**CURRICULUM VITAE**

Name : **Nudrat Aisha Akram**

Designation:Professor

Husband’s Name : Dr. Muhammad Farid-ul-Haq

Father’s Name : Muhammad Akram

Domicile : Sahiwal (Punjab), Pakistan

N. I. C. No. : 36502-8789148-8

Religion : Islam

Marital Status : Married

Postal Address : Department of Botany, Government College University,

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**QUALIFICATIONS**

|  |  |  |
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| **Exam.** | **Subjects** | **Board/University** |
| B. Sc. | Botany, Zoology, Chemistry | Bahaudin Zakariya University, Multan, Pakistan  |
| B. Ed. | Biology, Chemistry | Allama Iqbal Open University, Islamabad, Pakistan |
| M. Sc. | Botany | Bahaudin Zakariya University, Multan, Pakistan |
| M. Phil | Botany | University of Agriculture, Faisalabad, Pakistan. |
| Ph. D. | Botany | University of Agriculture, Faisalabad, Pakistan. |

**Awards and Honors:**

* **HEC Approved Supervisor** (Ist February, 2012)
* **Letter of Appreciation** from ‘‘Vice Chancellor, UAF, Pakistan’’ on completion of PhD within seven semesters (2011)
* Earned **Research Productivity Award, 2010** from the Ministry of Science & Technology, Islamabad, Pakistan (2011), Category **''F''**
* **Earned Productivity Allowance, 2011** **(Rs. 10,000)** from the GC University, Faisalabad, Pakistan
* **Dr. Shah Jahan Prize, 2012** (**Gold Medal**, 35, 000/- Cash and a certificate) under 40 from the Pakistan Academy of Sciences, Islamabad, Pakistan
* **Earned Productivity Allowance, 2012** **(Rs. 10,000)** from the GC University, Faisalabad, Pakistan
* Earned **Research Productivity Award, 2012** from the Ministry of Science & Technology, Islamabad, Pakistan, Category **''D''**
* Earned **Research Productivity Award, 2013** from the Ministry of Science & Technology, Islamabad, Pakistan Category **''B''**
* Received a **''Citation of Excellence'' Award, 2013** from the Crop Science Society of America
* **Earned Productivity Allowance, 2013** **(Rs. 10,000)** from the GC University, Faisalabad, Pakistan
* Earned **Research Productivity Award, 2014** from the Ministry of Science & Technology, Islamabad, Pakistan Category **''C''**
* Selected as **‘‘TWAS Young Affiliate, 2015’’ Italy,** from the Central & South Asian Region
* Received special **increment** on securing 100% marks in annual "TTS evaluation, 2014"
* Selected as **‘‘Full Member of Organization for Women in Science for the Developing World (OWSD), 2016’’** from the Central & South Asian Region
* **Earned Productivity Allowance, 2016** **(Rs. 30,000)** from the GC University, Faisalabad, Pakistan
* Earned **Research Productivity Award, 2015** from the Ministry of Science & Technology, Islamabad, Pakistan Category **''D''**
* **Earned Productivity Allowance, 2013** **(Rs. 10,000)** from the GC University, Faisalabad, Pakistan
* Secured **Second position** among Productive Scientists **under Age 40 in Biological Sciences** in **2016** by scoring **5.62** points by the **Pakistan Council for Science and Technology (PCST), Islamabad, Pakistan.**
* Selected as **‘‘Member, Pakistan Academy of Sciences, Islamabad 2016’’**
* **Earned Productivity Allowance, 2017** **(Rs. 115,000)** from the GC University, Faisalabad, Pakistan
* Earned **Research Productivity Award, 2017** from the Ministry of Science & Technology, Islamabad, Pakistan, Category **''D''**
* Nominated as **Woman Young Scientist in Asia, 2018 by** The Association of Academies and Societies of Sciences in Asia (AASSA)
* **Gold Medal, 2022 and a certificate in the field of Physiology**-Prof Dr. Samina Jalali 3rd Gold Medal by the **Applied Zoological Society of Pakistan (AZSP)**

Impact Factor: **324.983**

Total Citations: **4600**

Hi-Index: **38**

**M. Phil** **under supervision of Dr. Muhammad Shahbaz**

**Thesis Title**

* Morpho-physiological responses of *Cynodon dactylon* L. and *Cenchrus ciliaris* L. to water deficit conditions

**Ph. D. under supervision of Prof. Dr. Muhammad Ashraf**

**Thesis Title**

* Alleviation of salt induced adverse effects stress by exogenously applied 5-amino levulinic acid in sunflower (*Helianthus annuus* L.).

**International Experience**

China, Austria, Brazil, Japan, Iran, Saudi Arabia, Egypt

**EXPERIENCE**

1. **Professor** Department of Botany, GCUF from **30-12-2022 to continue**
2. **Associate Professor (Tenured)** Department of Botany, GC University, Faisalabad from **25-02-2019 to 29-12-2022**
3. **Assistant Professor (TTS),** Department of Botany, GC University, Faisalabad from **24-01-2013 to 24-02-2019**
4. **Assistant Professor (Contract),** Department of Botany, GC University, Faisalabad from **01-10-2012 to 23-01-2013**
5. **Assistant Professor (IPFP),** Department of Botany, GC University, Faisalabad from **29-09-11 to 28-09-2012**
6. **As a research fellow in project titled** ‘‘Modulation of activities/levels of antioxidants, vitamins and osmoprotectants in some prospective summer and winter vegetables due to salt stress’’ **from** **27-07-09 to 05-03-11 run by Prof. Dr. M. Ashraf,** Department of Botany, University of Agriculture, Faisalabad**.**
7. **As a research fellow in project titled** ‘Research Grant from King Saud University, Saudi Arabia’’ **from** **07-04-11 to 26-09-11, run by Prof. Dr. M. Ashraf,** Department of Botany, University of Agriculture, Faisalabad.
8. **As a research fellow in a project titled ‘‘**Activities of plasma membrane and vacuolar H+-ATPases and accumulation of antioxidants as markers of salt tolerance in potential oilseed crop canola’’ from **14-08-06** to **15-03-07 run by Prof. Dr. M. Ashraf,** Department of Botany, University of Agriculture, Faisalabad**.**
9. **Superintendent,** Khadija Girls Hostel, GC University Faisalabad, Pakistan from **07-01-13 to November, 2017.**
10. **Superintendent,** Federal Girls Hostel, GC University Faisalabad, Pakistan from 12**-01-16 to 12-06-2016**
11. **Superintendent, Rabia Hall, Hall Council III**, New Campus, GC University Faisalabad, Pakistan from **November, 2017 to date**
12. **Manager, TISC, ORIC**
13. **Deputy Director, ORIC**

**Member/Convener of Committees:**

1. **Superintendent,** Rabia Girls Hostel, New Campus, GC University Faisalabad, Pakistan from **05-12-18 to continue**
2. **Superintendent,** Khadija Girls Hostel, GC University Faisalabad, Pakistan from **07-01-13 to 04-12-18**
3. **Member, Synopsis/Thesis Scrutiny Committee**, Department of Botany, GCUF from 20-05-2012 to date
4. **Member, Purchase Committee for Hall Council**, GCUF from 28-01-2014 to date
5. **Coordinator, Board of Studies (BoS),** Department of Botany, GCUF from 07-08-2014 to date
6. **Opted member, Board of Studies (BoS),** Department of Botany, GCUF
7. **Member, Central Inspection Committee for General/Misc/Stationary Items,** GCUF, from 30-01-2015 to date
8. **Member, Technical Inspection/Purchase Committee,** Department of Botany, GCUF, from 27-05-2015 to date
9. **Member, Technical Inspection/Purchase Committee,** The Office of State care (Department 1), GCUF, from 2015 to date
10. Departmental Representative for **‘‘Office of Research Innovation and Commercialization (ORIC)’’**
11. Departmental Representative for **‘‘Quality Enhancement of Cell (QEC)’’**
12. Departmental Representative for **‘‘Annual Sports, GCUF’’**
13. **Member,** Admission Committee for **"Under Graduates, 2015".**
14. **Member,** Food Committee **"Convocation, 2016".**
15. **Member,** Alumni, GCUF

**Editor**

1. Journal of Plant Growth Regulation (IF = 4.169)
2. Member, Editorial Advisory Board, The Proceedings of the Pakistan Academy of Sciences: Part B (HEC Recognized, Y Category)
3. Member, Editorial Advisory Board, International Journal of Plant Science and Phytomedicines (HEC Recognized)

**REVIEWER**

1. Journal of the Science of Food and Agriculture
2. Pakistan Journal of Botany
3. African Journal of Agricultural Research
4. Scientia Horticulturae
5. Phytochemistry
6. Crop Science
7. BioMed Research International
8. Journal of Plant Growth Regulation
9. Plant Physiology and Biochemistry
10. South African Journal of Botany
11. Plant Physiology and Biochemistry
12. Brazilian Journal of Botany
13. Archives of Agronomy and Soil Science
14. Biologia Plantarum
15. Acta Physiologiea Plantarum
16. Environmental & Experimental Botany
17. Pakistan Journal of Agricultural Sciences
18. South African Journal of Botany

***Research Grants/Projects:***

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| --- | --- | --- | --- | --- | --- |
| **S.No.** | **Title** | **Donor Agency** | **Amount (Rs/$) In million** | **Duration** | **Role as PI/Co. PI** |
|  |  ***Completed*** |
| 1 | Role of 5-aminolevulinic acid (ALA) in oxidative defense system of wheat (*Triticum aestivum* L.) plants under drought conditions | Higher Education Commission (HEC), Islamabad, Pakistan, 2011 | 0.5 Million | One year | PI |
| 2 | Modulation in growth, yield and oil composition of canola (Brassica napus L.) by exogenously applied ascorbic acid under drought stress conditions | International Foundation of Science (IFS), Swedon, 2012 | 12,000 US$ | Two year | PI |
| 3 | Drought stress signal crosstalk in different ploidy wheats: Roles of non-hydraulic root-sourced signal  | National Natural Science Foundation (NNSFC) of China, 2013 | 200, 000 RMB | 1 Year | PI |
| 4 | Phyto-extracts potential in modulating the ontogeny and drought tolerance of maize (*Zea mays* L.) plants | NRPU-Higher Education Commission (HEC), Islamabad, Pakistan, 2017 | 2.802633 million | 2 Years | PI |
| 5 | Trehalose-induced improvement in various physio-biochemical, yield and oil composition of sunflower (*Helianthus annuus* L.) plants grown under saline and drought stress conditions | GC University, Faisalabad, Pakistan, 2017 | 0.095 million | 1 Year | PI |
|  | ***Going on*** |
| 6 | Monitoring cadmium-induced intra- and extra- cellular proton dynamics in maize under different pH regimes | NRPU-Higher Education Commission (HEC), Islamabad, Pakistan, 2016 | 3.18905 million | 3 Years | Co-PI |
| 7 | Zinc fortification and alleviation of cadmium stress by application of lysine-chelated zinc on wheat and rice in the cadmium polluted soils | NRPU-Higher Education Commission (HEC), Islamabad, Pakistan, 2017 | 2.3 million | 3 Years | Co-PI |
| 8 | Monitoring take advantage of some rangeland halophyte species as forage in saline regions of Iran and Pakistan  | Pak-Iran Project by Pakistan Science Foundation, Islamabad, Pakistan, 2017 | 9750 € | 2 Year | PI |
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**PUBLICATIONS**

**Books**

**1.** Munir-Ozturk, **Nudrat Aisha Akram,** Bengu Turkyilmaz Unal and Muhamamd Ashraf (**Editors). 2022.** Introduction and Application of Organic Fertilizers as Protectors of our Environment, Publisher, Cambridge Scholars Publishing, UK.

**Book Chapters**

1. Muhammad Ashraf, **Nudrat Aisha Akram,** Mehboob-ur Rehman and M.R. Foolad. **2012.** Using marker-assisted selection in plant breeding for salinity tolerance, In: Sergey Shabala and Tracey Ann Cuin (eds.), *Plant Salt Tolerance: Methods and Protocols, Methods in Molecular Biology,* Humana Pressvol. 913, pp. 305-333.
2. Shaista Qadir, Sumiya Jamshieed, Saiema Rasool, Muhammad Ashraf, **Nudrat Aisha Akram** and Parvaiz Ahmad. **2014.** Modulation of plant growth and metabolism in cadmium-enriched environments, In: *Reviews on Environmental Contamination & Toxicology,* D.M. Whitacre (Ed.), Vol, 229, **Springer International Publishing Switzerland, pp. 51-88.**
3. You-Cai Xiong, Feng-Min Li, Muhammad Ashraf, **Nudrat Aisha Akram,** Sabeeh ur Rasool Sabir, Fei Mo and Xiao-Ling Wang. **2016.** Grass and crop rotation system and its ecological importance in the loess plateau. In: (Bao-Luo Ma), *Crop Rotations: Farming Practices, Monitoring and Environmental Benefits*. **Nova Science Publishers, Inc. Chapter 6, pp. 133-155.**
4. **\*\*Akram, N.A.,** Iqbal, N., Ashraf, M. and Ozturk, M. **2016.** **Guest Editor** **for a Special Issue on** "Major Environmental Constraints to Plants: Assessment and Reclamations" published in **Applied Ecology and Environmental Research, Volume 14(5), 2016 (Impact Factor, 0.5).**
5. Mohammad A. Ahanger, Fahima Gul, Parvaiz Ahmad and **Nudrat Aisha Akram. 2018.** Environmental Stresses and Metabolomics-Deciphering the Role of Stress Responsive Metabolites. In: Parvaiz Ahmad, Mohammad Abass Ahanger, Vijay Pratap Singh, Durgesh Kumar Tripathi, Pravej Alam and Mohammed Nasser Alyemeni; Plant Metabolites and Regulation Under Environmental Stress, ISBN: 978-0-12-812689-9, Publisher: Andre G. Wolff, Academic Press, Elsevier**, pp. 53-68.**
6. Muhammad Sadiq and **Nudrat Aisha Akram. 2018.** *Field Performance of Transgenic Drought Tolerant Crop Plants,* In: Ed (Shabir Hussain Wani) Biochemical, Physiological and Molecular Avenues for Combating Abiotic Stress Tolerance in Plants, Elsevier, **pp. 93-102.**
7. Shabir H. Wani, Mukesh Choudhary, Pardeep Kumar, **Nudrat Aisha Akram,** Challa Surekha, Parvaiz Ahmad, Satbir S. Gosal. **2018.** Marker-Assisted Breeding for Abiotic Stress Tolerance in Crop Plants. In: Gosal S., Wani S. (eds) Biotechnologies of Crop Improvement, **Volume 3, pp. 1-23, Springer, Cham.**
8. \*\*Fahad Shafiq, **Nudrat Aisha Akram,** Arslan Mahmood, Abrar Ahmad, Muhammad Ashraf, Muhammad Iqbal and Syed Hammad Raza. **2020.** Glycogen-Based Bionanocomposites. In: Bionanocomposites Green Synthesis and Applications, 1st Edition, Khalid Mahmod Zia, Farukh Jabeen and Muhammad Naveed Anjum (Eds.), **ISBN:** 9780128167519, Publisher, Elsevier.
9. Muhammad Iqbal, Fahad Shaiq, Sumera Anwar, **Nudrat Aisha Akram,** Muhammad Arslan Ashraf, Syed Hammad Raza, Naila Ali, and Muhammad Ashraf. **2022.** Selenium and Nano-Selenium-Mediated Heat Stress Tolerance in Plants. In: M. A. Hossain et al. (eds.), Selenium and Nano-Selenium in Environmental Stress Management and Crop Quality Improvement, Sustainable Plant Nutrition in a Changing World. **Springer Nature Switzerland, pp. 149-171.**
10. Sidra Shafiq, **Nudrat Aisha Akram\***, Muhammad Ashraf and Arafat Abdel Hamed AbdelLatef. **2022.** *Maize: Role and Responses Under Abiotic Stress*. In: Arafat Abdel Hamed AbdelLatef (Ed.), Sustainable Remedies for Abiotic Stress in Cereals. **Springer Nature, pp. 85-106.**

***Research Papers***

**Note: \*\* for Corresponding author**

1. **\*\***Maqsood, A., M. Shahbaz and **N. A. Akram.** **2006.** Influence of exogenously applied glycinebetaine on growth and gas exchange characteristics of maize (*Zea mays* L.). **Pakistan Journal of Agricultural Sciences**. **43(1-2): 36-41.**
2. **\*\*Akram, N. A.,** M. Shahbaz, H. R. Athar and M. Ashraf. **2006.** Morpho-physiological responses of two differently adapted populations of *Cynodon dactylon* (L.) Pers. and *Cenchrus ciliaris* L. to salt stress. **Pakistan Journal of Botany, 38(5): 1581-1588. Impact Factor (0.106)**
3. **\*\*Akram, N. A.,** M. Shahbaz and M. Ashraf. **2007.** Relationship of photosynthetic capacity and proline accumulation with the growth of differently adapted populations of two potential grasses (*Cynodon dactylon* (L.) Pers. and *Cenchrus ciliaris* L.) to drought stress. **Pakistan Journal of Botany, 39 (3): 777-786. Impact Factor (0.29)**
4. Siddiqi E. H., M. Ashraf and **N. A. Akram.** **2007.** Variation in seed germination and seedling growth in some diverse lines of safflower (*Carthamus tinctorius* L.) Under salt stress.**Pakistan Journal of Botany,** **39(6): 1937-1944. Impact Factor (0.29).**
5. Ulfat, M., H. R. Athar, M. Ashraf, **N. A. Akram** and A. Jamil. **2007.** Appraisal of physiological and biochemical selection criteria for evaluation of salt tolerance in canola (*Brassica napus* L.). **Pakistan Journal of Botany,39(5): 1593-1608. Impact Factor (0.29).**
6. **\*\***Qayyum, B., M. Shahbaz and **N. A. Akram.** **2007.** Interactive effect of foliar application of 24-epibrassinolide and root zone salinity on morpho-physiological attributes of wheat (*Triticum aestivum* L.). **International Journal of Agriculture and Biology, 9(4): 584-589.**
7. **\*\***Jabeen, S., M. Shahbaz and **N. A. Akram**. **2007.** Influence of exogenous application of salicylic acid on growth and gas exchange characteristics of wheat (*Triticum aestivum* L.) under control or saline conditions. **Life Sciences International Journal, 1(4): 425-431.**
8. **\*\***Akhter, N., **N. A. Akram** and M. Shahbaz. **2007.** Presowing seed treatments with glycinebetaine and mineral nutrients of wheat (*Triticum aestivum* L.) under saline conditions. **Pakistan Journal of Agricultural Sciences, 44(2): 236-241.**
9. **\*\*Akram, N. A.,** M. Shahbaz and M. Ashraf. **2008.** Nutrient acquisition in differentially adapted populations of *Cynodon dactylon* (L.) Pers. and *Cenchrus ciliaris* L. under drought stress. **Pakistan Journal of Botany, 40(4): 1433-1440.Impact Factor (0.47).**
10. Naheed, G., M. Shahbaz and **N. A. Akram**. **2008.** Interactive effect of rooting medium application of phosphorus and NaCl on plant biomass and mineral nutrients of rice (*Oryza sativa* L.). **Pakistan Journal of Botany, 40(3): 1601-1608. Impact Factor (0.47).**
11. Akram, M. S., M. Ashraf and **N. A. Akram. 2009.** Effectiveness of potassium sulfate in mitigating salt-induced adverse effects on different physio-biochemical attributes in sunflower (*Helianthus annuus* L.). **Flora, 204: 471-483. (Impact Factor = 1.439).**
12. Akram, M.S., Ashraf, M., Shahbaz, M. and **Akram, N.A. 2009**. Growth and photosynthesis of salt-stressed sunflower (Helianthus annuus) plants as affected by foliar-applied different potassium salts. **Journal of Plant Nutrition and Soil Science, 172: 884-893. (West Germany). (Impact factor = 1.595)**
13. Muhammad Yasin Ashraf, Muhammad Ashraf, Naimi Huma Naveed, **Nudrat Aisha Akram,** and Muhammad Arshad. **2009.** Salt-induced Biochemical Changes in Germinating Seeds of Three Rice Cultivars Differing in Salt Tolerance. **Agrochimica, LIII(5): 308-321. Impact Factor (0.288).**
14. Muhammad Kamran, Muhammad Shahbaz, Muhammad Ashraf and **Nudrat Aisha Akram.** **2009.** Alleviation of drought-induced adverse effects in spring wheat (Triticum aestivum L.) using praline as a pre-sowing seed treatment. **Pakistan Journal of Botany,** 41**(2): 621-632. Pakistan (Impact Factor: 0.52).**
15. Muhammad Ashraf and **Nudrat Aisha Akram. 2009.** Improving salinity tolerance of plants through conventional breeding and genetic engineering: An analytical comparison**. Biotechnology Advances**, **27: 744-752 (Impact Factor= 8.25).**
16. Zahra Noreen, Muhammad Ashraf and **Nudrat Aisha Akram. 2010.** Salt-induced regulation of some key physio-biochemical phenomena in five diverse cultivars of turnip (*Brassica rapa* L.). **Journal of Agronomy and Crop Science, 196, 273-285 (Impact Factor: 1.952).**
17. Muhammad Ashraf, **Nudrat Aisha Akram**, R.N. Arteca and Majid R. Foolad. **2010.** The role of plant hormones in salinity tolerance of plants: brassinosteroids and salicylic acid. **Critical Reviews in Plant Science USA, 29, 162-190 (IF = 4.769).**
18. **\*\***Wasim Abbas, Muhammad Ashraf and **Nudrat Aisha Akram.** **2010.** Alleviation of salt-induced adverse effects in eggplant (*Solanum melongena* L.) by foliar-applied natural and synthetic glycinebetaine. **Scientia Horticulturae, 125, 188-195 (IF = 1.045)**
19. **\*\***Zahra Noreen, Muhammad Ashraf and **Nudrat Aisha Akram**. **2010.** Salt-induced modulation in some key physio-biochemical processes and their use as selection criteria in potential vegetable crop pea (*Pisum sativum* L.). **Crop and Pasture Science/ Australian journal of Agricultural Research, 61, 369-378. (IF = 1.248).**
20. **\*\***Khalid Nawaz, Muhammad Ashraf, **Nudrat Aisha Akram** and F. Al-Qurainy. **2010.** Modulation of growth parameters, proline content and mineral nutrientsin maize (*Zea mays* L.) by exogenously applied glycinebetaine at different growth stages under salt stress. **Journal of Applied Botany and Food Quality, 83(2): 204-211 (IF = 0.391).**
21. Zafar Iqbal Khan, Muhammad Ashraf, Kafeel Ahmad and **Nudrat Aisha Akram. 2011.** A study on the transfer of cadmium from soil to pasture under semi-arid conditions in Sargodha, Pakistan. **Biological Trace Element Research, 142(2): 143-147 (IF = 1.923).**
22. Zafar Iqbal Khan, Muhammad Khalid Mukhtar, Nasra Raza, Muhammad Ashraf, Kafeel Ahmad and **Nudrat Aisha Akram. 2011.** A Study on the Transfer of Iron in Soil-Plant-Animal Continuum Under Semi-Arid Environmental Conditions in Sargodha Pakistan. **Biological Trace Elements Research, 142(3): 890-895. (IF = 1.923).**
23. Asma Saleem, Muhammad Ashraf and **Nudrat Aisha Akram. 2011.** Salt (NaCl)-induced modulation in some key physio-biochemical attributes in okra (*Abelmoschus esculentus* L.). **Journal of Agronomy and Crop Science,** **197, 202-213 (IF = 2.433).**
24. Muhammad Ashraf, **Nudrat Aisha Akram**, F. Al-Qurainy and Majid R. Foolad. **2011.** Drought tolerance: Roles of organic osmolytes, growth regulators and mineral nutrients. **Advances in Agronomy, 111, 249-296 (IF = 5.204).**
25. \*\*Muhammad Shahbaz, Muhammad Ashraf, **Nudrat Aisha Akram,** Asma Hanif, Shumaila Hameed, Sundus Joham and Rehana Rehman. **2011.** Salt-induced modulation in growth, photosynthetic capacity, proline content and ion accumulation in sunflower (*Helianthus annuus* L.). **Acta Physiologia Plantarum, 33, 1113-1122 (IF = 1.639).**
26. \*\***Nudrat Aisha Akram** and Muhammad Ashraf. **2011.** Pattern of accumulation of inorganic elements in sunflower (*Helianthus annuus* L.) plants subjected to salt stress and exogenous application of 5-aminolevulinic acid. **Pakistan Journal of Botany, 43(1): 521-530. (IF = 0.836).**
27. **\*\*Nudrat Aisha Akram** and Muhammad Ashraf. **2011.** Improvement in growth, chlorophyll pigments and photosynthetic performance in salt-stressed plants of sunflower (*Helianthus annuus* L.) by foliar application of 5-aminolevulinic acid. **Agrochimica, 55(2): 94-104 (IF = 0.25).**
28. \*\*Sibgha Noreen, Muhammad Ashraf and **Nudrat Aisha Akram. 2011.** Does exogenous application of salicylic acid improve growth and some key physiological attributes in sunflower plants subjected to salt stress?. **Journal of Applied Botany and Food Quality, 84: 169-177 (IF = 0.429).**
29. Pakeeza Sabir, Muhammad Ashraf and **Nudrat Aisha Akram. 2011.** Appraisal of inter-accession variation for salt tolerance in proso millet (*Panicum miliaceum* L.) using leaf proline content and activities of some key antioxidant enzymes. **Journal of** **Agronomy and Crop Sciences, 197(5): 340-347 (IF = 2.433).**
30. \*\*Ejaz Hussain Siddiqi, Muhammad Ashraf, F. Al-Qurainy and **Nudrat Aisha Akram. 2011.** Salt-induced modulation in inorganic nutrients, antioxidant enzymes, proline content and seed oil composition in safflower (*Carthamus tinctorius* L.). **Journal of the Science Food & Agriculture, 91: 2785-2793 (IF = 1.436).**
31. Namra Javed, Muhammad Ashraf, **Nudrat Aisha Akram** and Fahad Al-Qurainy. **2011.** Alleviation of adverse effects of drought stress on growth and some potential physiological attributes in maize (*Zea mays* L.) by seed electromagnetic treatment. **Photochemistry and Photobiology, 87, 1354-1362 (IF = 2.413).**
32. **\*\*Nudrat Aisha Akram,** Muhammad Ashraf and F. Al-Qurainy. **2011.** Aminolevulinic acid-induced changes in yield and seed-oil characteristics of sunflower (*Helianthus annuus* L.) plants under salt stress. **Pakistan Journal of Botany, 43(6): 2845-2852. (IF = 0.836).**
33. Parvaiz Ahmad, Muhammad Ashraf, Muhammad Younis, Xiangyang Hu, Ashwani Kumar, **Nudrat Aisha Akram** and F.Al-Qurainy. **2012.** Role of transgenic plants in agriculture and biopharming. **Biotechnology Advances, 30, 524-540. (IF = 9.599).**
34. **\*\***Asma Saleem, Muhammad Ashraf, **Nudrat Aisha Akram** and F. Al-Qurainy. **2012.** Salinity-induced changes in the composition of some key enzymatic and non-enzymatic antioxidants, osmoprotectants, chlorophyll pigments and some inorganic elements in okra (*Abelmoschus esculentus* L.) fruit. **Journal of Horticultural Science & Biotechnology, 87(3), 271-277** **(IF = 0.51).**
35. Mubashra Saadia, Amer Jamil, **Nudrat Aisha Akram** and Muhammad Ashraf. **2012.** A Study of proline metabolism in canola (*Brassica napus* L.) seedlings under salt stress. **Molecules, 17(5), 5803-5815. (IF = 2.428).**
36. **\*\*Nudrat Aisha Akram,** Muhammad Ashraf and F. Al-Qurainy. **2012.** Aminolevulinic acid-induced regulation in some key physiological attributes and activities of antioxidant enzymes in sunflower (*Helianthus annuus* L.) under saline regimes. **Scientia Horticulturae, 142, 143-148. (IF = 1.396)**
37. **\*\***Zahra Noreen, Muhammad Ashraf and **Nudrat Aisha Akram**. **2012.** Salt-induced regulation of photosynthetic capacity and ion accumulation in some genetically diverse cultivars of radish (*Raphanus sativus* L.). **Journal of Applied Botany & Food Quality, 85, 91-96 (IF = 0.34).**
38. **\*\***Saira Bano, Muhammad Ashraf, **Nudrat Aisha Akram** and F. Al-Qurainy. **2012.** Regulation in some vital physiological attributes and antioxidative defense system in carrot (*Daucus carota* L.) under saline stress. **Journal of Applied Botany & Food Quality, 85, 105-115 (IF = 0.34).**
39. Zafar Iqbal Khan, Kafeel Ahmad, Shehnaz Yunas, **Nudrat Aisha Akram,** Muhammad Yasir Rizwan, Muneeba Shaheen, Mian Jehan Zeb and Munawar Aziz. **2012.** Effect of different doses of urea on the uptake of cadmium from soil by *Brassica napus*: A case study in Sargodha, Pakistan. **African Journal of Biotechnology, 11(6): 1419-1424. (IF = 0.00).**
40. Parvaiz Ahmad, Ashwani Kumar, Muhammad Ashraf and **Nudrat Aisha Akram. 2012.** Salt-induced changes in photosynthetic activity and oxidative defense system of three cultivars of mustard (*Brassica juncea* L.). **African Journal of Biotechnology, 11(11): 2694-2703. (IF = 0.00).**
41. Shagufta Shaheen, Sobia Naseer, Muhammad Ashraf and **Nudrat Aisha Akram. 2013.** Salt stress affects water relations, photosynthesis and oxidative defense mechanisms in *Solanum melongena* L. **Journal of Plant Interactions,** **8(1), 85-96 (IF = 0.865).**
42. **\*\***Asfa Batool, Muhammad Ashraf, **Nudrat Aisha Akram** and F. Al-Qurainy. **2013.** Salt-induced changes in growth, some key physio-biochemical attributes, activities of enzymatic and levels of non-enzymatic antioxidants in cauliflower (*Brassica oleracea* L.). **Journal of Horticultural Science & Biotechnology, 88(2), 231-241 (IF = 0.509).**
43. Saadia, M., A. Jamil, T. Iqbal, M. Ashraf and **N.A. Akram**. **2013**. Comparative study of SOS2 and a novel PMP3-1 gene expression in two sunflower (*Helianthus annuus* L.) lines differing in salt tolerance. **Applied Biochemistry & Biotechnology, 170, 980-987 (IF= 1.687).**
44. Zafar Iqbal Khan, Kafeel Ahmad, Muhammad Ashraf, Syed Ali Hassan Naqvi, Muhammad Khalid Mukhtar, Muhammad Sher and **Nudrat Aisha Akram. 2013.** Risk assessment of nickel toxicity in rams in a semi-arid region using soil-plant and blood plasma samples as indicators. **Pakistan Journal of Zoology, 45(3), 793-799** **(IF = 0.4).**
45. **\*\*Akram, N.A.** and M. Ashraf**. 2013.** Regulation in plant stress tolerance by a potential plant growth regulator, 5-aminolevulinic acid (ALA). **Journal of Plant Growth Regulation, 32, 663-679 (IF = 2.058).**
46. Zafar Iqbal Khan, Zahara Bibi, Kafeel Ahmad, Muhammad Ashraf, **Nudrat Aisha Akram** and Fahim Arshad. **2013.** Assessment of Metal and Metalloid Accumulation in Wastewater Irrigated Soil and Uptake by Pumpkin (*Cucurbita maxima*) at Sargodha, Pakistan. **Asian Journal of Chemistry, 25(17): 9712-9716. (IF = 0.355).**
47. Zafar Iqbal Khan, Kafeel Ahmad, Muhammad Ashraf, **Nudrat Aisha Akram,** Yasir Rizwan, Muneeba Shaheen and Fahim Arshad. **2013.** Assessment of potential toxicological risk for public health of heavy metals in wheat crop irrigated with wastewater: A case study in Sargodha, Pakistan, **Asian Journal of Chemistry, 25(17): 9704-9706. (IF = 0.355).**
48. Maryam Sarwat, Afsar Raza Naqvi, Parvaiz Ahmad, Muhammad Ashraf and **Nudrat Aisha Akram**. **2013.** Phytohormones and MicroRNAs as Sensors and Regulators of Leaf Senescence: Assigning Macro Roles to Small Molecules. **Biotechnology Advances, 31(8): 1153-1171 (IF = 8.9049).**
49. Parvaiz Ahmad, Muhammad Ashraf, Khalid Rehman Hakeem, MM Azooz, Saiema Rasool, Ruby Chandna and **Nudrat Aisha Akram. 2014.** Potassium starvation-induced oxidative stress and antioxidant defense responses in *Brassica juncea.* **Journal of Plant Interactions, 9(1): 1-9. (IF = 0.000).**
50. **\*\***Bano, S., M. Ashraf and **N.A. Akram**. **2014**. Salt stress regulates enzymatic and non-enzymatic antioxidative defense system in the edible part of carrot (*Daucus carota* L.). **Journal of Plant Interactions, 9(1), 324-329 (IF =0.000).**
51. WANG Hui, TIAN Tao, WANG Jian-yong, Asfa Batool, ZHAO Xu-zhe, MO Fei, **Nudrat Aisha Akram** and XIONG You-cai. **2014.** Rainwater resource utilization and ecosystem sustainability in arid agricultural areas: A review on 2013 International Workshop on Arid Agriculture and Ecosystem Sustainability. **Chinese Journal of Ecology, 2014, 33(11): 3127-3136 (IF = 0.00).**
52. Muhamamd Yasir Iqbal, Muhammad Ashraf, **Nudrat Aisha Akram**, Fahad Al-Qurainy and Merial G. Jones. **2014.** Biomass and some key physiological markers as selection criteria for drought tolerance in barley (*Hordeum vulgare* L.). **Scientia Agriculturae, 3(1), 49-57 (IF = 0.00).**
53. **\*\***Sidra Shafiq, **Nudrat Aisha Akram,** Muhammad Ashraf and Amara Arshad. **2014.** Synergistic effects of drought and ascorbic acid on growth, mineral nutrients and oxidative defense system in canola (*Brassica napus* L.) plants. **Acta Physiologiae Plantarum, 36(6), 1539-1553 (IF = 1.584).**
54. Zahara Bibi, Zafar Iqbal Khan, Kafeel Ahmad, Muhammad Ashraf, Abrar Hussain and **Nudrat Aisha Akram. 2014.** Vegetables as a potential source of minerals for human nutrition: A case study of *Momordica charantia* grown in soil irrigated with domestic sewage water in Sargodha, Pakistan. **Pakistan Journal of Zoology, 46(3), 633-641 (IF = 0.404).**
55. Muhammad Azhar Zia, Muhammad Ashraf, **Nudrat Aisha Akram,** and Mujtaba Hussain. **2014.** Heat-induced regulation in antioxidant defense system in wheat (*Triticum aestivum* L.). **Pakistan Journal of Botany, 46(3), 957-971 (IF = 0.822).**
56. Asma Saleem, Muhammad Ashraf, **Nudrat Aisha Akram,** Fahad Al-Qurainy and Merial G. Jones. **2014.** Evaluation of barley (*Hordeum vulgare* L.) germplasm for high forage production under salt stress. **Pakistan Journal of Botany, 46(4): 1179-1186 (IF = 0.822).**
57. Namra Javed, Muhammad Ashraf, Fahad-Al-Qurainy and **Nudrat Aisha Akram. 2014.** Integration of physio-biochemical processes at different phenological stages of wheat (*Triticum aestivum* L.) plants in response to heat stress. **Pakistan Journal of Botany, 46(6): 2143-2150 (IF = 0.822).**
58. **\*\***Firdos Kosar, **Nudrat Aisha Akram** and M. Ashraf. **2015.** Exogenously-applied 5-aminolevulinic acid modulates some key physiological characteristics and antioxidative defense system in spring wheat (*Triticum aestivum* L.) seedlings under water stress. **South African Journal of Botany, 96, 71-77 (IF = 0.978).**
59. Zafar Iqbal Khan, Kafeel Ahmad, Asma Zafar, Humayun Bashir, Abrar Hussain, Zile Huma, Hazoor Ahmad Shad, Muhammad Sher, Ghulam Hussain, Ijaz Rasool Noorka, **Nudrat Aisha Akram,** Muhammad Ashraf, Fahim Arshad, Irfan Mustafa, Vincenzo Tufarelli, Mariano Fracchiolla and Eugenio Cazzato. **2015.** Assessment of poisonous and anti-nutritional compounds in wild edible forages consumed by ruminant species. **Journal of Environmental Science and Technology 8 (3): 91-101 (IF = 0.00).**
60. Kafeel Ahmad, Zafar Iqbal Khan, Asma Ashfaq, Muhammad Ashraf, **Nudrat Aisha Akram** and Sumaira Yasmin. **2015.** Assessment of heavy metals in *Solanum tuberosum* and *Pisum sativum* irrigated with urban wastewater in the suburbs of Sargodha city, Pakistan. **Human & Ecological Risk Assessment, 21: 1109-1122 (IF = 1.096).**
61. **\*\***Sidra Shafiq, **Nudrat Aisha Akram** and Muhammad Ashraf. **2015.** Does exogenously-applied trehalose alter oxidative defense system in the edible part of radish (*Raphanus sativus* L.) under water-deficit conditions? **Scientia Horticulturae, 185, 68-75. (IF = 1.365). The Netherlands.**
62. Zafar Iqbal Khan, Kafeel Ahmad, Muhammad Ashraf, Rukhsana Parveen, Irfan Mustafa, Ameer Khan, Zahara Bibi and **Nudrat Aisha Akram. 2015.** Bioaccumulation of heavy metals and metalloids in luffa (*Luffa cylindrica* L.) irrigated with domestic waste water in Jhang, Pakistan: A prospect for human nutrition. **Pakistan Journal of Botany, 47(1): 217-224 (IF = 0.822).**
63. Zafar Iqbal Khan, Kafeel Ahmad, Muhammad Ashraf, Syed Ali Hassan Naqvi, Alireza Seidavi, **Nudrat Aisha Akram**, Vito Laudadio and Vincenzo Tufarelli. **2015.** Evaluating pasture and soil allowance of manganese for Kajli rams grazing in semi-arid environment. **Tropical Animal Health and Production, 47(3): 563-566 (IF= 0.8169).**
64. Zafar Iqbal Khan, Kafeel Ahmad, **Nudrat Aisha Akram,** Irfan Mustafa, Muhammad Ibrahim, Asia Fardous, Sumaira Gondal, Abrar Hussain, Fahim Arshad, Ijaz Rasul Noorka, Muhammad Yousaf, Ameer Fawad Zahoor, Muhammad Sher, Altaf Hussain, Hazoor Ahmad Shad and Umer Rashid. **2015.** Heavy metals concentration in soil-plant-animal continuum under semi-arid conditions of Punjab, Pakistan. **Pakistan Journal of Zoology, 47(2), 377-382 (IF = 0.404).**
65. Zulfiqar Ali, Muhammad Ashraf, Fahad Al-Qurainy, M. Salim Khan & **Nudrat Aisha Akram.** **2015.** Appraising drought tolerance in local accessions of sesbania [*Sesbania sesban* (L.) Merril.] using biomass production, relative membrane permeability and photosynthetic capacity as selection criteria. **Pakistan Journal of Botany, 47(3): 845-850, 2015. (IF = 0.822).**
66. Zulfiqar Ali, Muhammad Ashraf, Fahad Al-Qurainy, M. Salim Khan and Nudrat Aisha Akram. **2015**. Field screening of guar [*Cyamopsis tetragonoloba* (L.) Taub.] accessions for enhanced forage production on hot drylands. **Pakistan Journal of Botany, 47(4): 1429-1437 (IF = 0.822).**
67. **\*\*Nudrat Aisha Akram,** Sidra Noreen, Tabassum Noreen and Muhammad Ashraf. **2015.** Exogenous application of trehalose alters growth, physiology and nutrient composition in radish (*Raphanus sativus* L.) plants under water deficit conditions. **Brazilian Journal of Botany, 38(3): 431-439 (IF = 0.648).**
68. Asma Ashfaq, Zafar Iqbal Khan, Zahara Bibi, Kafeel Ahmad, Muhammad Ashraf, Irfan Mustafa, **Nudrat Aisha Akram**, Rukhsana Perveen, Sumaira Yasmeen. **2015.** Heavy metals uptake by Cucurbita maxima grown in soil contaminated with sewage water and its human health implications in peri-urban areas of Sargodha, City. **Pakistan Journal of Zoology, 47(4): 1051-1058 (IF = 0.404).**
69. Zafar Iqbal Khan, Asia Firdos, Kafeel Ahmad, Muhammad Ashraf, Zahara Bibi, **Nudrat Aisha Akram,** Yasir Rizwan and Fahad Al-Qurainy. **2015.** Assessment of hazardous and essential elements in food crop irrigated with municipal sewage water: Risk appraisal for public health. **Human & Ecological Risk Assessment, 21, 2126-2136 (IF = 1.096).**
70. Zafar Iqbal Khan, Zahara Bibi, Kafeel Ahmad, Muhammad Ashraf, **Nudrat Aisha Akram** and Fahad-Al-Qurainy. **2015** Risk evaluation of heavy metals and metalloids toxicity through polluted vegetables from waste water irrigated area of Punjab, Pakistan: Implications for public health. **Human & Ecological Risk Assessment, 21(8): 2262-2276. (IF = 1.096).**

**Total IF up to 2015 (calculated by PCST) = 92.535**

1. Zafar Iqbal Khan, Kafeel Ahmad, Muhammad Ashraf, Rukhsana Parveen, Zahara Bibi, Irfan Mustafa and **Nudrat Aisha Akram. 2016**. Risk assessment of heavy metal and metalloid toxicity through a contaminated vegetable (*Cucurbita maxima*) from wastewater irrigated area: A case study for a site-specific risk assessment in Jhang, Pakistan. **Human and Ecological Risk Assessment, 22(1): 86-98 (IF = 1.56).**
2. Zafar Iqbal Khan, Kafeel Ahmad, Muhammad Ashraf, Rukhsana Parveen, Fahim Ashraf, Abrar Hussain, Zahara Bibi, **Nudrat Aisha Akram**, Ijaz Rasool Noorka & Irfan Mustafa. **2016.** Risk assessment of heavy metal toxicity through contaminated vegetables from Sewage water: Implications for populace health. **Human and Ecological Risk Assessment, 22(2): 302-311. (IF = 1.56).**
3. Jun-Lan Xiong, Hai-Yan Kong, **Nudrat Aisha Akram,** Xue Bai, Muhammad Ashraf, Rui-Yue Tan, Hao Zhu, Kadambot H. M. Siddique, You-Cai Xiong and Neil C. Turner. **2016.** 24-epibrassinolide increases growth, grain yield and β-ODAP production in seeds of well-watered and moderately water-stressed grass pea. **Plant Growth Regulation, 78(2): 217-231 (IF = 2.646).**
4. Kafeel Ahmad, Zafar Iqbal Khan, Sumaira Yasmin, **Nudrat Aisha Akram**, Muhammad Ashraf, Asma Ashfaq and Asia Fardous. **2016.** Accumulation of metals and metalloids in radish (*Raphanus sativus* L.) and spinach (*Spinacea oleracea* L.) irrigated with domestic wastewater in the peri-urban areas of Khushab city, Pakistan. **Human and Ecological Risk Assessment, 22(1): 15-27 (IF = 1.56).**
5. **\*\***Latif, M., **Akram, N.A.** and Ashraf, M. **2016**. Regulation of some biochemical attributes in drought-stressed cauliflower (*Brassica oleracea* L.) by seed pre-treatment with ascorbic acid. **Journal of Horticultural Science & Biotechnology, 91(2): 129-137 (IF = 0.538).**
6. Kafeel Ahmad, Asma Ashfaq, Zafar Iqbal Khan, Muhammad Ashraf, **Nudrat Aisha Akram,** Sumaira Yasmin, Aima Iram Batool, Muhammad Sher, Hazoor Ahmad Shad, Ameer Khan, Saif Ur Rehman, Muhammad Fahad Ullah and Ijaz Rasool Noorka. **2016.** Health risk assessment of heavy metals and metalloids via dietary intake of a potential vegetable (*Coriandrum sativum* L.) grown in contaminated water irrigated agricultural sites of Sargodha, Pakistan. **Human and Ecological Risk Assessment, 22(3): 597-610 (IF = 1.56).**
7. **\*\***Hira Naz, **Nudrat Aisha Akram** and Muhammad Ashraf. **2016.** Impact of ascorbic acid on growth and physiology of cucumber (*Cucumis sativus*) plants under water-deficit conditions. **Pakistan Journal of Botany, 48(3): 877-883 (IF = 0.69).**
8. **\*\***Abida Mukhtar, **Nudrat Aisha Akram,** Riffat Aisha, Sidra Shafiq and M. Ashraf. **2016.** Foliar-applied ascorbic acid enhances antioxidative potential and drought tolerance in cauliflower (*Brassica oleracea* L. var. Botrytis). **Agrochimica,** **60(2):** **107-113 (IF = 0.45).**
9. **\*\*Nudrat Aisha Akram**, Sidra Shafiq, Muhammad Ashraf, Riffat Aisha and Muhammad Asim Sajid. **2016.** Drought-induced anatomical changes in radish (*Raphanus sativus* L.) leaves supplied with trehalose through different modes. **Arid Land Research and Management, 30(4): 412-420 (IF= 1.015).**
10. Wei Gou, Pufan Zheng, Peng Zheng, Kai Wang, Lixin Zhang and **Nudrat Aisha Akram. 2016.** Salinity-induced callus browning and re-differentiation, root formation by plantlets and anatomical structures of plantlet leaves in two Malus species. **Pakistan Journal of Botany, 48(4): 1393-1398 (IF = 0.69).**
11. **\*\***Riffat John, N.A. Anjum, S.K. Sopory, **Nudrat Aisha Akram** and M. Ashraf. **2016.** Some key physiological and molecular processes of cold acclimation: An overview. **Biologia Plantarum,** **60(4): 603-618 (IF = 1.551).**
12. Zafar Iqbal Khan, Kafeel Ahmad, Iqra Ashraf, Ameer Khan, Asia Fardous, Muhammad Sher, **Nudrat Aisha Akram**, Muhammad Ashraf, Zafar H-ayat, Vito Laudadio, Vincenzo Tufarelli, Abrar Hussain, Faheem Arshad, Eugenio Cazzato. **2016.** Appraisal of trace metal elements in soil, forage and animal continuum: A case study on pasture irrigated with sewage water. **Philippine Agricultural Scientist, 99(1), 80-87 (IF = 0.248).**
13. Cheng Qin, Baofeng Jin, Yonghong Tang, Hailun Liu, Qiang Hu, Xiaona Li, Huida Lian, **Nudrat Aisha Akram**, Lixin Zhang. **2016**. Effect of vermicompost on some physiological attrbutes involved in carbon and nitrogen metabolism as well as nutrient status in leaves of tobacco (*Nicotiana tabacum* L.). **Pakistan Journal of Botany, 48(5): 7799-1803 (IF = 0.69).**
14. Parvaiz Ahmad, Saiema Rasool, Alvina Gul, **Nudrat Aisha Akram,** Muhammad Ashraf, Salih Gucel. **2016.** Jasmonates: Multifunctional roles in stress tolerance. **Frontiers in Plant Science, 7: 813 (IF = 4.298).**
15. **\*\***Muhammad Sadiq, **Nudrat Aisha Akram** and Muhammad Tariq Javed. **2016.** Alpha-tocopherol alters endogenous oxidative defense system in mung bean plants under water-deficit conditions. **Pakistan Journal of Botany, 48(6): 2177-2182 (IF = 0.69).**
16. **\*\*Nudrat Aisha Akram**, Muhammad Waseem, Rabia Ameen and Muhammad Ashraf. **2016**. Trehalose pretreatment induces drought tolerance in radish (*Raphanus sativus* L.) plants: some key physio-biochemical traits. **Acta Physiologiae Plantarum, 38(1): Article #. 3 (IF = 1.364).**
17. Parvaiz Ahmad, Arafat A. Abdel Latef, Saiema Rasool, **Nudrat Aisha Akram,** Muhammad Ashraf, and Salih Gucel. **2016.** Role of proteomics in crop stress tolerance. **Frontiers in Plant Science, 7:1336. doi: 10.3389/fpls.2016.01336 (IF = 4.298).**
18. **\*\*Nudrat Aisha Akram,** Iqra Irfan and Muhammad Ashraf. **2016.** Trehalose-induced modulation in antioxidative defense system in radish (*Raphanus sativus* L.) plants subjected to water-deficit conditions. **Agrochimica, 60(3): 186-198 (IF = 0.45).**
19. Kafeel Ahmad, Zafar Iqbal Khan, Sumaira Yasmin, Asma Ashfaq, Ijaz Rasool Noorka, **Nudrat Aisha Akram,** Hazoor Ahmad Shad, Abrar Hussain, Fahim Arshad, Muhammad Sher, Hafiz Muhammad Tahir, Humayun Bashir, and Asma Zafar. **2016.** Contamination of soil and carrots irrigated with different sources of water in Punjab, Pakistan. **Environmental Earth Sciences, 75: 426 (IF = 1.569).**
20. Zafar Iqbal Khan, Kafeel Ahmad, Muhammad Ashraf, Nadia Shoaib, Rukhsana Parveen, Zahara Bibi, Irfan Mustafa, Ijaz Rasool Noorka, Hafiz Muhammad Tahir, **Nudrat Aisha Akram**, Muhammad Fahad Ullah, Rabia Yaqoob, Vincenzo Tufarelli, Mariano Fracchiolla, Eugenio Cazzato. **2016.** Assessment of toxicological health risk of trace metals in vegetables mostly consumed in Punjab, Pakistan. **Environmental Earth Sciences, 75:433 (IF = 1.569).**
21. Kafeel Ahmad, Zafar Iqbal Khan, Asma Ashfaq, **Nudrat Aisha Akram**, Muhammad Ashraf Sumaira Yasmeen, Vincenzo Tufarelli, Vito Laudadeo, Mariano Fracchiolla, and Eugenio Cazzato **2016.** Contamination and accumulation of heavy metals in brinjal (*Solanum melongena* L.) grown in a long-term wastewater-irrigated agricultural land of Sargodha, Pakistan. [**Fresenius Environmental Bulletin**](https://www.researchgate.net/journal/Fresenius-Environmental-Bulletin-1018-4619) **25(7), 2404-2410** **(IF = 0.489).**

**IF 2016= 28.306**

**Total IF up to 2016 = 120.841**

1. Zafar Iqbal Khan, Kafeel Ahmad, Sumaira Yasmeen, **Nudrat Aisha Akram**, Muhammad Ashraf and Naunain Mahmood. **2017.** Potential health risk assessment of potato (*Solanum tuberosum* L.) grown on metal contaminated soils in the central zone of Punjab, Pakistan. **Chemosphere, 166, 157-162 (IF = 4.427).**
2. Zafar Iqbal Khan, Kafeel Ahmad, **Nudrat Aisha Akram**, Naunain Mehmood and Sumaira Yasmeen. **2017.** Heavy metal contamination in water, soil and a potential vegetable garlic (*Allium sativum* L.) in Punjab, Pakistan. **Pakistan Journal of Botany, 49(2): 547-552 (IF = 0.75).**
3. Rehan Ahmad, Shafaqat Ali, Fakhir Hannan, Muhammad Rizwan, Muhammad Iqbal, Zaid ul Hassan, **Nudrat Aisha Akram**, Saliha Maqbool and Farhat Abbas. **2017.** Promotive role of 5-aminolevulinic acid on chromium-induced morphological, photosynthetic and oxidative changes in cauliflower *(Brassica oleracea* botrytis L.). **Environmental Science and Pollution Research, 24, 8814-8824 (IF = 2.8).**
4. Zafar Iqbal Khan, Shehnila Kashaf, Kafeel Ahmad, **Nudrat Aisha Akram**, Muhammad Ashraf, Muhammad Sohail, Humayun Bashir and Naunain Mehmood. **2017.** Metal uptake by psyllium (*Plantago ovata* L.) treated with lead (Pb) under semi-arid conditions. **Legume Research, 40(2): 277-281 (IF = 0.232).**
5. Muhammad Sadiq, \*\***Nudrat Aisha Akram** and Muhammad Ashraf. **2017.** Foliar applications of alpha-tocopherol improves composition of fresh pods of *Vigna radiata* subjected to water deficiency. **Turkish Journal of Botany,** **41: 244-252 (IF = 1.066).**
6. **\*\*Nudrat Aisha Akram**, Fahad Shafiq and Muhammad Ashraf. **2017**. Ascorbic acid - A potential oxidant scavenger and its role in plant development and abiotic stress tolerance. **Frontiers in Plant Science, Article No. 613 (IF = 3.678).**
7. Kafeel Ahmad, Zafar Iqbal Khan, Asma Ashfaq, Muhammad Ashraf, **Nudrat Aisha Akram,** Muhammad Sher, Hazoor Ahmad Shad, Vincenzo Tufarelli, Antonio Lonigro, Mariano Fracchiolla and Eugenio Cazzato. **2017**. Uptake of hazardous elements by spring onion (*Allium fistulosum* L.) from soil irrigated with different types of water and possible health risk. **Environmental Earth Sciences, 76:322 (IF = 1.435).**
8. Wei Gou,Pufan Zheng, Li Tian, Mei Gao, Lixin Zhang, **Nudrat Aisha Akram** and Muhammad Ashraf. **2017.** Exogenous application of urea and a urease inhibitor improves drought stress tolerance in maize (*Zea mays* L.). **Journal of Plant Research, 130(3): 599-609 (IF = 2.00).**
9. Muhammad Sadiq, **\*\*Nudrat Aisha Akram, M**uhammad Ashraf and Shafaqat Ali. **2017.** Tocopherol confers water stress tolerance: Sugar and osmoprotectant metabolism in mung bean [*Vigna radiata* (L.) Wilczek]. **Agrochimica,** **61(1): 28-42 (IF = 0.694).**
10. \*\*Maleeha Razzaq, **Nudrat Aisha Akram**, Muhammad Ashraf, Hira Naz, and Fahad Al-Qurainy. **2017.** Interactive effect of drought and nitrogen on growth, some key physiological attributes and oxidative defense system in carrot (*Daucus carota* L.) plants. **Scientia Horticulturae,** **225, 373-379 (IF = 1.76).**
11. Ahanger, M.A., **N.A. Akram,** M. Ashraf, M.N. Alyemeni, L. Wijaya and P. Ahmad. **2017.** Signal transduction and biotechnology in response to environmental stresses. **Biologia Plantarum,** **61(3), 401-416 (IF = 1.424).**
12. [Farid, M](https://www.ncbi.nlm.nih.gov/pubmed/?term=Farid%20M%5BAuthor%5D&cauthor=true&cauthor_uid=28573560)., [Ali, S](https://www.ncbi.nlm.nih.gov/pubmed/?term=Ali%20S%5BAuthor%5D&cauthor=true&cauthor_uid=28573560)., [**Akram, N.A**](https://www.ncbi.nlm.nih.gov/pubmed/?term=Akram%20NA%5BAuthor%5D&cauthor=true&cauthor_uid=28573560)**.,** [Rizwan, M](https://www.ncbi.nlm.nih.gov/pubmed/?term=Rizwan%20M%5BAuthor%5D&cauthor=true&cauthor_uid=28573560)., [Abbas, F](https://www.ncbi.nlm.nih.gov/pubmed/?term=Abbas%20F%5BAuthor%5D&cauthor=true&cauthor_uid=28573560)., [Bukhari, S.A.H](https://www.ncbi.nlm.nih.gov/pubmed/?term=Bukhari%20SAH%5BAuthor%5D&cauthor=true&cauthor_uid=28573560)., and [Saeed, R](https://www.ncbi.nlm.nih.gov/pubmed/?term=Saeed%20R%5BAuthor%5D&cauthor=true&cauthor_uid=28573560). **2017.** Phyto-management of Cr-contaminated soils by sunflower hybrids: physiological and biochemical response and metal extractability under Cr stress. **Environmental Science and Pollution Research, 24(20): 16845-16859 (IF = 2.8).**
13. Sumaira Qutab, Muhammad Iqbal, Rizwan Rasheed, M. Arslan Ashraf, Iqbal Hussain and **Nudrat Aisha Akram. 2017.** Root zone selenium reduces cadmium toxicity by modulating tissue specific growth and metabolism in maize (*Zea mays* L.). **Archives of Agronomy and Soil Science, 63(13): 1900-1911 (IF = 2.254).**
14. Mohammad Abass Ahanger, **Nudrat Aisha Akram,** Muhammad Ashraf, Mohammed Nasser Alyemeni, Leonard Wijaya and Parvaiz Ahmad. **2017.** Plant responses to environmental stresses – from gene to biotechnology. **AoB Plants, 9(4), plx025** **(IF = 2.821).**

**IF 2017= 28.141**

**Total IF up to 2017 = 148.982**

1. \*\*Aniqa Aziz, **Nudrat Aisha Akram** and Muhammad Ashraf. **2018.** Influence of natural and synthetic vitamin C (ascorbic acid) on primary and secondary metabolites and associated metabolism in quinoa (Chenopodium quinoa Willd.) plants under water deficit regimes. **Plant Physiology & Biochemistry, 123: 192-203 (IF = 2.718).**
2. \*\*Cengiz Kaya, **Nudrat Aisha Akram,** Muhammad Ashraf, O. Sonmez. **2018.** Exogenous application of humic acid mitigates salinity stress in maize (*Zea mays* L.) plants by improving some key physio-biochemical attributes. **Cereal Research Communications, 46(1), 67-78 (IF = 0.489).**
3. \*\***Nudrat Aisha Akram**, Majid Iqbal, Atta Muhammad, Muhammad Ashraf, Fahad Al-Qurainy and Sidra Shafiq. **2018.** Aminolevulinic acid and nitric oxide regulate oxidative defense and secondary metabolismsin canola (*Brassica napus* L.) under drought stress. **Protoplasma, 255: 163-174 (IF = 2.457).**
4. \*\*Saadia, M., Jamil, A., Ashraf, M., Iqbal, T., **Akram, N.A.,** Mushtaq, Z., and Shukat, I. **2018.** A salt stress induced up-regulation of chloroplast cDNA sequence from canola shows similarity to carcinoma related-DNA sequences. **Agrochimica, 61(3), 165-179 (IF = 0.694).**
5. \*\*Firdos Kosar, **Nudrat Aisha Akram,** Muhammad Ashraf, Muhammad Sadiq and Fahad Al-Qurainy. **2018.** Trehalose-induced improvement in growth, photosynthetic characteristics and levels of some key osmoprotectants in sunflower (*Helianthus annuus* L.) under drought stress. **Pakistan Journal of Botany, 50(3), 955-961 (IF = 0.75).**
6. \*\***Nudrat Aisha Akram,** Shamim Kausar, Naila Farid, Muhammad Ashraf and Fahad Al-Qurainy. **2018.** 5-Aminolevulinic acid induces regulation in growth, yield and physio-biochemical characteristics of wheat under water stress. **Sains Malaysiana, 47(4), 661-670 (IF = 0.565).**
7. Seyed Abdolreza Kazemeini, Hadi Pirasteh-Anosheh, Abdolrasol Basirat, and **Nudrat Aisha Akram. 2018.** Salinity tolerance threshold of berseem clover (*Trifolium alexandrinum*) at different growth stages. **Pakistan Journal of Botany, 50(5), 1675-1680 (IF = 0.75).**
8. Asfa Batool, **Nudrat Aisha Akram**, Guang-Chao Lv, Jun-lan Xiong, Tao Tian, Tian-Yong Wang, Zheng-Guo Cheng, Yan Yi, Jing Wen and You-cai Xiong. **2018.** Root-to-shoot communication and its signal cross talk in plants: a physiological and agronomic perspective. **Pakistan Journal of Botany, 50(5), 2059-2067 (IF = 0.75).**
9. Cengiz Kaya, Muhammad Ashrafand **Nudrat Aisha Akram. 2018.** Hydrogen sulfide regulates the levels of key metabolites and antioxidant defense system to counteract oxidative stress in pepper (*Capsicum annuum* L.) plants exposed to high zinc regime. **Environmental Science and Pollution Research,** **25(13), 12612-12618 (IF = 2.8).**
10. **\*\***Muhammad Sadiq, **Nudrat Aisha Akram,** Muhammad Ashraf. **2018.** Impact of exogenously applied tocopherol on some key physio-biochemical and yield attributes in mungbean [*Vigna radiata* (L.) Wilczek] under limited irrigation regimes. **Acta Physiologia Plantarum, 40: 131 (IF = 1.438).**
11. **\*\*Nudrat Aisha Akram**, Fahad Shafiq and Muhammad Ashraf. **2018**. Peanut (Arachis hypogaea L.): A Prospective Legume Crop to Offer Multiple Health Benefits under Changing Climate. **Comprehensive Reviews in Food Science and Food Safety, 17: 1325-1338 (IF = 7.028).**
12. Cengiz Kaya, **Nudrat Aisha Akram** and Muhammad Ashraf. **2018.** Kinetin and indole acetic acid promote antioxidant defense system and reduce oxidative stress in maize (*Zea mays* L.) plants grown at boron toxicity. **Journal of Plant Growth Regulation, 37(4): 1258-1266 (IF = 2.047).**
13. Cengiz Kaya, Salih Aydemir, **Nudrat Aisha Akram** and Muhammad Ashraf. **2018.** Epibrassinolide application regulates some key physio-biochemical attributes as well as oxidative defense system in maize plants grown under saline stress. **Journal of Plant Growth Regulation, 37(4): 1244-1257 (IF = 2.047).**
14. **\*\*Nudrat Aisha Akram,** Imran Khan, Zeeshan Javed, Zarfishan Khan, Sajida Mahmood, Muhammad Ashraf, Sidra Shafiq and Hira Naz. **2019.** Modulation in some key biochemical attributes in drought stressed pea (Pisum sativum L.) plants treated with different plant growth regulators. **Agrochimica 62(4): 337-351 (IF = 0.694).**
15. [Faisal Zulfiqar](https://link.springer.com/article/10.1007/s00425-019-03293-1#auth-Faisal-Zulfiqar), [**Nudrat Aisha Akram**](https://link.springer.com/article/10.1007/s00425-019-03293-1#auth-Nudrat_Aisha-Akram) & [Muhammad Ashraf](https://link.springer.com/article/10.1007/s00425-019-03293-1#auth-Muhammad-Ashraf). **2019.** Osmoprotection in plants under abiotic stresses: new insights into a classical phenomenon. **Planta, 251, 3 (IF = 3.249).**

**IF 2018= 27.782**

**Total IF up to 2018 = 176.764**

1. Cengiz Kaya, **Nudrat Aisha Akram** and Muhammad Ashraf. **2019.** Influence of exogenously applied nitric oxide on strawberry (Fragaria × ananassa) plants grown under iron deficiency and/or saline stress. **Physiologia Plantarum, 165(2): 247-263 (IF = 2.58).**
2. **\*\***Muhammad Adeel Ghafar, **Nudrat Aisha Akram**, Muhammad Ashraf, Muhammad Yasin Ashraf and Muhammad Sadiq. **2019.** Thiamin-induced variations in oxidative defense processes in white clover (*Trifolium repens* L.) under water deficit stress. **Turkish Journal of Botany, 43: 58-66 (IF = 1.066).**
3. Munifa Jabeen, **Nudrat Aisha Akram,** Muhammad Ashraf and Aniqa Aziz. **2019.** Assessment of biochemical changes in spinach (*Spinacea oleracea* L.) subjected to varying water regimes. **Sains Malaysiana, 48(3): 533-541 (IF = 0.565).**
4. Asfa Batool, **Nudrat Aisha Akram,** Zheng-Guo Cheng, Guang-Chao Lv, Muhammad Ashraf, Muhammad Afzal, Jun-Lan Xiong, Jian-Yong Wang, You-Cai Xiong. **2019.** Physiological and biochemical responses of two spring wheat genotypes to nonhydraulic root-to-shoot signalling of partial and full root-zone drought stress. **Plant Physiology & Biochemistry, 139: 11-20 (IF = 2.718).**
5. **\*\***Shehzadi, A., **Akram, N.A.,** Ali, A., Ashraf, M. and Ghafoor, R. **2019.** Glycinebetaine induced alteration in some key physio-biochemical attributes and plant anatomical features in water stressed oat (*Avena sativa* L.) plants. **Journal of Arid Land, 11(2): 292-305 (IF = 1.444).**
6. **\*\***Aneeqa Munawar, **Nudrat Aisha Akram,** Abrar Ahmad and Muhammad Ashraf. **2019.** Nitric oxide regulates oxidative defense system, key metabolites and growth of broccoli (Brassica oleracea L.) plants under water limited conditions. **Scientia Horticulturae, 254: 7-13 (IF = 1.76).**
7. \*\*Sidra Shafiq, **Nudrat Aisha Akram** and Muhammad Ashraf. **2019.** Assessment of physio-biochemical indicators for drought tolerance in different cultivars of maize (*Zea mays* L.). **Pakistan Journal of Botany, 51(4): 1241-1247 (IF = 0.75).**
8. Cengiz Kaya, **Nudrat Aisha Akram,** Abdulkadir Sürücü and Muhammad Ashraf. **2019.** Alleviating effect of nitric oxide on oxidative stress and antioxidant defence system in pepper (*Capsicum annuum* L.) plants exposed to cadmium and lead toxicity applied separately or in combination. **Scientia Horticulturae, 255, 52-60 (IF = 1.76).**
9. **\*\***Firdos Kosar, **Nudrat Aisha Akram**, Muhammad Sadiq, Fahad Al-Qurainy and Muhammad Ashraf. **2019.** Trehalose: A key organic osmolyte effectively involved in plant abiotic stress tolerance. **Journal of Plant Growth Regulation, 38(2), 606-618 (IF = 2.047).**
10. Faisal Zulfiqar, Suzanne E. Allaire, **Nudrat Aisha Akram**, Adnan Younis, Arslan Masood Peerzada, Narmeen Shaukat, Ana Méndez. **2019.** Challenges in organic component selection and biochar as an opportunity in potting substrates: A review. **Journal of Plant Nutrition, 42(11-12): 1386-1401 (IF = 0.565).**
11. \*\*Rehmana Ghafoor, **Nudrat Aisha Akram**, Muhammad Rashid, Muhammad Ashraf, Muhammad Iqbal, and Zhang Lixin. **2019.** Exogenously applied proline induced changes in key anatomical features and physio-biochemical attributes in water stressed oat (*Avena sativa* L.) plants. **Physiology and Molecular Biology of Plants**, **25(5), 1121-1135 (IF = 1.151).**
12. Cengiz Kaya, Ali Sarioğlu, **Nudrat Aisha Akram** and Muhammad Ashraf. **2019.** Thiourea-mediated nitric oxide production enhances tolerance to boron toxicity by reducing oxidative stress in bread wheat (*Triticum aestivum* L.) and durum wheat (*Triticum durum* Desf.) plants. **Journal of Plant Growth Regulation, 38(3): 1094-1109 (IF = 2.047).**
13. \*\*Muhammad Sadiq, **Nudrat Aisha Akram,** Muhammad Ashraf, Fahad Al-Qurainy and Parvaiz Ahmad. **2019.** Alpha-tocopherol induced regulation of growth and metabolism in plants under non-stress and stress conditions. **Journal of Plant Growth Regulation, 38: 1325-1340 (IF = 2.047).**
14. Guang-Chao Lv, Zheng-Guo Cheng, Feng-Min Li, **Nudrat Aisha Akram** and Youcai Xiong. 2019. Comparative response to drought in primitive and modern wheat: A cue on domestication. **Planta, 250(2): 629-642 (IF = 3.249).**
15. [Asfa Batool](https://plantmethods.biomedcentral.com/articles/10.1186/s13007-019-0461-5#auth-1), [Zheng-Guo Cheng](https://plantmethods.biomedcentral.com/articles/10.1186/s13007-019-0461-5#auth-2), [**Nudrat Aisha Akram**](https://plantmethods.biomedcentral.com/articles/10.1186/s13007-019-0461-5#auth-3)**,** [Guang-Chao Lv](https://plantmethods.biomedcentral.com/articles/10.1186/s13007-019-0461-5#auth-4), [Jun-Lan Xiong](https://plantmethods.biomedcentral.com/articles/10.1186/s13007-019-0461-5#auth-5), [Ying Zhu](https://plantmethods.biomedcentral.com/articles/10.1186/s13007-019-0461-5#auth-6), [Muhammad Ashraf](https://plantmethods.biomedcentral.com/articles/10.1186/s13007-019-0461-5#auth-7) and [You-Cai Xiong](https://plantmethods.biomedcentral.com/articles/10.1186/s13007-019-0461-5#auth-8). **2019**. Partial and full root-zone drought stresses account for differentiate root-sourced signal and yield formation in primitive wheat. **Plant Methods, 15:75. (IF = 3.170).**
16. Faisal Zulfiqar, Miriam Navarro, Muhammad Ashraf, **Nudrat Aisha Akram** and Sergi Munne-Bosch. **2019.** Nanofertilizer use for sustainable agriculture: advantages and limitations. **Plant Sciences, 289(12), 110270 (IF = 3.785).**
17. Muhammad Hamzah Saleem, Shafaqat Ali, Mahmoud F Seleiman, Muhammad Rizwan, Muzammal Rehman, **Nudrat Aisha Akram**, Liu Lijun, Majed Alotaibi, Ibrahim Al-Ashkar, Muhammad Mubushar. **2019.** Assessing the Correlations between Different Traits in Copper-Sensitive and Copper-Resistant Varieties of Jute (*Corchorus capsularis* L.). **Plants (Basel), 8(12), 545 (IF = 2.632).**
18. \*\*Hira Yaqoob, **Nudrat Aisha Akram,** Samrah Iftikhar, Muhammad Ashraf, Noman Khalid, Muhammad Sadiq, Mohammed Nasser Alyemeni, Leonard Wijaya, PraveJ Alam, Parvaiz Ahmad. **2019**. Seed pretreatment and foliar application of proline regulates morphological, physio-biochemical processes and activity of antioxidant enzymes in two cultivars of quinoa (*Chenopodium quinoa* Willd.) plants. **Plants (Basel), 8(12), pii: E588 (IF = 2.632).**

**IF 2019 = 36.662**

**Total IF up to 2019 = 213.851**

1. A. Ashraf, F. Hassan, S. Batool, M. Nadeem, M. Irshad, A. Siddique, F. Anwar, S.L. Rubab, K. Khaliq, M.T. Akhtar, **N.A. Akram,** T. Ruby and M. Saadia. **2020.** Protective effect of *Silybum marianum* and *Nigella sativa* oil extracts against cisplatin induced nephrotoxicity in mice. **Current Topics in Nutraceutical Research,** **18(2): 1-5** **(IF = 0.416).**
2. \*\*[Ayesha Farooq](https://sciprofiles.com/profile/author/aHBuMGdTc2hmc0xpbk4rZkQxeGpqcGVUOUtqVnoxZllOcWFUci9QbTFQTT0%3D), [Shazia Anwer Bukhari](https://sciprofiles.com/profile/author/bmhXUFB2bEJabnF6N2ZvOFIwZDQrK3l2ZUtSRW4yT2g5NUdmcFkxU3RaST0%3D), [**Nudrat Aisha Akram**](https://sciprofiles.com/profile/21455)**,** [Muhammad Ashraf](https://sciprofiles.com/profile/19329), [Leonard Wijaya](https://sciprofiles.com/profile/author/V1BHek9QZkc2S3NHWmg0TDFYY0xmSWtjaXVHaUtGdno2QitVOUNXWnhrST0%3D), [Mohammed Nasser Alyemeni](https://sciprofiles.com/profile/author/RDJYT3Q4YndFTVBzRkt1RVpsbUhTS1B6NjdXNTBIMERNVENQVUJocm44Yz0%3D) and [Parvaiz Ahmad](https://sciprofiles.com/profile/466482). **2020.** Exogenously applied ascorbic acid-mediated changes in osmoprotection and oxidative defense system enhanced water stress tolerance in different cultivars of safflower (*Carthamus tinctorious* L.). **Plants (Basel), 9(1), 104, pii: E588 (IF = 3.935).**
3. Faisal Zulfiqar, Adnan Younis, Asim Riaz, Mansoor, F., Mansoor Hameed, **Nudrat Aisha Akram** and Zain-ul Abideen. **2020.** Morpho-anatomical adaptations of two Tagetes erecta L. cultivars with contrasting response to drought stress. **Pakistan Journal of Botany, 52(3), 801-810 (IF = 0.972).**
4. **\*\*****Nudrat Aisha Akram**, Umm-e-Hani, Muneeba Ashraf, Muhammad Ashraf, Muhammad Sadiq. **2020.** Exogenous application of L-methionine mitigates the drought-induced oddities in biochemical and anatomical responses of bitter gourd (*Momordica charantia* L.). **Scientia Horticulturae,** **267(1), 109333 (IF = 3.463).**
5. Parvaiz Ahmad, Cengiz Kaya, Mehmet Şenbayram, **Nudrat Aisha Akram,** M Ashraf, and Mohammed Nasser Alyemeni. **2020.** Sulfur-enriched leonardite and humic acid soil amendments enhance tolerance to drought and phosphorus deficiency stress in maize (*Zea mays* L.). **Scientific Reports, 10, 6432 (IF = 4.379).**
6. **\*\***Shazia Anwer Bukhari, Ghulam Mustafa, Shahzad Bashir, **Nudrat Aisha Akram,** Mahmood ur Rehman, Bushra Sadia, MN Alyemeni, Parvaiz Ahmad. **2020.** Genetic transformation of Sr22 gene in a high yielding susceptible cultivar of commercial wheat (*Triticum aestivum* L.). **3 Biotech,** **10, 197 (IF = 2.406).**
7. **\*\***Hira Naz **Nudrat Aisha Akram** and Haiyan Kong. **2020**. Assessment of secondary metabolism involvement in water stress tolerance of quinoa (*Chenopodium quinoa* Willd.) Subjected to varying water regimes. **Pakistan Journal of Botany, 52(5): 1553-1569 (IF = 0.972).**
8. Cengiz Kaya, **Nudrat Aisha Akram,** Muhammad Ashraf, Mohammed Nasser Alyemeni and Parvaiz Ahmad. **2020.** Exogenously supplied silicon (Si) improves cadmium tolerance in pepper (*Capsicum annuum* L.) by up-regulating the synthesis of nitric oxide and hydrogen sulfide. **Journal of Biotechnology, 316, 35-45 (IF = 3.307).**
9. **\*\*Nudrat Aisha Akram,** Naima Hafeez, Muhammad Farid-ul-Haq, Abrar Ahmad, Muhammad Sadiq and Muhammad Ashraf. **2020.** Foliage application and seed priming with nitric oxide causes mitigation of salinity-induced metabolic adversaries in broccoli (*Brassica oleracea* L.) plants. **Acta Physiologiae Plantarum, 42: 155 (IF = 2.354).**
10. **\*\***Zanib Nazar, **Nudrat Aisha Akram**, Muhammad Hamzah Saleem, Muhammad Ashraf, Shakeel Ahmed, Shafaqat Ali, Abdulaziz Abdullah Alsahli, Mohammed Nasser Alyemeni. **2020.** Glycinebetaine-induced alteration in gaseous exchange capacity and osmoprotective phenomena in safflower (*Carthamus tinctorius* L.) under water deficit conditions. **Sustainability, 12(24), 10649 (IF = 3.251).**

**IF 2020 = 25.455**

**Total IF up to 2020 = 239.306**

1. **\*\***Haiyan Kong, Zhen Zhang, Juan Qin and **Nudrat Aisha Akram. 2021.** Synergistic effects of abscisic acid (ABA) and drought stress on the physiological responses of winter wheat (*Triticum aestivum* L.). **Pakistan Journal of Botany, 53(5), 1545-1551 (IF = 0.972).**
2. **\*\*Nudrat Aisha Akram**, Fahad Shafiq, Muhammad Ashraf, Muhammad Iqbal and Parvaiz Ahmad. **2021**. Advances in salt tolerance of some major fiber crops using classical and advanced biotechnological tools-a review. **Journal of Plant Growth Regulation, 40(3), 891-905 (IF = 4.169).**
3. **\*\***Firdos Kosar, **Nudrat Aisha Akram,** Muhammad Ashraf, Abrar Ahmad, Mohammed Nasser Alyemeni and Parvaiz Ahmad. **2021.** Impact of exogenously applied trehalose on leaf biochemistry, achene yield and oil composition of sunflower under drought stress. **Physiologia Plantarum, 172: 317-333 (IF = 4.5).**
4. **\*\***Munifa Jabeen, **Nudrat Aisha Akram,** Muhammad Ashraf, Mohammed Nasser Alyemeni and Parvaiz Ahmad. **2021.** Thiamin stimulates growth and secondary metabolites in turnip (*Brassica rapa* L.) leaf and root under drought stress. **Physiologia Plantarum, 172(2): 1399-1411 (IF = 4.5).**
5. Hadi Pirasteh-Anosheh, Ali Mirhosseini, **Nudrat Aisha Akram** and Mirza Hasanuzzaman. **2021.** Forage potential of Salsola species in arid-saline rangelands. **Turkish Journal of Botany, 45, 203-215 (IF = 1.489).**
6. Shafaqat Ali, **Nudrat Aisha Akram**, Muhammad Rizwan, Afzal Hussain, Arosha Maqbool, Awais Ahmad, Basharat Ali, Asif Tanveer, M. Awais Ghani and Mubashar Nadeem. **2021**. Morphological and biochemical responses of different rice varieties exposed to cadmium stress. **Pakistan Journal of Agricultural Sciences, 58(2), 521-528 (IF = 0.748).**
7. Naila Asghar, **Nudrat Aisha Akram**, Amina Ameer, Huma Shahid, Shameem Kausar, Ansa Asghar, Tayyaba Idrees, Sahar Mumtaz, Hafiz M Asfahan, Muhammad Sultan and Istakhar Jahangir. **2021.** Foliar-applied hydrogen peroxide and proline modulates growth, yield and biochemical attributes of wheat (*Triticum aestivum* L.) under varied N and P levels. **Fresenius Environmental Bulletin, 30(5), 5445-5465 (IF = 0.489).**
8. **\*\***Abdul Hameed, **Nudrat Aisha Akram,** Muhammad Hamzah Saleem, Muhammad
Ashraf, Shakeel Ahmed, Shafaqat Ali, Abdulaziz Abdullah Alsahli, Mohammed
Nasser Alyemeni. **2021.** Seed treatment with α-tocopherol regulates growth and key
physio-biochemical attributes in carrot (*Daucus carota* L.) plants under water
limited regimes. **Agronomy-Basel, 11(3), 469 (IF = 3.417).**
9. **\*\***Muhammad Adeel Ghafar, **Nudrat Aisha Akram**, Jianyong Wang, Muhammad Hamzah Saleem, Leonard Wijaya, Mohammed Nasser Alyemeni. **2021**. Ecotypic morphological and physio-biochemical responses of two differentially adapted forage grasses, *Cenchrus ciliaris* L. and *Cyperus arenarius* Retz. to drought stress. **Sustainability, 13, 8069 (IF = 3.251).**
10. \*\*Sidra Shafiq, **Nudrat Aisha Akram**, Muhammad Ashraf, Pedro García-Caparrós, Omar M. Ali and Arafat Abdel Hamed Abdel Latef. **2021.** Influence of glycine betaine (natural and synthetic) on growth, metabolism and yield production of drought-stressed maize (*Zea mays* L.) plants. **Plants (Basel), 10, 2540 (IF = 3.935).**
11. **\*\***Sidra Shafiq, **Nudrat Aisha Akram\*,** Muhammad Ashraf, Ahmed Noureldeen and Hadeer Darwish. **2021**. Sugar beet extract rich in glycine betaine modulates oxidative defense system and key physiological characteristics of maize under water-deficit stress. **PLOS ONE, 16(11):e0254906 in press (IF = 3.24).**
12. \*\*Gull Mehak, **Nudrat Aisha Akram,** Muhammad Ashraf, Prashant Kaushik, Mohamed A. El-Sheikh, Parvaiz Ahmad. **2021.** Methionine-induced regulation of growth, secondary metabolites and oxidative defense system in sunflower (*Helianthus annuus* L.) plants subjected to water deficit stress. **PloS One, 16(12): e0259585 (IF = 3.24).**

**IF 2021 = 33.95**

**Total IF up to 2021 = 273.938**

1. [Jianyong Wang](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Wang%2C+Jianyong), [Tongtong Xu](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Xu%2C+Tongtong), [Xinyue Feng](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Feng%2C+Xinyue), [Wanyue Zhu](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Zhu%2C+Wanyue), [Li Zhang](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Zhang%2C+Li), [Duofeng Pan](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Pan%2C+Duofeng), [**Nudrat Aisha Akram**](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Akram%2C+Nudrat+Aisha)**,** [Quanhui Ma](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Ma%2C+Quanhui), [Zhiwei Zhong](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Zhong%2C+Zhiwei), [Sehrish Mahroof](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Mahroof%2C+Sehrish), [Ling Wang](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Wang%2C+Ling). **2022.** Simulated grazing and nitrogen addition facilitate spatial expansion of *Leymus chinensis* clones into saline-alkali soil patches: implications for Songnen grassland restoration in Northeast China. **Land Degradation and Development, 2022;33:710–722. (IF = 4.977).**
2. \*\*Hira Naz, **Nudrat Aisha Akram,** Muhammad Ashraf, Saleh Alansi, Mohammed Nasser Alyemeni, and Parvaiz Ahmad. **2022.** Leaf extract of neem (*Azadirachta indica*) alleviates adverse effects of drought in quinoa (*Chenopodium quinoa* Willd.) plants through alterations in biochemical attributes and antioxidants. **Saudi Journal of Biological Sciences, 29(3), 1367-1374 (IF = 4.219).**
3. \*\*Muhammad Adeel Ghafar, **Nudrat Aisha Akram**, Bilquees Gul and Hadi Pirasteh-Anosheh. **2022.** Physio-biochemical analyses of selected halophytes from saline regions of Pakistan and its potential for biosaline agriculture in arid environments. **Pakistan Journal of Botany, 54(5), 1697-1706 (IF = 0.972).**
4. Hai-Yan Kong, Hao Zhu, Rui Zhou, **Nudrat Aisha Akram**, Yi-Bo Wang, Cheng-Jing Jiao and You-Cai Xiong. **2022.** Role of abscisic acid in modulating drought acclimation, agronomic characteristics, and β‑N‑Oxalyl‑L‑α, β‑diaminopropionic acid (β-ODAP) accumulation in grass pea (*Lathyrus sativus* L.). **Journal of the Science of Food and Agriculture, 102(6), 2553-2562 (IF = 3.638).**
5. \*\*Firdos Kosar, Khalid S. Alshallash, **Nudrat Aisha Akram,** Muhammad Sadiq, Muhammad Ashraf, Dalal Hussien M. Alkhalifah, Arafat Abdel Hamed Abdel Latef andAmr Elkelish. **2022.** Trehalose-induced regulations in nutrients status and secondary metabolites of drought-stressed sunflower (*Helianthus annuus* L.) plants**. Plants (Basel), 11, 2780 (IF = 3.935).**
6. \*\*Munifa Jabeen, **Nudrat Aisha Akram,** Muhammad Ashraf, Anshika Tyagi, Mohamed A El-Sheikh and Parvaiz Ahmad. **2022.** Thiamin stimulates growth, yield quality and key biochemical processes of cauliflower (*Brassica oleracea* L. var. Botrytis) under arid conditions. **PloS One, 17(5): e0266372 (IF = 3.24).**
7. Shafaqat Ali, Manar Fawzi Bani Mfarrej, Afzal Hussain, **Nudrat Aisha Akram,** Muhammad Rizwan, Xiukang Wang, Arosha Maqbool, Muhammad Nafees, Basharat Ali. **2022.** Zinc fortification and alleviation of cadmium stress by application of lysine chelated zinc on different varieties of wheat and rice in cadmium stressed soil. **Chemosphere, 295:133829 (IF = 7.086).**
8. \*\***Nudrat Aisha Akram,** Muhammad Hamzah Saleem, Sidra Shafiq, Hira Naz, Farid Haq, Baber Ali, Fahad Shafiq, Muhammad Iqbal, Mariusz Jaremko, Kamal A Qureshi. **2022.** Phytoextracts as crop biostimulants and natural protective agents - A critical review. **Sustainability-1844963 (IF = 3.251).**

1. [Tongtong Xu](https://www.sciencedirect.com/science/article/abs/pii/S0367253022001505?CMX_ID=&SIS_ID=&dgcid=STMJ_AUTH_SERV_PUBLISHED&utm_acid=81009521&utm_campaign=STMJ_AUTH_SERV_PUBLISHED&utm_in=DM300589&utm_medium=email&utm_source=AC_" \l "!), [Iram Abdullah,](https://www.sciencedirect.com/science/article/abs/pii/S0367253022001505?CMX_ID=&SIS_ID=&dgcid=STMJ_AUTH_SERV_PUBLISHED&utm_acid=81009521&utm_campaign=STMJ_AUTH_SERV_PUBLISHED&utm_in=DM300589&utm_medium=email&utm_source=AC_#!) [**Nudrat Aisha Akram,**](https://www.sciencedirect.com/science/article/abs/pii/S0367253022001505?CMX_ID=&SIS_ID=&dgcid=STMJ_AUTH_SERV_PUBLISHED&utm_acid=81009521&utm_campaign=STMJ_AUTH_SERV_PUBLISHED&utm_in=DM300589&utm_medium=email&utm_source=AC_#!)[Ying Wang](https://www.sciencedirect.com/science/article/abs/pii/S0367253022001505?CMX_ID=&SIS_ID=&dgcid=STMJ_AUTH_SERV_PUBLISHED&utm_acid=81009521&utm_campaign=STMJ_AUTH_SERV_PUBLISHED&utm_in=DM300589&utm_medium=email&utm_source=AC_#!), [Li Zhang](https://www.sciencedirect.com/science/article/abs/pii/S0367253022001505?CMX_ID=&SIS_ID=&dgcid=STMJ_AUTH_SERV_PUBLISHED&utm_acid=81009521&utm_campaign=STMJ_AUTH_SERV_PUBLISHED&utm_in=DM300589&utm_medium=email&utm_source=AC_#!), [Xinyue Feng](https://www.sciencedirect.com/science/article/abs/pii/S0367253022001505?CMX_ID=&SIS_ID=&dgcid=STMJ_AUTH_SERV_PUBLISHED&utm_acid=81009521&utm_campaign=STMJ_AUTH_SERV_PUBLISHED&utm_in=DM300589&utm_medium=email&utm_source=AC_#!), [Jianyong Wang](https://www.sciencedirect.com/science/article/abs/pii/S0367253022001505?CMX_ID=&SIS_ID=&dgcid=STMJ_AUTH_SERV_PUBLISHED&utm_acid=81009521&utm_campaign=STMJ_AUTH_SERV_PUBLISHED&utm_in=DM300589&utm_medium=email&utm_source=AC_#!), [Ling Wang](https://www.sciencedirect.com/science/article/abs/pii/S0367253022001505?CMX_ID=&SIS_ID=&dgcid=STMJ_AUTH_SERV_PUBLISHED&utm_acid=81009521&utm_campaign=STMJ_AUTH_SERV_PUBLISHED&utm_in=DM300589&utm_medium=email&utm_source=AC_#!). **2022.** Defoliation facilitates *Leymus chinensis* clones spatial expansion into saline-alkali soils under different population densities. **Flora, Morphology, Distribution, Functional Ecology of Plants, 296, 152154 (IF = 2.22).**

**IF 2022 = 33.538**

**Total IF up to 2022 = 307.476**

1. Hadi Pirasteh-Anosheh, Gholamhassan Ranjbar, **Nudrat Aisha Akram**, Muhammad Adeel Ghafar and Antonio Panico. **2022**. Forage potential of several halophytic species grown on saline soil in arid environments. **Environmental Research, 219, 114954 (IF = 8.431).**
2. **Nudrat Aisha Akram**, Rohina Bashir, Gulshan Ashraf, Shehnaz Bashir, Muhammad Ashraf, Mohammed Nasser Alyemeni, Andrzej Bajguz and Parvaiz Ahmad. **2023.** Exogenous α-tocopherol regulates the growth and metabolism of eggplant (*Solanum melongena* L.) under drought stress. **Plants (Basel), 12, 237 (IF = 3.935).**
3. \*\*Maleeha Razzaq, **Nudrat Aisha Akram**, Shafaqat Ali and Muhammad Ashraf. **2023.** Induction of chromium (Cr) stress tolerance in maize (*Zea mays* L.) by exogenous application of vanillic acid: growth, gas exchange characteristics and oxidative defence system. **Pakistan Journal of Botany, 55(2), in press (IF = 0.972).**
4. Fahad Shafiq, Muhammad Iqbal, Syed Hammad Raza, **Nudrat Aisha Akram** and Muhammad Ashraf. **2023**. Fullerenol (60) nano-cages for protection of crops against oxidative stress-A critical review. **Journal of Plant Growth Regulation, In press (IF = 4.169).**

**IF 2023 = 17.507**

**Total IF up to 2023 = 324.983**

**Conferences/Symposia/Webinar Organized:**

1. Organized a three days Ist International Conference on **"Major Environmental Constraints to Plants: Assessment and Reclamations"** as a conference secretary at Department of Botany, Government College University, Faisalabad, Pakistan **on 28-30 March, 2016**.
2. Organized a one day International Symposium on **"Establishments of Vegetables Garden with Organic Fertilizers"** as a Chief Organizer at Department of Botany, Government College University, Faisalabad, Pakistan **on March 13, 2017**.
3. Organized a three days 2nd International Conference on **"Water Saving and Plant Productions Strategies: Constraints and Implications for Sustainable Agriculture"** as a conference secretary at Department of Botany, Government College University, Faisalabad, Pakistan **on 26-28 March, 2019**.
4. Organized a two days International Webinar on **“Plants, Abiotic Stresses and Economy: Scenario and Strategies Worldwide"** as a secretary at Department of Botany, Government College University, Faisalabad, Pakistanduring **July 14-15, 2021.**
5. Organized a two days International Conference (Hybrid) on **“Water and Plants: Overview Allied Factors and Strategies Worldwide"** as a Secretary at Department of Botany, Government College University, Faisalabad, Pakistanduring **March 21-22, 2022.**
6. Celebrated **International World Water Day, 2022** as a Secretary at Department of Botany, Government College University, Faisalabad, Pakistanduring **March 22, 2022.**

**Conferences/Symposia attended:**

1. **International Plant Science Conference on, “Application of Plant Sciences in Emerging Scenario”** held on 18-20 February, 2006 at Department of Botany, GC University, Faisalabad, Pakistan.
2. **International Symposium on, “Strategies for Crop Improvement against Abiotic Stresses”** held on 18-20 September, 2006 at Department of Botany, University of Agriculture, Faisalabad Pakistan.
3. **International Conference of Plant Scientists** held on 21-24 April, 2008 at Department of Botany, University of Agriculture, Faisalabad.
4. **30th Pakistan Congress of Zoology** held on 2-4 March, 2010 at Department of Zoology, University of Agriculture, Faisalabad.
5. **A One-day Workshop on “Linking Biodiversity Preservation and Food Security”** on 17th February 2011, at University of Agriculture, Faisalabad, Pakistan, sponsored by Endowment Fund, UAF**.**
6. **International Conference of Plant Scientists** held on 22-24 February, 2011 at Department of Botany, GC University, Lahore, Pakistan.
7. **International Symposium on “Strategies for Conservation of Endangered Ecosystems”** held on 16-18 April, 2012 at Department of Botany, University of Agriculture, Faisalabad Pakistan.
8. One day conference in Zoology, GCUF.
9. **International Symposium on “Strategies for Conservation of Endangered Ecosystems”** held on 16-18 April, 2012 at Department of Botany, University of Agriculture, Faisalabad Pakistan.
10. Presented a lecture as invited speaker on **“Identification of Physiological Markers for Drought Tolerance in Plants**” in a three-day workshop on “Dryland Agriculture and Ecosystem Sustainability” organized at **Lanzhou University, China** on 16-18th October, 2013.
11. Presented a paper on **“Exogenous Application of Ascorbic Acid: Role in Physio-Biochemical and Molecular Processes Involved in Plant Drought Tolerance**” in a three-day international symposium on “Strategies for overcoming food security problems through utilization of rain-fed areas” organized at **University of Sargodha, Sargodha, Pakistan** on 26-28th March, 2014.
12. Presented a paper on **“Trehalose-induced changes in some key physiological attributes and activities of antioxidant enzymes under drought stress: a case study in radish (*Raphanus sativus* L.) plants”** in a three-day international conference on “International Conference of Plant Sciences” organized at **GC University, Lahore, Pakistan** on 22-24th October, 2014.
13. Presented a lecture as invited speaker on **“5-Aminolevulinic Acid and Drought Tolerance in Pea (*Pisum sativum* L.) as a Case Study**” in a three-day international workshop on “Land Degradation and Ecological Restoration of the Loess Plateau” organized at **Lanzhou University, China** on 17-21st August, 2015.
14. Participated in a one day workshop on **"Intellectual Property Rights"** At Govt. College University Faisalabad (GCUF) on **6th November, 2015** as a **Research Coordinator of Dept. of Botany, GC University, Faisalabad.**
15. Presented a lecture as TWAS Young Affiliate on **“Role of ascorbic acid in drought tolerance of pea (*Pisum sativum* L.)**" in a four-day "13th General Conference and 26th General meeting of TWAS" organized **at Austrian Academy of Sciences, Vienna, Austria on 17-21st November, 2015**.
16. Presented a lecture on **“Role of exogenously applied alpha tocopherol in modulating plant physiology and some nutritional composition of mung bean (*Vigna radiata*) under drought stress”** in a four day **International Agricultural Forum** "Silk Road Agricultural Education and Research Innovation Alliance" at **Northwest A & F University, Yangling, China** on **4-8 November, 2016**.
17. Chair a session and presented a lecture as invited speaker on **“Crop Drought Tolerance: Strategies and Improvement**” in a three-day international conference “Ist International Conference of TWAS Young Affiliates (TYAN)” organized at **Rio de-Jenario, Brazil** on 22-24th August, 2017.
18. Participated in a two-day national workshop on **“Intellectual Property Protection for the Inventions Related to Agriculture and Animal Sciences”** organized at **University of Veterinary and Animal Sciences, Lahore on 09-10th October, 2017.**
19. Presented a lecture as invited speaker on **“Research Progress on Drought Tolerance Mechanisms in Plants**” in a one-day national seminar organized at **Institute of Applied and Biological Sciences, Bahauddin Zakariya University, Multan, Pakistan on 16th November, 2017.**
20. Presented a lecture as invited speaker on **“Physiological and Biochemical Tools for Improving Salinity Tolerance in Plants**” in a two-day international congress “The First Haloculture Congress: Economic and Sustainable Use of Saline Resource in Yazd, Iran, from November 22-23, 2017 held by **National Salinity Research Center, Yazd, Iran.**
21. Participated in a one day international symposium on **“Emerging Strategies in Exploration of Natural Products”** organized by Department of Botany, GC University Faisalabad on **30-04-2018.**
22. Participated in a five-day training workshop on **“Project Execution: PPRA Rules”** organized by Office of Resident Auditor & ORIC, GC University Faisalabad on **22-26 January, 2018.**
23. Presented a lecture as invited speaker on **“Oxidative defense and growth of broccoli (*Brassica oleracea* L.) plants in response to nitric oxide under water limited conditions**” in a five-day International Conference “Women in Science International Forum “3rd International conference for Women in Science Without Borders Movement/Network” **(WISWB)** with the theme of (Science diplomacy for Sustainable Development **in Cairo, Egypt, from March 09-14, 2019.**
24. Participated in a one-day international symposium on **“Emerging Strategies in Exploration of Natural Products”** organized by Department of Botany, GCW, Faisalabad on **05-05-2018.**
25. Participated in a two-day international symposium on **“2nd International Conference on Applied Zoology (ICAZ-2019)”** organized by Department of Zoology, GC University Faisalabad on **19-20, 2019.**

**Lectures**

1. Presented a lecture to undergraduate students on “**Plant Mineral Nutrition**” at **Lanzhou University, China** on 25th October, 2013.
2. Presented a lecture to postgraduate students on “**Scientific Writing**” at **Lanzhou University, China** on 28th October, 2013.
3. Presented a lecture to undergraduate students on “Plant Biology: A General Overview on Different Plant Processes" at Yuzhong Campus, **Lanzhou University, China** on **9th October, 2015.**
4. Presented a lecture to undergraduate students on “**Plant Nutrients Uptake; Essential vs Beneficial Nutrition**” at **Northwest A & F University, Yangling, China** on **10th November, 2016.**
5. Presented a lecture to postgraduate students on “Role of alpha tocopherol application in drought stress tolerance of mung bean (*Vigna radiata* L.)” at **Northwest A & F University, Yangling, China** on **11th November, 2016.**

**Abstracts Published**

1. Nawazish, S., M. Hameed, M. Shahbaz and **N. A. Akram. 2008**. Effect of water stress on anatomy of *Cynodon dactylon* L. ecotype from the salt range. **(1st International Conference of Plant Scientists (10th National Meeting of Plant Scientists)”** held on 21-24 April, 2008 at Department of Botany, University of Agriculture, Faisalabad-Pakistan.
2. **Akram, N. A.,** S. Nawazish, M. Shahbaz and M. Hameed**. 2008.** Influence of drought on mineral nutrients of differentially adapted populations of *Cynodon dactylon* (L.) Pers. and *Cenchrus ciliaris* L. **(1st International Conference of Plant Scientists (10th National Meeting of Plant Scientists)”** held on 21-24 April, 2008 at Department of Botany, University of Agriculture, Faisalabad-Pakistan.
3. **Nudrat Aisha Akram** and Muhammad Ashraf. **2011.** Salt-induced accumulation of proline and glycinebetaine influenced by foliar applied 5-aminolevulinic acid (ALA) in sunflower (*Helianthus annuus* L.). International Conference of Pakistan Botanical Society held at GC University **Lahore, Pakistan.**
4. **Nudrat Aisha Akram** and Muhammad Waseem. **2014.** Trehalose-induced changes in some key physiological attributes and activities of antioxidant enzymes under drought stress: a case study in radish (**Raphanus sativus** L.) plants”. **International Conference of Plant Sciences, 22 to 24 September, 2014, GC University, Lahore, Pakistan.**

 ***Research Supervised:***



***Detail of Students (PhD, MPhil, MSc)***

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| ***Ph. D. Students as a Major Supervisor*** |
| **No** | **Name** | **Title** | **Year** | **University** |
| 1. | Muhammad Sadiq | Role of alpha tocopherol application in drought stress tolerance of mung bean (*Vigna radiata* L.) | 2013-2016 | GCUF |
| 2 | Firdos Kosar | Role of foliar applied trehalose on physio-biochemical attributes and oil composition of sunflower (*Helianthus annuus* L.)under drought stress | 2013-2016 | GCUF |
| 3 | Sidra Shafiq | Efficacy of glycinebetaine and sugarbeet extract in modulating drought tolerance of maize parameters | 2015-2018 | GCUF |
| 4 | Munifa Jabeen | Role of foliar-applied thiamin on two potential vegetables, cauliflower *(Brassica oleracea* L.) and turnip (*Brassica rapa* L.) under water deficit conditions | 2016-2019 | GCUF |
| 5 | Hira Naz | Effect of foliarly applied aqueous extract of neem (*Azadirachta indica* L.) on quinoa (Chenopodium quinoa Willd.) plants under different water regimes | 2015-2018 | GCUF |
| 6. | Adeel Ghafar | Exploration of some rangeland halophytic species as forage for saline and drought prone regions of Pakistan | 2016-2019Thesis submitted | GCUF |
| 7. | Maleeha Razzaq | Alleviation of chromium stress using some potential plant growth regulators in maize (*Zea mays* L.) | 2016-2019Thesis writeup | GCUF |
| 8. | Muhammad Younas | Influence of different sources of ascorbic acid on physio-biochemical attributes of okra (*Abelmoschus esculentus* L.) under water limited environment | 2017-2020In process | GCUF |
| 9. | Abdul Rehman | Insights into the role of exogenously applied vanillic acid mediating drought stress responses in cabbage (*Brassica oleracea* L.var. Capitata) and pea (*Pisum sativum* L.) | 2019-2022Analyses | GCUF |
| 10. | Abrar Ahmad |  | 2021-2023 | GCUF |
| 11. | Imrana Bukhari |  | 2021-2023 | GCUF |

***Ph. D. Students as a Supervisor II***

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| **No** | **Name** | **Title** | **Year** | **University** |
| 1. | Mujahid Farid(Environmental Sciences) | Citric acid and 5-Aminolevulinic acid assisted phytoremediation of chromium through sunflower | 2014-2017 | GCUF |
| 2 | Ayesha Adnan(Biochemistry) | Elucidation of ascorbic acid induced oxidative defense system and some potential physio-biochemical attributes in safflower (*C*arthamous *tinctorius* L*.*) under drought stress | 2015-2020 | GCUF |

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|  | ***M. Phil/MS Students as major supervisor*** |
| **No** | **Name** | **Title** | **Year** | **Degree** | **University** |
| 1. | Firdos Kosar2011-GCUF-70-213 | Role of 5-aminolevulinic acid in seedling growth and oxidative defense system of wheat (*Triticum aestivum* L.) under drought conditions | 2011-2013 | M.Phil | GCUF |
| 2. | Muhammad LatifRoll #. 9384, Reg.# 2012- GCUF-09120 | Modulation in some key physio-biochemical attributes of drought-stressed cauliflower (*Brassica oleracea* var. Botrytis L.) plants raised from seeds treated with ascorbic acid | 2012-2014 | M.Phil | GCUF |
| 3. | Abida MukhtarRoll #. 9385, Reg.# 2012- GCUF-09120 | Alleviation of drought-induced adverse effects on physio-biochemical attributes of cauliflower (*Brassica oleracea* var. Botrytis L.) by foliar-applied ascorbic acid | 2012-2014 | M.Phil | GCUF |
| 4. | Sidra ShafiqRoll #. 3408, Reg.# 2011- GCUF-03806 | Trehalose-induced chemical changes in the edible part (root) of radish (*Raphanus sativus* L.) plants subjected to water-deficit conditions | 2013-2015 | M.Phil | GCUF |
| 5 | Hira NazRoll #. 3411, Reg.# 2009- GCUF-5100-515 | Integration in physiobiochemical attributes of cucumber (*Cucumis sativus* L.) plants in response to foliar-applied ascorbic acid under water-deficit conditions | 2013-2015 | M.Phil | GCUF |
| 6 | M. Adeel Ghaffar | Influence of exogenous application of thiamin on white clover (*Trifolium repens* L.) under water deficit conditions | 2014-2016 | M.Phil | GCUF |
| 7 | Maleeha Razzaq | Interactive effect of drought and nitrogen on growth and physiology of carrot (*Daucus carota* L.) plants | 2014-2016 | M.Phil | GCUF |
| 8 | Munifa Jabeen | Assessment of antioxidative defence potential in spinach (*Spinacea oleracea* L.) under varying water regimes | 2014-2016 | M.Phil | GCUF |
| 9 | Rehmana Ghafoor | Proline induced anatomical changes in oat (*Avena sativa* L.) under different water regimes | 2015-2017 (Weekend) | M.Phil | GCUF |
| 10 | Anum Shahzadi | Anatomical responses of oat (*Avena sativa* L.) to glycinebetaine under water deficit condition | 2015-2017(Weekend) | M.Phil | GCUF |
| 11 | Aniqa Aziz | Influence of natural and synthetic vitamin C on morpho-physiology of quinoa (*Chenopodium quinoa* Willd.) under different water regimes | 2015-2017 | M.Phil | GCUF |
| 12 | Naima Hafeez | Does exogenously applied nitric oxide mitigate the adverse effects of salt stress in broccoli (*Brassica oleracea* L.): Growth and physiology | 2015-2017 | M.Phil | GCUF |
| 13 | Zaneb Nazar | Oxidative defense in safflower (*Carthamus tinctorius* L.) after glycine betaine application under water deficit conditions | 2015-2017 | M.Phil | GCUF |
| 14 | Aniqa Munawar | Oxidative defense in broccoli (*Brassica oleracea* L.) in response to nitric oxide under water limited conditions | 2015-2017 | M.Phil | GCUF |
| 15 | Hira Yaqoob | Proline induced modulation in morpho-physiological and biochemical processes of quinoa (*Chenopodium quinoa* Willd.) plants subjected to chilling stress | 2015-2017 | M.Phil | GCUF |
| 16 | Sumaira Kanwal | Thiamin induced changes in chlorophyll and osmoprotectants metabolism of broccoli under water deficit conditions | 2015-2017 | M.Phil | GCUF |
| 17 | Ume-Hani | Involvement of foliar-applied L-Methionine in secondary metabolism and water stress tolerance of bitter gourd (*Mamordica charantia* L.)  | 2016-2018 | M.Phil | GCUF |
| 18 | Samreen Sarwar | Differential ecotypic biochemical response of okra (*Abelmoschus esculentus* L.) leaves and fruits | 2016-2018 | M.Phil | GCUF |
| 19 | Muniba Ashraf | Application of methionine induce changes in leaf and stem anatomical features of bitter gourd (*Memordica charantia* L.) | 2016-2018 | M.Phil | GCUF |
| 20 | Tasleem Hussain | Modulation in some key physio-biochemical attributes of drought-stressed okra (Abelmoschus esculentus L.) seedlings raised from seeds treated with vanillic acid | 2016-2018 (Weekend) | MS | GCUF |
| 21 | Gul Mehak | Effectiveness of exogenously applied L-methionine in upregulation of biochemistry of sunflower (*Helianthus annuus* L.) plant subjected to drought stress | 2017-2019(Weekend) | MS | GCUF |
| 22 | Sami Ullah | Exogenously-applied salicylic acid induces changes in physio-biochemical attributes of sunflower (*Helianthus annuus* L.) subjected to drought stress | 2017-2019 (Weekend) | MS | GCUF |
| 23 | M. Sajjad  | Thiourea induces amendments in physio-biochemistry of rice (*Oryza sativa* L.) under varying water limited conditions | 2017-2019(Weekend) | MS | GCUF |
| 24 | Abrar Ahmad | Optimization of crocin as a growth promotor of turnip plants under saline conditions | 2017-2019 | MPhil | GCUF |
| 25 | Abdul Hameed | Effects of presowing seed treatment with α-tocopherol on growth and physio-biochemical attributes of carrot (*Daucus carota* L.) under water deficit conditions | 2017-2019 | MPhil | GCUF |
| 26 | Madiha Noreen | Assessment of α-tocopherol induced various physio-biochemical changes in carrot (*Daucus carota* L.) plants subjected to varying water regimes | 2017-2019(Weekend) | MPhil | GCUF |
| 27 | Gulshan Ashraf | Mitigation of drought-induced oxidative stress in eggplant (*Solanum* *melongena* L.) by foliar applied alpha-tocopherol  | 2017-2019(Weekend) | MPhil | GCUF |
| 28 | Shehnaz Bashir | Alleviation of drought-induced adverse effects on physio-biochemical attributes ofeggplant (*Solanum melongena* L.) raised by seed priming with alpha-tocopherol | 2017-2019(Weekend) | MPhil | GCUF |
| 29 | Damna | lnfluence of trehalose as a pre-sowing application of okra (*Abelmoschus esculentus* L.) under water deficit conditions | 2017-2019(Weekend) | MPhil | GCUF |
| 30 | Tanzila Atta | Effectiveness of foliar-applied trehalose on growth and osmoprotection of okra (*Abelmoschus esculentus* L.) under water deficit conditions | 2017-2019(Weekend) | MPhil | GCUF |
| 31 | Riaz Hussain | Effect of leaf extract of neem (*Azadirachta indica* L.) on growth and biochemical changes in maize (*Zea mays* L.) under water stress | 2018-2020(Weekend) | MPhil | GCUF |
| 32 | Iram Shehzadi | Does foliar application of neem extract improve drought stress tolerance of maize (*Zea mays* L.) plants? | 2018-2020(Weekend) | MPhil | GCUF |
| 33 | Azhar Mehmood | Thiamine-induced changes in growth and osmoprotectants in carrot *(Daucus carota* L.) under drought stress | 2018-2020 | MPhil | GCUF |
| 34 | Urooj Musrrat | Oxidative defense potential of carrot *(Daucus carota L.*) treated with thiamin under drought stress | 2018-2020 | MPhil | GCUF |
| 35 | Amina Zafar | Interactive effect of nitrogen and drought stress on growth and biochemical attributes of spinach (*Spinacia oleracea* L.) | 2019-2021 | MPhil | GCUF |
| 36 | Shamsa Zaka | Influence of nitrogen as a rooting medium application on the leaf biochemistry of drought-stressed cauliflower (*Brassica oleracea* L.) | 2019-2021 | MPhil | GCUF |
| 37 | Kaneez Fatima | Interactive effect of drought stress and L-methionine on the growth and physio-biochemical changes in broccoli (*Brassica oleracea* L. var. italica): Leaf and head | 2020-2022 | MPhil | GCUF |
| 38 | Nimra Zafar | Exogenously applied vitamin E (alpha-tocopherol) effects plant-yield interlinked physio-biochemical characteristics of cauliflower (*Brassica oleracea* L. var. botrytis) subjected to drought stress | 2020-2022 | MPhil | GCUF |
| 39 | Muhammad Talha | Spatio-temporal variations in the physio-biochemical characteristics of selected halophytes | 2020-2022 | MPhil | GCUF |
|  |  | Appraisal of trehalose induced changes in growth and osmoprotection in carrot (*Daucus carota* L.) plants under drought stress conditions | 2018-2020 ????? | MPhil | GCUF |

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| ***M. Phil. Students as a committee member*** |
| **No** | **Name** | **Title** | **Year** | **University** |
| 1. | Fahad Shafiq | Osmo-priming mediated induction and modulation of wheat antioxidant potential *in lieu* to improve salt tolerance | 2013 | GCUF |
| 2. | Anum Khalid Regd. No. 2007-GCUF-2591-515, | Response of wheat (*Triticum aestivum* L.) to foliar application of iron under drought stress'' | 2013 | GCUF |
| 3. | Sehrish KamranRegd. No. 2015-GCUF-2126 | Response of cadmium stressed okra (Abelmoschus esculentus Moench) plantsto foliar application of menadione sodium bisulphate | 2017 | GCUF |

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| ***M. Sc. Students as major supervisor*** |
| **No** | **Name** | **Title** | **Year** | **University** |
| 1 | Sidra ShafiqRoll # 5776Reg.#.2011-GCUF-03806 | Modulation in growth and antioxidant metabolism of canola (*Brassica napus* L.) plants by exogenously applied ascorbic acid under drought stress conditions | 2013 | GCUF |
| 2 | Naila FaridRoll # 5799Reg.#2011-GCUF-03829 | 5-Aminolevulinic acid (ALA)-induced changes in leaf chlorophyll and fluorescence of wheat (*Triticum aestivum* L.) Plants under water deficit conditions | 2013 | GCUF |
| 3 | Maryam Khan Roll # 5727Reg.# 2011-GCUF-04888 | 5-Aminolevulinic acid-induced changes in mineral nutrients accumulation in wheat (*Triticum aestivum* L.) plants under water stress | 2013 | GCUF |
| 4 | Amara IrshadRoll # 5695Reg.# 2011-GCUF-03844 | Does foliar-applied ascorbic acid improve mineral nutrients accumulation in canola (*Brassica napus* L.) plants under drought stress? | 2013 | GCUF |
| 5 | Shameem KausarRoll # 5785Reg.# 2011-GCUF-03815 | Role of 5-aminolevulinic acid (ALA) in oxidative defense system and yield of wheat (*Triticum aestivum* L.) plants under drought conditions | 2013 | GCUF |
| 6 | Hafiza Iqra IrfanRoll#. 7670Reg.#. 2012-GCUF-06734 | Trehalose-induced modulation in antioxidative defense system in radish (*Raphanus sativus* L.) plants subjected to water-deficit conditions | 2014 | GCUF |
| 7 | Sidra NoreenRoll# 7698Reg.# 2012-GCUF-06736 | Exogenous application of trehalose alter growth and some key physio-biochemical characteristics of radish (*Raphanus sativus* L.) plants under water-deficit conditions | 2014 | GCUF |
| 8 | Tabassum NoreenRoll# 7679Reg.# 2012-GCUF -06726 | Trehalose-induced alteration in mineral nutrients and osmoprotectants accumulation in radish (*Raphanus sativus* L.) plants under water-deficit conditions | 2014 | GCUF |
| 9 | Muhammad WaseemRoll# 7758Reg.# 2012-GCUF -06771 | Changes in enzymatic antioxidants and mineral acquisition of water stressed radish (Raphanus sativus L.) plants raised from seed treated with trehalose | 2014 | GCUF |
| 10 | Rabia AmeenRoll# 7731Reg.# 2012- GCUF-06702 | Modulations in some key physio-biochemical characteristics of water stressed radish (*Raphanus sativus* L.) plants raised from seed treated with trehalose | 2014 | GCUF |
| 11 | Majid Iqbal2011-GCUF-21200 | Effectiveness of nitric oxide in upregulation the antioxidative defense system in canola (*Brassica napus* L.) plants under water deficit conditions  | 2015 | GCUF |
| 12 | Atta Muhammad2013-GCUF-06259 | Response of growth and biochemical attributes of canola (*Brassica napus* L.) plants to exogenously applied 5-aminolevulinic acid under drought stress | 2015 | GCUF |
| 13 | Muhammad Imran2013-GCUF-05802 | Foliar spray of 5-Aminolevulinic acid induces changes in pea (*Pisum sativum* L.) plants under water deficit conditions | 2015 | GCUF |
| 14 | Sajida MahmoodRoll#: 1504 Reg.#: 2013-GCUF-06251 | Ascorbic acid induced changes in physio-biochemical attributes of pea (*Pisum sativum* L.) plants under water stress | 2015 | GCUF |
| 15 | Zarfishan Khan2013-GCUF-07249 | Changes in oxidative defence system of drought-induced pea (*Pisum sativum* L.) plant by foliar applied nitric oxide | 2015 | GCUF |
| 16 | M. Zeeshan Javed 2010-GCUF-3643-514102 | Nutrients aquisition and oxidative defence system of pea (*Pisum sativum* L.) plants subjected to water stress conditions | 2015 | GCUF |
| 17 | Ayaz Ali | Glycinebetaine-induced changes in plant growth and oxidative defence system of oat (*Avena sativa* L.) subjected to water stress | 2016 | GCUF |
| 18 | Muhammad Rashid | Exogenous application of proline alters growth and biochemistry of oat (*Avena sativa* L.) plants under water-deficit conditions | 2016 | GCUF |
| 19 | Samra | Influence of nitric oxide on growth and some physiological attributes of quinoa at low temperature stress | 2017 | GCUF |