.20)
53. Das AK, Rahman MA, Keya SS, Saha SR & **Rahman MM** (2020). Malta-based agroforestry system: an emerging option for improving productivity, profitability and land use efficiency. **Environmental Sustainability**. 3, 521-532. (IF: 3.00)
54. Riyadh ZA, Rahman MA, Miah MG, Saha SR, Hoque MA, **Rahman MM** & Miyajima I (2020). Performance of spices as lower-story crop in jackfruit-papaya multistorey agroforestry system in Bangladesh. **Journal of the Faculty of Agriculture**. Kyushu University, 65, 223-231. (IF: 0.40)

2019

55. Nguyen KH, Mostofa MG, Watanabe Y, Tran CD, **Rahman MM** & Tran LSP (2019). Overexpression of *GmNAC085* enhances drought tolerance in *Arabidopsis* by regulating glutathione biosynthesis, redox balance and glutathione-dependent detoxification of reactive oxygen species and methylglyoxal. **Environmental and Experimental Botany**. 161, 242-254. (IF: 4.50)
56. Mostofa MG, **Rahman MM**, Ansary MMU, Fujita M & Tran LSP (2019). Interactive effects of salicylic acid and nitric oxide in enhancing rice tolerance to cadmium stress. **International Journal of Molecular Sciences**. 20, 5798. (IF: 4.90)
57. Latef AA, Mostofa MG, **Rahman MM**, Abdel-Farid IB & Tran LSP (2019). Extracts from yeast and carrot roots enhance maize performance under seawater-induced salt stress by altering physio-biochemical characteristics of stressed plants. **Journal of Plant Growth Regulation**. 38, 966-979. (IF: 3.90)
58. **Rahman MM**, Mostofa MG, Rahman MA, Islam MR, Keya SS, Das AK, Miah MG, Kawser AQMR, Sowrav A & Tran LSP (2019). Acetic acid: a cost-effective agent for mitigation of seawater-induced salinity in mung bean. **Scientific Reports**. 9, 15186. (IF: 3.80),

59. **Rahman MM**, Mostofa MG, Rahman MA, Miah MG, Saha SR, Karim MA, Keya SS, Akter M, Islam M & Tran LSP (2019). Insight into salt tolerance mechanisms of the halophyte *Achras sapota*: an important fruit tree for agriculture in coastal areas. **Protoplasma**. 256, 181-191. (IF: 2.50)
60. Rahman MA, Das AK, Saha SR, Uddin MM & **Rahman MM** (2019). Morpho-physiological response of *Gliricidia sepium* to seawater-induced salt stress. **The Agriculturists**. 17, 66-75.
61. Riyadh ZA, Rahman MA, Miah MG, Saha SR, Hoque MA, Saha S & **Rahman MM** (2019). Performance of aroid under jackfruit-based agroforestry system in terrace ecosystem of Bangladesh. **Annals of Bangladesh Agriculture**. 23, 79-87.
62. Miah MG, Rahman MM, Saha SR, Islam MM, Nayak D, Dhyani SK & Rizvi J (2019). Morpho-physiological characterization of jackfruit (*Artocarpus heterophyllus* Lam.) accessions in Bangladesh. **Indian Journal of Agroforestry**. 21, 1-12.

2018

63. Tahjib-Ul-Arif M, Siddiqui MN, Sohag AA, Sakil MA, **Rahman MM**, Polash MA, Mostofa MG & Tran LSP (2018). Salicylic acid-mediated enhancement of photosynthesis attributes and antioxidant capacity contributes to yield improvement of maize plants under salt stress. **Journal of Plant Growth Regulation**. 37,1318-30. (IF: 3.90)
64. Rahman MA, Rahman A, Miah MG, Hoque MA & **Rahman MM** (2018). Productivity and profitability of jackfruit-eggplant agroforestry system in the terrace ecosystem of Bangladesh. **Turkish Journal of Agriculture-Food Science and Technology**. 6, 124-129.
65. Miah MG, **Rahman MM**, Rahman MA & Abdullah HM (2018). Land use functions assessment for sustainable land management: a case study in Barind tract of Bangladesh. **Annals of Bangladesh Agriculture**. 22, 1-16.

2017

66. **Rahman MM**, Rahman MA, Miah MG, Saha SR, Karim MA & Mostofa MG (2017). Mechanistic insight into salt tolerance of *Acacia auriculiformis*: the importance of ion selectivity, osmoprotection, tissue tolerance, and Na⁺ exclusion. **Frontiers in Plant Science**. 8, 155. (IF: 4.1)

2016

67. **Rahman MM**, Haque MA, Nihad SAI, Howlader MRA & Akand MMH (2016). Morpho-physiological response of *Acacia auriculiformis* as influenced by seawater-induced salinity stress. **Forest Systems**. 25, 6. (IF: 0.8)
68. Islam AS, Rana MS, Rahman MM, Mian MJA, **Rahman MM**, Rahman MA & Naher N (2016). Growth, yield and nutrient uptake capacity of rice under different sulphur levels. **Turkish Journal of Agriculture-Food Science and Technology**. 4, 557-565.
69. Hasan M, Rahim MA, Islam AKMS, **Rahman MM**, Rahman MA & Naher N (2016). Effect of management practices on the growth and yield of lime and lemon. **International Journal of Bioscience**. 8, 22-33.
70. Anjum M, Rahman MA, Parvin S, Afrad MSI & **Rahman MM** (2016). Species diversity and productivity at different microsite of homestead in the terrace ecosystem of Bangladesh. **Annals of Bangladesh Agriculture**. 20, 25-39.
71. Miah MG, Rahman MA, **Rahman MM** & Saha SR (2016). Impacts of climate variability on major food crops in selected agro-ecosystems of Bangladesh. **Annals of Bangladesh Agriculture**. 20, 61-74.
72. Sohel MH, Miah MR, Mohiuddin SJ, Islam AKMS, **Rahman MM** & Haque MA (2016). Correlation and path coefficient analysis of Blackgram (*Vigna mungo* L.). **Journal of Bioscience and Agriculture Research**. 7, 621-629.
73. Islam AKMS, Nath UK, Rai PK, **Rahman MM**, Haque MA & Rahman MA (2016). Genetic study and selection of soybean lines for higher yield. **International Journal of Biosciences**. 8, 209-217.

2015

74. Abdullah HM & **Rahman MM** (2015). Initiating rainwater harvest technology for climate change induced drought resilient agriculture: scopes and challenges in Bangladesh. **Journal of Agriculture and Environment for International Development**. 109, 189-208. (IF: 0.5)
75. Islam M, Hoque MA, Reza MM & **Rahman MM** (2015). Contribution of boron doses on growth and yield of different broccoli genotypes. **International Journal of Sustainable Crop Production**. 10, 14-20.
76. Abdullah HM, Mahboob MG, **Rahman MM** & Ahamed T (2015). Monitoring natural sal forest cover in Modhupur, Bangladesh using temporal Landsat imagery during 1972 – 2015. **International Journal of Environment**. 5, 1-7.

TRAINING/WORKSHOP/CONFERENCE

- Keya SS, **Rahman MM**, Hossain MM, Gupta A & Tran LSP (2023). *Bacillus amyloliquefaciens* mitigates combined salt and heat stress in sorghum by reinforcing plant antioxidant defense system. IGCST Symposium, November 14th, 2023. Organized by the Institute of Genomics for Crop Abiotic Stress Tolerance of Texas Tech University.

- **Rahman MM**, Mostofa MG, Keya SS, Anik TR, Ghosh PK, Nur-U-Shams S & Tran LSP (2023). Jasmonic acid role in alleviating combined drought and heat stress effect in soybean. **IGCAST Symposium**, December 7th, 2022. Organized by the Institute of Genomics for Crop Abiotic Stress Tolerance of Texas Tech University.
- **Rahman MM**, Mostofa MG, Keya SS, Anik TR & Tran LSP (2022). Ethanol positively modulates photosynthetic traits, antioxidant defense, and osmoprotectant levels to enhance drought acclimatization in soybean. **PSS Student Research Symposium**, April 18, 2022. Organized by the Department of Plant and Soil Science of Texas Tech University.
- Participated in **the First-Gen Student Summit** on Wednesday, April 6, 2022, organized by Texas Tech University.
- Participated in **Pipetting Workshop** on Tuesday, March 22nd, organized by Eppendorf Company at Texas Tech University.
- **Rahman MM**, Das AK, Keya SS, Islam MR, Rahman MA, Islam SMN, Hossain MM & Mostofa MG. Strigolactones positively regulate defense mechanisms to enhance resistance against sheath blight of rice (*Oryza sativa*). 7th Annual South Asia Biosafety Conference (SABC2019), September 14–16, 2019. The Westin, Dhaka, Bangladesh. **Won first prize.**
- Mostofa MG & **Rahman MM**. Metabolite, hormone and lipid profiling reveal positive regulatory roles of strigolactones in protection of rice plants from arsenic stress. 4th IPFS-ICBHA 2019-GNOBB Conference, November 11 - 13, 2019, Dhaka, Bangladesh.
- Miah MG, **Rahman MM**, Saha SR, Rizvi J, & Muchugi A. Morpho-physiological characterization of jackfruit accessions in Bangladesh. 4th World Congress on Agroforestry, 20-22 May 2019, Le Corum-Montpellier, France.
- Participated in a training program on “**User-oriented statistical downscaling of climate information in agriculture and water resources**” from 20 to 27 August 2017, organized by the APEC Climate Center, Busan, South Korea.

EDUCATION

PhD: Plant and Soil Science, Institute of Genomics for Crop Abiotic Stress Tolerance, Texas Tech University, USA

Duration: 13 August 2021 to 09 August 2025

CGPA: 4.00 (on a scale of 4)

Title: Combining chemical and genetic strategies for improvement of growth and yield potential of soybean under drought stress.

Master of Science: Agroforestry and Environment, Gazipur Agricultural University (GAU), Bangladesh

Duration: 03 March 2013 to 5 June 2015

CGPA: 3.90 (on a scale of 4)

Title: Elucidation of salinity tolerance mechanisms of *Acacia auriculiformis*.

Bachelor of Science (Honors): Agriculture, Patuakhali Science and Technology University (PSTU), Bangladesh

Duration: 3 February 2008 to 14 August 2012

CGPA: 3.86 (on a scale of 4)

Merit Position: eighth (out of 132 students)

ACADEMIC ACHIEVEMENT

- Honored with the **Davis College Outstanding Graduate Student Researcher Award in Natural Science** by Texas Tech University.
- Texas Tech University has awarded me the **Doctoral Dissertation Completion Fellowship** for the completion of my dissertation purpose for 2024-2025.
- Texas Tech University has awarded me the **Graduate Student Research Support Award** for research and academic purposes **for 2023-2024.**
- **Texas Tech University** has awarded me the **LeRoy & Claire “Sally” Olsak Endowed Scholarship** for research and academic purposes **for 2023-2024.**
- **Texas Tech University** has awarded me the **Helen DeVitt Jones Graduate Fellowship** for research and academic purposes **for 2021-2023.**
- **Texas Tech University** has awarded me the **Water Conservation Research Scholarship** for research and academic purposes **for 2022-2023.**
- The Ministry of Science and Technology, Bangladesh, has awarded me the **National Science and Technology (NST) fellowship for research purposes during 2013-2015.**
- Received **DEANs merit scholarship** for the academic years 2008-2012 from PSTU for performing excellent results.

EDITORIAL EXPERIENCE

- Editorial Board Member, **BMC Plant Biology**, Biomed Central Ltd, Springer Nature, Switzerland
- Editorial Board Member, **Frontiers in Plant Science**, Avenue du Tribunal Fédéral 34, CH – 1005 Lausanne, Switzerland
- Junior Editorial Board Member, **Plant Stress**, Elsevier

MANUSCRIPT REVIEW FOR

- Agricultural Water Management, Annals of Agricultural Science, Biocatalysis and Agricultural Biotechnology, Environmental and Experimental Botany, Food Research International, Journal of Agriculture and Food Research, Journal of Plant Growth Regulation, Plant Physiology and Biochemistry, Plant Stress, Agroforestry Systems, PeerJ, Scientific Reports, BMC Plant Biology, Cogent Food and Agriculture, Agriculture, Plants, and Antioxidants.

PROFESSIONAL MEMBERSHIP

- Member of American Society of Agronomy
- Member of Crop Science Society of America
- Member of Soil Science Society of America. (Contact Number: 804408)

REFERENCES

1. Dr. Lam-Son Phan Tran (Ph.D. supervisor)

Professor, Dept. of Plant and Soil Science,
Texas Tech University, Lubbock, TX 79409.

E-mail: son.tran@ttu.edu

2. Dr. Krishna Jagadish

Professor, Dept. of Plant and Soil Science,
Texas Tech University, Lubbock, TX 79409.

E-mail: kjagadish.sv@ttu.edu

3. Dr. Md. Abiar Rahman

Professor, Dept. of Agroforestry and Environment
Gazipur Agricultural University
Salna, Gazipur-1706, Bangladesh.

E-mail: abiar@gau.edu.bd