

**CURRICULUM VITAE**  
**Dr. SAJID MAHMOOD NADEEM**



**NAME:** Sajid Mahmood Nadeem    **FATHER'S NAME:** Muhammad Rafiq

**DATE OF BIRTH:** Feb 10, 1974    **DISIGNATION** Associate Professor

**POSTAL ADDRESS:** UAF Sub-Campus, Chichawatni Road, Vehari

**PERMANENT ADDRESS:** Village & P. O. 119 J.B. Samana, Teh & Distt Faisalabad

**E-MAIL:** [smnadeem@uaf.edu.pk](mailto:smnadeem@uaf.edu.pk), [sajidmn92@hotmail.com](mailto:sajidmn92@hotmail.com)

**CNIC No.** 33100-0915602-5    **PHONE:** 0092 67 9239066    **CELL:** 0092 333 6533119

**Educational Qualification:**

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|---|-------------|--|
| <b>Post Doc (Environmental Microbiology)</b><br>Department of Environmental Sciences,<br>University of California, Riverside, USA | <b>2012</b> |  |
| <b>Ph.D. (Soil Science)</b><br>Institute of Soil and Environmental Sciences<br>University of Agriculture, Faisalabad              | <b>2008</b> |  |
| <b>MSc (Hons) Soil Science</b><br>Department of Soil Science<br>University of Agriculture, Faisalabad                             | <b>1999</b> | <b>(Ist. Div., 78%)<br/>(CGPA 3.73/4.00)</b> |
| <b>BSc (Hons) Soil Science</b><br>Department of Soil Science<br>University of Agriculture, Faisalabad                             | <b>1997</b> | <b>(Ist. Div., 78%)<br/>(CGPA 3.75/4.00)</b> |
| <b>FSc (Pre-Medical)</b><br><b>(B.I.S.E. Faisalabad)</b><br>Govt. College, Faisalabad   | <b>1992</b> | <b>(Ist. Div., 71%)<br/>(779/1100)</b>       |
| <b>Matriculation</b><br><b>(B.I.S.E. Faisalabad)</b><br>Subjects: Science Group<br>Govt. Pak. Model. High School, Faisalabad      | <b>1989</b> | <b>(Ist Div., 74%)<br/>(627/850)</b>         |

## **EXPERIENCE**

- Worked as Scientific Officer in a research project entitled "Farmers Participation, Technology Development and Transfer for Using Agricultural Drainage Water For Growing Grain Crops During Reclamation of Saline-Sodic Soils" at Dept. Soil Science, University of Agriculture Faisalabad, Pakistan
- More than eighteen years teaching and research experience at University of Agriculture, Faisalabad, Pakistan (D. G. Khan & Burewala Sub-Campuses)
- More than four years administrative experience as a Principal/Project Director of UAF Sub Campus Burewala

## **FORMAL TRAINING**

- Three months Computer (Software) training at Computer Centre Zila Council, Faisalabad, Pakistan.
- National Cadet Corp training at Govt College Faisalabad, September 6, 1989, to June 13, 1991
- Internet course at Department. Computer Science, University of Agriculture Faisalabad, Pakistan
- Basic I. T. Training from Punjab Leadership College, Dera Ghazi Khan, Pakistan

## **PROFICIENCY IN ENGLISH**

Good communication skills in English speaking, writing, reading and listening.

**FIELD OF STUDY:** Soil & Environmental Sciences

**AREA OF SPECIALITY:** Soil Microbiology & Biochemistry

## **RESEARCH DISCIPLINES OF INTEREST:**

- Plant growth under stress conditions
- Microbial interaction with plants under stress conditions/ Microbial ecology/diversity
- Soil chemistry with special reference to salt-affected soil and water quality in changing climatic conditions.

## **DISTINCTION IN EDUCATION/RESEARCH/AWARD**

- First division through out academic career
- Merit scholarship during BSc and MSc (Hons) degree program
- Research Productivity Award 2011, by Pakistan Council for Science and Technology
- Development of biofertilizer "Rhizogold Plus" for enhancing yield of cereals under salinity stress. Now it is available commercially.

## **ADMINISTRATIVE DUTIES PERFORMED**

- Principal/Project Director
- Academic coordinator
- Director Student Affairs
- Chairman Advisory and Disciplinary Committee
- Incharge Admission Committee
- Tutor of Tutorial Group Meeting (TGM)
- Class advisor of B.Sc. (Hons) Agriculture
- Senior tutor
- Organizer of Annual sport and Funfair
- Incharge Analytical Lab
- Convener Quality Assessment Cell
- Convener "The Agrarian Society"

- Incharge Motor pool
- Convener Ethical and Vigilance Committee
- Member Standing Purchase Committee
- Convener Standard Purchase Committee
- Convener Character Building Society

## **WORKSHOP/ FOREIGN TRAINING**

- "Project Formulation Workshop" organized by Pakistan Science Foundation at Bahauddin Zakariya University, Multan, Pakistan dated: 20-21 June 2012
- Participate in 3<sup>rd</sup> International Training Course on "Sustainable Management of Soil and Water" Resources, 02-13 July 2012, organized by International Agricultural Research & Training Center, Izmir, Turkey.
- Hand on Training "Soil, Water and Plant Analysis" 26<sup>th</sup> February to 1<sup>st</sup> March 2013 at Nuclear Institute for Agriculture & Biology, Faisalabad.
- Three Day Training Workshop of Program Evaluators/Experts of NAEAC Organized by Quality Assurance Agency in Collaboration with NAEAC (July 29-31, 2015) Islamabad.
- One day workshop on "Holding Effective Seminars: Engaging the Audience" organized by office of Research Innovation & Commercialization (ORIC) University of Agriculture, Faisalabad (January 12, 2016).
- Capacity Building Workshop. Organized by UAF Sub-Campus Burewala in collaboration with main campus.
- Three Day Training Workshop of Program Evaluators/Experts of NAEAC Organized by Quality Assurance Agency in Collaboration with NAEAC (July 29-31, 2016) Islamabad.
- One Day Seminar "Horizon-2020 Building a Science Bridge between the EU and Pakistan" organized by Pakistan Science Foundation at Bahauddin Zakariya University Multan dated:24-08-2017.
- Two days' workshop/training on "Effective Pedagogical Strategies for Lecturer and Assistant Professor". Quality Enhancement Cell (QEC), University of Agriculture, Faisalabad, November 17-18, 2022.

## **RESEARCH PROJECTS**

### **As a PI**

- Improving drought tolerance of maize through rhizobacteria containing ACC-deaminase and exopolysaccharides activity (**4.68 million**). Duration three years, Funded by HEC
- Improving salt tolerance in wheat through multi-strains bacterial consortium (**2.91 million**) Duration three years, Funded by HEC

### **As a CO-PI**

- Capacity building of small-scale farmers to enhance productivity and improve socio economic status through institutional outreach program. Funded by EFS-UAF (5.134 million) In Process

## **COUNTRY VISITED**

Turkey, Dubai, Oman, USA

## **PUBLICATIONS**

### **A. Thesis:**

**Sajid, M. N.** 2008. Inducing salt tolerance in cereals through rhizobacteria containing ACC-deaminase activity. Ph.D. dissertation, Institute of Soil & Environmental Sciences, University of Agriculture Faisalabad, Pakistan

**Sajid, M. N.** 1999. Reclamation response of saline sodic soils to  $EC_{iw}:SAR_{iw}$  ratio. M. Sc. Thesis, Institute of Soil & Environmental Sciences, University of Agriculture Faisalabad, Pakistan

### **B. Reports:**

Arshad, M., A. Khalid, M. Naveed and **S.M. Nadeem**. 2007. 2<sup>nd</sup> Annual Report of HEC-funded Project on “Inducing Salt Tolerance in Cereals through ACC deaminase Biotechnology”. Inst. Soil & Environ. Sci. Univ. Agri., Faisalabad, Pakistan.

**Nadeem, S.M.** 2012. Application of advanced molecular techniques to evaluate the effectiveness of environment friendly traits of rhizobacteria in stress agriculture. Post Doctorate Fellowship Report, University of California, Riverside, USA

**Nadeem, S.M.**, S. Nawaz and M Ayyub. 2018. Final report of HEC funded research project entitled: Improving Salt tolerance in Wheat through multi-strains bacterial consortium.

**Nadeem, S.M.**, Z.A. Zahir and M.A. Tufail. 2019. Final report of HEC funded research project entitled: Improving drought tolerance in maize through rhizobacteria containing acc-deaminase and exopolysaccharides activity

### **C. Book Chapter**

1. **Nadeem, S.M.**, M. Ahmad, Z.A. Zahir and M. Asharf. 2012. Microbial ACC-Deaminase Biotechnology: Perspectives and Applications in Stress Agriculture. In: D.K. Maheshwari, (ed) *Bacteria in Agrobiolgy: Stress Management*. Springer, Heidelberg, Germany.

2. **Nadeem, S.M.**, M. Naveed, Z.A. Zahir and H.N Asghar. 2013. Plant-Microbe Interactions for Sustainable Agriculture: Fundamentals and Recent Advances. In: N Arora (ed) *Plant Microbe Symbiosis: Fundamentals and Advances*. Springer, India.

3. **Nadeem S.M.**, M. Naveed, M. Ahmad and Z.A. Zahir. 2015. Rhizosphere bacteria for biomass production and improvement of stress tolerance: Mechanisms of action, applications and future prospects. In: N Arora (ed) *Plant Microbe Symbiosis: Applied Facets* Springer, India.

4. **Nadeem S.M.**, M. Ahmad, Z.A. Zahir and M.A. Kharal. 2016. Role of Phytohormones in Stress Tolerance of Plants. In: K.R. Hakeem and M.S. Akhtar. *Plant, Soil and Microbes: Mechanisms and Molecular Interactions*. Springer, Switzerland.

5. Ahmad M., **S.M. Nadeem**, M. Naveed and Z.A. Zahir. 2016. Potassium Solubilizing Bacteria and their Application in Agriculture. In: V.S. Meena, B.R. Maurya, J.P. Verma and R.S. Meena (eds). *Potassium Solubilizing Microorganisms for Sustainable Agriculture*. Springer, India

6. **Nadeem S.M.**, M. Y. Yahya., M. R. Waqas., R. Binyamin, S. Akhtar and Z.A. Zahir. 2017. Arbuscular Mycorrhizas: An Overview. In: Q-S Wu. *Arbuscular Mycorrhizas and Stress Tolerance of Plants*. Springer Singapore. Pp 1-24

7. **Zahir Z.A.**, S.M. Nadeem, M.Y. Khan, R. Binyamin and M.R. Waqas. 2018. Role of halotolerant microbes in plant growth promotion under salt stress conditions. In: M. Kumar, H. Etesami and V. Kumar (eds) *Saline soil-based agriculture by halotolerant microorganisms*. Springer Singapore

8. Naseer I., A. Maqshoof, **S.M. Nadeem**, I. Ahmad, Najm-ul-Sahar and Z.A. Zahir. 2019. Rhizobial Inoculants for sustainable agriculture: Prospects and

- applications. In: B. Giri, R. Prasad, Q-S Wu and A. Varma (eds) Biofertilizers for Sustainable Agriculture and Environment.
9. Ahmad M., **S.M. Nadeem** and Z.A. Zahir. 2019. Plant-Microbiome Interactions in Agroecosystem: An Application. In: V. Kumar, R. Prasad, M Kumar and D.K Choudhary (eds) Microbiome in Plant Health and Disease. Springer Nature Singapore
  10. Nazli, F., Najm-ul-Sahar, M.Y. Khan, M. Jamil, **S.M. Nadeem** and M. Ahmad. 2020. Soil Microbes and Plant Health. In: Inam Ul Haq and Siddra Ijaz. Plant Disease Management Strategies For Sustainable Agriculture through Traditional and Modern Approaches. Springer Nature Switzerland
  11. Mumtaz., MZ., M. Ahmad, K. Mehmood, AS Sheikh, A. A Malik, A. Hussain, **SM Nadeem** and ZA Zahir. 2022. Role of plant-growth rhizobacteria in combating abiotic and biotic stresses in plants. In: Arora, NK and B. Bouizgrane (Editors) Microbial Biotechnology for Sustainable Agriculture. Springer Nature, Singapore.
  12. Kanwal, N., Aqsa, MY Khan, M. Iqbal, MR Waqas, **SM Nadeem** and M Shaban. 2024. Green Technologies for restoration of degraded soil. In: HS Jatav and T Raza. Soil Health Management for Sustainable Development Goals. NIPA Genx Electronic Resources & Solution Ltd.
  13. Waqas MR., Z Ahmad, **SM Nadeem**, S. Farooq, R Kanwal, L Ali, MY Khan, MZ Waqas and MR Bukhari. 2024. Conservation approaches for enhancing crop production. In: HS Jatav and T Raza. Soil Health Management for Sustainable Development Goals. NIPA Genx Electronic Resources \* Solution Ltd.

#### **D. Research Papers**

1. Ghafoor, A., **S. M. Nadeem**, Anwar-ul-Hassan and M. Sadiq. 2001. Reclamation response of two different textured saline-sodic soils to  $EC_{iw}$ :  $SAR_{iw}$ . **Pak. J. Soil Sci. 19: 84-91.**
2. **Nadeem S. M.**, A. Ghafoor, G. Murtaza and Saifullah. 2002. Reclamation of dense saline-sodic soils through physical and chemical methods. **Pak. J. Soil Sci. 21: 67-71**
3. Nadeem, **S.M.**, I. Hussain, M. Naveed, H.N. Ashgar, Z.A. Zahir and M. Arshad. 2006. Performance of plant growth promoting rhizobacteria containing ACC-deaminase activity for improving growth of maize under salt-stressed conditions. **Pakistan Journal of Agricultural Sciences 43: 114-121.**
4. **Nadeem, S.M.**, Z.A. Zahir, M. Naveed, M. Arshad and S.M. Shahzad. 2006. Variation in growth and ion uptake of maize due to inoculation with plant growth promoting rhizobacteria under salt stress. **Soil & Environment 25: 78-84.**
5. **Nadeem, S.M.**, Z.A. Zahir, M. Naveed and M. Arshad. 2007. Preliminary investigation on inducing salt tolerance in maize through inoculation with rhizobacteria containing ACC-deaminase activity. **Canadian Journal of Microbiology 53: 1141-1149. (Impact factor 1.26)**
6. Mehboob, I., M. Naveed, A. Mahboob, S. M. Shahzad, M. A. Anjum and **S. M. Nadeem**. 2008. Influence of temperature and texture on potassium fixation by three differently textured series. **Life Sciences International Journal. 2: 753-759.**
7. Mehboob, I., A. Mahboob, M. Naveed, **S.M. Nadeem**, A. Anjum and S.M. Shahzad. 2008. Effect of texture and  $CaCO_3$  on K-fixation of applied potassium. *Life Sciences International Journal* 2: 678-683.
8. Naveed, M., R. Ahmad, M.A. Nadeem, **S.M. Nadeem**, K. Shahzad and M.A. Anjum. 2008. Effect of a new post emergence herbicide application in combination with

- urea on the growth, yield and weeds control of maize (*Zea mays* L.). **Journal of Agricultural Research** **46: 157-171.**
9. Zahir, Z.A., U. Ghani, M. Naveed, **S.M., Nadeem**, and M. Arshad. 2009. Comparative effectiveness of *Pseudomonas* and *Serratia* sp. containing ACC-deaminase for improving growth and yield of wheat under salt-stressed conditions. **Archives of Microbiology**. **191:415-24. (Impact factor 1.92)**
  10. **Nadeem, S.M.**, Z.A. Zahir, M. Naveed and M. Arshad. 2009. Rhizobacteria containing ACC-deaminase confer salt tolerance in maize grown on salt affected fields. **Canadian Journal of Microbiology**. **55:1302-1309. (Impact factor 1.26)**
  11. **Nadeem, S.M.**, Z.A. Zahir, M. Naveed, H.N. Asghar and M. Arshad. 2010. Rhizobacteria capable of producing ACC-deaminase and exopolysaccharides may mitigate the salt stress in wheat. **Soil Science Society of America Journal**. **74:533-542 (Impact factor 2.18)**
  12. **Nadeem, S. M.**, Z.A. Zahir, M. Naveed and M. Ashraf. 2010. Microbial ACC-deaminase: Prospects and applications for inducing salt tolerance in plants. **Critical Review in Plant Sciences**. **29: 360-393 (Impact factor 4.76)**
  13. Zahir, Z.A., S. S. Akhtar, M. Maqshoof, Safullah, **S.M. Nadeem**. 2012. Comparative effectiveness of *Enterobacter aerogenes* and *Pseudomonas fluorescens* for mitigating the depressing effect of brackish water on maize. **International Journal of Agriculture & Biology**. **14: 337-344 (Impact factor 0.94)**
  14. Jorquera, M. A., Baby Shaharoon, **S. M Nadeem**, Maria de la Luz Mora and David E. Crowley. 2012. Plant growth promoting rhizobacteria associated with ancient clones of creosote bush (*Larrea tridentata*). **Microbial Ecology** **64: 1008-1017 (Impact factor 3.27)**
  15. **Nadeem, S.M.**, B. Shaharoon, M. Arshad and David E. Crowley. 2012. Population density and functional diversity of plant-growth-promoting rhizobacteria associated with avocado trees in saline soils. **Applied Soil Ecology** **62: 147-154 (Impact factor 2.37)**
  16. **Nadeem, S.M.**, Z.A. Zahir, M. Naveed and S. Nawaz. 2013. Mitigation of salinity induced negative impact on growth and yield of wheat by plant growth promoting rhizobacteria in naturally saline conditions. **Annals of Microbiology** **63: 225-232 (Impact factor 1.54).**
  17. Safdar Hussain, Muhammad Ahmad, Saeed Ahmad, Javaid Iqbal, Muhammad Nasir Subhani, **Sajid Mahmood Nadeem**, Sagheer Atta and Muhammad Ibrahim. 2013. Improvement of drought tolerance in sunflower (*Helianthus annuus* L.) by foliar application of abscisic acid and potassium chloride. **Pakistan Journal of Nutrition** **12: 345-352**
  18. Safdar Hussain, M. Farrukh Saleem, Javaid Iqbal, **Sajid Mahmood Nadeem**, Muhammad Ahmad and Muhammad Ibrahim. 2013. Profitability assessment of abscisic acid application on sunflower (*Helianthus annuus* L.) hybrid under drought and well watered conditions. **Pakistan Journal of Nutrition** **12:448-454**
  19. Ahmad M, Zahir ZA, **Nadeem SM**, Nazli F, Jamil M, Khalid M. 2013. Field evaluation of *Rhizobium* and *Pseudomonas* strains to improve growth, nodulation and yield of mung bean under salt-affected conditions. **Soil Environ** **32:158–165**
  20. **Nadeem, S.M.**, M. Ahmad, Z.A. Zahir, A. Javaid, and M. Ashraf. 2014. The role of mycorrhizae and plant growth promoting rhizobacteria (PGPR) in improving agricultural productivity under stressful environments in plants. **Biotechnology Advances**. **32: 429–448 (Impact factor 9.60)**
  21. Ibrahim M., M. M. Maqbool, M. Ayub, M.I. Ahmad, M. Tahir, **M.S. Nadeem**, T. UIHaq, and M. M. Nadeem. 2014. Evaluating the forage yield and quality

- potential of different maize cultivars under different harvesting times. **International Journal of Modern Agriculture. 3: 1-6**
22. Ibrahim M., M. Ayubb, M. M. Maqbool, **S. M. Nadeem**, T. Haq, S. Hussain, A. Ali and L. M. Lauriault. 2014. Forage yield components of irrigated maize–legume mixtures at varied seed ratios. **Field Crops Research 169:140–144 (Impact factor 2.61)**
  23. Ahamd M., Z. A. Zahir, **S. M. Nadeem**, F. Nazli, M. Jamil and M. U. Jamshaid. 2014. Physiological response of mung bean to rhizobium and pseudomonas based biofertilizers under salinity stress. **Pak. J. Agri. Sci., 51: 557-564 (Impact factor 1.24)**
  24. Tanveer ul Haq, A. Ali, **S.M. Nadeem**, M. M. Maqbool and M. Ibrahim.2014. Performance of canola cultivars under drought stress induced by withholding irrigation at different growth stages. **Soil & Environ 33:43–50**
  25. Hussain S., M. F. Saleem, J. Iqbal, M. Ibrahim, M. Ahmad, **S. M. Nadeem**, A. Ali and S. Atta. 2015. Abscisic acid mediated biochemical changes in sunflower (*Helianthus annuus* L.) grown under drought and well-watered field conditions. **J Animal and Plant Science 25: 406-416 (Impact factor 0.549)**
  26. Malik M. A., **S. M. Nadeem**, M. Ibrahim and S. Hussain. 2015. Effective use of brackish water for improving soil properties and chickpea (*Cicer arietinum*) growth through organic amendments. **Soil & Environ 34: 65-74**
  27. Ahamd M, M.S.H Zeshan, M. Nasim, Z.A. Zahir, **S.M. Nadeem**, F. Nazli and M. Jamil. 2015. Improving the productivity of cucumber through combined application of organic fertilizers and *Pseudomonas fluorescens*. **Pak. J. Agri. Sci. 52:1011-1016 (Impact factor 1.24)**
  28. Imran M., M. Arshad, A. Khalid, F. Negm, B. Shaharoon, S. Hussain, **S.M. Nadeem** and D.E. Crowley. 2016. Yeast extract promotes decolorization of azo dyes by 1 stimulating azoreductase activity in *Shewanella* sp. Strain IFN4. **Ecotoxicology and Environmental Safety. 124: 42-49 (Impact factor 3.13)**
  29. **Nadeem SM**, M. Ahmad, · M Naveed, ·M. Imran, ZA Zahir, DE. Crowley. 2016. Relationship between in vitro characterization and comparative efficacy of plant growth promoting rhizobacteria for improving cucumber salt tolerance. **Archives of Microbiology. 198:379-87 (Impact factor 1.76)**
  30. Ahmad M., M. Jamil, Z.A. Zahir, **S.M. Nadeem**, M. Ali Kharal, A. Saeed, M.F. Akhtar, I. Ashraf. 2016. Effectiveness of *Pseudomonas fluorescens* and L-Tryptophan to improve seedlings growth of onion (*Allium cepa* L.). **Soil & Environ 35: 85-90**
  31. **Nadeem S.M.**, M Naveed, M Ayyub, M Yahya Khan, M Ahmad, ZA Zahir. 2016. Potential, Limitations and Future Prospects of *Pseudomonas* spp. for Sustainable Agriculture and Environment. A Review. **Soil & Environment. 35:106-145**
  32. Khakwani, A., M. Arshad, R. Waqas, M. B. Hussain, **S. M. Nadeem** and M. Imran. 2017. Comparative efficacy of bio-organic and mineral phosphate on growth, yield and economics of wheat (*Triticum aestivum* L.) grown by different methods. **Comm. Soil Sci. Plant Ana. 48: 73-82 (Impact Factor 0.59)**
  33. **Nadeem, S.M.**, M Imran, M. Naveed, M.Y. Khan, M. Ahmad, ZA. Zahir and DE. Crowley. 2017. Synergistic use of biochar, compost and plant growth-promoting rhizobacteria for enhancing cucumber growth under water deficit conditions. **J Sci Food Agri. 97:5139-5145 (Impact Factor 2.46)**
  34. Akhtar M. J, Sana Ullah, I. Ahmad, Abdul Rauf, **S.M. Nadeem**, M. Y. Khan, S. Hussain, L. Bulgariu. 2018. Nickel phytoextraction through bacterial inoculation in *Raphanus sativus*. **Chemosphere. 190: 234-242 (Impact Factor 4.22)**

35. Ahmad M, I. Ahmad, T.H. Hilger, **S.M. Nadeem**, M.F. Akhtar, M. Jamil, A. Hussain and Z.A. Zahir. 2018. Preliminary study on phosphate solubilizing *Bacillus subtilis* strain Q3 and *Paenibacillus* sp. strain Q6 for improving cotton growth under alkaline conditions. **Peer J**. DOI 10.7717/peerj.5122 (**Impact Factor 2.12**)
36. Sattar A, M Naveed, M Ali, Z.A. Zahir, **S.M. Nadeem**, M. Yaseen, V.S. Meena, M. Farooq, R. Singh, M. Rahman, H. N. Meen. 2019. Perspectives of potassium solubilizing microbes in sustainable food production system: A review. **Applied Soil Ecology** 133:146-159. (**Impact Factor 2.92**)
37. Perveen S., M. Yousaf, M. N. Mushtaq, N. Sarwar, M. Y. Khan and **S.M. Nadeem**. 2019. Bioherbicidal potential of some allelopathic agroforestry and fruit plant species against *Lepidium sativum*. **Soil Environ.** 38(1): 119-126
38. Binyamin R., **S.M. Nadeem**, S. Akhtar, M.Y. Khan and R. Anjum. 2019. Beneficial and pathogenic plant-microbe interactions: A review. **Soil & Environment**. 38(2). 127-150
39. **Nadeem S.M**, M. Ahmad, M.A. Tufail, H.M.N. Asghar, F. Nazli, and Z.A. Zahir. 2020. Appraising the potential of EPS-producing rhizobacteria with ACC-deaminase activity to improve growth and physiology of maize under drought stress. **Physiologia Plantarum**. 172:463-476 (**Impact Factor 4.15**)
40. Bashir M.A, X. Wang, M. Naveed, A. Mutafa, S. Ashraf, T. Samreen, **SM Nadeem** and M. Jamil. 2021. Biochar mediated-alleviation of chromium stress and growth improvement of different maize cultivars in tannery polluted soils. **Intl J Environ R Public Res**. 18:4461 (**Impact Factor 2.84**)
41. Raza T, M.Y. Khan, **S.M. Nadeem**, S. Imran, K. N. Qureshi, M. N. Mushtaq, M. Sohaib, A. Schmalenberger, N. S Eash. 2021. Biological management of selected weeds of wheat through co-application of allelopathic rhizobacteria and sorghum extract. **Biological Control** (Accepted) (**Impact Factor 3.68**)
42. Liaqat A, N. Manzoor, X. Li, M. Naveed, **SM Nadeem**, MR Waqas, M Khalid, A Abbas, T. Ahmed, B. Li, J Yan. 2021. Impact of corn cobs-derived biochar in altering soil quality, biochemical status and improving maize growth under drought stress. **Agronomy** (**Impact Factor 3.95**)
43. Liaqat A, W. Xiukang, M. Naveed, S Ashraf, **SM Nadeem**, F U Haider and A Mustafa. 2021. Impact of biochar application on germination behavior and early growth of maize seedlings: Insights from a growth room experiment. **Plant Sciences**. (**Impact Factor 3.95**)
44. Waqas, MR, **SM Nadeem**, MY Khan, Z Ahmad, L Ali, H N Asghar and A Khalid. 2022. Phycoremediation of textile effluents with enhanced efficacy of biodiesel production by algae and potential use of remediated effluent for improving growth of wheat. **Environ Sci Pollu Res**. 29(30):46118-46126. (**IF-5.19**)
45. Khan, MY, **SM Nadeem**, M. Sohaib, MR Waqas, F. Alotaibi, L. Ali. ZA Zahir and F. N.I. Al-Barakah. 2022. Potential of plant growth promoting bacterial consortium for improving the growth and yield of wheat under saline conditions. **Frontier of Microbiology**. 13: <https://doi.org/10.3389/fmicb.2022.958522> (**IF-6.06**)
46. Rafique, HM., MY Yahya, HN Asghar, ZA Zahir, **SM Nadeem**, M. Sohaib, F Alotaibi and FNI Al-Barakah. 2023. Converging alfalfa (*Medicago sativa* L.) and petroleum hydrocarbon acclimated ACC-deaminase containing bacteria for phytoremediation of petroleum hydrocarbon contaminated soil. **Intl J Phytoremediation**. 25 (6): 717-727 (**IF-3.65**)
47. Ali A., MY Khan, ZA Zahir, HN Asghar, A Muhmood, M Rashid, Z Aslam, SA Javed, **SM Nadeem**. 2023. Plant growth-promoting bacterial consortia improved

- the physiology and growth of maize by regulating osmolytes and antioxidants balance under salt-affected field conditions. *Heliyon*. 9 e17816
48. Ahmad Z., MR Waqas, MY Khan, A Hameed, T Athar, **SM Nadeem**, M Nadeem and M Shafique. 2023. Value-added organic fertilizer with salicylic acid and naphthyl acetic acid improves the tomato quality and productivity in saline-sodic conditions. *Soil Environ*. 42(1): 56-64.
  49. Khan MY., Z. Ahmad, MR Waqas, **SM Nadeem**, SA Hameed and M. Iqbal. 2023. Phosphate solubilization inoculation on seeds and fertilizers for improving wheat yield in semiarid field conditions. *Soil Environ*. 42(1): 56-64
  50. **Nadeem SM.**, MY Khan, MR Waqas, M Naveed, L Ali. 2023. Elemental sulphur with sulphur oxidizing bacteria enhances phosphorus availability and improves growth and yield of wheat in calcareous soil. **Arch Agron Soil Sci**. 69: 1494-1502 (IF-2.24)
  51. Saleem K., MA Asghar, HH Javed, A Raza, MF. Seleimane, AbdUllah, A Rahman, S Iqbal, A Hanif, S Imran, **SM Nadeem**, J Duc, G Kocsy, A Riaz, JWH Yongh. 2023. Alleviation of arsenic toxicity-induced oxidative stress in lemon grass by methyl jasmonate. *South African J Botany*. 160: 547-559
  52. Saleem K., MA Asghar., A. Raza., K. Pan, Abd Ullah, HH Javed, MF. Seleiman, S Imran, **SM Nadeem**, KS Khan, J Du, F Xu, G Kocsy, KHM Siddique, A Riaz. 2023. Alleviating drought stress in strawberry plants: unraveling the role of paclobutrazol as a growth regulator and reducer of oxidative stress induced by reactive oxygen and carbonyl species. *J Plant Growth Regul*. 9: 3238-3253
  53. Ashraf MR, LA Khan, S Ahmed, MU Iqbal, **SM Nadeem**, G M, SZ Khan, S Ahmad, A Masroor. 2024. Validation of different control strategies (chemical and biological) for the reduction of whitefly for better cotton production. *Eur. Chem. Bull*. 13(Regular Issue 06), 238-245.
  54. Dar, A., U. Habiba, MT. Jaffar, M. Ahmad, A, Hussain, U. Farooq, **S.M. Nadeem**, M.Z. Mumtaz, U. Zulfiqar, AMA. Mustafa and MS. Elshikh. 2024. Suppression of Canary grass (*Phalaris minor*) with simultaneous use of rhizobacteria and sunflower allelopathy. *Rhizosphere*. 32:1-11

### **E. Proceedings**

1. **Nadeem, S. M.**, I. Hussain, M. Naveed, H. N. Asghar, Z. A. Zahir and M. Arshad. 2007. Performance of PGPR containing ACC-deaminase activity for improving growth of maize under saline conditions. Proceeding of the International Symposium on Microbial Technologies for Sustainable Agriculture: Exploring the hidden potentials of microbes. March 12-16, 2007, NIBGE, Faisalabad, Pakistan.
2. Zahir, Z. A., **S. M. Nadeem**, M. Naveed and H. N. Asghar. 2010. Mitigation of salt stress in maize through rhizobacteria containing ACC-deaminase in salt affected fields. Proceedings of International Conference on Management of Soils and Groundwater Salinization in Arid Regions. January 11-14, 2010, Sultan Qaboos University, Muscat, Oman.

### **F. Paper Presented/Accepted in National and International Conferences/Seminars**

1. **Nadeem, S.M.**, I. Hussain, M. Naveed, H.N. Asghar, Z. A. Zahir and M. Arshad. 2007. Performance of PGPR containing acc-deaminase activity for improving growth of maize under saline conditions. International Symposium on "Microbial Technologies for Sustainable Agriculture. National Institute of Biotechnology & Genetic Engineering, Faisalabad, Pakistan. March 12-16, 2006. (Abstract, 72p.).

2. **Nadeem, S.M.**, Z.A. Zahir, M. Naveed, H.N. Asghar, M. Khalid and M. Arshad. 2008. Rhizobacteria carrying ACC-deaminase activity can mitigate the salt stress in cereals. 12th Cong. Soil Sci. Peshawar, 20-23 October, 2008. (Abstract, 52-53p).
3. **Nadeem, S.M.**, Z.A. Zahir, M. Naveed and M. Arshad. 2008. Salinity tolerance in wheat through inoculation with rhizobacteria containing ACC-deaminase. Int. Symp. Modern Approaches and Techniques in Agriculture to Ensure Food Security in Pakistan. 13-14 October, 2008, University of Agriculture Faisalabad. (Abstract, 77p).
4. **Nadeem, S.M.**, Z.A. Zahir, M. Naveed, M. Khalid, M.J. Akhter and M. Arshad. 2008. Differential response of etiolated pea and maize seedlings to inoculation with rhizobacteria capable of utilizing 1-aminocyclopropane-1-carboxylate (ACC) under salt-stressed conditions. Int. Conf. Plant Scientists [10<sup>th</sup> National Meeting of Plant Scientists] at University of Agriculture Faisalabad, 21-24 April, 2008. (Abstract, 54p).
5. **Nadeem, S.M.**, Z.A. Zahir, M. Naveed, S. Nawaz and M. Khalid. 2008. Plant growth promoting rhizobacteria for enhancing growth and nutrient uptake in wheat under salt stressed conditions. Int. Conf. Advances in Agriculture: Prospectus and Potential of natural Resources in food security at University of Azad Jammu & Kashmir, Rawlakot, Azad Kashmir. 13-15 July, 2009
6. **Nadeem, S.M.**, S. Nawaz, Z.A. Zahir and M. Naveed. 2008. Rhizobacteria capable of producing ACC-deaminase can mitigate salt stress in wheat. 9<sup>th</sup> Biennial Conference: Advances in Biochemistry and Molecular Biology. Pir Mehr Ali Shah Arid Agriculture University Rawalpindi, Pakistan. 17-20 December, 2008. (Abstract, 54p).
7. **Nadeem S.M.**, Zahir, Z.A., U. Ghani, M. Naveed, and M. Arshad. 2009. Comparative effectiveness of *Pseudomonas* and *Serratia* sp. containing ACC-deaminase for improving growth and yield of wheat under salt-stressed conditions. Int. Conf. on Plants and Environmental Pollution at Erciyes University-Kayseri, Turkey. 6-11 July, 2009.
8. Zahir, Z.A., **Nadeem S.M.**, M. Naveed, and H.N. Asghar. 2009. Inducing salt tolerance in cereals through inoculation with rhizobacteria containing ACC-deaminase. Int. Conf. on Plants and Environmental Pollution at Erciyes University-Kayseri, Turkey. 6-11 July, 2009.
9. **Nadeem, S. M.**, Z. A. Zahir, M. Naveed, S. Nawaz and I. Mehboob. 2010. Rhizobacteria capable of producing acc-deaminase and exopolysaccharides partially eliminate the salt stress in wheat. Intl. Conf. on Management of Soil and Ground Water Salinization in Arid Regions. Sultan Qaboos University Musqat, Oman. 11-14 January, 2010.
10. **Nadeem, S. M.**, Z. A. Zahir and S. Nawaz. 2010. Plant growth promoting rhizobacteria containing ACC-deaminase facilitate germination, growth and yield of wheat in the presence of salts. 13<sup>th</sup> Congress of Soil Science on Efficient Resource Management For Sustainable Agriculture. 24-27 March, Serena Hotel, Faisalabad.
11. **Nadeem, S.M.**, B. Shaharoon and D.E. Crowley. 2012. Ecology of functionally diverse plant-growth-promoting rhizobacteria indigenous to saline avocado orchard soils in Southern California. 14<sup>th</sup> Congress of Soil Science. Soil Science: Service to mankind. 12-15 March, 2012, Expo center Lahore, Pakistan.
12. **Nadeem S.M.**, Tanveer ul Haq, Safdar Hussain, Muhammad Ibrahim and Javaid Iqbal. 2013. Evaluation of drought tolerance in canola genotypes at different growth

stages. International Conference "Crop Management in Changing Climate" February 11-13, 2013 at University of Agriculture, Faisalabad

13. **Nadeem S.M.**, Muhammad Ibrahim, Tanveer ul Haq and Matloob Ahmad. 2013. Efficacy of environmental friendly approaches for sustainable crop production under harsh climatic conditions. National Conference "Food Security in Arid Environment" 25-26 March, 2013, at College of Agriculture, Layyah, Bahadur Sub campus Bahauddin Zakariya University, Mutan
14. **Nadeem S.M.**, R. Waqas, S. Akhtar and M.A. Hashmat. Plant growth promoting rhizobacteria: An environment friendly population for promoting plant growth under stress conditions. 2<sup>nd</sup> National Conference on "Advancement In Sciences & Research" 17th March, 2014 at COMSATS Institute of Information & Technology, Vehari.
15. **Nadeem S.M.** and M. Ahmad. Bacterial characterization under stress condition and their comparative efficacy to improve salt tolerance of cucumber. 15<sup>th</sup> Congress of Soil Science "Soil Science: Service to mankind".18-20, 2014, National Agriculture Research Centre, Islamabad.
16. **Nadeem S.M.**, M.R. Waqas, M.Y. Khan and M.A Tufail. 2016. Evaluating the effectiveness of rhizobacteria containing ACC-deaminase and exopolysaccharides for enhancing maize drought tolerance. 15<sup>th</sup> Congress of Soil Science "Healthy Soil for Food Security".15-17, 2016, PMAS Arid Agriculture, University, Rawalpindi.
17. **Nadeem S.M.**, M. Ayyub, M.R. Waqas and M.Y. Khan. 2016. Improving salt tolerance in wheat through multi-strain bacterial consortium. 15<sup>th</sup> Congress of Soil Science "Healthy Soil for Food Security". March 15-17, 2016, PMAS Arid Agriculture University, Rawalpindi.
18. **Nadeem S.M.**, M.Y. Khan, M.R. Waqas and S. Nawaz. 2016. Impact of multi-strain bacterial consortium for enhancing salt tolerance of wheat (*Triticum aestivum*). 1<sup>st</sup> International Salinity Conference, December 19-21, 2016 PMAS Arid Agriculture University, Rawalpindi
19. Khan M.Y, **S.M. Nadeem**, M. Naveed, M.R. Waqas and K. N. Qureshi. 2018. Application of organic amendment with low pH improves the growth and yield of maize. 1st International Conference on "Soil and Crop Health in Changing Climate" 28-29 November-2018, MNS University of Agriculture, Multan

#### **G. Articles in Native Language (Urdu)**

- 1) The reasons for genesis of salt-affected soil
- 2) The basic information about fertilizers
- 3) Irrigation, water quality for crops and use of brackish water
- 4) Green crops on salt-affected soils
- 5) The growth of maize and wheat on salt-affected soil through rhizobacteria: an environmental friendly technology

#### **REFERENCES**

**Dr. Zahir Ahmad Zahir**

Professor

Institute of Soil and Environmental Sciences,  
University of Agriculture, Faisalabad, Pakistan.

Phone: 92-41-9201092 Fax: 92-41- 9201221

E-mail: [zazahir@yahoo.com](mailto:zazahir@yahoo.com)

**Dr. Shafqat Nawaz**

Professor  
Ex-Dean Faculty of Agriculture, Ghazi University, Dera Ghazi Khan.  
Phone: 92-64-9239072  
E-mail: [shafqat\\_nawaz@hotmail.com](mailto:shafqat_nawaz@hotmail.com)