

## **RESUME'**

**Dr. Irfan Aziz**

**Professor & Director**

Dr. Muhammad Ajmal Khan Institute of Sustainable Halophyte Utilization

University of Karachi

Karachi-75270, Pakistan

Email: [irfanaziz@uok.edu.pk](mailto:irfanaziz@uok.edu.pk)

ORCID URL: <https://orcid.org/0000-0002-2552-3276>



Commission member: IUCN – SSC Mangrove Specialists Group  
Member: ISME (International Society for Mangrove Ecosystems)  
Member: Global Mangrove Alliance (Society for Mangrove Restoration)

### **Current Job Responsibilities & Description**

Directorship of the institute, Teaching graduate students, Research supervision and mentoring, Research dissemination via seminars, conferences, and research articles.

### **Citation Index:**

Cumulative Impact Factor= **101.2**

*h-index*: 19; *i-10 index*: 28

Total Publications: 47

Scopus citations: 1613

RG citations: 1839

Google citations: 1842

### **HOME ADDRESS AND PERSONAL**

House No. C-62, Staff Town, University of Karachi, Karachi, Pakistan.

### **EDUCATION:**

**Ph.D.** Botany. 2001. University of Karachi, Karachi. **Title: Structure, Life History Strategies & Ecophysiology of Indus Delta mangroves.** Research supervisor: Prof. Dr. M. Ajmal Khan.

**M.Sc.**, Botany. 1991. University of Karachi, Karachi. - Stood First class second in order of merit.

### **Academics:**

1. Research & Teaching
2. Supervision & Co-supervision of Research students
3. Member, Departmental Research Committee at DMAK-ISHU,
4. Member, Board of Studies at DMAK-ISHU, University of Karachi
5. Member, Board of Faculty (Science), University of Karachi
6. Member, Academic Council, University of Karachi
7. Member, Senate, University of Karachi

### **Research Interest:**

Research interest of Dr. Aziz deals with:

- I. Impact of climate changes on coastal and near coastal vegetation.
- II. Restoration & Conservation of Wetlands including Mangroves, Physiological Ecology & Biochemistry
- III. Soil-plant water relationship and osmolytes in salt and drought resistant Halophytes.
- IV. Phytoremediation of barren saline lands using halophytes

### **Collaborators (Last 48 months):**

***Prof. Dr. J.W.H.Yong (Swedish University of Agriculture, SLU, Sweden)***

***Prof. Dr. Farid Dahdou Guebas, (Vrije Universiteit Brussels, Belgium)***

***Prof. Dr. Sunanda Kodikara (Ruhuna University, Galle, Srilanka)***

***Dr. Dolly Priatna (Pakuan University, Indonesia)***

***Dr. Aldrie A Amir (Universiti Kebangsaan, Malaysia)***

***Dr. Mirza B Baig (King Saud University, Saudi Arabia)***

***Dr. Muhammad Sohail (Department of Microbiology, Karachi University)***

***Dr. Shabana Askari (Department of Botany, Jinnah University for Women)***

***Dr. Huma Fatima (Department of Botany, Jinnah University for Women)***

***Dr. Sofia Alvi (Senior Scientific Officer, PCSIR)***

***Dr. Beena Naqvi (Senior Scientific Officer, PCSIR)***

### **Professional Experience**

#### **Administrative:**

**July 08, 2024 – to date:** Director, Muhammad Ajmal Khan Institute of Sustainable Halophyte Utilization, University of Karachi.

**June 29, 2017 – July 13, 2017:** Acting Controller Examinations, University of Karachi.

**July 14, 2017 – May 16, 2019:** Additional charge as Controller Examinations, University of Karachi.

#### **Research & Teaching:**

**April 04, 2023 to date: Professor,** Muhammad Ajmal Khan Institute of Sustainable Halophyte Utilization, University of Karachi.

**November 9, 2013 to April 03, 2023:** Associate Professor, Muhammad Ajmal Khan Institute of Sustainable Halophyte Utilization, University of Karachi.

**March 27, 2009 to November 8, 2013:** Assistant Professor, Muhammad Ajmal Khan Institute of Sustainable Halophyte Utilization, University of Karachi.

**November 15, 2006 – March 2009:** Assistant Professor, Department of Botany, University of Karachi.

**June 17, 2004 – November 14, 2006:** Assistant Professor & Head, Department of Botany, Govt. Degree Science & Commerce College, Orangi Township, Karachi.

**November 22, 1995 – June 16, 2004:** Lecturer, Department of Botany, Govt. Degree Science & Commerce College, Orangi Township, Karachi.

**January 21, 1992 – November 21, 1995:** Research Officer, Department of Botany, University of Karachi (Funded projects: **International Foundation for Science, Pakistan Science Foundation and NSRDB**).

#### **Graduate / Post graduate courses taught (Department of Botany)**

Bot. 311. Diversity in Plants.

Bot. 532. Genetics

Bot. 411. Genetics & Biotechnology

Bot. 542. Plant Physiology

Bot. 412. Fundamentals of Plant Physiology

Bot. 631. Plant Sociology

Bot. 422. Fundamentals of Plant Ecology

ISHU – 771. Plant responses to Abiotic stresses

ISHU – 776. Functional Genomics of Halophytes

ISHU – 701. Research Methodology

#### **Current teaching assignments M.phil / Ph.D (DMAK-ISHU)**

ISHU – 772. Ecology of Saline Habitats

ASR – 702. Research Methodology

ISHU – 775. Physiological Ecology of Halophytes

ISHU – 778. Biology of Mangroves

#### **Awards**

**2017:** Ranked among Productive Scientists of Pakistan (PSP), PCST, Islamabad, Pakistan

**2013:** Research Productivity Award by PCST, Islamabad, Pakistan

**2012:** Research Productivity Award by PCST, Islamabad, Pakistan

**2007:** Research productivity allowance by PCST, Islamabad, Pakistan

### **Editorial Board (Scientific Journals)**

**2023-24: Guest Editor** *Scientific Reports: Section – Coastal Ecology*

**2022-23: Review Editor:** *Frontiers in Plant Science (Section: Plant Abiotic Stress)*

**2023: Member, Editorial Board:** *Sustainable Agriculture and Environment*

### **Manuscript Reviewer for International Journals**

*Applied Soil Ecology*

*Aquatic Botany*

*Brazilian Journal of Botany*

*Environmental and Experimental Botany*

*Environmental Engineering Research*

*Environmental Pollution*

*Environmental Science & Pollution research*

*International Journal of Phytoremediation*

*International Journal of Plant Physiology and Biochemistry*

*Journal of Tropical Forest Science*

*Nordic Journal of Botany*

*Pakistan Journal of Botany*

*Pakistan Journal of Scientific & Industrial Research*

*RADS Journal of Biological Research and Applied Sciences*

*Saudi Journal of Pharmaceutical Sciences*

*Science of the Total Environment*

*Scientific Reports*

*Sustainable Agriculture and Environment*

### **Membership of Professional Societies (National / International)**

**2022 - Present** CFEER (COMSTECH Forum for Environment and Ecosystem Restoration)

**2022 - Present** GMA (Global Mangrove Alliance)

**2013 onwards:** IUCN – MSG (Mangrove Specialists Group) – Commission member

**2013:** ISME (International Society for Mangrove Ecosystems)

**Life Member:** PBS (Pakistan Botanical Society)

**Life Member:** PSBMB (Pakistan Society for Biochemistry and Molecular Biology)

**2013 – Present:** University of Karachi Alumni

**2011 – Present:** ASPB (American Society of Plant Biologists)

**2009 – 2011:** ISHU (International Society for Halophyte Utilization)

**2008 – 2012:** Plant Stress Group.

**1997 – 2006:** CTBS (College Teachers Botanical Society), Sindh Education Department

### **Community Services / Membership**

**1997 – 2004:** SHEHRI - Citizens for Better Environment.

**2015 to 2018:** BOS (Member, Board of Studies), Lasbella University of Agriculture, Water and Marine Sciences (LUAWMS), Balochistan

**2015 to 2018:** BOS (member) at Jinnah University for Women, Nazimabad, Karachi

**2011 – 2015:** WWF (Worldwide Fund for Nature), Woking, GB as Ranger

**2012 to 2024:** Incharge, Support Staff, DMAK-ISHU, University of Karachi

**2009 – 2010:** Store Incharge, DMAK-ISHU, University of Karachi

**2007- 2008:** Store Incharge, Department of Botany, University of Karachi

### **Honors**

**2007 - Present:** HEC Approved Supervisor for PhD students (Higher Education Commission, Islamabad).

**2006:** Member, organizing committee and "Resource person" for the HEC workshop on Advances in Plant Ecology (July 3-6, 2006), University of Karachi.

**2005:** Resource person, 5- day Refresher Courses in Biology (Jan 31 - Feb 4), Education and Literacy Department, Govt. of Sindh (organized by Govt. D.J. Sindh Govt. Science College, Karachi and Board of Intermediate Education, Karachi)

**2004:** In Service Training course (December 9-15, 2004), HEC Regional Centre, Karachi, for participating in the HEC.

**1991:** Certificate of Merit for obtaining First class 2<sup>nd</sup> position in M.Sc (Final examination) from University of Karachi, Karachi-75270.

### **Leading or Critical role for Organizations / Institutions / Departments**

**2024 to date: Director:** Muhammad Ajmal Khan Institute of Sustainable Halophyte Utilization (MAK-ISHU), *University of Karachi*.

**2024: Moderator:** October 29 – 30, 2024; International Conference on Sustainable Agriculture in Pakistan”, organized by Pakistan Media Development & Ripple Concepts at **Beach Luxury Hotel, Karachi**.

**2024: Organizer:** July 26, 2024; One day Seminar on “Importance of Mangrove Conservation” in commemoration with “World Mangroves Day”, at **MAK-ISHU, University of Karachi**.

**2023: Conference Secretary:** “International Conference on Saline Resource Management in the context of Climate Change”- 23 – 25 February 2023; at **Avari Towers & Salim Habib University**; organized by MAK-ISHU, *University of Karachi*.

**2023: Member, Organizing Committee:** “International workshop on “Hands on Training in Microscopy Techniques” - 20 – 21 February 2023; at **MAK-ISHU, University of Karachi**.

**2022: Moderator:** Virtual Seminar on “**Solutions to Combat Food Insecurity and Malnutrition in the Sahel**”- 26 September 2022 (Convened by: COMSTECH Forum for Environment and Ecosystem Restoration - CFEER) at **Science Summit, 77th Session of United Nations General Assembly (UNGA)**.

**2021: Member, Organizing Committee:** “International Virtual Conference on Ecophysiology & Sustainable use of Halophytes: A Tribute to Dr. Muhammad Ajmal Khan, April 6 – 8, 2021 at **MAK-ISHU, University of Karachi**.

**2020: Member, Organizing Committee:** “World Science Day for Peace and Development”, November 19, 2020, at **MAK-ISHU, University of Karachi**.

**2019: Member, Organizing Committee:** “2<sup>nd</sup> International Conference on the Sustainable Development: *Halophytes for the Green Revolution*”, at **Mak-ISHU, University of Karachi**, 07-09 January 2019.

**2016: Member, Organizing Committee:** 14<sup>th</sup> National and 5<sup>th</sup> International Conference of Pakistan Botanical Society, “*Climate Change and Phyto diversity: Challenges and Opportunities*. January 15-18, 2016, at **University of Karachi**.

**2004: Member, Organizing Committee:** for the HEC workshop on Current Trends in Plant Sciences (August 23-26, 2004), at the **Department of Botany, University of Karachi**.

### **Research Students Supervised (Degree awarded):**

#### **Ph.D:**

1. Ms. Farzeen Khan: (Ph.D. Botany-ISHU; UOK) – 2010 – 2016 (Supervisor)
2. Ms. Amtul Mujeeb: (Ph. D. Botany-ISHU; UOK) – 2015 – 2021 (Supervisor)

#### **M.Phil. / M.Sc.**

1. Mr. Azhar Manzoor (M.Phil. Botany-ISHU; UOK) – 2020- 2023 (Supervisor)
2. Ms. Syeda Sadaf Altaf (M.Phil. Botany; JUW) –2023 to 2025 (Co-supervisor)
3. Ms. Sumaira Manzoor (M.Sc. Botany; UOK) – 2008 (Supervisor)
4. Ms. Sonia Bano (M.Sc. Botany; UOK) – 2008 (Supervisor)
5. Mr. Owais Khan (M.Phil. Microbiology; UOK) – (Co-supervisor) 2022 to 2025

### **Ph.D Students Supervised in Botany / ISHU (ongoing):**

1. Mr. Azhar Manzoor (Ph.D. Botany-ISHU; UOK) – 2023 onwards (Supervisor)
2. Ms. Samma Ain (Ph.D; Botany; UOK) - 2025 onwards (Co-supervisor)
3. Ms. Umme Farwa Hasan (Ph.D. Botany-ISHU; UOK) – 2024 onwards (Co-supervisor)

### **M.Phil in Botany-ISHU or Botany / Other Departments (ongoing)**

1. Mr. Jalaluddin (M.Phil; Botany-ISHU) – 2024 onwards (Supervisor)
2. Ms. Tafseer Ahmed Khan (M.Phil; Botany-ISHU) – 2024 onwards (Co-supervisor)
3. Ms. Kaif-ul-Muntaha (M.Phil; Botany) – 2024 onwards (Supervisor)
4. Ms. Mariyum Agha (M.Phil; Botany) – 2024 onwards (Supervisor)
5. Ms. Noor-ul-Ain (M.Phil. Chemisry) – (Co-supervisor)

### **Principal Investigator (Funded Research)**

**2022: Faculty of Science, University of Karachi:** Phytoremediation potential of *Arthrocnemum macrostachyum* (Pak. Rs. 150,000)

**2017-19: HEC funded NRPU project:** Evaluation of Coastal Halophytes for Phytoremediation of Polluted and saline Lands (3.4 million)

**2018: Faculty of Science, University of Karachi:** Growth and Salt Balance of the Mangrove *Aegiceras corniculatum* in relation to Salinity and Light (Pak. Rs. 125,000)

**2016: Faculty of Science, University of Karachi:** Reclamation of Polluted wastelands using Halophytes. (Pak. Rs. 100,000)

**2014-2015: Faculty of Science, University of Karachi:** Exogenous application of Ascorbic acid can increase salt resistance of a threatened mangrove *Ceriops tagal* (Pak. Rs. 100,000)

**2009: Faculty of Science, University of Karachi:** Photosynthetic performance of mangroves under saline conditions. (Pak. Rs. 70,000)

**2007: HEC funded NRPU project:** Stress tolerance in Mangroves. (Pak. Rs. 5.7 million)

**2007: Faculty of Science, University of Karachi:** Ecophysiological responses of four halophytes before and after rains. (Pak. Rs. 60,000)

### **Participation in Conferences / Workshops / invited Lectures / Paper presentations.**

**2025:** International Conference on Climate change mitigation and Environmental amelioration through Plants and other Sustainable Practices”, organized by “Department of Botany, University of Karachi in collaboration with HANDS Institute of Development Studies. February 11 – 13, 2025.

**2024:** International Conference on Sustainable Agriculture in Pakistan”, organized by “Pakistan Media Development & Ripple Concepts” October 29 – 30, 2024 at **Beach Luxury Hotel, Karachi.**

**2024:** One day Seminar on “Importance of Mangrove Conservation” in commemoration with “World Mangroves Day”, July 26, 2024, at **MAK-ISHU, University of Karachi.**

**2023:** International Conference on Saline Resource Management in the context of Climate Change”- 23 – 25 February 2023; at **Avari Towers & Salim Habib University**; organized by MAK-ISHU, *University of Karachi.*

**2023:** International workshop on “Hands on Training in Microscopy Techniques” - 20 – 21 February 2023; at **MAK-ISHU, University of Karachi.**

**2022:** Participated and presented a talk on “*Crop Diversification using Halophytes: Step Towards Climate Smart Agriculture & Food Security*” in a Seminar on “**Solutions to Combat Food Insecurity and Malnutrition in the Sahel**”- 26 September 2022, Convened by: COMSTECH Forum for Environment and Ecosystem Restoration (CFEER) at **Science Summit, 77th Session of United Nations General Assembly (UNGA).**

**2021:** Participated and delivered oral presentation on “Halophytes for Phytoremediation: A promising approach for re-vegetating saline and polluted lands. Sustainable use of Bio-resources in Green Economy”. **IBRAS (International Conference on Biological Research and Applied Sciences)**: Online conference, January 20 to 21, 2021 at *Jinnah University for Women, Nazimabad, Karachi*

**2021:** Participated in “International Virtual Conference on Ecophysiology & Sustainable use of Halophytes: A Tribute to Dr. Muhammad Ajmal Khan, April 6 – 8, 2021 at MAK-ISHU, *University of Karachi*.”

**2020:** Participated in “**World Science Day for Peace and Development**”, November 19, 2020 at MAK-ISHU, *University of Karachi*.

**2020.** Participated in “**The Third Meikong Mangrove Forum**” (Oct. 01, 2020). Organized by UNEP, Bangkok, Hong Kong (Online zoom webinar).

**2019:** Participated and Organized the “2nd International Conference on the Sustainable Development: Halophytes for the Green Revolution”, 07-09 January, 2019.

**2018:** Participated and delivered oral presentation on “Conservation and Sustainable utilization of medicinally important Mangrove Plants” at **Conservation of Medicinal and Aromatic Plants for Improving the Livelihood of Mountain Communities through Industrial Linkages**, September 3 – 5, 2018 at the *University of Swat*.

**2017.** Proceedings of EGU General Assembly “Growth responses of *Phragmites karka* – a candidate for second generation biofuel from degraded saline lands. Geophysical Research Abstracts Vol. 19, EGU2017-4375, 2017 **EGU General Assembly 2017** © Author(s) **CC Attribution 3.0 License**.

**2016:** Participated in proceedings with paper on “Contribution of prevalent solutes constitutively involved in Osmotic adjustment in mangroves from Pakistan” at “**Mangrove & Macrobenthos meeting (MMM4)**” 18 – 22 July, St. Augustine, Florida, USA

**2016:** Participated and presented poster on “Role of flavonoids and radical scavenging activity in growth and photosynthetic performance of *Phragmites karka* under saline conditions”. **4<sup>th</sup> International Conference on Environmental Horizon; valuing and Conserving nature**, January 8 – 10, 2016 at *Department of Chemistry, University of Karachi*.

**2016:** Participated and presented poster on “Ecophysiological evaluation of *Phragmites karka* in relation to water deficit and flooding. **4<sup>th</sup> International Conference on Environmental Horizon; valuing and Conserving nature**, January 8 – 10, 2016 at *Department of Chemistry, University of Karachi*.

**2016:** Participated and presented poster on “Metabolic implications of Salt induced Osmolyte Accumulation in *Avicennia marina*. **14<sup>th</sup> National & 5<sup>th</sup> International meeting of Plant Scientists**, January 15 – 18, 2016, jointly organized by Department of Botany, Agriculture and Agribusiness and the Institute of Sustainable Halophyte Utilization, at *University of Karachi*.

**2015:** Participated and presented a paper on “A comparison of Bulk Elastic Modulus and Water Relations in Halophytes from Karachi Coast. **International Conference on Physiological, Biochemical and Molecular Arguments for salt tolerance**, October 12 – 15, 2015 at **Doha, Qatar**

**2014.** Trained graduate students in a workshop on Use of Instruments for plant Water Relation studies. **Hands on Training in Ecophysiological Techniques**, April 13 – 14, 2014 at the *Institute of Sustainable Halophyte Utilization, University of Karachi*.

**2014.** Participated and presented paper on “Does foliar application of chemicals alleviate salinity effects in mangroves? **International conference on Halophytes for Food security on Dry lands**, May 12 – 13, 2014 at **Doha, Qatar**.

**2012.** Participated and presented paper on “Influence of Salinity on biomass production, total phenols, damage markers and water relations in mangroves. **Meeting on Mangrove Ecology, Functioning & Management (MMM3)**, 2-7 July 2012 at *Galle, Sri Lanka*.

**2011.** Participated in Training course on “**Desertification and its control in Developing Countries**” from September 11 – 26, 2011 in *Lanzhou, Gansu Province, Organized by CAREERI, P.R. China*.

**2011.** Participated and presented paper on “Effects of Sea salt on ROS balancing and activity of Antioxidant Enzymes in *Ceriops tagal*. **2nd International Conference of Plant Scientists & 11th National Meeting of Plant Scientists**, February 22 – 24, 2011 at *Department of Botany, GC University Lahore- Pakistan*.

**2011.** Co-authored and participated in "Effects of Chemical Pretreatment on the Seed Germination of Three Salt Tolerant Grasses. **2nd International Conference of Plant Scientists & 11th National Meeting of Plant Scientists.** February 22 – 24, 2011 at *Department of Botany, GC University Lahore- Pakistan.*

**2011.** Co-authored and participated in a poster "Photosynthetic Responses, Lipid Peroxidation And Water Status of Mangroves under Salt Stress. **2nd International Conference of Plant Scientists & 11th National Meeting of Plant Scientists,** February 22 -24, 2011 at *Department of Botany, GC University Lahore- Pakistan.*

**2010:** Participated and co-organized a Workshop on "Physiological Ecology of Salt Tolerance", April 27 – 29, at the ***Institute of Sustainable Halophyte Utilization, University of Karachi.***

**2010:** Participated in "Three days academic retreat for HEC approved supervisors", July 29-31, 2010, Sponsored By ***HEC, Islamabad*** at ***HEC regional Office, Karachi.***

**2010:** Participated in "National Curriculum Revision Committee meeting in Botany" at ***Higher Education Commission of Pakistan, regional center Karachi.*** March 1-3.

**2009:** Participated in "Implementation of the strategy for development of Biotechnology in Pakistan", 27-28 February, organized by ***ICCBS and PABIC at HEJ, Karachi.***

**2008:** Participated as a member in "Second (2<sup>nd</sup>) National Conference of Life Scientists, January 30-31, 2008, at ***Bahauddin Zakariya University, Multan.***

**2008:** Attended and co-organized PAS (Pakistan Academy of Sciences) workshop on "Recent Trends in Plant Sciences: Impact on Biodiversity", April 16 -18, 2008, at the ***Institute of Sustainable Halophyte Utilization, University of Karachi.***

**2007:** Presented a lecture on "Diversity" in HEC sponsored workshop on Advances in Plant Ecology - Ecophysiological constraint, December 17-19, 2007, at *Department of Botany, University of Agriculture, Faisalabad, Pakistan.*

**2006:** Participated and presented a paper on "Eco-physiological responses of two grasses and a sedge from an inland population of Karachi University campus" at the **International Symposium on strategies for crop improvement against abiotic stresses**, September 2006 at the *University of Agriculture, Faisalabad, Pakistan.*

**2006:** Delivered a lecture on "Plant Ion Relations" in **Life Sciences- HEC Workshop on advances in Plant Ecology**, July 3-6, 2006, at *Department of Botany, University of Karachi.*

**2006:** Participated and presented a paper on "Water status and accumulation of compatible osmolytes in some halophytes before and after rains", November 2006 at the **9th National Conference of Plant Scientists, University of Sindh, Jamshoro, Pakistan.**

**2005:** Presented a Lecture on "Measurement techniques of Solute Potential" in **Workshop for Biology Practicals**, February 8-12, organized by *Govt. Degree College for Boys and Girls, Stadium Road, SRE Majeed, Karachi in Collaboration with PNS Bahadur, Pakistan Navy.*

**2005:** Presented a Lecture on "Bioenergetics" in "**Five days Refresher Course in Biology**", January 31 - Feb 4, 2005, Organized by *Govt. D.J. Science College, Karachi and Board of Intermediate Education, Karachi.*

**2005:** Participated in **Fifth (5<sup>th</sup>) International Symposium on Recent Trends in Plant Disease Management**, December 20-22, 2005, at *KIBGE, University of Karachi, Karachi, Pakistan.*

**2004:** Attended "**Six days In-service Training Program for B.Sc. College Teachers of Botany**, December 9-15, 2004, organized by the **HEC (Higher Education Commission, Karachi Regional Office).**

**2004:** Participated in **HEC Workshop on "Current Trends in Plant Sciences"**, August 23-26, 2004 at the *Department of Botany, University of Karachi.*

**2003:** Presented a paper on "Seasonal variation in water relations of *Halopyrum mucronatum* growing near Sandspit, Karachi" at **8th National Conference of Plant Scientists**, January 2003 at the *Department of Botany, University of Karachi, Karachi, Pakistan.*

**2000:** Participated and presented a paper on "Salt Tolerance in *Rhizophora mucronata*" in **Seventh (7<sup>th</sup>) National Conference of Plant Scientists**, held in February 2000 at *Quaid-e-Azam Campus, University of the Punjab, Lahore, Pakistan.*

**2000:** Attended an international conference on "Technology and Development in the New Millennium", at the *University of Karachi, Karachi, Pakistan*.

**1995:** Attended Third (3<sup>rd</sup>) International Conference on "Food Science and Technology" at the *Department of Food Science & Technology, University of Karachi*.

**1994:** Participated and presented a paper on "salt Tolerance mechanisms in Mangroves of Pakistan at the **International Symposium on High Salinity Tolerant plants**, December 12 – 16, 1994, organized by the *Department of Botany, University of Karachi*.

## **PUBLICATIONS (SCHOLARLY ARTICLES)** **(Peer Reviewed Research Articles)**

1. **Aziz, I** & M.A. Khan. (2000). Effect of seawater on osmoregulation of *A. marina* from Indus Delta, Pakistan. *Pak. J. Bot.* **36**:151-170.
2. Khan, M.A & **I. Aziz** (2001). Salinity tolerance in some mangrove species from Pakistan. *Wetland Ecol. & Manag.* **9** (3):229-233.
3. **Aziz, I** & M.A. Khan. (2001). Experimental assessment of salinity tolerance of *Ceriops tagal* seedlings and saplings from the Indus Delta, Pakistan. *Aquat. Bot.* **70** (3): 259-268. (The Netherlands).
4. **Aziz, I** & M.A Khan. (2001). Effect of seawater on the growth, ion content and water potential of *Rhizophora mucronata* Lam. *J. Plant Research.* **114** (1115): 369-374. (Japan).
5. **Aziz, I** & M.A. Khan. (2001). Seawater tolerance of *Rhizophora mucronata*. *Pak. J. Bot.* **33**: 619-628.
6. **Aziz, I** & M.A Khan. (2001). Ecophysiology of *A. marina* populations growing in polluted coasts around Arabian sea. *Pak. J. Bot.* **33** (4): 429-441.
7. **Aziz, I** & M.A. Khan. (2003). Proline and Plant Water Status of some desert shrubs before and after rain. *Pak. J. Bot.* **35** (5): 911-915.
8. **Aziz, I.**, S. Gulzar., M. Noor & M.A. Khan. (2005). Seasonal variation in water relations of *Halopyrum mucronatum* (L.) Stapf., growing near Sandspit, Karachi. *Pak. J. Bot.* **37**: 141-148.
9. **Aziz, I.** (2007). Seasonal flux in water potential, proline and chlorophyll content in desert shrubs at Ziarat valley, Balochistan, Pakistan. *Pak. J. Bot.* **39**(6): 1995 - 2002.
10. Qasim, M., S. Gulzar., Z. K. Shinwari., **I. Aziz** & M.A. Khan. (2010). Traditional Ethnobotanical uses of halophytes from Hub, Balochistan. *Pak. J. Bot.* **42**: 1543 – 1551.
11. Gul, B., R. Ansari., **Aziz, I** & M. A. Khan. (2010). Salt tolerance of *Kochia scoparia*: a new fodder crop for highly saline arid regions. *Pak. J. Bot.* **42** (4): 2479 – 2487.
12. **Aziz, I.**, B. Gul., S. Gulzar & M.A. Khan. (2011). Seasonal variations in plant water status of four desert halophytes from semi arid region of Karachi. *Pak. J. Bot.* **43** (1): 587 - 594.
13. Moinuddin, M., S. Gulzar., **Aziz, I.**, Abdel Rahman A. Al-Atar., A.K. Hegazi & M.A. Khan. (2012). Evaluation of Forage Quality among Coastal and Inland Grasses from Karachi. *Pak. J. Bot.* **44**: 573-577.
14. Hameed, A., Hussain, T., Gulzar., S. **Aziz, I.**, Gul, B & M. A. Khan. 2012. Salt tolerance of a cash crop halophyte *Suaeda fruticosa*: biochemical responses to salt and exogenous chemical treatments. *Acta Physiol. Plant.* **34**: 2331 – 2340. <https://doi.org/10.1007/s11738-012-1035-6>
15. Ali, H., Gul, B., Ahmed, M.Z., **Aziz, I.**, Gulzar, S., Ansari, R & M.A. Khan. (2014). NPK mediated improvement in biomass production, photosynthesis and Na<sup>+</sup> regulation of *Panicum antidotale* under saline conditions. *Pak. J. Bot.*, **46**(6): 1975-1979.
16. Hameed, A., Gulzar, S., **Aziz, I.**, Hussain, T., Gul, B & M. A. Khan. (2015). Effects of salinity and ascorbic acid on growth, water status and antioxidant system in a perennial halophyte. *AoB PLANTS*. <https://doi.org/10.1093/aobpla/plv004>
17. Khan, F., Adnan, M.Y & **I. Aziz.** (2016). Metabolic implications of salt induced osmolyte accumulation in *Avicennia marina*. *Pak. J. Bot.* **48**(1): 29 – 35

18. Qasim, M; I. **Aziz, I.**, Rasheed, M., Gul, B & M. A. Khan. (2016). Effect of extraction solvents on polyphenolic contents and antioxidant activity of Halophytic medicinal plants. *Pak. J. Bot.* 48(2): 621-627
19. Ehsen, S., Rizvi, F. R., Abideen, Z., **Aziz, I.**, Gulzar, S., Gul, B., Khan, M.A and R. Ansari; 2016. Physicochemical responses of *Zaleya pentandra* (Linn.) C. Jeffrey to NaCl treatments. *Pak J. Bot.* 49(3): 801-808
20. Shoukat, E., **Aziz, I.**, Ahmed, M. Z & M.A. Khan. 2018. Growth dynamics of *Phragmites karka* under saline conditions depend on bulk elastic modulus. *Crop & Pasture Science*; 69: 535 – 545. <https://doi.org/10.1071/CP17195>
21. Qasim, M., Fuji, Y., Ahmed, M. Z., **Aziz, I.**, Watanabe, K.N & M. A. Khan. 2019. Phytotoxic analysis of Coastal medicinal plants and quantification of phenolic compounds using HPLC. *Plant Biosystems*; 153(6): 767-774. <https://doi.org/10.1080/11263504.2018.1549607>
22. Ehsen, S., Abideen, Z.U., Rizvi, F.R., Gulzar, S., **Aziz, I.**, Gul, B., Khan, M.A and R. Ansari. 2019. Ecophysiological adaptations and anti-nutritive status of cattle feed *Haloxylon stocksii* under saline conditions. *Flora*. <https://doi.org/10.1016/j.flora.2019.151425>
23. **Aziz, I.**, Khan, F and Syed, M.N. 2020. Seasonal physiological & biochemical responses of three medicinal halophytes from Karachi University Campus. *Biosight*. 01(01): 34-40 <https://biosight.org/index.php/bios/article/view/3>
24. 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.
25. Mujeeb, A., **Aziz, I.**, Ahmed, M.Z., Alvi, S.K & S. Shafiq. 2020. Comparative assessment of heavy metal accumulation and bio indication in coastal dune halophytes. *Ecotoxicolgy and Environmental safety* 195 (2020) <https://doi.org/10.1016/j.ecoenv.2020.110486>
26. Kodikara, A.S.K., Ranasinghe, P., **Aziz, I.**, Jayatissa, L.P., Madarasinghe, S.K., Dadouh-Guebas, F., & N. Koedam. 2020. Oxidative stress, leaf photosynthetic capacity and dry matter content in young mangrove plant *Rhizophora mucronata* Lam., under prolonged submergence and soil water stress. *Physiol. Mol. Biol. Plants*. 26(8): 1609-1622 <https://doi.org/10.1007/s12298-020-00843-w>
27. Dahdouh-Guebas, F., Ajonina, G.N., Amir, A.A., Andradi-Brown, D.A., **Aziz, I.**, Balke, T., Barbier, E., Cannicci, S., Cragg, S.M., Cunha-Lignon, M. *et al.*, 2020. Public perceptions of mangrove forests matter for their conservation. *Front. Mar. Sci.* <https://doi.org/10.3389/fmars.2020.603651>
28. Mujeeb, A., **Aziz, I.**, Ahmed, M.Z., Shafiq, S., Fatima, S and S.K. Alvi. 2021. Spatial and seasonal metal variation, bioaccumulation and biomonitoring potential of halophytes from littoral zones of the Karachi Coast. *Sci. Tot. Environ.* 781 (2021) 146715. <https://doi.org/10.1016/j.scitotenv.2021.146715>
29. Nisar, F., Gul, B, **Aziz, I.**; Hameed, A; Egan T. 2021. Increasing salinity leads to differential growth and H<sub>2</sub>O<sub>2</sub> homeostasis in plants produced from heteromorphic seeds of the succulent halophyte *Arthrocnemum indicum*. *Plant Physiol. Biochem.* <https://doi.org/10.1016/j.plaphy.2021.05.029>
30. Afsar, S; **Aziz, I.**; Qasim, M; Baloch, A.H; Syed, M.N and Gulzar, S.G. 2021. Salt tolerance of a leaf succulent halophyte *Salsola imbricata* – growth and water relations perspective. *Int. J. Biol. Biotec.* 18(3): 499 – 507.
31. **Aziz, I** and A. Mujeeb. 2021. Halophytes for Phytoremediation: A promising approach for re-vegetating saline and polluted lands. Sustainable use of Bio-resources in Green Economy. *IBRAS*: 29 – 31. Jinnah University for Women, Nazimabad, Karachi. <http://dx.doi.org/10.37962/IBRAS/2021/29-31>
32. Hameed, A., Ahmed, M.Z., Hussain, T., **Aziz, I.**, Ahmad, N., Gul, B and B.L. Nielsen. 2021. Effects of Salinity Stress on Chloroplast Structure and Function. *Cells* 2021, 10, 2023. <https://doi.org/10.3390/cells10082023>

33. Aziz, I., A. Mujeeb. **2022**. Halophytes for phytoremediation of hazardous metal(loid)s: A terse review on metal tolerance, bio-indication and hyperaccumulation. *Journal of Hazardous Materials*. <https://doi.org/10.1016/j.jhazmat.2021.127309>
34. Jakhar, A.M., Aziz, I., Kaleri, A.R., Hasnain, M., Haider, G., Maa, J and Abideen, Z. U. **2022**. Nano-fertilizers: a sustainable technology for improving crop nutrition and food security. *NanoImpact* 27 (2022) 100411. <https://doi.org/10.1016/j.impact.2022.100411>
35. Khilji, S.A., Munir, N., Aziz, I., Anwar, B., Hasnain, M., Jakhar, A.M., Sajid, Z.A., Abideen, Z., Hussain, M.I., El-Habeeb, A.A., Yang, H-H. **2022**. Application of algal nanotechnology for leather wastewater treatment and heavy metal removal efficiency. *Sustainability*. **2022** 14, 13940. <https://doi.org/10.3390/su142113940>
36. Mujeeb, A., Abideen, Z., Aziz, I., Sharif, N., Hussain, M.I., Qureshi, A.S., and Yang, H.H. **2023**. Phytoremediation of potentially toxic elements from contaminated saline soils using *Salvadora persica* L. Seasonal variation. *Plants*. 2023, 12(3), 598. <https://doi.org/10.3390/plants12030598>
37. Umer, S., Abbas., Z, Aziz, I., Hanif, M., Abideen, Z., Mansoor, S., Hamid, N., Ali, M.A., Al-Hemaid, F.M. **2023**. Potential of ornamental trees to remediate trace metals con-taminated soil for environmental safety and urban green space development. *Sustainability*, 2023, 15, 8963. <https://doi.org/10.3390/su15118963>
38. Manzoor, A., Mujeeb, A., Aziz, I., Abideen, Z., Yong, J.W.H. **2024**. Lead tolerance and accumulation in *Arthrocaulon macrostachyum*: Growth, physiological and antioxidant responses. *South Afr. J. Bot.* 174, 988-999. <https://doi.org/10.1016/j.sajb.2024.10.006>
39. Nisar, F., Hameed, A., Gul, B., Aziz, I., B. L. Nielsen. **2024**. Insights into the Salinity Tolerance of the Succulent Halophyte *Arthrocnemum macrostachyum*: Comparative Ecophysiology of Plants from Heteromorphic Seeds. *Front. Plant Sci.* 15:1504540. <https://doi.org/10.3389/fpls.2024.1504540>
40. Khilji, S.A., Tariq, R., Aziz, I., Munir, N., Javed, A., Uppal, T., Abideen, Z., El-Sheikh, M.A., El-Keblawy, A.A. **2025**. Phytoremediation potential and ecophysiological responses of *Pistia stratiotes* for removal of cadmium and lead from polluted water: A viable option for agricultural resilience. *Environ. Sustainability*. (Accepted)
41. Mujeeb, A., Manzoor, A., Aziz, I., Nisar, F., Hameed, A., Abideen, Z., Yong, J.W.H. **2025**. Toxicological responses of a wetland halophyte *Aeluropus lagopoides* to chromium under saline conditions. *Ecotoxicol. Environ. Safety*. (Submitted)
42. Khilji, S.A., Qamar, M.N., Tariq, R., Aziz, I., Munir, N., El-Sheikh, M.A., Abideen, Z. **2025**. Application of humic acid & fluvic acid enhance the ecophysiological adaptations in *Chenopodium quinoa* Willd for optimum trace metal remediation. *Acta Physiol. Plant.* (submitted).

### **Book Chapters**

43. Aziz, I & F. Khan. **2014**. Distribution, Ecology & Ecophysiology of mangroves in Pakistan. *In*: Eds. Khan, M.A.; Böer, B.; Öztürk, M.; Al Abdessalaam, T.Z.; Clüsener-Godt, M.; Gul, B. **Sabkha Ecosystems vol. IV: Cash Crop Halophyte & Biodiversity Conservation**. Pp: 300. Springer. ISBN 978-94-007-7410-0. [https://doi.org/10.1007/978-94-007-7411-7\\_3](https://doi.org/10.1007/978-94-007-7411-7_3)
44. Sarwat, S. G., Siddiqui, H., Hameed, A., Hussain, T., Aziz, I., Khan, M.A and S. Gulzar. **2019**. Temporal variations in water and ion relationships in coastal halophytes. *In*: B. Gul et al., (eds.). *Sabkha Ecosystems, Tasks for Vegetation Science*. Vol VI. Springer Nature Switzerland AG 2018. Pp: 447-458. [https://doi.org/10.1007/978-3-030-04417-6\\_27](https://doi.org/10.1007/978-3-030-04417-6_27)
45. Ahmed M.Z., Abideen, Z., Aziz, I & B. Gul. **2020**. Salinity induced changes in growth attributes, water relation and ion-flux of sub-tropical halophytes. *In*: Grigore, Marius-Nicuser (Ed.). *Handbook of Halophytes: From Molecules to Ecosystems towards Biosaline Agriculture*. ISBN 978-3-030-57634-9. Springer Nature Switzerland AG 2021. [https://doi.org/10.1007/978-3-030-17854-3\\_51-1](https://doi.org/10.1007/978-3-030-17854-3_51-1)

46. **Aziz, I.**, A. Mujeeb., Belgacem, A.O and Baig. M.B. **2022**. Crop Diversification Using Saline Resources: Step Towards Climate-Smart Agriculture and Reclamation of Marginal Lands. In: Behnassi, M., Gupta, H., Barjees Baig, M., Noorka, I.R. (eds) *The Food Security, Biodiversity, and Climate Nexus*. Springer, Cham. [https://doi.org/10.1007/978-3-031-12586-7\\_21](https://doi.org/10.1007/978-3-031-12586-7_21)
47. Abideen, Z.U., Hanif, M., Sarwa, Z., **Aziz, I.**, Munir, N., and Hasnain, M. **2024**. Recent Trends of Promising Membrane Technologies for Heavy Metal Removal from Water and Wastewater. In: Juhana Jaafar, J., Naseer, M.N., Zaidi, A.A. (Eds.). *Membrane technologies for heavy metal removal from water and wastewater*. 2024. (28 – 43). CRC Press. Taylor and Francis <https://doi.org/10.1201/9781003326281-3>