

CURRICULUM VITAE

PROF. DR. ZAHIR SHAH

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PERSONAL: DOB: October 11, 1959

EDUCATION

- i. **Post doc in Soil Microbiology and Plant Nutrition under the Fulbright Fellowship** at Colorado State University, **USA** (September 2003-August 2004).
- ii. **Post doc in Soil Science under the Commonwealth Academic Staff Fellowship** programme, University of Wales Aberystwyth, U.K (January-October 1995)
- iii. Ph.D degree in Soil Science, University of Wales, Aberystwyth, U.K (1989).
- iv. M.Sc (Hons) degree Soil Science, **First Division** and **First Position**, NWFP Agricultural University, Peshawar (1983).
- v. B.Sc (Hons) degree in Soil Science, **First Division** and **First Position**, NWFP Agricultural University, Peshawar (1981).
- vi. F.Sc Agriculture Certificate, **First Division** and **First Position**, Faculty of Agriculture, University of Peshawar (1978).
- vii. Secondary School Certificate, **First Division**, Government High School, Kot, Malakand Agency (1976).

PROFESSIONAL EXPERIENCE:

- i. **Professor (BPS-21)**, Department of Soil & Environmental Sciences, The University of Agriculture, Peshawar (3.2.2016-onward).
- ii. **Professor TTS (BPS-21)**, Department of Soil & Environmental Sciences, The University of Agriculture, Peshawar (6.2.2013-2.2.2016).
- iii. **Professor (BPS-21)**, Department of Soil & Environmental Sciences, The University of Agriculture, Peshawar (13.1.2007-5.6.2013).
- iv. **Professor (BPS-20)**, Department of Soil & Environmental Sciences, NWFP Agricultural University, Peshawar (9.8.2001-12.1.2007).
- v. **Associate Professor (BPS-19)**, Department of Soil Science, NWFP Agricultural University, Peshawar (26.3.1998-8.8.2001).
- vi. **Assistant Professor (BPS-18)**, Department of Soil Science, NWFP Agricultural University, Peshawar (10.5.1990-25.3.1998).

- vii. **Lecturer (BPS-17)**, Department of Soil Science, NWFP Agricultural University, Peshawar (1.10.1984 to 9.5.1990).
- viii. **Soil Conservation Officer (BPS-17)**, Soil Conservation Wing of Agricultural Engineering Department, Government of NWFP (24.11.1983 to 30.9.1984).

ADMINISTRATIVE EXPERIENCE

1. **Dean/Focal Person**, Faculty of Crop Production Sciences, The University of Agriculture, Peshawar (since 27.12.2017 to-date).
2. **Executive Director**, Endowment Fund Secretariat, The University of Agriculture, Peshawar (18 June 2014 to 30.1.2018). The Endowment Fund Secretariat is responsible to award competitive grants to scientists of public sector organizations through open competition that promote and support agricultural research and development activities having direct impact at field level. The Executive Director is responsible for the management of all such projects that include funding, evaluation and monitoring of projects.
3. **Director**, Financial Assistance & Development (FAD), The University of Agriculture, Peshawar (18 June 2014 to 30.1.2018). The Director FAD is responsible for the award of various merit and need based scholarships to the students of Agriculture University. The major funding agencies are USAID, HEC, British Council, Professional Education Foundation, FATA, Pakistan Baitulmal and many others. Most of the scholarships cover both tuition fee and maintenance allowance during the whole degree program of a student. We annually award more about 1000 scholarships to the needy and deserving students.
4. **Chairman**, Department of Soil and Environmental Sciences, The University of Agriculture, Peshawar (May 2011 to June 2014). Chairman is the Chief Executive of the department and is responsible to administer the whole academic activities and maintain discipline in the department.
5. **Chief Proctor** of the University in 2003 and 2004. Chief proctor is responsible to maintain discipline both in students, staff and faculty in the university
6. **President of Soil Science Society of Pakistan** (active national professional society of more than 800 active members established in 1970s) for years 2013, 2014 and 2016.
7. **Principal Investigator of 15 national and international research projects** since 1991 and each project involved field and lab research as well as financial and staff management.
8. **Convener**, Investment Committee, The University of Agriculture, Peshawar (2014 to date). The Convener is responsible to look-after the investment of the university fund in any of the scheduled banks at the best possible rate.
9. **Convener**, Unfair Means Committee (UFM), The University of Agriculture, Peshawar (2012 to June 2017). The Convener UFM is responsible to deal with all unfair means cases that students are using during their exams. Each and every case is heard and decisions are made accordingly.
10. **Convener**, Students Tour Committee, The University of Agriculture, Peshawar (2014 to date). The Convener is responsible to arrange study tours for all students of the university.

PROFESSIONAL RECOGNITION

A. AWARDS/HONOURS

- i. Obtained **GOLD MEDAL** in B.Sc (Hons).
- ii. Obtained **PRESIDENT OF PAKISTAN AWARD** in B.Sc (Hons).
- iii. Obtained **GOLD MEDAL** in M.Sc (Hons).
- iv. Recipient of **Quaid e Azam scholarship**.
- v. Recipient of **Commonwealth Academic Staff Fellowship (U.K)**.
- vi. Recipient of **Fulbright Post Doctoral Fellowship (USA)**.
- vii. Recipient of **Best University Teacher Award** for Year 2007 from HEC Islamabad.
- viii. Recipient of **Distinguished Soil Science Service Award** from Soil Science Society of Pakistan.
- ix. Recipient of **Research Productivity Award** for 2010 from Pakistan Council for Science and Technology, Islamabad.
- x. Recipient of **Research Productivity Award** for 2011 from Pakistan Council for Science and Technology, Islamabad.
- xi. Recipient of **Research Productivity Award** for 2012 from Pakistan Council for Science and Technology, Islamabad.
- xii. Recipient of **Research Productivity Award** for 2013 from Pakistan Council for Science and Technology, Islamabad.

B. Distinctions:

Obtained **DISTINCTION CERTIFICATE** on account of obtaining **FIRST CLASS FIRST POSITION** in all examinations from F.Sc Agric. through M.Sc (Hons) in agriculture.

C. Membership of International Bodies

- International Society of Soil Science (since 1990)
- American Society of Agronomy/Soil Science Society of America (2003-2004)
- Australian Society of Agronomy (2014-2015)
- Life Member of British Alumni Association

D. Fellowship/Membership of Local Bodies

- Soil Science Society of Pakistan (Life member).
- Pakistan Society for Microbiology (2002+)

- Pakistan Society of Agronomy (2002+)
- Pakistan Association for the Advancement of Science (2002+)
- Executive member, Soil Science Society of Pakistan (1992-1993).
- Vice President, Soil Science Society of Pakistan (1997-1998).
- Member Board of Studies, PBG, AUP, Peshawar.
- Member Board of Studies in Soil & Environ. Science, AUP, Peshawar.
- Member Board of Faculty of Crop Production Sciences, AUP, Peshawar (1999-2000).
- Member Board of Studies in Agronomy, AUP, Peshawar (2008-2011).
- General Secretary, Re-entry Committee, AUP (1991-94)
- Member Syndicate NWFP Agricultural University, Peshawar (2000- 2001).
- Vice President, Soil Science Society of Pakistan (2000-2004).
- General Secretary, Soil Science Society of Pakistan (2005-06).
- Editor, Soil Science Newsletter of SSSP (2007-2009).
- President, Agricultural University Teachers Association (2007-2008).
- Editor, Soil and Environment (2009+).
- Managing Editor, Sarhad Journal of Agriculture (2010+).
- Vice President, Soil Science Society of Pakistan (2011-2012).
- Chairman, Department of Soil & Environ. Science, AUP, Peshawar (2010+).
- President, Soil Science Society of Pakistan (2013 & 2014)
- President Soil Science Society of Pakistan (2016)
- Member Board of Studies, University of Haripure (2015 todate)
- Member Board of Studies, Faculty of Agriculture, University of Poonch, AJK) (2014 todate)
- Member Board of Studies, Institute of Natural Resources, NARC Islamabad
- Subject Specialist on Selection Board of Abdul Wali Khan University
- Subject Specialist on Selection Board of University of Haripur
- Subject Specialist on Selection Board of University of Swat
- Subject Specialist on Board of Pakistan Agriculture Research Council, Islamabad
- External PhD Examiner on panel of UPM, Malaysia
- External PhD Examiner on panel of UKM, Malaysia
- External PhD Examiner on panel of University of Malaya, Malaysia
- External PhD Examiner on Panel of Muzaffarabad University, AJK
- External PhD Examiner on Panel of University of Poonch, AJK
- External PhD Examiner on Panel of Gomal University, DI Khan

SPECIAL ACHIEVEMENTS

- Established the Endowment Fund Secretariat at the University of Agriculture, Peshawar and successfully awarded 10 projects on technology transfer for the first time to Scientists of public sectors including Atomic Energy Commission (NIFA), Agriculture Research System (KP) and Agriculture University, Peshawar.
- Established Soil Microbiology Lab at the Department of Soil & Environmental Sciences, The University of Agriculture, Peshawar.
- Established facility for measuring total N, NH₄-N and NO₃-N in soil/plant samples in the department.
- Established facility for measuring biological N₂ fixation in legumes in the department.
- Quantified biological N₂ fixation in various legumes for the first time in Pakistan.
- Developed recipe for converting different wastes into a compost.
- Organized two International Workshops at Agricultural University, Peshawar viz.,
 - 1) *Methods to Measure Legume Nitrogen Fixation* on 9-19 October 1994. Researchers from New South Wales Australia, CSIRO Australia, ICARDA Syria, ICRISAT India, Nepal, Nigeria and from various Agricultural Universities and Research Organizations within the country participated in this course, and
 - 2) *Soil Organic Quality Measurement and Laboratory Quality Assurance* on Nov 11-22, 1997. In this workshop, the resource person was Dr. Graeme Schewenki from New South Wales Tamworth Centre for Crop Improvement, Australia and the participants were mostly researchers from ACIAR funded projects.

RESEARCH/OUTREACH PROJECTS

Projects completed/On-going:

- i. "Improving Plant-Microbe Interactions Through Biochar Applications for Sustainable Crop Production in degraded soils" by Pakistan Agriculture Research Council, Islamabad (2016+).
Total Grant: Rs. 3,673,000/-.
- ii. "Strengthening and up-gradation of SES Lab and Library" funded by HEC for a period of one year (2014-15).
Total Grant: Rs. 925,552 /-.
- iii. "Short term skill development courses under Prime Minister's Hunarmand Program" funded by National Vocational and Technical Training Commission (NAVTTTC) through NARC/PARC Islamabad (2012-2014).
Total Grant: Rs. 3,200,600/-.

- iv. "Bioremediation of industrial wastewater through micro-algae" funded by Higher Education Commission Islamabad for a period of four years (2009-2013).
Total Grant: Rs. 1,838,998/-.
- v. "Micronutrients management in apple and citrus orchards in Swat valley" was funded by PARC Islamabad under ALP program for a period of years (2006-2009).
Total Grant: Rs. 3,829,000/-.
- vi. "Development of sustainable rice-wheat cropping system through management of legumes" by Pakistan Science Foundation, Islamabad for a period of 3 years (2002-2006).
Total Grant: Rs. 384,499/-.
- vii. "Recycling of organic wastes for sustainable agricultural production" is being funded by PARC Islamabad under ALP program for a period of about five years (2001-2006).
Total Grant: Rs. 1,642,000/-.
- viii. "Management of legume nitrogen fixation for irrigated wheat production" funded by the NWFP AUP/UGC Islamabad for a period of 2 years (2001-2002).
Total Grant: Rs. 214,000/-.
- ix. "Enhancing wheat productivity through management of legume N₂ fixation in irrigated environment" was funded by the University Grants Commission, Islamabad for a period of 2 years (1999-2000).
Total Grant: Rs. 346,000/-
- x. "Sustainable legume-cereal production systems through management of N₂ fixation" is being funded by ACIAR for a period of 5 years (1998- 2002).
Total Grant: A\$ 162,960/-.
- xi. "Fate of nitrogen-15 fertilizer in soil-plant system as influenced by nitrification inhibitor" was funded by Pakistan Science Foundation for a period of three years (1994-97).
Total Grant: Rs. 430,000/-.
- xii. "Management of legume nitrogen fixation for rain-fed cereal production in Pakistan, Nepal and Australia" was funded by ACIAR (Australian Centre for International Agriculture Research), Australia for a period of 4 years (1994-1997).
Total Grant: A\$ 156,450/-.
- xiii. "Enhancing fertilizer use efficiency and crop productivity in soils of Mardan SCARP area" sponsored by USAID TIPAN Project/NWFP Agric Univ Peshawar (1993-94).
Total Grant: Rs 30,000/-.
- xiv. "Nitrification inhibition property of some indigenous plant materials and their influence on yield of different crops" was funded by the Islamic Educational Scientific and Cultural Organization (ISESCO), Morocco for 4 years (1992-95).
Total Grant: US\$ 12,000/-.
- xv. "Nitrification rate of nitrogenous fertilizers in soils of Mardan SCARP area" was sponsored by USAID TIPAN Project/NWFP Agricultural University Peshawar (1991).
Total Grant: Rs 30,000/-.

RESEARCH SCHOLARS SUPERVISED

Ph.D Scholar Supervised

Completed as Major Advisor:

1. Strategies for improving wheat productivity and soil organic in irrigated and rain-fed environments (Wisal Mohammad, PhD Scholar, Department of Soil & Environmental Sciences, 2003)
2. Management of legumes for improving soil organic fertility and crop productivity in the rice-wheat system (Syed Rashid Ahmad, PhD Scholar, Department of Soil & Environmental Sciences, 2010)
3. Microbial dynamics of salt affected soils (Syed Asif Shah, PhD Scholar, Department of Soil & Environmental Sciences, 2014)
4. Organic wastes management for improving crop yields and environmental quality (Samreen Shehzadi, PhD Scholar, Department of Soil & Environmental Sciences, 2015)

Completed as Member/Co-supervisor:

1. Effect of lignitic coal derived humic acid on growth and yield of wheat and maize in alkaline (Muhammad Sharif, Ph.D student, Department of Soil & Environ Sci. 2002)
2. Carry over effect of crop management techniques and nitrogen on the yield of maize (Habib Akbar, Ph.D student, Department of Agronomy, 2003)
3. Management of cropping system and crop residue for sustainable cereal production (Muhammad Shafi, Ph.D student, Department of Agronomy, 2003)
4. Organic and inorganic nitrogen management for wheat and its residual effect on subsequent maize (Abdul Bari, Ph.D student, Department of Agronomy, 2003).
5. Managing tillage, organic and inorganic nitrogen in wheat (Ahmad Khan, Department of Agronomy, 2009)
6. Micronutrients (Zn, B) and temperature conditioning influence the pre and post-harvest performance of sweet orange (Muhammad Sajid, Department of Horticulture, 2010).
7. Genetic and molecular analysis of nodulation in chickpea (*Cicer arietinum* L.) (Rozina Gul, Department of PBG, June 2010)
8. Evaluation of fruit quality and amelioration of fruit cracking in Litchi (*Litchi chinensis* Sonn.) cultivars through water and nutrient management (Ihsanul Haq, Horticulture, July 2011)
9. Effect of seed priming on emergence, growth, yield and in-store biochemical changes in Okra seed (Inayat ur Rahman, Department of Horticulture, 2011)
10. Enhancing efficiency of organic and inorganic N fertilizers through beneficial microbes using wheat crop (Haji Muhammad, Department of Agronomy, 2012 or 13 or 14)
11. Integrated use of organic and inorganic fertilizers in wheat and their residual effect on

- subsequent mungbean (Sajjad Khan, Department of Agronomy, 2013 or 14)
12. The influence of seed priming with P and Zn solutions and its optimization with respect to rate and duration on yield of cereals (Abdus Samad, Department of SES, 2014)
 13. Organic and inorganic N fertilizer management for rice under rice-wheat cropping system (Hidayatullah, Department of Agronomy, April 2014)
 14. Zinc and phosphorus management for rice under rice-wheat cropping system (Inamullah, Department of Agronomy, January 2014).
 15. Nitrogen management in dual purpose canola under varying planting densities (Sajjad Zaheer, Department of Agronomy June 2015).
 16. Formulation of carrier bio-inoculant and its evaluation on maize (*Zea mays* L.) (Tosif Tabassam, Deptt: NRM NARC Islamabad, 2016).
 17. Growth dynamics and nitrogen use efficiency of various wheat varieties under different nitrogen levels (Gul Naz, Department of Agronomy, 2017).
 18. Genetic analysis for nitrogen use efficiency and yield associated traits in bread wheat (Fahimullah Khan, Department of PBG, 2017).

Ph.D in Progress as Major Advisor:

1. Enhancing yield and quality of citrus (Sweet orange) through management of micronutrients (Zn, B) (Mr. Yousaf Noor, Thesis approved by Board of Studies in its meeting held in January 2017 and ready for evaluation by foreign experts).
2. Characterization and evaluation of rhizobacteria isolated from peas (Mr. Abdur Rehman, Thesis approved by Board of Studies in its meeting held in January 2017 and ready for evaluation by foreign experts)
3. Plant-microbes interaction through use of biochar (Ms. Zubaria Malik, course work completed, research in final stages)
4. Integrated effect of rhizobial inoculums and inorganic fertilizers on nutrients mineralization and growth of wheat crop (Mr. Muhammad Adnan, course work completed and research in progress).
5. Integrated management of nutrients and biochar for off-season vegetables in high tunnels under two irrigation systems (Mr. Naseem Khan; course work completed and research in progress)
6. Mr. Muhammad Arshad (Research yet to begin)

M.Phil/M.Sc (Hons) Scholars Supervised:

Completed as Major Advisor:

1. Fate of fertilizer nitrogen applied to soil and its effect on yield and yield components of

- maize. Department of Soil Science, NWFP AU Peshawar, (Mr. Rashid Ali, 1992).
2. Nitrogen mineralization potential of soils of Peshawar Valley. Deptt. of Soil Science, NWFP AU Peshawar, (Mr. Hamidullah, 1993).
 3. Nitrification rate of nitrogenous fertilizers in soils of Mardan SCARP area. Department of Soil Science, NWFP AU Peshawar, (Mr. M. Anwar, 1993).
 4. Testing indigenous plant materials for nitrification inhibition property. Department of Soil Science, NWFP AU Peshawar, (Mr. Arshad Islam, 1993).
 5. Microbial activity in soil as influenced by a fungicide. Department of Environmental Planning & Management, University of Peshawar, (Mr. Salim Ullah, 1993).
 6. Enhancing fertilizer use efficiency and wheat productivity in soils of Mardan SCARP area. Department of Soil Science, NWFP AU Peshawar, (Mr. Fazal ur Rehman, 1994).
 7. Evaluation of indigenous plant materials for the nitrification inhibition property in soils of Peshawar valley. Department of Soil Science, NWFP AU Peshawar, (Mr. Abdul Faheem, 1997).
 8. Effect of indigenous plant materials on fertilizer use efficiency and yield of maize. Department of Soil Science, NWFP AU Peshawar, (Mr. Abdul Qadir Jilani, 1998).
 9. The role inoculation in lentil production in northern NWFP. Department of Soil Science, NWFP AU Pesh (Mr. Razaullah, 1999).
 10. Effect of pesticides on microbial activity in soil. Department of Environmental Sciences, Peshawar Univ (Ms Shazia Ishrat, 1999).
 11. Effect of potassium, zinc and boron on yield of maize in Swat. (Mr Mohammad Saeed, 2000)
 12. Evaluation of summer legumes for yield and N₂ fixation using different approaches Department of Soil Science, NWFP AU Pesh (Mr. Rafiq-ur Rehman, 2001).
 13. Denitrification potential of paddy fields in Swat and Peshawar Valleys. (Mr. Dost Muhammad, M.Sc student, 2001).
 14. Microbial activity and N transformation in soil as influenced by pesticides. (Ms Sadia Sherazi and Ms Saima Suleman, M.Sc students Department of Environmental & Planning Management, PU; 2001).
 15. Evaluation of crop residues for potentially available N and their effect on microbial activity. (Mr. Ahmad Ali Khan, M.Sc student, 2002).
 16. Effects of legumes, crop residue, and fertilizer nitrogen on soil organic matter. Department of Soil & Environmental Sciences, NWFP AU Pesh (Mr. M. Iqbal, M.Sc student, 2002).
 17. Effect of integrated use of FYM and urea on yield and N uptake of wheat (Mian Muhammad Ishaq, M.Sc student, 2002).
 18. Evaluation of solid waste from agro-based industries in NWFP for agricultural use (Ms Ghazala Yasmin, M.Sc student, 2003)

19. Quantitative and qualitative assessment of municipal solid waste for agricultural use (Mr. M. Anwar, M.Sc student, 2003).
20. Quantitative and qualitative assessment of farm waste in Peshawar (Mr. Razaullah, M.Sc student, 2003).
21. Assessment of municipal solid wastes for use in agriculture (Ms Shabana Roshan, M.Sc student, 2004).
22. Changes in soil microbial biomass and mineralizable carbon and nitrogen as affected by cropping system and management practices (Mr. Zia-ul-Islam, M.Sc student, 2006).
23. Influence of legumes on microbiological changes in soil under rice-wheat cropping system (Mr. Aamer Aman, M.Sc student, 2006).
24. Fertilizer use efficiency and corn yield as influenced by urease and nitrification inhibitors and compost (Mr. Khadim Muhammad Dawar, M.Sc student, 2006).
25. Nodulation and yield of chickpea as influenced by micronutrients (Mr. Tahir Ullah Khan, M.Sc student, 2006).
26. Microbial biomass and mineralizable carbon and nitrogen in selected soil series of Peshawar valley (Mr. Yousaf Noor, M.Sc student, 2006).
27. Micronutrients status of apple orchards in Swat Valley (Mr. Khuram Shahzad, M.Sc student, 2008).
28. Micronutrients status of peach orchards in Swat Valley (Mr. Samiullah, M.Sc student, 2009).
29. Spatial variability in micronutrients in citrus orchards (Mr. Subhanullah, M.Sc student, 2010).
30. Spatial variability in soil fertility in citrus orchards (Mr. M. Ishtiaq, M.Sc student, 2010).
31. Nitrogen mineralization in soil as influenced by manures and urea and impact on growth and nitrogen uptake of maize (*Zea mays* L.) (Mr. Arif Mehmood, M.Sc student, 2011).
32. Survey of industrial wastewaters for algae, heavy metals and other elements (Ms Sofia Gul Afridi, M.Sc student, 2011).
33. Effect of urease inhibitor on yield and yield components of wheat and its residual effect on the following maize crop (Mr. Sadiqullah, M.Sc student, 2012).
34. Effect of urease inhibitor treated urea on yield and yield components of maize (*Zea mays* L.) (Mr. Muhammad Waqar, M.Sc student, 2012).
35. Effect of urease and nitrification inhibitors on wheat yield (Mr. M. Arshad Khan, M.Sc student, 2013).
36. Relationship of nitrogen mineralization with important soil properties in frontier region (FR) Peshawar (Mr. Anees Kanwal, M.Sc student, 2013).
37. Effect of pH and temperature on the efficiency of indigenous algae to remove contaminants from wastewaters (Mr. Abdus Salam, M.Sc student, 2013).

38. Effect of amino acids on the efficiency of indigenous algae to remove heavy metals from contaminated waters (Mr. Sanaullah, M.Sc student, 2013).
39. Integrated effect of rhizobial inoculants and nitrogen fertilizers on nutrients mineralization and growth of wheat crop (Mr. M. Adnan, M.Sc student, 2013).
40. Assessment of soil and plants for chromium concentration in the basin of chromites hills in lower Malakand (Mr. Naseem Khan, M.Sc student, 2013).
41. Yield response of wheat to different levels of N and K in alkaline calcareous soil (Gohar Ali Khan, M.Sc student, 2014).
42. Residual effect of biochar and mineral N fertilizer on yield and N₂ fixation of mungbean (Najeeb Ahmad Khan, M.Sc student, 2015).
43. Nodulation and yield of barseem (Egyptian clover) as influenced by previous of biochar and current FYM and fertilizer N application (Arbab Ali, M.Sc student, 2015).
44. Effect of iron and molybdenum on yield and nodulation of lentil (Jamal Nasar, M.Sc student, 2015).
45. Heavy metals accumulation in crops and animal hairs in peri urban areas of Peshawar (Tufail Shah, M.Sc student, 2015).
46. Heavy metals accumulation in soil and shallow ground water of peri urban areas of Peshawar (M. Shoaib Khan, M.Sc student, 2015).
47. Soil microbiological properties, N₂ fixation and yield of mung bean (*Vigna radiata*) as influenced by residual biochar under different cropping systems (Ms. Tasneem Shah, M.Sc student, 2016).
48. Response of wheat yield and soil properties to organic and inorganic fertilizers under different tillage practices (Mr. Imran Khan, M.Sc student, 2016).
49. Residual effect of biochar on soil properties and yield of maize (*Zea mays*. L) under different cropping systems (Ms. Sara, M.Sc student, 2017).
50. Nitrogen management for wheat crop (*Triticum aestivum* L.) under calcareous alkaline soil (Mr. Sajid Ali, M.Sc student, 2017).
51. Integrated effect of biochar and PK fertilizers on yield of maize (Mr. Ijaz ul Haq, M.Sc student, 2017).
52. Soil quality and yield of wheat as influenced by integrated management of biochar and NPK fertilizers on under cereal-cereal and legume-cereal cropping systems (Mr. Aqib Nauman, M.Sc student, 2017).
53. Integrated management of biochar and PK fertilizers on soil quality, N₂ fixation and yield of chickpea under cereal-legume and legume-legume cropping systems (Mr. Tausif Ahmad, M.Sc student, 2018).
54. Preparation of biochar from different organic wastes (Mr. Khurshid Alam, M.Sc thesis in progress).
55. Improving yield and quality of off-season cucumber with application of NPK and B with drip irrigation system under high tunnel (Mr. Shakir Ullah, M.Sc thesis in progress)

56. Evaluation and screening of stressed tolerant (salinity) wheat varieties under hydroponic conditions (Mr. Hasham Khan, M.Sc thesis in progress)
57. Effect of nitrogen and farm yard manure (FYM) on soil fertility and plum fruit productivity (Mr. Shaheer Ahmad Aman, M.Sc thesis in progress)

Completed as Member/Co-Advisor:

1. To study the residual effect of P and K on the yield of maize (Department of Soil Science, Mr. Mohib ur Rehman, M.Sc, 1986).
2. Wheat yield and fertilizer use efficiency as influenced by nitrification inhibitor (N-Serve) (Department of Soil Science, Mr. Hamid Khan, M.Sc, 1995).
3. Using relationship between wheat yield and soil properties for estimating N fertilizer requirements of wheat (Department of Soil Science, Mr. Masil Khan, M.Sc, 1995).
4. Comparative effect of direct sowing and transplantation age on the yield of maize varieties. Department of Agronomy, NWFP AU Pesh (Mr. Majidullah, 1995).
5. Correlation of yield and yield associated traits in spring wheat (*Triticum aestivum* L.) (Ihsanullah Khan, PBG, 1998).
6. Evaluation of wheat genotypes under irrigated and rain-fed conditions of Peshawar (Khuram Shehzad, PBG, 1999).
7. Performance of single and double cross hybrids and their correlations in sunflower (*Helianthus annuus* L.) (Salman Ahmad, PBG, 2002)
8. Evaluation of drinking water quality in the vicinity of palosi drain, Peshawar (Aamir Ilyas, Water Management, 2002).
9. Heterotic studies for various characters in sunflower (*Helianthus annuus* L.) (Muhammad Sayyar Khan, PBG, 2003).
10. Magnitude of genetic variability for yield and yield associated traits in maize genotypes (M. Daud Alam, PBG, 2003).
11. Magnitude of variability for yield and yield associated traits in maize hybrids (Muhammad Younas, PBG, 2003).
12. Evaluation of self-incompatibility in sunflower hybrids (S. Bilal Murtaza Shah, PBG, 2004).
13. Effect of phosphorus and FYM on N nutrition and grain yield of chickpea (Mr. Abdul Basir, M.Sc Agron, 2004).
14. Heterosis and combining ability of flue cured Virginia tobacco (*Nicotiana tabacum* L.) hybrids for yield related characters (Aamir Shams, PBG, 2004).
15. Composting of organic wastes as influenced by microbial products (Ms. Bushra Bano, M.Sc student, 2005).

16. Genetic variability for phytic acid and yield associated parameters in inbred wheat and triticales (Ms Humaira Gul, PBG, 2005).
17. Genetic variability for yield and quality parameters of exotic sugarbeet genotypes over environments (Saifullah Khan, PBG, 2005).
18. Impact of pesticides on microbial activities in soil in district Charsadda (Mehnaz Nazeer Gul and Sana Mehmood, Department of Environ. Sci, University of Peshawar, 2006).
19. Genetic gains for yield related traits in wheat under irrigated and rain-fed environment (Nadia Afridi, PBG, 2006).
20. Effect of seed priming with phosphorus concentrations and application rates (Shitab Khan, Agronomy, 2007).
21. Effect of seed priming on yield and yield components of maize (S. Rehmatullah Shah, Agronomy, 2007).
22. Effect of Zn priming on germination, seedling growth, grain yield and nutrient uptake by maize (*Zea mays* L.) (Abdul Wadood Khattak, SES, 2007).
23. Effect of levels and timing of phosphorus application on maize (Muhammad Zakirullah, Agronomy, 2007).
24. Yield and yield components of maize as influenced by plant density and sources of phosphorus application (Muhammad Asif, Agronomy, 2007).
25. Micronutrients status of citrus orchards in Malakand Division (M. Zahid Shah, SES, 2008).
26. Effect of different methods of boron application on the yield and quality of tobacco (*Nicotiana tabacum* L.) (Ali Akbar, SES, 2008).
27. Response of growth and yield of different *Crocus sativus* L. (Saffron) cultivars in response to various planting depths (Kamran Shah, Horticulture, 2008).
28. Effect of different harvesting dates and storage on quality of sweet orange cultivar blood red (Javed Rahman, Horticulture, 2008).
29. Effect of nitrogen and zinc on wheat yield (Muhammad Waseem, Agronomy, 2008).
30. Growth dynamics, yield and seed composition of rape and mustard as influenced by sulfur and potassium application (Muhammad Hassan, Agronomy, 2008).
31. Yield, yield components and seed oil content of sunflower as influenced potassium and phosphorus application (Mir Wali Khan, Agronomy, 2009).
32. Effect of foliar application of micronutrients on the yield and quality of plum (*Prunus domestica* L.) (Rafiullah, SES, 2010).
33. Improving urea use efficiency through potassium chloride and crop residue management in wheat (Imran Ullah, Agronomy, 2010).
34. Testcross performance of S2 lines for yield and yield related attributes in maize variety Azam (Irfan Ahmad Shah, PBG, 2011).

35. Effect of different time of application and concentrations of gibberelic acid on growth and yield of okra cv. Arka Anamika (M. Naeem Shah, Horticulture, 2011).
36. The effect of different sources and levels of phosphorus on the growth and yield of radish (Shahid Iqbal, Horticulture, 2011).
37. Effect of phosphorus on the uptake of micronutrients by maize (*Zea mays* L.) (Farooq Shah, SES, Oct 2011).
38. Micronutrients profile of stone fruits in district Charsadda (plum, peach and apricot) (M. Ejaz Khan, Agri Chemistry, August 2011).
39. Growth and yield response of wheat to foliar application of micronutrients (Zn, B) under rain-fed and irrigated conditions (M. Ilyas, Agronomy, 2012)
40. Magnitude and genetic variability and heterosis for yield and related traits among double cross maize hybrid (Ghulamullah, PBG, 2013)
41. Combining ability analysis in maize population hybrids (Sanaullah, PBG, 2013)

CONFERENCES/WORKSHOPS/TRAINING COURSES ORGANIZED

- i. An international training course on *Methods to measure legume nitrogen fixation* was organized at the Department of Soil Science, NWFP Agricultural University Peshawar, Pakistan from 9-19 October 1994. Researchers from New South Wales Australia, CSIRO Australia, ICARDA Syria, ICRISAT India, Nepal, Nigeria and from various Agricultural Universities and Research Organizations within the country participated in this course.
- ii. 5th National Congress on Soil Science in collaboration with the Soil Science Society of Pakistan was organized at the NWFP Agricultural University, Peshawar from 23-25 October 1994. Mr Sardar Farooq Ahmad Khan Leghari, the President of the Islamic Republic of Pakistan inaugurated the congress.
- iii. Being General Secretary of the Re-entry Committee which was constituted by the USAID/TIPAN team for the US returnees to present seminars on their experiences at USA, NWFP Agricultural University Peshawar, organized several seminars at different agricultural organizations in NWFP including ARI DI Khan, ARI Tarnab, NWFP AU Peshawar, CCRI Pirsabak and ARS Mingora.
- iv. Organized International Workshop on "Soil Organic Quality Measurement and Laboratory Quality Assurance" at the Department of Soil Science, NWFP Agricultural University, Peshawar (Pakistan) on Nov 11-22, 1997. In this workshop, the resource person was Dr. Graeme Shewenki from New South Wales Tarpworth Crop Improvement Centre, Australia and the participants were mostly researchers from ACIAR funded projects.
- v. Conducted Fertilizer Analysis Training Course for the Scientists of Pakistan Tobacco Board, Mardan Group at the Dept: Soil & Environ. Sciences, NWFP AU Peshawar 18-20 Feb 2002.
- vi. Organized one day seminar on "**Higher Education in Australia**" at NWFP Agriculture University, Peshawar 27 March 2002.
- vii. Conducted 11th congress of Soil Science "**Soil management for sustainable**

- agriculture and the environment”** at NARC, Islamabad on March 27-31, 2006.
- viii. Organized 5 days Science Conference on **“Response to challenges of globalization in agriculture”** at Peshawar University Summer Campus, Bara Gali on July 2-7, 2008.
 - ix. International Special Seminar on **“Improving the Efficiency, Profitability and Environmental Friendliness N fertilizers”** at Agriculture University, Peshawar on 6.1.2010. The resource person was Dr. Arshad Islam, Research Fellow, The University of Melbourn, Australia.
 - x. Organized two days workshop for students on soil sampling at Agricultural University Peshawar on February 28-29, 2012.
 - xi. Successfully conducted **TWO Training Courses** (one on Farm Manager Diploma and other on Livestock Manager Diploma) organized at the Department of Soil and Environmental Sciences, The University of Agriculture, Peshawar, which commenced in September 2012 and completed end in November 2013.
 - xii. Successfully organized 15th International Congress of Soil Science on **“Soil Management in Changing Climate”** in collaboration with Soil Science Society of Pakistan at NARC Islamabad on March 18-20, 2014.
 - xiii. Helped organized a national conference on **“Innovative Technologies and Sustainable Development in Agriculture”** at Bara Gali, August 19-22, 2014.
 - xiv. Successfully organized 16th International Congress of Soil Science on **“Healthy Soils for Food Security”** in collaboration with Soil Science Society of Pakistan at PAMS Arid Agriculture University, Rawalpindi on March 15-17, 2016.
 - xv. Organized **“Talent Grooming Workshop”** under USAID-funded Merit and Needs-Based Scholarship Program for USAID scholars at The University of Agriculture, Peshawar on Dec 14-15, 2016.

PAPERS PRESENTED AT CONFERENCES/WORKSHOPS/SEMINARS OR ATTENDED

International

1. Paper titled *Short and long term effect of liming an organic upland soil on the size and activity of microbial population* presented at the **Welsh Soils Discussion Group Meeting**, Welsh Plant Breeding Station (now known as IGER), Plas Gogerddan, Aberystwyth, **U.K, 21-22 March, 1987**.
2. Paper titled *Nitrogen transformations in limed and unlimed upland soils* presented at the **5th nitrogen workshop** held at Silsoe College, Rothamsted Experimental Station, **U.K., December 13-14, 1988**.
3. Paper titled *The use of ¹⁵N for measurement of gross and net N mineralization in native and limed upland soils* presented at the Welsh Soils Discussion Group Meeting, Welsh Plant Breeding Station (now known as IGER), Plas Gogerddan, Aberystwyth, U.K., 24-25 March, 1989.
4. Paper titled *Aspects of nitrification in highly acidic organic soils* presented at 6th Workshop on Nitrogen in Soils, held at The Queen's University of Belfast, U.K.,

December 17-19, 1990.

5. Paper titled *Nitrification rate of nitrogenous fertilizers in soils of Mardan SCARP area* presented at the 5th Congress of Soil Science, NWFP Agric. Univ. Peshawar, 23-25 October 1994.
6. Paper titled *Concurrent occurrence of nitrification and denitrification in compacted grassland soil* was presentation at an International Conference on 'Nitrogen Emissions from Grassland' held at the Institute of Grassland and Environmental Research (IGER), North Wyke, Devon, England in May 1996.
7. Paper titled *Surveys of N₂-fixation of lentil, mung bean and mash bean in farmers' fields in NWFP Pakistan* presented at the international workshop on Managing Legume N₂ Fixation in Cropping Systems of Asia" held at ICRISAT Asia Centre, India, 20-24 August, 1996.
8. Paper titled Overview and prospects for enhancing residual benefits of legumes in rice-wheat cropping system (RWCS) in Pakistan presented at the international workshop on Residual Effects of Legumes in Rice and Wheat Cropping Systems (RWCS) of the Indo-Gangetic Plain" held at ICRISAT Asia Centre, India, 26-28 August 1996.
9. Presented the results of field experiments of four years at the project workshop at CSIRO Canberra, Australia on 15-30 March 1998.
10. Presented the progress of ACIAR project at the mid-term review meeting at Pokhara, Nepal on 17-31 Oct 1998.
11. Paper on "Benefits of pulse legumes to subsequent cereal in low N soils of Pakistan" presented at an International Plant Nutrition Colloquium at Hannover, Germany on July 27-August 3, 2001.
12. Attended American Society of Agronomy (ASA) conference in November 2003 at Denver, USA.
13. Presented paper on "Micronutrients status of citrus orchards in Pakistan" at an international research conference: A response to the challenge of globalization at Visayas State University, Lapaz, Iloilo City, Philippines, 27-29 February 2008.
14. Presented poster on "Benefits of legumes grown in the gap between wheat harvest and rice plantation in rice-wheat system in NWFP Pakistan" at an international research conference: A response to the challenge of globalization at Visayas State University, Lapaz, Iloilo City, Philippines, 27-29 February 2008.
15. Presented paper on Management of organic wastes for minimizing environmental pollution in Pakistan at an international conference on social, development and environmental studies 2008: Global change and transforming spaces organized by Faculty of Social Sciences and Humanities, Universiti Kebangsaan Malaysia (UKM), Bangi on 18-19 November 2008.
16. Presented paper on "Sodium Chloride induced salinity reduces the microbial processes in soil" at the 16th Biennial Conference "Capturing opportunities and overcoming obstacles in Australian agronomy" held in the University of New England, Armidale, Australia on October 14-18, 2012.
17. Presented research paper on "Microbial Dynamics in Salt Affected Soils" at World Congress of Soil Science held on June 8-13, 2014 at ICC, Jeju, Korea.

NATIONAL

1. Paper titled *Nitrification rate of nitrogenous fertilizers in soils of Mardan SCARP area* presented at the 5th Congress of Soil Science, NWFP Agric. Univ. Peshawar, 23-25 October 1994.
2. *Paper presented on Strategies for improving wheat productivity in rain-fed environment* at a symposium on Plant nutrition management for sustainable agricultural growth at NFDC, Islamabad on 8-10 Dec 1997.
3. *Paper on Management of fertilizer nitrogen for increasing wheat production in irrigated environment* presented at a symposium on Plant nutrition management for sustainable agricultural growth at NFDC, Islamabad on 8-10 Dec 1997.
4. The wise use of chemical and biological fertilizers at a training program for agricultural extension workers at Dir Development Project, Timergara on 29.11.97.
5. Fertilizer use efficiency and the environment at the agricultural extension workers training program at the NWFP Agric. Univ. Peshawar organized by NFDC Islamabad on 17 Oct 1997.
6. Paper on "Evaluation of methods to measure legume N₂ fixation and yield of legumes" presented at 8th International Soil Science Congress, November 13-16, 2000, NARC, Islamabad, Pakistan.
7. Paper on "Pulse legume and fertilizer N effects on wheat production in a low N soil" presented at 8th International Soil Science Congress, November 13-16, 2000, NARC, Islamabad, Pakistan.
8. Paper on "Benefits of pulse legumes to subsequent cereals in a low N soil" presented at 8th International Soil Science Congress, November 13-16, 2000, NARC, Islamabad, Pakistan.
9. Paper on "Management of residue, crop sequence and fertilizer N for high productivity and soil organic fertility in NWFP, Pakistan" was presented at 9th International Soil Science Congress at NIAB, Faisalabad on 18-20 March 2002.
10. Paper on "legume management of sustainable irrigated wheat" was presented at 9th International Soil Science Congress at NIAB, Faisalabad on 18-20 March 2002.
11. Paper on "denitrification potential of irrigated rice soils of Swat and Peshawar valleys" was presented at 9th International Soil Science Congress at NIAB, Faisalabad on 18-20 March 2002.
12. Paper on "Mineral fertilizers and rhizobial inoculation under field conditions" was presented at 9th International Soil Science Congress at NIAB, Faisalabad on 18-20 March 2002.
13. Presented paper on "Management of soils through crop substitution" at Pakistan Rural Academy, University Town, Peshawar on 13.9.2005
14. Presented paper on "Benefits of green manuring of legumes in rice-wheat cropping system" at 11th Congress of Soil Science at NARC, Islamabad on March 28-31, 2006.

15. Presented paper on "Changes in soil microbial biomass and mineralizable C and N as influenced by cropping systems and management" at 11th Congress of Soil Science at NARC, Islamabad on March 28-31, 2006.
16. Presented paper on "Nodulation and yield of chickpea as influenced by micronutrients" at 11th Congress of Soil Science at NARC, Islamabad on March 28-31, 2006.
17. Presented paper on "Performance of urea in the presence and absence of urea and nitrification inhibitors and compost and effect on corn yield" at 11th Congress of Soil Science at NARC, Islamabad on March 28-31, 2006.
18. Presented paper on "Land reclamation strategies for agriculture land optimization" at Pakistan Rural Academy, University Town, Peshawar on 18.5.2006.
19. Presented paper on "Soil microbial biomass and activities as influenced by green manure legumes and N fertilizer in rice-wheat system" at 13th Soil Science Congress "Efficient response of management for sustainable agriculture" at Serena, Faisalabad on 24-27 March 2010.
20. Presented paper on "Micronutrients Status of Fruit Orchards in Swat Valley" at 13th Soil Science Congress at Serena, Faisalabad on 24-27 March 2010.
21. Presented paper on "Assessment of Spatial Variability and Mapping of Micronutrients in Citrus Orchards of Malakand Agency" at 13th Soil Science Congress at Serena, Faisalabad on 24-27 March 2010.
22. Presented paper on "Yield and Quality of Sweet Orange Fruit as Influenced by Micronutrients (Zn, B) in Northern NWFP" at 13th Soil Science Congress at Serena, Faisalabad on 24-27 March 2010.
23. Presented paper on "Microbial Biomass and Mineralizable Carbon and Nitrogen in Selected Soil Series of Peshawar Valley" at 13th Soil Science Congress at Serena, Faisalabad on 24-27 March 2010.
24. Presented paper on "Microbial Biomass and Activity in Salt Affected Soils of NWFP" at 13th Soil Science Congress at Serena, Faisalabad on 24-27 March 2010.
25. Presented paper on "Algal removal of heavy metals, ammonium-N and phosphorus from contaminated water" at the Pakistan Society of Botany Conference held at Quaid e Azam University Islamabad on 1-3 September 2012.
26. Presented invited paper on "Prospects of biofertilizers for agriculture development in Pakistan" at 1st national conference on Prospects and Opportunities for Agricultural Development in Pakistan organized by the University of Haripur at Khanispur, Ayubia on June 25-27, 2013.
27. Presented invited paper on "Soil and Water Conservation Practices in Khyber Pakhtunkhwa" at the Training Course for the Technical Staff/Officers of Khyber Agency Agriculture, Livestock and Irrigation Departments GoKP organized by P&D in collaboration with FAO at The University of Agriculture Peshawar on January 15-16, 2014.
28. Presented paper on "Influence of early, normal and delayed N fertilization on maize" (R.M Khan, Subhanullah, Z. Shah, I. Ahmad and Z. Shah) at 15th Congress of Soil Science at NARC Islamabad on March 18-20, 2014 (Page 11 of abstract book)

29. Presented paper on “Influence of boron on the yield, quality and micronutrients content of tobacco” (M. Tariq, F. Ali, H. Gul and Z. Shah) at 15th Congress of Soil Science at NARC Islamabad on March 18-20, 2014 (Page 26 of abstract book).
30. Presented paper on “Zinc and phosphorus management for rice genotypes “fine Vs coarse” and its residual effect on subsequent wheat crop in rice-wheat cropping system in Malakand (Amanullah, Inamullah, S.K. Khalil, Z. Shah and A. Khan) at 15th Congress of Soil Science at NARC Islamabad on March 18-20, 2014 (Page 61 of abstract book).
31. Presented paper on “Integrated effect of rhizobial inoculums and inorganic fertilizers on nutrients mineralization and growth of wheat crop (M. Adnan and Z. Shah) at 15th Congress of Soil Science at NARC Islamabad on March 18-20, 2014 (Page 92 of abstract book).
32. Presented research paper titled “Effect of pH and temperature on the efficiency of indigenous algae to remove contaminants from wastewaters” (authors: A. Salam, Z. Shah and H. Rahman) at a national conference on “Innovative Technologies and Sustainable Development in Agriculture” at Bara Gali, August 19-22, 2014.
33. Presented research paper titled “Management of plant biodiversity in response to challenges of globalization in agriculture” (authors: H. Rahman and Z. Shah) at a national conference on “Innovative Technologies and Sustainable Development in Agriculture” at Bara Gali, August 19-22, 2014.
34. Presented paper titled “Nitrogen use efficiency of urease coated urea in maize under alkaline calcareous soil” (authors: Z. Shah, W. Ahmad and H. Rahman)at 5th international conference on agriculture, food security and climate change at the University of Poonch Rawalakot on September 8-11, 2014 (abstract published in abstract book on page 126)
35. Presented paper titled “Test cross performance of S5 lines for yield and yield related traits in maize variety Azam” (authors: H. Rahman, Habibullah, and Z. Shah) at 5th international conference on agriculture, food security and climate change at the University of Poonch Rawalakot on September 8-11, 2014 (abstract published in abstract book on page 283-284)
36. Presented invited paper titled “Salinity and water-logging problems in Pakistan and their management” at a training course at Pakistan Rural Academy, University Town Peshawar on 18.11.2014.
37. Attended the 2nd Annual Review/Planning Meeting of the ICARDA-USDA project “**Improving Soil Fertility and Soil Health in Pakistan**” on 29-30 October 2015 at NARC Islamabad.
38. Presented invited paper on “**Threats to Soil Health and Possible Remedies**” at the event of International Year of Soils on 4-5 November 2015 at University of Haripur.
39. Presented invited paper on “**Prospects of Biofertilizers in KP**” at a national conference at the Arid Agriculture University, Rawalpindi on December 9, 2015.
40. Attended special seminar on “**Sustainable Nutrient Management for Orchards**” organized by the Soil Science Society of Pakistan at Arid Agric Univ Rawalpindi on 16th February 2016.
41. Presented paper on “**Yield response of wheat to different levels of N and K in alkaline calcareous soils**” (M. Adnan, Z. Shah and G.A. Khan) at 16th International

Congress of Soil Science on Healthy Soils for Food Security organized by Soil Science Society of Pakistan at PMAS Arid Agriculture University, Rawalpindi on Islamabad on March 15-17, 2016 (Page 24 of abstract book).

42. Presented paper on **“Effect of nitrification inhibitor (Dicyandiamide) on N mineralization and nitrous oxide/carbon dioxide emission from soil amended with filter cake in the absence or presence of NPK mineral fertilizers”** (S. Shehzadi, D. Jones, D. Chadwick and Z. Shah) at 16th International Congress of Soil Science on Healthy Soils for Food Security organized by Soil Science Society of Pakistan at PMAS Arid Agriculture University, Rawalpindi on Islamabad on March 15-17, 2016 (Page 54 of abstract book).
43. Attended national conference on Environment organized by the Department of Environmental Sciences, University of Peshawar at Bara Gali on August 8-10, 2016.
44. Attended special seminar on **“Use of satellite technology for soil quality monitoring”** organized by the Soil Science Society of Pakistan at Arid Agric Univ Rawalpindi 5th September, 2016.
45. Attended a one day workshop on **“Draft Khyber Pakhtunkhwa Environment Policy 2016”** at Pakistan Academy of Rural Development on September 7, 2016 organized by the Urban Policy Unit, P&D Department, Government of Khyber Pakhtunkhwa.
46. Presented invited paper titled **“Status of zinc in KP soils and fruit orchards”** at one day workshop on **“Role of zinc in crop and human nutrition”** organized by NIFA on February 21, 2017 at NIFA, Tarnab, Peshawar.
47. Attended field days at ARI Mingora and Agric Ext Office Batkhela organized by Dr. Amanullah for his EF funded project on April 29-30, 2017.
48. Presented paper titled **“Algal removal of heavy metals, ammonium and phosphorus from contaminated water under different pH and temperature regimes”** at 4th International Conference on Global Environmental Changes at GC University Faisalabad on May 4-5, 2017.
49. Participated in International Students Science Conference organized by UDEF Federation of International Students Association at Izmir Katip Celeb University Turkey on May 5-6, 2017.
50. Attended travelling seminar on Soil Conservation Structures in Karak and Bannu organized jointly by the Soil Conservation Department, Government of Khyber Pakhtunkhwa (resource persons were 1) Mr. Yaseen, SCO Karak, 2) Mr. Zahoor Khatak, DG and 3) Mr. Farmanullah Khan, Dy. Dir) on May 8-9, 2017.
51. Attended field days at Farmers Field Matta Swat and Agric Ext Office Batkhela organized by Dr. Amanullah for his EF funded project on May 20-21, 2017.
52. Presented paper on **The role of indigenous algae in removing contaminants from water for sustainable environment** at HEC 7th National Conference on Biodiversity Conservation, Livelihood and Sustainable Development at Bara Gali Sumer Campus on July 10-12, 2017.
53. Participated in First National Conference on **Emerging Trends In Bioinformatics And Biosciences** at Hazara University, Mansehra, on July 20-22, 2017.
54. Presented invited paper on **“Biofertilizers and Farmers’ response in Khyber**

Pakhtunkhwa” at national seminar on “Biofertilizers: Pros & Cons of Entrepreneurship in Pakistan” at the University of Agriculture, Faisalabad on November 08, 2017.

55. Presented invited paper “Fixing Soil Health with Soil Carbon for Sustainable Crop Production” on the eve of World Soil Day 2017 at Agric Univ Peshawar on the 5th December 2017.
56. Attended one day workshop on “The Effect of Climate Change on Rainfall Patterns and Existing Rainwater Management in Khyber Pakhtunkhwa” organized jointly by the Climate Change Centre, Agric Univ Peshawar and the Norwegian Church Aid (NCA) at the University of Agriculture Peshawar on 22.12.2017.
57. Presented invited paper on “Agriculture Development in Pakistan: Issues and Challenges” at NIM (PARD), Peshawar on 26.2.2018.
58. Presented invited paper “Fixing Soil Health with Soil Carbon to Sustain Production and Mitigate Climate Change” at International Soil Science Congress, Faisalabad, Serena on 13-15 March 2018.
59. Participated as Chief Guest in a one day workshop on “Biosafety and Biosecurity for Young Scientists” at IBGE, UAP on March 20, 2018.
60. Presented invited paper on “**Management of Soil Carbon to Sustain Soil Health and Mitigate Climate Change**” at UAP on 18.4.2018.
61. Presented keynote paper on “**Micronutrients deficiencies in fruit orchards in Pakistan**” at National Conference on “Soil Plant Interaction for Orchards Management under Changing Climate” at the University of Haripur on May 9, 2018.

RESEARCH PUBLICATIONS

A. Publications in Journals having Impact Factor (IF):	46
B. Publications in Journals having no Impact Factor (IF):	78
C. Publications in Proceedings (Refereed):	11
Total Publications:	135

LIST OF PUBLICATIONS

A. List of Publications in Journals having Impact Factors (IF):

S.#	Name of Authors	Name of Journal	Title of the Publication	Vol. and Page No.	Year	IF
1	Shah, Z., W.A. Adams and C.D.V. Haven	Soil Biology & Biochemistry	Composition and activity of the microbial population in an acidic upland soil and effects of liming	22: 257-263	1990	2.623
2	Steve, Z.N., Z. Shah, and W.A. Adams	Soil Biology & Biochemistry	Changes in microbial biomass and nitrogen turnover in acidic organic soils	29(9-10): 1463-1474	1997	2.623

			following liming			
3	Abbasi, M.K., Z. Shah , and W.A. Adams	Journal Plant Nutrition and Soil Science	Mineralization and nitrification potentials of grassland soils at shallow depth during laboratory incubation	164(5): 497-502	2001	1.969
4	Shah, Z. , S.H. Shah, M.B. Peoples, G.D. Schwenke, and D.F. Herridge	Field Crops Research	Crop residue and fertilizer N effects on nitrogen fixation and yields of legume-cereal rotations and soil organic fertility	83(1): 1-11	2003	2.232
5	Abbasi, M.K., Z. Shah , and W.A. Adams	Journal Plant Nutrition and Soil Science	Effect of the nitrification inhibitor nitrapyrin on the fate of nitrogen applied to a soil incubated under laboratory conditions	166(4): 513-518	2003	1.969
6	Habib, G., G. Jabbar, M.M. Siddiqui, and Z. Shah	Pakistan Veterinary Journal	Paralytic disorder associated with phosphorus deficiency in buffaloes	24: 18-22	2004	1.255
7	Shafi, M., J. Bakht, M.T. Jan, and Z. Shah	Soil and Tillage Research	Soil C and N dynamics and maize (<i>Zea mays</i> L.) yield as affected by cropping systems and residue management in North western Pakistan	94: 520-529	2007	1.128
8	Stromberger, M., Z. Shah , and D. Westfall	Applied Soil Ecology	Soil Microbial Communities of No-till Dryland Agroecosystems across an Evapotranspiration Gradient	35(1): 94-106	2007	1.755
9	Bakht, J., M. Shafi, M.T. Jan and Z. Shah	Soil and Tillage Research	Influence of crop residue management, cropping system and N fertilizer on soil N dynamics and sustainable wheat (<i>Triticum aestivum</i> L.) production	104: 233-240	2009	1.846
10	Rahman, H., I.H. Khalil, F.M. Abbasi, Z.T. Khanzada, S.M.A. Shah, Z. Shah and H. Ahmad	Pakistan Journal of Botany	Cytomorphological characterization of Tea cultivars	42(1): 485-495	2010	0.47
11	Rahman, H., Arifuddin, Z. Shah , S.M.A. Shah and I.H. Khalil	Pakistan Journal of Botany	Evaluation of maize (<i>Zea mays</i> L.) S ₂ lines in test cross combinations I: Flowering and morphological traits	42(3): 1619-1627	2010	0.52
12	Wisal Mohammad, Samreen Shehzadi, S.M. Shah and Zahir Shah	Pakistan Journal of Botany	Effect of tillage and crop residues management on mugbean (<i>Vigna radiata</i> L. Wilczek) crop yield, nitrogen fixation and water use efficiency in rainfed areas	42(3): 1781-1789	2010	0.52
13	Shah, Z. , H. Rahman, M.A. Shah, M. Iqbal, U. Pervaiz and Amanullah	Pakistan Journal of Botany	Tillage and residue impacts on microbial biomass and soil C and N dynamics under different cropping systems	42(3): 1969-1976	2010	0.52
14	Shah, Z. , S.R. Ahmad & H. Rahman	Pakistan Journal of Botany	Soil microbial biomass and activities as influenced by green manure legumes in rice-wheat system	42(4): 2589-2598	2010	0.52
15	Amanullah, M. Asif, K. Nawab, Z. Shah , M. Hassan, A.Z. Khan, S.K. Khalil, Z. Hussain, M. Tariq and H. Rahman	Pakistan Journal of Botany	Impact of planting density and P fertilizer source on the growth analysis of maize at Peshawar	42(4): 2349-2357	2010	0.52
16	Bakht, J., M. Shafi, M. Zubair, M. Aman Khan, H. Shah and Z.	Pakistan Journal of Botany	Effect of soil vs foliar application of nitrogen on yield and yield components of wheat varieties	42(4): 2737-2745	2010	0.52

	Shah and U. Pervaiz					
17	A. Shah, M. Shafi, J. Bakht, W. Mohammad, M. Shah, M. T. Jan, M. J. Khan, Z. Shah and Raziuddin	Pakistan Journal of Botany	Effect of integrated use of nitrogen on yield and N uptake of maize crop	42(5): 3633-3638	2010	0.52
18	Amanullah, M. Zakirullah, M. Tariq, K. Nawab, A. Z. Khan, Farhatullah, Z. Shah , A. Jan, S.K. Khalil, M.T. Jan, M. Sajid, Z. Hussain and H. Rahman.	Pakistan Journal of Botany	Levels and time of phosphorus application influence on growth, dry matter partitioning, and harvest index in maize	42(6): 4051-4061	2010	0.52
19	Stromberger, M., Z. Shah and D. Westfall	Soil Biology and Biochemistry	High specific activity in low microbial biomass soils from a no-till evapotranspiration gradient in Colorado	43(1): 97-105	2011	3.342
20	Shah , Z., S.R. Ahmad and H. Rahman	Pakistan Journal of Botany	Sustaining rice-wheat system through management of legumes: I. Effect of green manure legumes on rice yield and soil fertility	43(3):1569-1574	2011	0.947
21	Shah , Z., S.R. Ahmad, H. Rahman and M.Z. Shah	Pakistan Journal of Botany	Sustaining rice-wheat system through management of legumes: II. Effect of green manure legumes and N fertilizer on wheat yield	43(4): 2093-2097	2011	0.947
22	Shah, S.M.A., H. Rahman, F.M. Abbasi, M.A. Rabbani, I.A. Khan, Z.K. Shinwari and Z. Shah	Pakistan Journal of Botany	Interspecific variation of total seed protein in wild rice germplasm using SDS-PAGE	43(4): 2147-2152	2011	0.947
23	Amanullah, M. Asif, L.K. Almas, A. Jan, Z. Shah, H. Rahman and S.K. Khalil	Journal of Plant Nutrition	Agronomic efficiency and profitability of P fertilizers applied at different planting densities of maize in Northwest Pakistan	35(3): 331-341	2012	0.726
24	Rahman, H., Arifuddin, Z. Shah , S.M.A. Shah and I.H. Khalil	Pakistan Journal of Botany	Evaluation of maize (<i>Zea mays</i> L.) S ₂ lines in test cross combinations II: Yield and yield components	44(1): 187-192	2012	0.726
25	Shah, I.A., H. Rahman, S.M.A. Shah, Z. Shah , Ihteramullah and M. Noor	Pakistan Journal of Botany	Characterization of Pearl Millet germplasm for various morphological and fodder yield parameters	44(1): 273-279	2012	0.947
26	Shah , Z., M.Z. Shah, M. Tariq, J. Bakht and H. Rahman	Pakistan Journal of Botany	Survey of citrus orchards for micronutrients deficiency in Swat Valley of Khyber Pakhtunkhwa Pakistan	44(2): 705-710	2012	0.947
27	H. Rahman, A. Ali, Z. Shah , M. Iqbal, M. Noor and Amanullah	Pakistan Journal of Botany	Line x tester analysis for grain yield and yield related traits in maize variety Sarhad-White	45(SI): 383-387	2013	0.947
28	Shah, S.A and Z. Shah	Communications in Soil Science and	Effect of MgCl ₂ induced salinity on CO ₂ evolution and N mineralization in a silty loam soil	44 (14): 2173-2185	2013	0.619

		Plant Analysis				
29	Shah, Z. , Wasiullah, A.U. Bhatti and H. Rahman	Communications in Soil Science and Plant Analysis	Spatial variability of nutrient contents in wheat plants in semi-arid region of north western Pakistan	44(16): 2472-2487	2013	0.619
30	Shah, Z. , I. Haq, A. Rehman, Amanullah and M. Afzal	Soil Science and Plant Nutrition	Soil amendments and seed priming influence nutrients uptake, soil properties, yield and yield components of wheat (<i>Triticum aestivum</i> L.) in alkali soils	59: 262-270	2013	0.989
31	Gul, H., Z. Shah , D. Muhammad, and R.A. Khattak	Communications in Soil Science and Plant Analysis	Micronutrients losses from soil under subsurface drainage system	44(17): 2546-2559	2013	0.619
32	Hydayatullah, Amanullah Jr, A. Jan and Z. Shah	International Journal of Agronomy and Plant Production	Residual effect of organic nitrogen sources applied to rice on the subsequent wheat crop	4(4): 620-631	2013	0.467
33	Khan, A., M.T. Jan, A. Jan, Z. Shah and M. Arif	Journal of Plant Nutrition	Efficiency of dry matter and nitrogen accumulation and redistribution in wheat as affected by tillage and nitrogen management	37(5): 723-737	2014	0.526
34	Shah, Z. , Y. M. Jani and F. Khan	Communications in Soil Science and Plant Analysis	Evaluation of organic wastes for composting	45: 309-320	2014	0.619
35	Amanullah, S. Shah, Z. Shah , S.K. Khalil, , F.Muhammad, Z. Hussain, K.M. Kakar, and I. Khan	Turkish Journal of Field Crops	Effect of variable nitrogen sources and rate on leaf area index and total dry matter accumulation in maize (<i>Zea mays</i> L.) genotypes under calcareous soils	19(2): 183-191	2014	1.30
36	Amanullah, I. Khan, A. Jan, M.T. Jan, S.K. Khalil, Z. Shah and M. Afzal	Communications in Soil Science and Plant Analysis	Compost and nitrogen management influence productivity of spring maize (<i>Zea mays</i> L.) under deep and conventional tillage system in semi-arid region	46(12): 1566-1578	2015	0.619
37	Ahmad Khan, M. T. Jan, M. Afzal, I. Muhammad, A. Jan and Z. Shah	International Journal of Agriculture & Biology	An integrated approach using organic Amendments under a range of tillage practices to improve wheat productivity in a cereal based cropping system	7: 467-474	2015	0.93
38	M. Adnan, Z. Shah, M. Arif, I.A. Mian, A. Basir, H. Ullah, M. Alam, M.J. Khan and M. Sharif	Canadian Journal of Soil Science	Impact of rhizobial inoculum and inorganic fertilizers on nutrients (NPK) availability and uptake in wheat crop.	96: 169-176	2016	1.382
39	M. Arif, K. Ali, M.T. Jan, Z. Shah, D. L. Jones, and R. S. Quilliam	Field Crops Research	Integration of biochar with animal manure and nitrogen for improving maize yields and soil properties in calcareous semi-arid agroecosystems	195: 28-35	2016	2.927
40	Shehzadi, S., Z. Shah and W. Muhammad	Global Advanced Research	Soil carbon sequestration, water use efficiency and yield of maize as influenced by organic amendments in	5(7): 249-262	2016	1.217

		Journal of Agricultural Science	irrigated area of North-West Pakistan			
41	Shehzadi, S., Z. Shah and W. Mohammad	Biotechnology, Agronomy, Society and Environment	Impact of organic amendments on soil carbon sequestration, water use efficiency and yield of irrigated wheat	21(1): 1-14	2017	0.487
42	Khan, F.U., F. Muhammad, Raziuddin, Z. Shah, M. Ahmad and Z. Shah	Journal of Animal and Plant Sciences	Genotypic differences and genotype x nitrogen interactions for yield traits in bread wheat	27(4). 1264-1268	2017	0.381
43	Ahmad, W., F. Khan, Z. Shah and M.J. Khan	Pedosphere	Changes in quality and yield potential of moderately degraded Alfisol with types and levels of nutrient input and legumes in crop rotation	DOI: 10.1016/S1002-0160(17)60364-3	2017	1.734
44	Adnan, M., Z. Shah et al	Scientific Reports (Nature)	Phosphate-Solubilizing Bacteria Nullify the Antagonistic Effect of Soil Calcification on Bioavailability of Phosphorus in Alkaline Soils	In press	2017	4.30
45	Shah., Z., S. G. Afridi, S. Z. Shah, Farhatullah et al	Pakistan Journal of Botany	Algal removal of heavy metals, ammonium-N and phosphorus from contaminated water	Accepted (12-896)		
46	Shah, Z., S. G. Afridi, S. Z. Shah, Farhatullah et al	Pakistan Journal of Botany	Evaluation of industrial wastewaters for algal species, heavy metals, ammonium and phosphorus	Accepted (13-397)		

B. List of Publication in Journals having No Impact Factors (IF)

S.#	Authors	Name of Journal	Category	Vol. and Page No	Title	Year
1	Bhatti, A.U., J.K. Khattak and Z. Shah	Pakistan Journal of Soil Science	Y	4: 33-36	Studies on the effect of trace elements (Zn, Cu, Fe, Mn) on the yield of maize	1986
2	Bhatti, A.U., J.K. Khattak, Z. Shah and A. Ghani	Pakistan Journal of Agriculture Research	Y	9: 151-154	Effect of trace element cations on yield of maize	1988
3	Shah, Z	Sarhad Journal of Agriculture	X	7: 675-680	Inhibitory effect of N-serve on nitrification in different soils	1991
4	Shah, Z. and W.A. Adams	Sarhad Journal of Agriculture	X	9: 345-348	The fungus flora of an acidic upland soil as influenced by liming	1993
5	Shah, Z., J.K. Khattak and R. Ali	Sarhad Journal of Agriculture	X	9: 435-445	Fate of fertilizer nitrogen in soil-plant system and its influence on yield of maize crop	1993
6	Shah, Z., S.H. Shah, D.F. Herridge, M.B. Peoples, M. Aslam, S. Ali, and M.T. Jan	Journal of Agriculture University of Wales Aberystwyth, U.K.	Foreign	75: 89-98	Pakistan's Agriculture- cereal and legume production	1995
7	Shah, Z. and	Sarhad Journal of	X	11: 97-	Microbial activity of soil as	1995

	Salimullah	Agriculture		104	influenced by a fungicide	
8	Shah, Z. and W.A. Adams	Sarhad Journal of Agriculture	X	11: 105-113	Aspects of nitrification in an acidic upland soil	1995
9	Shah, Z	Pakistan Journal of Soil Science	Y	12: 151-155	The crop and nitrogen yields of wheat as influenced by single and split fertilizer N application	1996
10	Shah, Z., W. Mohammad and M. Afzal	Sarhad Journal of Agriculture	X	13: 383-390	Transformation of ammonium as influenced by nitrification inhibitor under field conditions	1997
11	Shah, Z., W. Mohammad and M. Afzal	Scientific Khyber	-	10: 1-12	Yield and nitrogen content of wheat as influenced by nitrification inhibitor	1997
12	Malik, A., F. Sahi, Z. Shah, and S.A. Rizvi	Scientific Khyber	-	11: 31-40	Growth of wheat as influenced by phosphorus fertilization	1997
13	Shah, Z	Sarhad Journal of Agriculture	X	14: 147-152	Enhancing efficiency of nitrogen fertilizer through nitrapyrin Vs split application on wheat crop	1998
14	Shah, Z., and A. Faheem	Sarhad Journal of Agriculture	X	16: 69-75	Evaluation of indigenous plant materials for nitrification inhibition property in soils	2000
15	Shah, Z., Razaullah, S.H. Shah, D.F. Herridge, and M.B. Peoples	Sarhad Journal of Agriculture	X	16: 179-187	Does lentil (<i>Lens culinaris</i>) in the Swat R. Valley needs rhizobial inoculation?	2000
16	Shah, Z., S. Ishrat, and R. Ali	Sarhad Journal of Agriculture	X	16: 319-328	Are pesticides friendly to soil microbes?	2000
17	Jan, M.R., Z. Shah, J. Shah, and S. Ishrat	American Laboratory	Foreign	33: 24-25	Effect of pesticides on soil microorganisms	2001
18	Shah, Z., Riazullah, and T. Hussain	Pakistan Journal of Soil Science	Y	21: 20-26	Can crop residues and glucose carbon stimulate denitrification and N mineralization in soil under submerged condition?	2002
19	Shah, Z., and A.A. Khan	Sarhad Journal of Agriculture	X	19: 81-92	Evaluation of crop residues for potentially available nitrogen in soils	2003
20	Shah, Z., A.A. Khan, and M. Afzal	Sarhad Journal of Agriculture	X	19: 211-220	Microbial activity as influenced by various crop residues in soils	2003
21	Shah, Z., and D. Muhammad	Sarhad Journal of Agriculture	X	19: 391-399	Potential for denitrification in irrigated rice fields of Swat and Peshawar Valley	2003
22	Mohammad, W., Z. Shah, S.M. Shah, and M.M. Iqbal	Pakistan Journal of Soil Science	Y	22: 11-18	Wheat yield, fertilizer N utilization and water use efficiency as influenced by tillage and P levels under rain-fed conditions	2003
23	Mohammad, W., Z. Shah, S.M. Shah, and M.M. Iqbal	Pakistan Journal of Soil Science	Y	22: 19-27	Rotational benefits of legumes to subsequent rain-fed wheat in a low N soil	2003

24	Shah, Z., and Riazullah	Pakistan Journal of Soil Science	Y	22: 33-41	Assessment of farm wastes for nitrogen, phosphorus and potassium	2003
25	Shah, Z., and Riazullah	Pakistan Journal of Soil Science	Y	22: 42-50	Evaluation of farm wastes for heavy metals	2003
26	Shah, Z., and M. Anwar	Pakistan Journal of Soil Science	Y	22: 1-10	Assessment of municipal solid wastes for nutrient elements and heavy toxic metals	2003
27	Shah, Z., R. U. Rahman	Sarhad Journal of Agriculture	X	20: 113-123	Evaluation of pulse legumes for yield, N ₂ fixation and their influence on soil organic fertility	2004
28	Shah, Z., W. Mohammad, S.M. Shah, and M.M. Iqbal	Sarhad Journal of Agriculture	X	20: 243-249	Yields and N ₂ fixation of lentil and chickpea as influenced by tillage and P levels under rain-fed conditions	2004
29	Habib, G., G. Jabbar, M.M. Siddiqui, and Z. Shah	Pakistan Veterinary Journal	Y	24: 18-22	Paralytic disorder associated with phosphorus deficiency in buffaloes	2004
30	Basir, A., K. Zada, and Z. Shah	Sarhad Journal of Agriculture	X	21: 11-19	Effect of phosphorus and farm yard manure on nitrogen nutrition and grain yield of chickpea	2005
31	Tariq, M., K.M. Kakar, and Z. Shah	Soil and Environment	Y	24: 103-108	Effect of B-Zn interaction on wheat (<i>Triticum aestivum</i> L.) in calcareous soil of Peshawar valley	2005
32	Shah, Z., Ghazala Yasmin, and M. Tariq	Soil and Environment	Y	24: 138-144	Quantitative and qualitative assessment of solid wastes at agro-based industries in the North Frontier Province, Pakistan	2005
33	Shah, Z., Shabana Roshan, A.U. Bhatti and M. Afzal	Soil and Environment	Y	24: 63-68	Chemical composition of municipal solid wastes of Peshawar city	2005
34	Tariq, M., M. Ali and Z. Shah	Soil and Environment	Y	25: 64-69	Characteristics of industrial effluents and their possible impacts on quality of underground water of Hayatabad industrial estate, Peshawar	2006
35	Akbar, H., M.T. Jan, A.U. Jan, Z. Shah and M. Idrees	Journal of Agricultural and Biological Science	-	1: 22-29	Barseem (<i>Trifolium alexandrum</i> L.) and shaftal (<i>T. resupinatum</i> L.) after various cuts, biomass incorporation at final harvestof maize	2006
36	Akbar, H., M.T. Jan, A.U. Jan, Z. Shah and J. Bakht	Sarhad Journal of Agriculture	X	22: 591-600	Impact of clover's biomass incorporation on the physico-chemical analysis properties of soil for succeeding crop	2006
37	Shah, Z., and M.	Journal of Agricultural	-	1: 60-64	Effect of integrated use of	2006

	Ishaq	and Biological Science			farm yard manure and urea on yield and nitrogen uptake of wheat	
38	Shah, Z. , Shabana Roshan, Z. Shah and M. Tariq	Sarhad Journal of Agriculture	X	23: 681-688	Nitrogen mineralization of municipal solid wastes during laboratory incubation	2007
39	Shah, Z. , Zahid Shah, M. Tariq, and M. Afzal	Sarhad Journal of Agriculture	X	23: 667-673	Response of maize to integrated use of compost and urea fertilizers	2007
40	Amanullah, M. Asif, Z. Shah , and M. Hassan	Annals of Agrarian Science	Foreign	5: 13-17	Potassium influence on the yield of maize in North-West Pakistan	2007
41	Taiq, M., M. Sharif, Z. Shah and R. Khan	Pakistan Journal of Biological Sciences	-	10: 1823-28	Effect of foliar application of micronutrients on the yield and quality of sweet orange (<i>Citrus sinensis</i> L.)	2007
42	Shah, Z. and K. Shahzad	Soil and Environment	Y	27: 123-130	Micronutrients status of apple orchards in Swat Valley of North West Frontier Province of Pakistan	2008
43	Muhammad, W., Z. Shah , S.M. Shah, and S. Shehzadi	Soil and Environment	Y	27: 148-154	Response of irrigated and N-fertilized wheat yield to legume-cereal and cereal-cereal rotation	2008
44	Tariq, M., Z. Shah and A. Ali	Soil and Environment	Y	27: 223-227	Micronutrients status of plum orchards in Peshawar valley	2008
45	Amanullah, Z. Shah and H. Rahman	Archives of Agronomy and Soil Science	Foreign	54: 401-411	Plant density and nitrogen effects on growth dynamics, light interception and yield of maize	2008
46	Basir, A., Z. Shah, M. Naeem and J. Bakht	Sarhad Journal of Agriculture	X	24(4): 567-572	Effect of phosphorus and farm yard manure on agronomic traits of chickpea	2008
47	Shah, Z., S. R. Ahmad, H. Rahman, A. Latif and A. Shah	Sarhad Journal of Agriculture	X	27(1): 73-84	Rice and wheat yields in relation to biomass of green manure legumes	2011
48	Gul, H., R.A. Khattak, D. Muhammad and Z. Shah	Sarhad Journal of Agriculture	X	27(2): 225-232	Physical properties of soils under sub-surface drainage system	2011
49	Shah, S.A., and Z. Shah	Sarhad Journal of Agriculture	X	27(2): 233-244	Changes in Soil Microbial Characteristics with Elevated Salinity	2011
50	Khan, F., K. Ejaz, M. Ramzan, Z. Shah, Naveedullah, M. Sharif, M. Afzal and M.J. Khan	Sarhad Journal of Agriculture	X	28(4): 571-578	Extent of nutrient deficiencies and degradation of selected soil properties in water eroded soils of district Muzaffarabad (AJK), Pakistan	2012
51	W. Ahmad, F. Khan, Z. Shah, M.J. and K. A. Shah	Journal of the Saudi Society of Agricultural Sciences	Foreign	13(2): 92-99	Recovery of organic fertility in degraded soil through fertilization and crop rotation	2013
52	Khan, F., Z. Hayat,	Soil and Environment	X	32(1): 22-	Effect of slope position on	2013

	W. Ahmad, ... M. Sharif, I.A. Mian and M. Hanif			28	physic-chemical properties of eroded soil	
53	Noor, Y, Subhanullah and Z. Shah	Sarhad Journal of Agriculture	Y	29(3): 387-394	Spatial variability of micronutrients in citrus orchard of North Western Pakistan	2013
54	Khan, M. A., Z. Shah and T. Shah	Sarhad Journal of Agriculture	Y	29(3): 371-378	Effect of urease and nitrification inhibitors on wheat yield	2013
55	Rahman, I., N. Ali, A. Rab and Z. Shah	Sarhad Journal of Agriculture	Y	29(3): 379-386	Role of pre storage seed priming in controlling seed deterioration during storage	2013
56	Khan, S., S.K. Khalil, Amanullah and Z. Shah	Asian Journal of Agriculture and Biology	-	1(3): 141-148	Crop stand and phenology of wheat as affected by integrated use of organic and inorganic fertilizers	2013
57	Samiullah, Z. Shah, M. Tariq, T. Shah A. Latif and A. Shah	Sarhad Journal of Agriculture	Y	29(4): 485-493	Micronutrients status of peach orchards in Swat	2013
58	Ahmad, W., Z. Shah, F. Khan, A. Ali and W. Malik	Soil and Environment	X	32(2): 121-129	Maize yield and soil properties as influenced by integrated use of organic, inorganic and bio-fertilizers in a low fertility soil	2013
59	Amanullah, A.Z. Khan, A. Jan, Z. Shah, B. Ahmad, S.K. Khalil, A. Ali, Hidayatullah, F. Ahmad and A. Nawaz	Soil and Environment	X	32(2): 135-140	Foliar application of nitrogen at different growth stages influences the phenology, growth and yield of maize (<i>Zea mays</i> L.)	2013
60	Naseem Khan, Z. Shah, N. Ahmad, S.A. Ahmad, N. Mehmood & M. Junaid	Pure and Applied Biology	X	2(2): 42-47	Effect of integrated use of biochar, FYM and nitrogen fertilizer on soil organic fertility	2013
	Adnan, M., Z. Shah, A. Khan, M. Shah, G.A. Khan....K. Zaib	Am. J. Plant Sci.	Foreign	5: 2066-2073	Integrated effects of rhizobial inoculums and inorganic fertilizers on wheat yield and yield components	2013
61	Shah, Z., Y. Noor, T. Shah, A. Latif and A. Shah	Sarhad Journal of Agriculture	Y	30(1): 15-25	Changes in soil microbial attributes with soil characteristics and parent materials	2014
62	Muhammad, H., A. Zaman, S. K. Khalil and Z. Shah	Sarhad Journal of Agriculture	Y	30(1): 7-13	Effect of beneficial microbes (BM) on the efficiency of organic and inorganic N fertilizer on wheat crop	2014
63	Samad, A., M.J. Khan, Z. Shah and M.T. Jan	Sarhad Journal of Agriculture	Y	30(1): 27-34	Determination of optimal duration and concentration of zinc and phosphorus for priming wheat seed	2014
64	Amin, M., M.J. Khan, M.T. Jan,	Soil and Environment	X	33(1): 33-37	Effect of different tillage practices on soil physical	2014

	M.U. Rehman, J.A Tariq, M. Hanif and Z. Shah				properties under wheat in semi-arid environment	
65	Shehzadi, S., Z. Shah and W. Mohammad	Soil and Environment	X	33(2): 88-95	Residual effect of organic wastes and chemical fertilizers on wheat yield under wheat-maize cropping sequence	2014
66	Amanullah, I.M. Kakar, I. Khan, Z. Shah and Z. Hussain	Soil and Environment	X	33(2): 116-123	Growth and yield response of maize (<i>Zea mays</i> L.) to foliar NPK fertilizers under moisture stress conditions	2014
67	Zahoor, W. Ahmad, K. Hira, Bashir ullah, A. Khan, Z. Shah, F. A. Khan, R. M. Muazzam Naz	International Journal of Agriculture and Forestry	Foreign	4(3): 201-206	Role of nitrogen fertilizer in crop productivity and environmental pollution. 2014,	2014
68	Abdus Salam, Zahir Shah, Khitab Ullah, Imran Khan, Faiz Ali Khan, Naseer Ahmad and Kamran Khan	IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS) www.iosrjournals.org	Foreign	7(3) 62-72	Effect of pH and Temperature on the Efficiency of Indigenous Algae to Remove Contaminants from Artificial Wastewaters	2014
69	Arbab Ali, Zahir Shah, Altaf Hussain, Izhar Shafi, Nasrullah, Murtaza Ali and Aqleem Abbas	Journal of Biodiversity and Environmental Sciences (JBES)	Foreign	6(5): 358-366	Removal of heavy metals (Cr, Cd, Ni and Pb) using fresh water algae (<i>Utricularia tenuissima</i> , <i>Utricularia tenuis</i> & <i>Zygonium ericetorum</i>) from contaminated water	2015
70	M. Adnan, Z. Shah, N. Saleem..... & S.R. Shah	Pure and Applied Biology	X	5(1): 127-133	Isolation and evaluation of summer legume Rhizobia as PGPR	2016
71	Amanullah Jan, Inamullah, Z. Shah and S.K. Khalil	Journal of Plant Stress Physiology	Foreign	2: 1-8	Phosphorus and zinc interaction influence leaf area index in fine vs. course rice (<i>Oryza sativa</i> L.) genotype in northwest Pakistan	2016
72	N. Khan, Z. Shah, M. Adnan, L. Ullah, A. Khaliq, W. A. Khan and A. Alam	Advances in Environmental Biology	X	10(7): 141-147	Evaluation Of Soil For Important Properties And Chromium Concentration In The Basin Of Chromite Hills In Lower Malakand	2016
73	M. Adnan, Z. Shah, H. Ullah, B. Khan, M. Arshad, I. A. Mian, G. A. Khan, M. Alam, A. Basir, I.U. Rahman, M. Ali and W. U. Khan	Pure and Applied Biology	X	http://dx.doi.org/10.19045/bs.pab.2016.50109	Yield response of wheat to nitrogen and potassium fertilization	2016
74	Khan, N., Z. Shah, M. Adnan, M. Saeed, S. Fahad, M. Ali, M.	American-Eurasian J. Agric & Environ, Sci.	Foreign	16(6): 1172-75	Assessment of plants for chromium concentration in the Basin of chromites hills	2016

	Zahoor, A. Ali, W.A. Khan, M. Arshad, A. Alam and W.A. Khan				in Lower Malakand	
75	Shah, S.T., F. Ghafoor, N. Khan, M. Sajid, N. Amin, Z. Shah, S. Bibi, T. Ahmad and F. Haq	Pakistan Journal of Weed Science Research	X	22(3): 463-470	Organic fertilizers affect the growth attributes of weeds and swiss chard	2016
76	Shah, Z., S. Ali, T. Shah and Amanullah	Soil and Environment	X	35(2): 194-206	Recovering soil health of eroded lands through fertilizers and crop rotation	2016
77	Tasneem Shah, Sara and Zahir Shah	Soil and Environment	X	36(1): 77-83	Soil respiration, pH and EC as influenced by biochar	2017
78	Rawan, S., F. Bibi, N. Khan, A.M. Khattak, Z. Shah, A. Iqbal, M. Alamzeb, S. Haq, A. Kamal, F.A. Shah, A. Naeem and W. Ali	Pakistan Journal of Agricultural Research		30(2): 155-161	Postharvest life of guava (<i>Psidium guajava</i> L.) varieties as affected by storage intervals at room temperature.	2017
79	Khan, I., Z. Shah, W. Ahmad, F. Khan and M. Sharif	Sarhad Journal of Agriculture	X	34: 144-157	Integrated nutrient and tillage management improve organic matter, micronutrient content and physical properties of alkaline Calcareous Soil Cultivated with Wheat	2018

C. List of Publication in Proceedings (Refereed)

2. **Shah, Z.**, C.D.V. Haven and W.A. Adams. **1987**. Short and long term effect of liming an organic upland pasture soil on the size and activity of microbial population. Welsh Soils Discussion Group Report No.29 (U.K.), October, 1987, p 143-154. **[Foreign]**
3. Herridge, D.F., H. Marcellos, W. Felton, G.D. Schwenke, M. Aslam, S. Ali, **Z. Shah**, S.H. Shah, S. Maskeys, S. Bhattari, M.B. Peoples and G. Turner. **1994**. Management of legume N₂-fixation for rainfed cereal production in Pakistan, Nepal and Australia. ACIAR Food Legume Newsletter 21: 4-5. **[Foreign]**
4. Herridge, D.F., H. Marcellos, W. Felton, G.D. Schwenke, M. Aslam, S. Ali, **Z. Shah**, S.H. Shah, S. Maskeys, S. Bhattari, M.B. Peoples and G. Turner. **1995**. Management of legume N₂-fixation in cereal systems- a research program for the rain-fed areas of Pakistan, Nepal and Australia. *In Proc: IAEA/FAO International Symposium on Nuclear Techniques in Soil-Plant Studies for Sustainable Agriculture and Environmental Preservation*. Vienna, Austria, 17-21 October 1994. IAEA-SM-334: 237-250. **[Foreign]**
5. Herridge, D.F., S.L. Maskey, S. Bhattarai, **Z. Shah**, S.H. Shah, M. Aslam, S. Ali, G.D. Schwenke, G.L. Turner, and M.B. Peoples. **1996**. Nitrogen fixation by pulse legumes in farmers' fields in Pakistan, Nepal and Australia. Proceedings of the 11th Australian N₂ Fixation Conference, Perth (Australia). **[Foreign]**

6. Abbasi, M.K., **Z. Shah**, and W.A. Adams. **1997**. Concurrent nitrification and denitrification in compacted grassland soil. In: Gaseous Nitrogen Emissions from Grasslands (eds S.C. Jarvis and B.F. Pain) p 47-54, CAB International Publication. [**Foreign**]
7. **Shah, Z.**, S.H. Shah, M.B. Peoples, and D.F. Herridge. **1997**. Surveys of N₂ fixation of lentil, mung bean and black gram in farmers' fields in North West Frontier Province, Pakistan. Pages 333-343 *In* Extending Nitrogen Fixation Research to Farmers' Fields Proceedings of an international Workshop on Managing Legume Nitrogen Fixation in Cropping Systems of Asia, , 20-24 August 1996, ICRISAT Asia Centre, India (Rupela, O.P., Johansen, C., Herridge, D.F., eds. Patancheru 502 324, Andra Pradesh, India: International Crops Research Institute for the Semi-Arid Tropics. [**Foreign**]
8. Peoples, M.B., G.L. Turner, **Z. Shah**, S.H. Shah, M. Aslam, S. Ali, S.L. Maskey, S. Bhattarai, F. Afandi, G.D. Schwenke, and D.F. Herridge. **1997**. Evaluation of the ¹⁵N natural abundance technique for measuring N₂ fixation of legumes in experimental plots and farmers' fields. Pages 57-75 *In* Extending Nitrogen Fixation Research to Farmers' Fields Proceedings of an international Workshop on Managing Legume Nitrogen Fixation in Cropping Systems of Asia, , 20-24 August 1996, ICRISAT Asia Centre, India (Rupela, O.P., Johansen, C., Herridge, D.F., eds. Patancheru 502 324, Andra Pradesh, India: International Crops Research Institute for the Semi-Arid Tropics. [**Foreign**]
9. Zahid, M.A., R.A. Mann, and **Z. Shah**. **1997**. Overview and prospects for enhancing residual benefits of legumes in rice-wheat cropping system (RWCS) in Pakistan. In: *Residual Effects of Legumes in Rice and Wheat Cropping Systems (RWCS) of the Indo-Gangetic Plain* (Eds. J.V.D.K. Kumar Rao, C. Johansen, & T.J. Rego) p 190-206. ICRISAT Asia Center, Patancheru 502 324, Andra Pradesh, India. [**Foreign**]
10. Bhatti, A.U. and **Z. Shah**. 2000. Integrated plant nutrient management in North West Frontier Province of Pakistan. Proceedings of Symposium on Integrated Plant Nutrition Management November 8-10, 1999 (N. Ahmad and A. Hamid, eds) p 150-158 National Fertilizer Development Corporation, Islamabad.
11. Khan, A., M.T. Jan, A. Jan, Z. Shah and S. Ali. 2008. Tillage and nitrogen management in a wheat-maize farming system. Unkoyich, M.J. (ed.). Proceedings of the 14th Australian Agronomy Conference. September 2008, Adelaide South Australia. Australian Society of Agronomy www.agronomy.org.au.
12. Shah, Z., and S.A. Shah. 2012. Sodium Chloride induced salinity reduces microbial processes in soil. Proceedings of the 16th Australian Agronomy Conference on "Capturing Opportunities and Overcoming Obstacles in Australian Agronomy", edited by I. Yunusa, October 14-18, 2012, University of New England, Armidale, NSW, Australia, Australian Society of Agronomy, www.regional.org.au.

Vision for Development of Universities

Development of skilled and trained manpower to change traditional agriculture in the country, create awareness among students to promote entrepreneurship, develop strong linkages between students, extension workers, researchers and farmers to address the real issue of the farming community and help support adapt modern technologies on the farms,