Dr. Muhammad Zaheer Ahmed
Associate Professor
Dr. Muhammad Ajmal Khan, Dr. Muhammad Ajmal Khan
Institute of Sustainable Halophyte Utilization (MAK-ISHU)
University of Karachi
Email: mzahmed@uok.edu.pk
Date of Birth: 07th January 1982
Passport Number: GA1158404
Ethnic Group: Muslim

EDUCATION

1. **Ph. D.** Botany/Plant Eco-physiology. 2012. University of Karachi, Karachi. Pakistan.
   Dissertation title: *Germination Ecology of Salt Playa Halophytes from Pakistan*.
   Advisor: Prof. Dr. M. Ajmal Khan ***S.I.***
2. **M. Sc.** (**Botany- Plant Ecology**). Admission: 01 January 2003; Completion: 31 December 2003, Department of Botany, University of Karachi, Karachi, Pakistan
   Project: "*Alleviation seawater salinity effect on the seed germination of perennial halophytes using L-ascorbic acid (Vitamin C)*" Adviser: Prof. Dr. M. Ajmal Khan ***S.I.***
3. **B. Sc. Honors** (**Botany**). Admission: 01 January 2000; Completion: 01 December 2002. University of Karachi, Karachi, Pakistan
4. **Intermediate** (**HSSC**; **Pre-Medical**). Admission: 01 August 1997; Completion:10 November 1999, D. J. Govt. Science College, Karachi, Pakistan
5. **Matriculation** (**SSC**; **Science**). Admission: 01 July 1995; Completion: 19 July 1997
   Board of Secondary Education, Karachi, Pakistan

CHRONOLOGICAL LIST OF POSITIONS

1. **3rd April 2023 to till date** - Associate Professor (20 Grade), Dr. Muhammad Ajmal Khan Institute of Sustainable Halophyte Utilization (MAK-ISHU), University of Karachi (Responsibility: Teaching and Research)
2. **21st February 2013 to 2nd April 2023** - Assistant Professor (19 Grade), Institute of Sustainable Halophyte Utilization (ISHU), University of Karachi (Responsibility: Teaching and Research)
3. **01 Oct. 2007 to 20 Feb. 2013** - Research Officer (equal to 17 Grade), Institute of Sustainable Halophyte Utilization (ISHU), University of Karachi Research (Responsibility: Research)

TEACHING AND COURSE COORDINATION RESPONSIBILITIES

- I am involved in the teaching of the give below courses of undergraduate and postgraduate level since 2013;

Research Methodology I, Saline Agriculture, Mangrove Biology, Plant abiotic stresses,	Research Methodology II, Functional Genomics of Halophytes, Physiological Ecology of Halophytes, Ecology of Saline Habitats,

- I have been a member of the "Board of Studies" in the Dean Faculty of Sciences University of Karachi, from 2013, where we have responsibility to review different courses that came under the umbrella of the Science faculty.
- I was a member of the team and directly involved in the development of the above mentioned courses at postgraduate level which are still the part of teaching courses in University of Karachi. These courses are updated after each 3 year period.
- I have the responsibility as a course in charge of “Functional Genomics of Halophytes”.

ACTIVITIES RELATED TO THE RESEARCH SKILLS

MAJOR RESEARCH INTEREST

- Utilize the degraded land (coastal and heavy metal contaminated) for cultivation of conventional crops by using modern technology
- Reveal the osmotic and ionic effect of salinity on plant growth, physiology and biochemistry
- Explore the differential regulation of ion transport between halophyte and conventional crops
- Reveal the salt secretion mechanisms in halophyte

INTERNATIONAL ACTIVITIES

MZA presented/discussed the research data in different international forums like European Geosciences Union (EGU) congress (2017 in ***Vienna***), XIX International Botanical Congress (***Shenzhen, China***), International Conference on the Molecular and Cellular argument for food security and International Conference on Halophytes for Food Security in Dry Regions (***Qatar***).

RESEARCH GRANTS/PROJECTS

- MZA successfully secured four local research grants from the University of Karachi regarding the work of growth, physiology and biochemistry of halophytic grasses.
- MZA is a part of team (Co-PI) in a ***Pak-China project "Revealing mechanistic basis of salt secretion in halophytic grasses to improve salinity stress tolerance in cereal crops***".
- MZA as a PI is successfully win an HEC research project-***NRPU-20-17451 (6.3 million Pak Rupees) entitled "Development and Demonstration of a Model Cropping System for Coastal Barren Land to Address the Food Security in Pakistan"***
- ***MZA*** as a PI is successfully win an Sindh-HEC research project- **Agri-10/353/2024-25** ***(1 million Pak Rupees) entitled "Development of a Stress Specific Micro-Biome Based Cultivation System to Utilize Wasteland of SINDH for Multifarious Economic Purposes"***

COLLABORATIONS

MZA have active collaborations with the following world known scientists;
Dr. Sergey Shabala (Australia, Electrophysiology expert) – submitted a project in the "2019-Collaborative Regional Research Programme (CRRP)".
Dr. Anne-Aliénor Véry (France, Ion transport expert in cereals) – submitted a PERIDOT RESEARCH PROGRAM in 2019 Programme.
Dr. Hans Werner Koyro (Germany, Plant Physiologist) – a co-author in different published research articles
Dr. Kazo Watanabe (Japan, Molecular Biologist) – a co-author in different published research articles
Dr. Brent L. Nielsen (USA, Molecular Biologist) – a co-author in different published research articles

PROFESSIONAL SOCIETIES

2010: Pakistan Biochemistry and molecular biological Society
2006: International Society for Halophyte Utilization
2006: Pakistan Botanical Society – ***lifetime*** membership

ACADEMIC AWARDS AND HONORS

2025: Member of discussion panel to train the faculty of Sir Syed University for HEC-NRPU.
2023: Organizing committee member and speaker - Workshop on Improving Tolerance of Conventional and Non-conventional Crops under Extreme Conditions. July 10-12, 2023. Jointly organized by the Dr. Muhammad Ajmal Khan Institute of Sustainable Halophyte Utilization (MAK-ISHU), University of Karachi, and Sindh Engro Coal Mining Company (SECMC), Pakistan.
2023: Workshop on Essential Molecular Biology Techniques. July 06th, 2023. Organized by the Dr. Muhammad Ajmal Khan Institute of Sustainable Halophyte Utilization (MAK-ISHU), University of Karachi, Pakistan.
2023: Organizing committee member - International Conference on Sustainable Food Security Solutions. May 29-31, 2023. Jointly organized by the Department of Agronomy, IAEE & RD, University of Agriculture Faisalabad, Dr. Muhammad Ajmal Khan Institute of Sustainable Halophyte Utilization (ISHU), University of Karachi, Pakistan & South China Agriculture University (SCAU) Guangzhou, China.
2022: Hameed and Azra Awards – (Third best scientific article)
2019: Invited lecture (PCR technique) in Centralized Research Laboratory – UoK.
2017: International Botanical Congress (IBC) 2017 Excellent Academic Award, China
2017: HEC travel grant (265.40/TG/R&D/HEC/2016/21354) to attend "European Geosciences Union (EGU) 2017 congress" 23-28 April, Vienna, Austria.
2016: Organizing committee member - International Synergy Meeting on the Sustainable Utilization of Saline Resources in Support of the UN Sustainable Development Goals with special Emphasis on Renewable Energy based on biofuel, December 5 & 7, 2016, UoK.
2016: Organizing committee member – workshop on Sustainable Development and Environment Protection, December 3 & 4, 2016, ISHU, UoK.
2016: Organizing committee member - Science for a Sustainable Future" an event on World Science Day, 10th November 2016, ISHU, UoK.
2016: Organizing committee member - 14th National & 5th International Conference of Botany "Climate Change and Phytodiversity: Challenges and Opportunities" January 15-18, 2016 Department of Botany, UoK.
2013: Higher Education Commission approved supervisor
2013: PSF travel grant (PSF/P&D/TG – II (927)/13) to attend 2 International Conference on Optimum Utilization of Salt Affected Ecosystems in arid regions from September 9-12, 2013 at Cairo, Egypt
2012: Assisting in edit the Book entitled "Sabkha Ecosystems Volume IV: Cash Crop Halophytes & Biodiversity Conservation" (contract signed by Springer) under the supervision of Prof. Dr. M. Ajmal Khan S.I.
2011: Research Productive Scientist Award - by PCST, Islamabad, Pakistan
2010: Research Productive Scientist Award - by PCST, Islamabad, Pakistan
2010: Received a scholarship from JSPS through "University of Tsukuba, Japan" for complete Ph.D. research work (from 01, March 2010 to June 30, 2010)
2009: Received a scholarship (split-Ph.D.) from HEC through "International linkage between University of Karachi and University of Tsukuba for complete Ph.D. research work (from 01, Sep 2008 to Aug 30, 2009)
2007: Received a shield from Prof. Dr. M. Qiaser, Dean, faculty of Science, University of Karachi for working as a member of organizing committee and "Resource person" for the HEC workshop on "Advances in Plant Ecology" (July 3-6, 2006)
2007: Assisted in editing the Book entitled "Crop and forage production using saline waters" under the supervision of Prof. Dr. M. Ajmal Khan S.I.
2006: Assisted in editing the Book entitled "Sabkha Ecosystems Volume II: West and Central Asia" (Springer Published) under the supervision of Prof. Dr. M. Ajmal Khan S.I.
2006: Assisted in editing the Book entitled "Ecophysiology of High Salinity Tolerant Plants" (Springer Published) ISBN-10 1-4020-4017-2 (HB) under the supervision of Prof. Dr. M. Ajmal Khan S.I.

SEMINARS AND CONFERENCES ATTENDED

2024: 9th International 18th National Conference of Plant Scientists - October 28-30, 2024
2021: Building Ethical and Sustainable Relationships between People and Nature (16 Feb. 2021), (Attended Online webinar)
2020: The Third Meikong Mangrove Forum (Online zoom webinar; October, 01, 2020), Bangkok, Hong Kong (Attended Online webinar)
2020: 1 day conference-Halophytes for Science and Society (November 10, 2020), held at Dr. Muhammad Ajmal Khan Institute of Sustainable Halophyte Utilization, University of Karachi
2019: 2nd International Conference on Sustainable Development 'Halophytes for Green Revolution' (January 7-9, 2019) held at Dr. Muhammad Ajmal Khan Institute of Sustainable Halophyte Utilization, University of Karachi
2018: Curriculum Orientation Workshop on Environmental Sciences held from October 8-10, Islamabad, Pakistan
2017: 6th International and 15th National Conference on "Dynamic Trends in Plant Sciences-Fostering Environment and Food Security" 9-11 May Peshawar, Pakistan
2017: European Geosciences Union (EGU) 2017 congress, 23-28 April, 2017 in Vienna, Austria.
2017: XIX International Botanical Congress, Shenzhen, China, on July 23-29.
2016: International Synergy Meeting on the Sustainable Utilization of Saline Resources in Support of the UN Sustainable Development Goals with special Emphasis on Renewable Energy based on biofuel, December 5 & 7, 2016, Institute of Sustainable Halophyte Utilization, University of Karachi
2016: Science for a Sustainable Future" an event on World Science Day, 10th November 2016, Institute of Sustainable Halophyte Utilization, University of Karachi
2016: 14th National & 5th International Conference of Botany "Climate Change and Phytodiversity: Challenges and Opportunities" January 15-18, 2016 Department of Botany, University of Karachi
2016: ICEH 2016- 4th International Conference on Environmental Horizon, Valuing and Conserving Nature, which was held on January 8-10, 2016. University of Karachi
2015: International Conference on the Molecular and Cellular argument for food security. CWSP, QNRF, Qatar
2014: Organizing an International Conference on Halophytes for Food Security in Dry Regions during May 12-14.
2011: Advances in Ecophysiology of Salt Tolerance, Institute of Sustainable Halophyte Utilization, University of Karachi, Pakistan
2011: 11th National Conference of Plant Scientists, Department of Botany, GC University, Lahore, Pakistan
2009: Thematic Workshop on "Laboratory Bio-safety and containment facilities" from 5-9 October 2009 at COMSTECH, Islamabad, Pakistan
2008: Workshop on "Bio-safety of transgenic plants" University of Tsukuba, Tsukuba-Japan
2006: Conference of "National Core group in Life Sciences" from 13-14 November 2006 at Bahauddin Zakariya University, Multan, Pakistan
2006: International symposium on "Strategies for Crop Improvement against Abiotic Stresses". 18-20, Sep 2006. Department of Botany, University of Agriculture, Faisalabad, Pakistan
2006: Invited lecture on "Community Concepts and Succession" in Life Sciences- HEC Workshop on advances in Plant Ecology (July 3-6, 2006), Department of Botany, University of Karachi, Pakistan
2006: 9th National Conference of Plant Scientists, Institute of Botany, University of Sindh, Jamshoro, Pakistan
2003: 8th National Conference of Plant Scientists, Karachi University, Karachi, Pakistan

Member of Reviewer Committee

HEC-NRPU research proposal (2025)

Journal of Plant Sciences (ISSN Print: 2331-0723; ISSN Online: 2331-0731)

http://www.jplantsciences.org; http://www.sciencepublishinggroup.com/j/jps

Phyton-International Journal of Experimental Botany (ISSN: 0031-9457-Print; ISSN: 1851-5657-Online)

Journal of Plant Studies (ISSN (Print): 1927-0461; ISSN (Online): 1927-047X)

RESEARCH SUPERVISED

Name	*Year*	*Topic*	*Stats*
Dr. Erum Shoukat (UoK)	2019	Osmotic and ionic effect of NaCl on growth, physiological and biochemical responses of *Phragmites karka*.	Ph.D. completed
Ms. Hina Ashraf	2021	An algal Based modulation system to improve the salinity tolerance of *Zea mays*.	Ph.D. completed
Ms. Urooj Fatima (UoK)	2023	Chloride Specific Impact on Salt Tolerance of Halophyte	MPhil completed
Ms. Kehkeshan (UoK)	2023	Salt secretion mechanism of *U. setulosa*-a high salt resistant grass	MPhil completed
Mr. Zareef Khan (UoK)	2023	Dynamics of Salt Secretion by *Cressa cretica* under Salinity	MPhil completed
Mr. Abdul Aziz (UoK)	2023	Evaluating and Screening of growth, Physiological and biochemical Indices for Salinity Stress Tolerance in local Wheat genotypes	MPhil completed
Mr. Ghulam Mustafa (UoK)	2023	Evaluation of growth, physiological and biochemical traits of local maize genotypes under salt stress	MPhil completed
Ms. Tahira Parveen (UoK)	2024	Exploring the Ca signaling for tissue specific ion transport and salt secretion in Urochondra satulosa:	MPhil Ongoing
Ms. Asia Waris (UoK)	2024	Exploring the salicylic acid signaling for tissue specific ion transport and salt secretion in Urochondra satulosa:	MPhil Ongoing
Ms. EESHAH FATIMA	2025	Role of halo-tolerant microbes in enhancing salinity tolerance of *Panicum antidatole*: A non-conventional fodder crop for saline areas	MPhil Ongoing

SCIENTIFIC RECORDS

Research Publications: 57; **Book**: 01; **NCBI-Patents:** 5 NCBI
Total Impact Factor: 125 (JCR 2023)
https://www.researchgate.net/profile/Muhammad_Ahmed14/contributions/?ev=prf_act
Total Citation: 1374; ***Reads***: 16355; **h-index:** 19**;** **i10-index:** 31
https://scholar.google.com.pk/citations?user=rbMqXDkAAAAJ&hl=en
ORCID Code: orcid.org/0000-0003-3953-6905

BOOK EDITED

2016: Halophytes for Food Security in Dry Lands, Muhammad Ajmal Khan · Munir Ozturk · Bilquees Gul · Muhammad Zaheer Ahmed http://store.elsevier.com/Halophytes-for-Food-Security-in-Dry-Lands/Muhammad-Ajmal-Khan/isbn-9780128018545/

NCBI records

1. **NCBI:** ***Aeluropus lagopoides putative vacuolar Na^+/H^+ antiporter (NHX) mRNA, complete cds*** (AlaNHX; GenBank: GU199336) 2010 **Ahmed, M.Z.,** Shimazaki, T., Kikuchi, A., Khan, M.A. and Watanabe, K.N. http://www.ncbi.nlm.nih.gov/nuccore/272972706; http://srs.ebi.ac.uk/srsbin/cgi-bin/wgetz?-e+[EMBL:GU199336]+-newId
2. **NCBI:** ***Aeluropus lagopoides Plasma membrane Na^+/H^+ antiporter (SOS1), mRNA sequence*** (ISHU-Ala-4; GenBank: GW796824.1 GI: 293626647) 2011 **Ahmed, M.Z.,** Shimazaki, T., Gulzar, S., Kikuchi, A., Gul, B., Watanabe, K.N., Khan, M.A. http://www.ncbi.nlm.nih.gov/nucest/GW796824.1
3. **NCBI:** ***Aeluropus lagopoides H^+-ATPase, mRNA sequence*** (ISHU-Ala-3; GenBank: GW796823.1 GI: 293626646) 2011 **Ahmed, M.Z.,** Shimazaki, T., Gulzar, S., Kikuchi, A., Gul, B., Watanabe, K.N., Khan, M.A. http://www.ncbi.nlm.nih.gov/nucest/GW796823.1
4. **NCBI:** ***Aeluropus lagopoides beta actin like, mRNA sequence*** (ISHU-Ala-2: GenBank: GW796822.1 GI: 293626645) 2011 **Ahmed, M.Z.,** Shimazaki, T., Gulzar, S., Kikuchi, A., Gul, B., Watanabe, K.N., Khan, M.A. http://www.ncbi.nlm.nih.gov/nucest/GW796822.1
5. **NCBI:** ***Aeluropus lagopoides H^+-PPase (Soluble Inorganic Pyrophosphatase/ pyrophosphate Phospho-hydrolase), mRNA sequence*** (ISHU-Ala-1; GW796821.1 GI: 293626644) 2011 **Ahmed, M.Z.,** Shimazaki, T., Gulzar, S., Kikuchi, A., Gul, B., Watanabe, K.N., Khan, M.A. http://www.ncbi.nlm.nih.gov/nucest/GW796821.1

LIST OF PUBLICATIONS

https://www.researchgate.net/profile/Muhammad_Ahmed14/contributions/?ev=prf_act
https://scholar.google.com.pk/citations?user=rbMqXDkAAAAJ&hl=en

2025

1. Kehkashan Najam, Muhammad Zaheer Ahmed, Erum Shoukat, Anis Ali Shah. Environmental regulation in tissue specific ion distribution and salt secretion of coastal high salt resistant grass U. setulosa. (in review)
2. Gul, B., Ahmed, M.Z., Hameed, A., Yu, M. and Shalaba, S., 2025. Root-to-shoot signaling in plant adaptation to soil salinity. Journal of Experimental Botany, p.eraf458.
3. Urooj Fatima, Erum Shoukat, Muhammad Zaheer Ahmed, Muhammad Yousuf Adnan, Zainul Abideen, Irfan Aziz, Ali El-Keblawy. Chloride-triggers Eco-Physiological Adaptations in Suaeda fruticosa: Enhancing Saline Agriculture and Growth Resilience. (in review)

2024

4. Ramzan, M., Javed, T., Hassan, A., Ahmed, M.Z., Ashraf, H., Shah, A.A., Iftikhar, M., El-Sheikh, M.A. and Raja, V., 2024. Protective effects of the exogenous application of salicylic acid and chitosan on chromium-induced photosynthetic capacity and osmotic adjustment in Aconitum napellus. BMC Plant Biology, 24(1), p.933. **Impact Factor: 4.3**
5. Gul, B., Hameed, A., Ahmed, M.Z., Hussain, T., Rasool, S.G. and Nielsen, B.L., 2024. Thriving under Salinity: Growth, Ecophysiology and Proteomic Insights into the Tolerance Mechanisms of Obligate Halophyte Suaeda fruticosa. Plants, 13(11), p.1529. **Impact Factor: 4.658**
6. Abdul Hameed, Sadiq Hussain, Aysha Rasheed, Muhammad Zaheer Ahmed, Sahar Abbas. Exploring the Potentials of Halophytes in Addressing Climate Change-Related Issues: A Synthesis of Their Biological, Environmental, and Socioeconomic Aspects. World-MDPI. 3 January 2024 **Impact Factor: 4.658**
7. Musarrat Ramzan, Sira Sarwar, Talha Jamshaid, Muhammad Zaheer Ahmed, Rifat Zubair Ahmad, Usama Jamshaid, Tanveer Hussain, Phytoremediation of heavy metal-contaminated Lyari River's soil using bioenergy crops. South African Journal of Botany. 2024 (Accepted). **Impact Factor: 3.11**

2023

8. Ramzan M, Naveed N, **Ahmed MZ**, Ashraf H, Shah AA, Jamil M, Ahmad Z, Casini R, Elansary HO. Supplementation of Moringa based zinc oxide nanoparticles mitigates salt stress in *Celosia argentea* through reduced chloride (Cl^-) uptake and modulation in physiochemical attributes. South African Journal of Botany. 2023 Jun 1; 157: 457-66. **Impact Factor: 3.11**
9. Ramzan M, Shah AA, **Ahmed MZ**, Bukhari MA, Ali L, Casini R, Elansary HO. Exogenous application of glutathione and gamma amino-butyric acid alleviates salt stress through improvement in antioxidative defense system and modulation of *CaXTHs* stress-related genes. South African Journal of Botany. 2023 Jun 1; 157: 266-73. **Impact Factor: 3.11**
10. Huang S, Gill S, Ramzan M, **Ahmed MZ**, Danish S, Huang P, Obaid SA, Alharbi SA. Uncovering the impact of AM fungi on wheat nutrient uptake, ion homeostasis, oxidative stress, and antioxidant defense under salinity stress. Scientific Reports (Accepted) **Impact Factor: 4.99**
11. Abideen Z, Koyro HW, Zulfiqar F, Moosa A, Rasool SG, **Ahmad MZ,** Altaf MA, Sharif N, El-Keblawy A. Impact of biochar amendments on copper mobility, phytotoxicity, photosynthesis and mineral fluxes on (*Zea mays* L.) in contaminated soils. South African Journal of Botany. 2023 Jul 1;158:469-78. **Impact Factor: 3.11**
12. Farooq, N., Khan, M.O., **Ahmed, M.Z.,** Fatima, S., Nawaz, M.A., Abideen, Z., Nielsen, B.L. and Ahmad, N., 2023. Salt-Induced Modulation of Ion Transport and PSII Photoprotection Determine the Salinity Tolerance of Amphidiploid Brassicas. Plants, 12(14), p.2590. **Impact Factor: 4.50**
13. Dadach, M.; **Ahmed, M.Z.;** Bhatt, A.; Radicetti, E.; Mancinelli, R. 2023. Effects of Chloride and Sulfate Salts on Seed Germination and Seedling Growth of *Ballota hirsuta* Benth. And *Myrtus communis* L. Plants, 12, 3906. https://doi.org/10.3390/plants12223906 **Impact Factor: 4.50**

2022

14. Bano S, **Ahmed MZ**, Abideen Z, Qasim M, Gul B, Khan NU. Humic acid overcomes salinity barriers and stimulates growth of Urochondra setulosa by altering ion-flux and photochemistry. Acta Physiologiae Plantarum. 2022 Apr; 44(4):39. **Impact Factor: 2.74**

2021

15. Hameed A, **Ahmed MZ**, Hussain T, Aziz I, Ahmad N, Gul B, Nielsen BL. Effects of salinity stress on chloroplast structure and function. Cells. 2021 Aug 7; 10(8):2023. **Impact Factor: 7.66**
16. Adnan, M.Y., Hussain, T., **Ahmed, M.Z.** et al. Growth regulation of *Desmostachya bipinnata* by organ-specific biomass, water relations, and ion allocation responses to improve salt resistance. Acta Physiol Plant 43, 38 (2021). https://doi.org/10.1007/s11738-021-03211-7 **Impact Factor: 2.74**
17. Mujeeb A., Aziz, I. **Ahmed, M.Z.,** Alvi, S.K., Shafique, S. Spatial and seasonal metal variation, bioaccumulation and bio-monitoring potential of halophytes from littoral zones of the Karachi Coast. Journal: Science of the Total Environment. **Impact Factor: 10.75**
18. **Ahmed, M.Z.,** Abideen, Z., Aziz, I. and Gul, B. Salinity-Induced Changes in Growth Attributes, Water Relation, and Ion Flux of Subtropical Halophytes. Handbook of Halophytes: From Molecules to Ecosystems towards Biosaline Agriculture. 2021 May 19:1495-513.
19. Ahmed, M.Z., Hussain, T., Adnan, M.Y., Gulzar, S., Khan, M.A. Calcium improves the leaf physiology of salt treated *Limonium stocksii*: A floriculture crop. Scientia Horticulturae (accepted) **Impact Factor: 4.34**
20. Ullah M., Khan M.S., Jan A., **Ahmed, M.Z.** Effects of carbon sources and synthetic growth regulators on the tissue culture of Sugarcane. Pakistan Journal of Botany (Accepted) **Impact Factor: 1.101**
21. Khan M.S., Ahmed, W., **Ahmed, M.Z.** Ullah M., Jan A. Promoter transformation of OSC_3H_{52} Gene in tissue culture of Sugarcane. (Accepted with minor changes in Journal of Animal and Plant Sciences) **Impact Factor: 0.57**
22. Rasool SG, **AHMED MZ**, Hameed A, Gul B. Altered water relations, selective nutrient uptake, and reduced Na^+ flux make *Halopeplis perfoliata* an obligate halophyte. Turkish Journal of Botany. 2021; 45(7):701-12. **Impact Factor: 1.43**
23. Abideen, Z., Koyro, H.-W., Huchzermeyer, B., **Ahmed, M.Z.**, Gul, B., Khan, M.A. *Phragmites karka* plants adopt different strategies to regulate photosynthesis and ion flux in saline and water deficit conditions (Accepted with minor changes in Plant Biosystems) **Impact Factor: 1.78**
24. Agha F, Ahmed MZ, Gul B, Khan MA. Interactive effects of salinity and plant density on the growth of *Cyperus arenarius*, a sand dune stabilizer. Turkish Journal of Botany. 2021; 45(7):681-7. **Impact Factor: 1.43**

2020

25. Shoukat, E., **Ahmed, M.Z**., Abideen, Z., Azeem, M., Ibrahim, M., Gul, B. and Khan, M.A., 2020. Short and long term salinity induced differences in growth and tissue specific ion regulation of *Phragmites karka*. Flora, p. 151550. https://www.sciencedirect.com/science/article/pii/S0367253020300141 **Impact Factor: 2.22**
26. Rizvi, R.F., Abideen, Z.U., Ehsen,S., Aziz, I., **Ahmed, M.Z.,** Gul, B and M. A. Khan. 2020. Germination responses of *Typha domingensis* (Pers.) to salinity, light and temperature. Int. J. Biol. Biotec., 17 (2): 351-358, 2020.
27. **Ahmed, M.Z**., Perveen F., Gulzar, S., Khan, M.A. Effects of chloride and sulfate salts on seed germination of halophytes from dry alpine climate. Journal of Plant Nutrition (Accepted) **Impact Factor: 2.28**
28. Mujeeb A., Aziz, I. **Ahmed, M.Z.,** Alvi, S.K., Shafique, S. Comparative assessment of heavy metal accumulation and bio-indication in coastal dune halophytes (Accepted with minor changes in Ecotoxicology and Environmental Safety) **Impact Factor: 7.129**

2019

29. Shoukat, E., Abideen, Z., **Ahmed**, **M.Z.,** Gulzar, S., Nielsen, B.L. Changes in growth and photosynthesis linked with intensity and duration of salinity in *Phragmites karka*. Environmental and Experimental Botany 162, 504-514, https://doi.org/10.1016/j.envexpbot.2019.03.024 **(Impact Factor: 6.028)**
30. Khan, M.S., Ahmad, H., Ullah, M., **Ahmed, M.Z.,** Munir, I. Allelopathic assessment for the environmental biosafety of the transgenic oilseed rape lines harboring the antifungal synthetic Chitinase (*NIC*) gene. Pakistan Journal of Botany 51(4), DOI: 10.30848/PJB2019-4(8) (**Impact Factor: 1.101)**
31. Qasim, M., Fujii, Y., **Ahmed, M.Z**., Aziz, I., Watanabe K., Khan, M.A. Allelopathic Properties and Phenolic Composition of Coastal Medicinal Plants: A Potential Source of Bioherbicides. Plant Biosystem, DOI: 10.1080/11263504.2018.1549607 **Impact Factor: 1.78**
32. Rasheed, A., **Ahmed, M.Z**., Gul B., Khan, M.A., Hameed, A. Comparative seed germination ecology of salt desert and playa halophytes of Pakistan. B. Gul et al. (eds.), Sabkha Ecosystems, Asia/Pacific, Hardcover ISBN 978-3-030-04416-9; Springer International Publishing, Springer Nature Switzerland AG. pp. 41-54.

2018

33. Shoukat, E., Aziz, I., **Ahmed**, **M.Z.,** Abideen, Z., Khan, M.A. Growth dynamics of *Phragmites karka* to periodic changes in water relations under salt stress. Crop and Pasture Science 69(5) 535-545. https://doi.org/10.1071/CP17195 **Impact Factor: 2.25**
34. Hadi, S.M.S., **Ahmed, M.Z.,** Hameed, A., Khan, M.A., Gul, B. Seed germination and seedling growth responses of toothbrush tree (*Salvadora persica* Linn.) to different interacting abiotic stresses. Flora, 243, pp.45-52. https://doi.org/10.1016/j.flora.2018.04.002 **Impact Factor: 2.22**

2017

35. Gilani S.A., Kikuchi, A., Yu, X., **Ahmed, M.Z.,** Sugano, M., Fujii, Y., Watanabe, K.N. Difference between non-transgenic and salt tolerant transgenic *Eucalyptus camaldulensis* for diversity and allelopathic effects of essential oils. Pakistan journal of Botany 49(1): 345-351. **Impact Factor: 1.101** https://www.semanticscholar.org/paper/DIFFERENCE-BETWEEN-NON-TRANSGENIC-AND-SALT-TOLERANT-Gilani-Kikuchi/c6abc4e1aeb6cf94015ef825d8ffce3812125fcc
36. Abbasi S.B., Gul, B., Khan, N., Gulzar, S., **Ahmed, M.Z.** Effect of humic acid on seed germination of sub-tropical halophytes under salt stress. Pak. J. Bot., 49(6): 2079-2088, 2017. **Impact Factor: 0.75** http://www.halophyte.org/pdfs/drkhan_pdfs/Dr%20Zaheer%2017.pdf
37. Khan M.A., Shaikh, F., Zehra, A., **Ahmed, M.Z.,** Gul, B., Ansari, R. Role of chemicals in alleviating salinity and light related seed dormancy in sub-tropical grasses. Flora 233, 150-155. https://doi.org/10.1016/j.flora.2017.06.001 **Impact Factor: 2.22**

2016

38. **Ahmed, M.Z.,** Kikuchi, A., Watanabe, K.N., Khan, M.A. Bio-informatics analysis of a vacuolar Na^+/H^+ antiporter (*AlaNHX*) from the salt resistant grass *Aeluropus lagopoides*. Pakistan Journal of Botany 48(1): 57-65. https://inis.iaea.org/search/search.aspx?orig_q=RN:47088631 **Impact Factor: 1.101**
39. Ali, H., Gul, B., Adnan, M.Y., **Ahmed**, **M.Z.,** Ansari, R., Khan, M.A. Potential of halophytes as cattle fodder: A case-study in Pakistan. Pakistan Journal of Agricultural Sciences, Vol. 53(3), 719-725. DOI: 10.21162/PAKJAS/16.2580 **Impact Factor: 0.86**
40. Rasool, S.G., Hameed, A., **Ahmed**, **M.Z.,** Khan, M.A., Gul, B. Comparison of seed germination and recovery responses of a salt marsh Halophyte *Halopeplis perfoliata* to osmotic and ionic treatments. Pakistan Journal of Botany 48(4): 1335-1343. **Impact Factor: 1.101**https://www.pakbs.org/pjbot/PDFs/48(4)/03.pdf
41. **Ahmed, M.Z.**, Gul, B., Watanabe, K.N., Khan, M.A. Characterization and function of sodium exchanger genes in *Aeluropus lagopoides* under NaCl stress. In: Halophytes for Food Security in Dry Lands, (Eds.), M.A. Khan, M. Ozturk, B. Gul, M.Z. Ahmed. Pages 1-16, Elsevier. https://www.sciencedirect.com/book/9780128018545/halophytes-for-food-security-in-dry-lands

2014

42. Ali, H., Gul, B. Adnan, M.Y., **Ahmed**, **M.Z.,** Aziz, I., Gulzar, S., Ansari, R., Khan, M.A. NPK mediated improvement in biomass production, photosynthesis and Na^+ regulation in *Panicum antitotale* under saline conditions. Pakistan Journal of botany 46 (6), 1975-1979. **Impact Factor: 1.101** https://www.pakbs.org/pjbot/PDFs/46(6)/06.pdf
43. **Ahmed, M.Z**., Gulzar, S., Khan, M.A. Role of dormancy regulating chemicals in alleviating seed germination of three playa halophytes. Ekoloji 23(92): 1-7. DOI: 10.5053/ekoloji.2014.921 **Impact Factor: 0.49**
44. Moinuddin, M., Gulzar, S., **Ahmed, M.Z.**, Gul, B., Koyro, H.-W., Khan, M.A. Excreting and non-excreting grasses exhibit different salt resistance strategies. AoB PLANTS 1; 6. plu038; doi:10.1093/aobpla/plu038. **Impact Factor: 3.14**
45. Abideen, Z., Koyro, H.-W., Huchzermeyer, B., **Ahmed, M.Z.**, Gul, B., Khan, M.A. Moderate salinity stimulates growth and photosynthesis of *Phragmites karka* by water relations and tissue specific ion regulation. Environmental and Experimental Botany 105, 70–76. **Impact Factor: 6.028** https://doi.org/10.1016/j.envexpbot.2014.04.009
46. Gulzar, S., Hameed, A., **Ahmed, M.Z.,** Khan, M.A. Is soil heterogeneity the major factor influencing vegetation zonation at Karachi coast? Sabkha Ecosystems Volume IV: Cash Crop Halophytes & Biodiversity Conservation, Series: Tasks for Vegetation Science, Vol. 47, Khan, M.A., Böer, B., Öztürk, M., Al Abdessalaam, T.Z.,Clüsener-Godt, M., Gul, B. (Eds.), Pages 199-207,Springer
https://www.academia.edu/25130448/Sabkha_Ecosystems_Volume_IV_Cash_Crop_Halophyte_and_Biodiversity_Conservation

2013

47. Hameed, A., **Ahmed**, **M.Z.,** Gulzar, S., Gul, B., Alam, J., Hegazy, A.K., Alatar, A.A., Khan, M.A. Seed germination and recovery responses of *Suaeda heterophylla* to abiotic stresses. Pakistan Journal of Botany 45(5): 1649-1656. **Impact Factor: 1.101** http://halophyte.org/pdfs/drkhan_pdfs/188-1.pdf
48. **Ahmed, M.Z.,** Shimazaki, T., Gulzar, S., Kikuchi, A., Gul, B., Khan, M.A., Koyro, H.-W., Huchzermeyer, B., Watanabe, K.N. The influence of genes regulating transmembrane transport of Na^+ on the salt resistance of *Aeluropus lagopoides*. Functional Plant Biology 40(9) 860-871. **Impact Factor: 2.81** https://doi.org/10.1071/FP12346

2011

49. **Ahmed, M.Z.,** Gillani, S.A., Kikuchi, A., Gulzar, S., Khan, M.A., Watanabe, K.N. Population diversity of *A. lagopoides*: A potential cash crop for saline land. Pakistan Journal of Botany 43(1): 595-605. **Impact Factor: 1.101**
https://www.researchgate.net/publication/235999617_Population_diversity_of_aeluropus_lagopoides_A_potential_cash_crop_for_saline_land

2010

50. **Ahmed, M.Z.,** Khan, M.A. Seed Germination of Salt Playa Halophytes from Pakistan: Salinity, Temperature and Light Responses. Flora 205: 764-771. **Impact Factor: 2.22** doi:10.1016/j.flora.2009.10.003

2009

51. Hameed, A., **Ahmed**, **M.Z.,** Gulzar, S., Khan, M.A. Effect of disinfectants in improving seed germination of *Suaeda fruticosa* under saline conditions. Pakistan Journal of Botany 41(5): 2639-2644. **Impact Factor: 1.101** http://www.halophyte.org/pdfs/drkhan_pdfs/155.pdf

2006

52. Hameed, A., **Ahmed**, **M.Z.,** Khan, M.A. Comparative effects of NaCl and sea-salt on seed germination of coastal halophytes. Pakistan Journal of Botany 38(5): 1605-1612. **Impact Factor: 1.101** http://www.halophyte.org/pdfs/drkhan_pdfs/133.pdf
53. Khan, M.A., **Ahmed, M.Z.,** Hameed, A. Effect of sea salt and L-ascorbic acid on the seed germination of halophytes. Journal of Arid Environments 67: 535-540. **Impact Factor: 2.76** doi:10.1016/j.jaridenv.2006.03.001

Journal Name	IF (2022)	# of Publications	Total IF
Cells	7.666	1	7.666
Plants -MDPI	4.5	3	13.5
PAKISTAN JOURNAL OF BOTANY	1.101	10	11.010
Journal of Animal and Plant Sciences-JAPS	0.570	1	0.570
ECOTOXICOLOGY AND ENVIRONMENTAL SAFETY	7.129	1	7.129
ENVIRONMENTAL AND EXPERIMENTAL BOTANY	6.028	2	12.056
Scientific Reports	4.996	1	4.996
SCIENTIA HORTICULTURAE	4.342	1	4.342
SCIENCE OF THE TOTAL ENVIRONMENT	10.753	1	10.753
AoB Plants	3.138	1	3.138
SOUTH AFRICAN JOURNAL OF BOTANY	3.111	4	12.444
FUNCTIONAL PLANT BIOLOGY	2.812	1	2.812
JOURNAL OF ARID ENVIRONMENTS	2.759	1	2.759
ACTA PHYSIOLOGIAE PLANTARUM	2.736	2	5.472
JOURNAL OF PLANT NUTRITION	2.277	1	2.277
FLORA	2.220	4	8.880
PLANT BIOSYSTEMS	1.781	2	3.562
TURKISH JOURNAL OF BOTANY	1.429	2	2.858
CROP AND PASTURE SCIENCE	2.250	1	2.250
PAKISTAN JOURNAL OF AGRICULTURAL SCIENCES	0.856	1	0.856
BMC Plant Biology	0.430	1	0.430
UN-IMPACT FACTOR PUBLICATIONS	0.000	7	0.000
World	0.000	1	0.000
Journal of Experimental Botany	5.600	1	5.600
Final Impact Factor		51	126

As of Oct./2025