

# CURRICULUM VITAE



## 1. PERSONAL:

Name : Dr. Dost Muhammad  
Father's Name : Mr. Khadim Muhammad  
Place of Birth : District Dir, Khyber Pakhtunkhwa, Pakistan  
Nationality : Pakistani by Birth  
Present/Postal Address : Office. No. 188, Plant Science Building,  
Department of Soil & Environmental Sciences,  
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## 2. Brief of achievements:

### Qualification:

B.Sc (Hons), M.Sc (Hons) and Ph.D in Soil and Environmental Science  
1 year Post-graduate diploma in GIR/RS (Remote sensing)  
10 months Postdoctoral fellowship from Dalian University of Technology, China

### Service:

Length of regular service: 23 years and three months  
Service in university: 21 years,  
Post Ph.D experience: 15 years

### Students Produced:

Ph.D Students produced: 02 (HEC scholar) + 04 (Non-HEC Scholar) = Total = 06  
M.Sc. Students produced: 48  
B.Sc Students produced: 61

**Publication (IF+HEC): 82**

## 3. ACADEMIC RECORD:

Exam Passed	Year	Mks/total CGPA/GPA	%age	Major subjects	Institution/Board University
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Matric	1992	670/850	78.82	Science	GHS Kotigram, B.I.S.E. Swat
F.Sc	1992-94	784/1100	71.27	Pre-Medical	Edwards College, B.I.S.E. Peshawar
B.Sc (Hons)	94-98	3.88/4.00	89.67	Soil Science	NWFP Agric. University Peshawar
M.Sc (Hons)	98-00	3.91/4.000	90.58	Soil & En. Sciences	NWFP Agric. University Peshawar
Ph. D	2009	3.95/4.00	92.54	Soil & En. Sciences	NWFP Agric. University Peshawar (Now changed to The University of Agric. Peshawar)
Postdoc	2014-15	-	-	Environmental Sciences	Dalian University of Technology, Dalian, China
Post-graduate diploma in GIS and RS	2014	3.52/4.00		GIS and RS	The University of Peshawar

#### 4. WORK EXPERIENCE:

Employer	Designation	BS	Duration
NDP/World Bank Project	Research Fellow	-	01-01-2002 to 25-11-2002
Pakistan Agricultural Research Council, Islamabad	Scientific Officer	17	25-11-2002 to 15-01-2005
The University of Agriculture, Peshawar	JRS/Lecturer	18	15-01-2005 to 23-4-2011
The University of Agriculture, Peshawar	Assistant Professor	TTS-19	24-4-2011 to 17-09-2017
The University of Agriculture, Peshawar	Associate Professor (BPS)	20	18-9-2017 to 03-03-2022
The University of Agriculture, Peshawar	Professor (BPS)	21	04-03-2022 to date

#### 5. TRAINING COURSES ATTENDED/PARTICIPATED:

Name of Training	Location	Sponsor/Organizer	Period/Duration
1. Internship on Tea cultivation	NTRI, Shinkiari	----	25/6/98-31/8/98
2. 17 <sup>th</sup> Training Course on Nuclear Techniques in Agricultural Research	NIFA, Peshawar	Pakistan Atomic Energy Commission	18-29 September, 2000
3. Orientation Course for Newly inducted Scientist	NARC, Islamabad	PARC, Islamabad	25-30 November, 2002
4. Postdoctoral Fellowship	Dalian University of Technology, China	China Government	06-09-2014 – 30-06-2015

5. Remote Sensing Application in Water Management	WAMA Department, The Univ. of Agric. Peshawar	HEC and The University of Agric. Peshawar	December 26-30, 2016
6. National Training Course on Climate Smart Agriculture using Nuclear Sciences	NIFA, Peshawar	IAEA, and Pakistan Atomic Energy Commission	December 09-13, 2024

## 6. TRAININGS PARTICIPATED AS RESOURCE PERSON

S.No	Title of the conference/seminar/training/workshop	Title of paper presented	Place	Date(s) specialization
1.	2 days workshop on wheat production in barani area	Nutrient management for wheat under rainfed conditions	KP Agric. University, Peshawar	13-14/10/2010
2.	Training of trainers (ToT) on soil nutrient management sponsored by Italian Government	<ol style="list-style-type: none"> <li>1. Soil fertility and crop productivity in relation to soil physico-chemical and biological properties</li> <li>2. Soil fertility management through organic and inorganic fertilizers and legumes and fertilizer application techniques</li> <li>3. Increasing Fertilizer Use Efficiency</li> <li>4. Organic farming and Composting</li> </ol>	Model Development Farm, Farm Services Center, Mingora, Swat	24, 25 and 26 <sup>th</sup> May, 2011
3.	8 days Training of Laboratory Staff and Student in soil-water plant to analyses (Phase I and II)  I was the sole resource person	Practical training of laboratory staff and Ph.d enrolled students in various soil-water-plant analysis and installing of various equipments at WAMA laboratory	WAMA department, KPK Agric. Univ. Peshawar	Phase I 13-16, 06, 201 (4 days) Phase II 20-30, 06, 2011 (4 days)
4.	Training on enhancing maize and oil seed production in FR areas through modern agricultural practices, sponsored by Italian government Phase I: FR Peshawar Phase II: FR Kohat Phase III: FR D.I. Khan	Land Preparation for maize and sunflower	KPK Agric. Univ. Peshawar	Phase I: 12-14, 7, 2011 Phase II: 16-19, 7, 2011 Phase III: 21-23, 7, 2011
5	Training on enhancing maize, sunflower and kharif vegetables in FR areas through modern agricultural Practices, sponsored by Italian Government, Phase 1, FR Peshawar and Kohat Phase II, FR Bannu Phase III, D.I. Khan	Land Preparation and fertility management for maize sunflower and vegetables	KPK Agric. Univ. Peshawar	Phase 1 23-25, 04, 2012 Phase II 7-9, 05, 2012 Phase III 21-23, 05, 2012
6	One day work shop on role of Zn in	Zn Status of KP soils	NIFA, Tarnab	22 <sup>nd</sup> February,

crop production and human health organized by NIFA, PAEC, Peshawar	and strategies to improve its efficiency	Peshawar	2017
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## 6. AWARDS AND DISTINCTIONS

- Received 3<sup>rd</sup> position in Middle Board Exam (8<sup>th</sup> class) across the province in 1990.
- Received 1<sup>st</sup> position among government schools and overall 6<sup>th</sup> position in SSC Exam (1992) in the BISE, Swat.
- Remained in top ten in B.Sc of the whole university and got merit scholarship throughout the education career in KPK Agric. University, Peshawar
- Got 1<sup>st</sup> position in Department in M.Sc students and distinction certificate
- Received Merit Indigenous Scholarship for Ph.D

## 7. PROJECTS:

**Enrichment of Indigenously Extracted and Commercially Available Humic Acid with Micronutrients for Increasing Crop Production (Three years). Funded by HEC 20- NRPU 2021 16741 (Rs. 4.22 millions)**

1. Enrichment of Indigenously Extracted and Commercially Available Humic Acid with Micronutrients for Increasing Crop Production (Three years). Funded by HEC 20- NRPU 2021 16741 (Rs. 4.22 millions) as Co-PI.
2. Production of P Enriched Compost (Phosphocompost) to Enhance P Use Efficiency, Compost Quality and Crop Productivity (three years project for 2017-19). Funded by The University of Agriculture under Endowment Fund Program. (Rs. 1.9872 million).
3. Increasing crops production through humic acid in rainfed and salt affected soils in Kohat Division (NWFP). ALP-USAD Programme. PARC, Islamabad (2005-08). (Worked as Co-Principal Investigator with Dr. Riaz A. Khattak, Meritorious Professor, Deptt. of Soil and Environmental Sciences, NWFP Agricultural University, Peshawar).
4. Evaluation, reclamation and management of saline-sodic and waterlogged soils in Kohat Division. Funded by NDP/World Bank (2001- 2004) (Worked as Research fellow with Dr. Riaz A. Khattak, Meritorious Professor, Deptt. of Soil and Environmental Sciences, NWFP Agricultural University, Peshawar).

## 8. PUBLICATIONS:

1. Maria Mussarat, Waqar Ahmad, Dost Muhammad, Muhammad Adnan, Beena Saeed, Noor Us Sabah, Zain Mushtaq, Mukkram Ali Tahir, Manzoor Ahmad & Muhammad Romman (26 Mar 2026): Elucidating the phytoremediation potential of aquatic macrophytes for Cd, Cr, and Pb under varying pH and salinity, *International Journal of Phytoremediation*, DOI: 10.1080/15226514.2026.2642353
2. Jian Zhang, Hao Jiang, Yanping Li, Wenshi Zhang, Wenlu Lan, Xin Luo, Dost Muhammad, Shahzad Afzal, and Ke Pan. 2026. Oyster aquaculture enhances sedimentary nitrogen removal in a subtropical estuary. *Regional Studies in Marine Science*. 96 (2026) 104932. <https://doi.org/10.1016/j.rsma.2026.104932>
3. Sarmad Iqbal, Ahmad Khan, Gulzar Ahmad, Habib Akbar and Dost Muhammad. 2026. Farmyard manure mineralization: field and laboratory insights into manure placement depth and mulching strategies for sustainable maize production. *Plant Soil*. <https://doi.org/10.1007/s11104-026-08406-w>
4. Ibadullah, D. Muhammad, C. Rosen, M. Mussarat, M.J. Khan, F. Wahid and A. Ali. 2026. Nitrogen and sulphur fertilization effects on maize growth and nutrient uptake in contrasting soils. *Sarhad Journal of Agriculture*, 42(1): 277-289. DOI | <https://dx.doi.org/10.17582/journal.sja/2026/42.1.277.289>
5. SADIGOV, R.A, G.S. MIRZAYEV, F.H. GURBANOVA and D. MUHAMMAD. 2026. DETERMINATION OF DIAGNOSTIC INDICATORS IN ALLUVIAL MEADOW-FOREST SOILS FORMED IN THE SHAMKIRCHAY RESERVOIR BASIN. *SABRAO Journal of Breeding and Genetics*. 58 (1) 463-473, 2026 <http://doi.org/10.54910/sabrao2026.58.1.43> <http://sabraojournal.org/>
6. Bibi, S., M. Mussarat, D. Muhammad, Z. Murad, S.Y. Im, P. Zhuang, I. Khan and A. Rehman. 2025. Enhancing nutrient use efficiency and wheat productivity through application of humic acid and farmyard manure with synthetic fertilizers. *Sarhad Journal of Agriculture*, 41(4): 1980-1995
7. Kashif, Muhammad; Khan, Asad Ali; Ahmed, Iftikhar; Khan, Ahmad; Muhammad, Dost; 2025. Improvement of Chickpea (*Cicer arietinum* L.) Growth and Yield through Phosphorus Sources and Beneficial Microbes. *Plant Animalia*. 4(5):179-193
8. Khan, F., M.J. Khan., and Muhammad D. 2025. Rhizosphere saturation with carcinogenic heavy metals (Cd, Cr, Pb and Ni) and their uptake by crops in urban wastewater irrigated lands - a mayday call. *Sarhad Journal of Agriculture*, 41(3): 1420-1434.

<https://dx.doi.org/10.17582/journal.sja/2025/41.3.1420.1434>

9. Afzal, Shahzad; Muhammad, Dost; Ullah, Rafi; Adnan, Muhammad; Saeed, Beena; Alzayed, Rasha M; Alhajouj, SONDOS A; Alaida, Meaad F; Ahmad, Manzoor and Altalhi, A; 2025. Interactive effect of humic acid and farmyard manure on soil health and microbial activity in calcareous soil. *Pak. J. Bot.* 57(3):871-876
10. Ullah, Ibad; Muhammad, Dost; Musarat, Maria. 2025. Effect of Various Nitrogen and Sulfur Sources on Maize-Wheat Yield and N: S Uptakes Under Two Different Climatic Conditions. *Agricultural Research.* 14(1):188-199
11. Sumreen, Sonia, M. Sharif, T. Sultan, D. Muhammad and A. Khan. 2025. Effect of isolated plant growth promoting rhizobacteria on growth and nutrient uptake by maize in acid and alkaline soil conditions. *Pak. J. Bot.,* 57(1): 37-46, 2025. DOI: [http://dx.doi.org/10.30848/PJB2025-1\(15\)](http://dx.doi.org/10.30848/PJB2025-1(15))
12. Zaryab Khan, Aftab Tabasum, Dost Muhammad , Maria Mussarat , Javaid Hassan. 2024. Comparative Analysis of Soil Phosphorus Determination Methods and Their Correlation with Plant Phosphorus in Standing Wheat Crops. *Turkish Journal of Agriculture - Food Science and Technology.*12(4): 568-574, 2024DOI:<https://doi.org/10.24925/turjaf.v12i4.568-574.639>
13. Sara and Dost Muhammad. 2024. Effects of Organic Amendments and Mineral Fertilizers on Optimizing Nutrient Cycling in Alkaline Soil. *Plant Bulletin.* 3(1):26-35
14. Akbar, F., N. Ahmed, M. Mussarat, I. Ahmed, D. Muhammad, T. Ahmad, M.A. Akbar, S. Rafique, S. Ali, S. Aslam, B.H. Shah, F. Ahmad and M.A. Khan. 2024. Effect of trichoderma applied with different sulfur levels on yield and sulfur uptake by onion (*Allium cepa* L.). *Sarhad Journal of Agriculture,* 40(2): 286-294
15. Khan, H., A. Khan, S. Khan, A. Anjum, H. Akbar and D. Muhammad. 2023. Quantifying maize phenology using beneficial microorganisms and residue management under deep tillage system. *Zemdirbyste-Agriculture.* 110(4):301-310
16. Nadia, Amanuallah. M. Arif and D. Muhammad. 2023. Improvement in wheat productivity with integrated management of beneficial microbes along with organic and inorganic phosphorus sources. *Agriculture.* 13:1118. <https://doi.org/10.3390/agriculture13061118>
17. Ullah, I., D. Muhammad, and M. Mussarat. 2023. Effect of Various Nitrogen Sources at Various Sulfur Levels on Maize–Wheat Yield and N/S Uptake under Different Climatic Conditions. *J Plant Growth Regulation* (2022). <https://doi.org/10.1007/s00344-022-10682-6>
18. Jan, T., M. Arif, S. Anwar and D. Muhammad. 2023. Biochar-micronutrients-FYM Nexus for maize productivity, macronutrients' availability and soil organic carbon under semi-arid climate.

Gesude Pflanzen. <https://doi.org/10.1007/s10343-023-00872-x>

19. Sara and D. Muhammad. 2023. Effect of carbon sources and levels on soil microbial dynamics and N, P mineralization. *Journal of Xian Shiyou University, Natural Science Edition*. 19: 1265-1282
20. Myra, N, M.J. Khan, D. Muhammad and A. Khan. 2022. Biochar application stabilized the heavy metals in coal mined soil. *Canadian Journal of Soil Science*. <https://doi.org/10.1139/cjss-2022-0073>
21. Ullah, I., Muhammad, D. and Mussarat, M. Effect of Various Nitrogen Sources at Various Sulfur Levels on Maize–Wheat Yield and N/S Uptake under Different Climatic Conditions. *J Plant Growth Regulation*. (2022). <https://doi.org/10.1007/s00344-022-10682-6>
22. Ibad Ullah, D. Muhammad, M. Mussarat, S. Khan, M. Adnan, S. Fahad, M. Ismail, I. A. Mian, A. Ali, M. H. Saleem, M. Saeed, F. Gul, M. Ibrahim, M. A. S. Raza, H. M. Hammad, W. Nasim, S. Saud, J. Z. K. Khattak, M. Ahmad, N. Ali, R. Akbar, S. M. Khan and J. Banout. 2022. Comparative effects of biochar and NPK on wheat crops under different management systems. *Crop and Pasture Science*. Special issue/Research Paper. <https://doi.org/10.1071/CP21146>
23. Khalil, M.S, D. Muhammad, M. O. Khan, O.A. Skorba, S. Ali, S. R. Qureshi and M. Ali. 2022. Contrasting impacts of phosphorus enriched compost on phosphorus fractionation in soil and yield of traits of chickpea.. *Int. J. Agricult. Stat. Sci.* 17: 2339-2352
24. Rahman, M., K. Zhanga, Y. Wang, B. Ahmad, A. Ahmad, Z. Zhang, D. Khan, D. Muhammad, and A. Alif. 2022. Variations in soil physico-chemical properties, soil stocks, and soil stoichiometry under different soil layers, the major forest region Liupan Mountains of Northwest China. *Brazilian Journal of Biology*. Vol. 84. e256565. <https://doi.org/10.1590/1519-6984.256565>.
25. Nadeem. M., K. Waseema, M.S. Khan, S. Fatima, I. Khan, D. Muhammad, S. F. Arslanoglu and S. A. Khan. 2022. Assessing Interactive Response of Humic Acid Amended Media and IBA on the Growth and Propagative Capacity of Fig (*Ficus carica* L.) Stem Cuttings. *Pak. j. sci. ind. res. Ser. B: biol. sci.* 2022 65B(1) 77-89
26. Ibadullah and Dost Muhammad. 2021. Enhancement in Maize-Wheat productivity and N use efficiency through sulfur application in two diverse climatic conditions. *BIOSCIENCE RESEARCH*, 2021 18(2): 1914-1932.
27. Mussarat, M.; Shair, M.; Muhammad, D.; Mian, I.A.; Khan, S.; Adnan, M.; Fahad, S.; S. Dessoky, E.; EL Sabagh, A.; Zia, 2021. Accentuating the Role of Nitrogen to Phosphorus Ratio

- on the Growth and Yield of Wheat Crop. Sustainability. 2021, 13, 2253. <https://doi.org/10.3390/su13042253>.
28. Mussarat M, Ali H, Muhammad D, Ahmad Mian I, Khan S, Adnan M, Fahad S, Wahid F, Dawar K, Ali S, Zia A, Ahmad M, Khan S, Ali Shah W, Romman M, Parvez R, H Siddiqui M, Khan A, Wang D, Jiang X. Comparing the phosphorus use efficiency of pre-treated (organically) rock phosphate with soluble P fertilizers in maize under calcareous soils. PeerJ. 2021 May 24;9:e11452. doi: 10.7717/peerj.11452. PMID: 34113489; PMCID: PMC8158173.
  29. Rafiullah , Mohammad Jamal Khan , Dost Muhammad , Maria Mussarat , Huma , Muhammad Adnan , Shah Fahad , Fazli Wahid , Muhammad Arif & Amanullah Jr. 2021. Foliar versus soil phosphorus (P) application for improving P use efficiency in wheat and maize in calcareous soils. Journal of Plant Nutrition. <https://doi.org/10.1080/01904167.2021.1871744>.
  30. Irfan, M. F. Ishaq, D. Muhammad , M. J. Khan, I.A. Mian, , K. M. Dawar, A. Muhammad, M. Ahmad, S. Anwar, S. Ali, F.U. Khan, B. Khan, H. Bibi, A. Kamal, M. Mussarat, W. Ullah and M. Saeed. 2021. Effect of wheat straw derived biochar on the bioavailability of Pb, Cd and Cr using maize as test crop. Journal of Saudi Chemical Society (2021) 25, 101232.
  31. Shah, T., M. Tariq and D. Muhammad. 2020. Biochar application improves soil respiration and nitrogen mineralization in alkaline calcareous soil under two cropping systems. Sarhad Journal of Agriculture, 37(2): 500-510.
  32. Muhammad Farhan Saeed, Aftab Jamal, Dost Muhammad, Ghulam Mustafa Shah, Hafiz Faiq Bakhat, Iftikhar Ahmad, Sajjad Ali, Fahid Ihsan, and Jingkuan Wang. 2020. Optimizing Phosphorus Levels in Wheat Grown in a Calcareous Soil with the Use of Adsorption Isotherm Models. J Soil Sci Plant Nutr (2020). <https://doi.org/10.1007/s42729-020-00344-5> (IF = 2.271)
  33. Rafiullah, Muhammad Jamal Khan, Dost Muhammad, Shah Fahad, Muhammad Adnan, Fazli Wahid, Saud Alamri, Farmanullah Khan, Khadim Muhammad Dawar, Inam Irshad, Subhan Danish, Muhammad Arif, Amanullah, Shah Saud, Bushra Khan, Ishaq Ahmad Mian, Rahul Datta, Tayebah Zarei, Anis Ali Shah, Musarrat Ramzan, Muhammad Zafar-ul-Hye, Maria Mussarat and Manzer H. Siddiqui. 2020. Phosphorus Nutrient Management through Synchronization of Application Methods and Rates in Wheat and Maize Crops. Plants 2020, 9: 1389
  34. Abida Saleem, Dost Muhammad, Mumtaz Khan, Qudrat Ullah Khan, Muhammad Rizwan, Salma Shaheen, Hamza Noor, Shiza Gul, Muhammad Daud Khan, and Shafaqat Ali. 2020. Dynamics of AB-DTPA-extractable Zn in high and low limed calcareous soils amended with biochar and farmyard and poultry manures. Arabian Journal of Geosciences. 13: 145-156.

35. Humaira, A.A. Shad, Dost Muhamamd, H.U. Shah. 2020. Evaluation of some medicinal plant extracts for their nematicidal properties against root-knot nematode, *Meloidogyne javanica*. *Applied Ecology and Environmental Research*. 18(2):2475-2482
36. Haroon Ur Rashid, Dost Muhammad, Muhammad Azim Khan, Muhammad Arif, Nazia Tahir, Muhammad Zamin6, Riaz Ahmad Afridi, Muhammad Tahir Azeem and Farooq Azam. 2020. Impact of integrated weed management in maize on weed density, biological yield and soil physicochemical properties. *Intl. J. Biological Sciences*. 16(5): 232-244.
37. Asim Muhammad , Ishaq Ahmad Mian, Dost Muhammad, Haroon Khan , Imtiaz Khan , Muhammad Ishfaq Khan, and Abdullah Jalal. 2019. Management of weeds through planting dates alteration and using selected maize cultivars under changing climate. *Mitteilungen Klosterneuburg*. 70(2):102-121.
38. Manzoor Ahmad, M. Jamal Khan, Dost Muhammad, Wajid Ali Shah, Fahim Ullah, Riaz A. Khattak, Zafar Hayat Khan, Amjad Iqbal and Farooq Shah. 2019. Critical solution [P] in diverse calcareous soil series using adsorption equation. *Fresenius Environmental Bulletin*. 28(6):4661-4670
39. Munir Ahmad, Ibrahim Khan, Dost Muhammad, Maria Mussarat and Muhammad Izhar Shafi. 2019. Effect of phosphorus sources and their levels on spring maize. *Pak. J. Sci. Ind. Res. Ser. B: Biol.Sci*. 62B(1):8-14.
40. Mussaddiq Khan Khalil, Dost Muhammad, Shuja Ur Rehman Qureshi, Sultan Nawaz, Farooq Ishaq. 2019. Impact of Phosphorite on pH, Electrical Conductivity and Water Soluble Phosphorous Extracted from Incubated Citrus Waste Compost, *Modern Chemistry*. Volume 7, Issue 4, December 2019 , pp. 109-113. doi: 10.11648/j.mc.20190704.14
41. Munir Ahmad, Dost Muhammad, Maria Mussarat, Muhammad Naseer, Muhammad A. Khan, Abid A. Khan, Muhammad Izhar Shafi. 2018. Spatial variability pattern and mapping of selected soil properties in hilly areas of Hindukush range northern, Pakistan. *Eurasian J Soil Sci*, 7 (4) 355 - 364
42. Jamil Ahmad, Dost Muhammad, Mujibur Rahman and Maria Mussarat. 2018. Fortification of Locally Developed Single Super Phosphate With Zinc Sulphate for Enhanced Zinc Nutrition to Maize Crop Under Calcareous Soil Conditions. *Current Agriculture Research Journal*. 6(1):30-36.
43. Mujibur Rahman, Dost Muhammad, Maria Mussarat, Muhammad Sharif, Muhammad Irfan, Rafiullah, Jamil Ahmad and Farooq Ishaq. 2018. Effect of acidulated levels and application techniques of rock phosphate on phosphorus use efficiency and yield of wheat in calcareous soil

of Peshawar-Pakistan. *Pure Appl. Biol.*, 7(3): 1094-1103

44. Aftab Jamal, Dost Muhammad and M.F. Khan. 2018. Foliar Application of Phosphorous on Maize Seedling Growth and P Concentrations. *International Journal of Environmental Sciences and Natural Resources*. 11(4):01-05.
45. Aftab Jamal, Dost Muhammad, Mujeeb ur Rahman, and Hifsa Jamal. 2018. Application of adsorption isotherms in evaluating the influence of humic acid and farmyard manure on phosphorous adsorption and desorption capacity of calcareous soil. *World Scientific News*. 107 (2018) 136-149
46. Fazlullah , Muhammad Adnan\*, Shah Fahad , Saadia Iqbal , Muhammad Arshad , Dost Muhammad , Fazli Wahid , Akif Hussain , Muhammad Roman , Rainaz Perveez and Muhammad Noor. 2018. Integrated application of phosphorus (P) and phosphate solubilizing bacteria (PSB) improve maize yield. *Pure and Applied Biology*. <http://dx.doi.org/10.19045/bspab.2018.70062>
47. Rafiq Ahmad, Dost Muhammad, Maria Mussarat, Shah Fahad, Shahid Ullah, Taimur Ahmad, and Sara Wahab. 2018. Effect of different levels of nitrogen on yield of Colocasia (*Colocasis esculenta*) at district Malakand Dargai. *Open journal of Soil Science*. 87-98.
48. Rafiullah, M.J. Khan and D. Muhammad. 2017. Foliar application of phosphorus to enhance phosphorus utilization and crop growth:a hydroponic study. *Sarhad Journal of Agriculture*, 34(1): 47-53.
49. Amjad Ali , Di Guo, Amanullah Mahara, Zhen Wanga , Dost Muhammad, Ronghua Lia , Ping Wang, Feng Shen , Quanhong Xue , Zengqiang Zhang. 2017. Role of *Streptomyces pactum* in phytoremediation of trace elements by *Brassica juncea* in mine polluted soils. *Ecotoxicology and Environmental Safety*. 144: 387-395 (IF: 5.34)
50. Abida Saleem, Sajida Perveen, Dost Muhammad, Muhammad Jamal Khan, Maria Mussarat, Nasrullah Muhammad, Ihtesham Kaleem, and Abdul Wahid. 2017. Integrating Effects of Applied Zn with Organic Amendments for Enhanced Maize and Wheat Yields at Two Diverse Calcareous Soils. *Turkish journal of Agricultural and Natural Sciences*. 4(2): 179–188.
51. Munir Ahmad, Dost Muhammad, Maria Mussarat, Abid Ali Khan, Shah Faisal Khan and Muhammad Waqas Javed. 2016. Appraisal for site specific plant nutrient management through spatial variability and mapping in hilly areas of northern Pakistan. *J Soils Sediments*. DOI 10.1007/s11368-016-1606-z (IF 2.206)
52. M.N. Khan, Dost Muhammad, Sajjad Raza, Abdul Haseeb, Mubasher Nasir, Asad Shah,

- Farmanullah Khan, and Tanveer Ali. 2016. Phosphorus Adsorption and Phosphorus Use Efficiency in Calcareous Alkaline Soils Influenced by Humic Acid. *International Journal of Plant & Soil Science* 12(1): 1-10, 2016; Article no. IJPSS.25805
53. Shahzad Afzal, Xie Quana, Shuo Chena, Jing Wanga, and Dost Muhammad. 2016. Synthesis of manganese incorporated hierarchical mesoporous silica nanosphere with fibrous morphology by facile one-pot approach for efficient catalytic ozonation. *Journal of Hazardous Materials* 318 (2016) 308–318 (IF 4.836)
  54. Irshad Ali, Dost Muhammad, Fayaz Ali, Zia Ullah, Muhammad Amin, Muhammad Arshad, Fida Muhammad, Maria Musrrat and Muhsan Ali Kalhoro. 2015. Land evaluation of Umerzai area, District Charsadda for Cropping. *Lasbela, U. J. Sci. Techl.*, 4: 168-171.
  55. M. Arif, F. Jalal, M. T. Jan, Dost Muhammad and R. S. Quilliam. 2015. Incorporation of Biochar and Legumes into the Summer Gap: Improving Productivity of Cereal-Based Cropping Systems in Pakistan. *Agroecology and Sustainable Food Systems*. 39:391–398. (IF 1.140)
  56. Waheed, M., M.A. Khan, T. Naseem, D. Muhammad, and M. Musarat. 2015. Improving effectiveness of rock phosphate through mixing with farmyard manure, humic acid and effective microbes to enhance wheat and phosphorus uptake by wheat. *Pure and applied biology*. 4(4): 480-490.
  57. Ali, H., Y. Akbar, A. Razaq and D. Muhammad. 2014. Effect of humic acid on root elongation and percent seed germination of wheat seeds. *International J. of Agric. and Crop Sci*. 7(4): 196-201.
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  60. Naseer, M. and D. Muhammad. 2014. Direct and residual effect of Hazara Rock Phosphate (HRP) on wheat and succeeding maize in alkaline calcareous soils. *Pak. J. Bot.* 46(5):1755-1761.
  61. Samad, A., D. Muhammad, M. Musarat and W. Ullah. 2014. Enhancing wheat yield and phosphorus use efficiency through foliar application in calcareous soil. *J. Natural Science Research*. 4(7): 70-74.
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## **10. PAPERS PRESENTED IN CONFERENCES/ABSTRACTS PUBLISHED**

1. Denitrification potential in rice soils of Swat and Peshawar Valleys, 9<sup>th</sup> Congress of Soil Science held at Agricultural University, Faisalabad on 16-19 March, 2002 organized by Soil Science Society of Pakistan
2. Effect of rhizobial inoculation and different phosphorus levels on the yield and yield components of mungbean under the rainfed conditions of D.I. Khan, 10<sup>th</sup> Congress of Soil Science held at Sindh Agricultural University, Tandojam on 16-19 March, 2004 organized by Soil Science Society of Pakistan
3. Effect of pressmud on soil reclamation and growth of maize under saline-sodic soil condition, 11<sup>th</sup> Congress of Soil Science held at National Agricultural Research Center, Islamabad on 11-13 March, 2006 organized by Soil Science Society of Pakistan
4. Evaluating efficiency of different amendments in reclamation of saline-sodic soil: a column study, 12<sup>th</sup> Congress of Soil Science held at NWFP Agricultural University, Peshawar on 20-23

- Oct., 2008 organized by Soil Science Society of Pakistan
5. Enhancement of wheat and maize productions through humic acid in salt-affected soils. 12<sup>th</sup> Congress of Soil Science held at NWFP Agricultural University, Peshawar on 20-23 Oct., 2008 organized by Soil Science Society of Pakistan
  6. Effect of rock phosphate on the growth maize in pot experiment. 12<sup>th</sup> Congress of Soil Science held at NWFP Agricultural University, Peshawar on 20-23 Oct., 2008 organized by Soil Science Society of Pakistan
  7. Uptake of P by Wheat Seedlings as Influenced by Acidified Rock Phosphate in Calcareous Soil, 13<sup>th</sup> Congress of Soil Science held at Serina Hotel Faisalabad on 24-27 March, 2010 organized by Soil Science Society of Pakistan
  8. Rock phosphate solubility in water and sulfuric acid solutions, 13<sup>th</sup> Congress of Soil Science held at Serina Hotel Faisalabad on 24-27 March, 2010 organized by Soil Science Society of Pakistan
  9. Effect of wetting drying cycles on P release in two diverse calcareous soil series, 13<sup>th</sup> Congress of Soil Science held at Serina Hotel Faisalabad on 24-27 March, 2010 organized by Soil Science Society of Pakistan.
  10. Waseem Haider\*, Maria Mussarat, Dost Muhammad, and Rafiq. 2014. Ahmad Evaluating the Role of Humic Acid, FYM and Poultry Manure on yield of Colocasia for Organic Farming in Malakand Agency. Submitted to 15<sup>th</sup> International Congress of Soil Science on “Soil Management in Changing Climate” March 18-20, 2014, Islamabad, Pakistan.
  11. Rafiq Ahmad\*, Dost Muhammad, Maria Mussarat, and Waseem Haider. 2014. Effect of Nitrogen levels on Yield of Colocasia (*Colocasia esculenta*) at Farmer’s Field in District Malakand. Submitted to 15<sup>th</sup> International Congress of Soil Science on “Soil Management in Changing Climate” March 18-20, 2014, Islamabad, Pakistan.
  12. Dost Muhammad\*, Abdul Samad, Maria Mussarat, Muzamil Shah, and Muhammad Arif. 2014. Enhancing Wheat Yield and Phosphorous Use Efficiency through Foliar Application in Calcareous Soil. Submitted to 15<sup>th</sup> International Congress of Soil Science on “Soil Management in Changing Climate” March 18-20, 2014, Islamabad, Pakistan.
  13. Dost Muhammad\*, Maria Mussarat, Muhammad Numan, and Abid Ali Khan. 2014. Influence of humic acid on phosphorus sorption in alkaline calcareous soil. Submitted to 15<sup>th</sup> International Congress of Soil Science on “Soil Management in Changing Climate” March 18-20, 2014, Islamabad, Pakistan.
  14. Dost Muhammad. 2016. Application of adsorption isotherm in optimizing phosphorus levels for wheat crop in calcareous soil. Presented at 16<sup>th</sup> International Congress of Soil Science on

“Healthy soils for food security” March 15-17<sup>th</sup>, 2016 at Pir Meher Ali Shah Arid Agriculture University, Rawalpindi, Pakistan.

15. Fakhar Zaman, Maria Mussarat, Ihsan Khan, Dost Muhammad, and Abida Saleem. 2018. Comparative effect of potassium orthophosphate and sodium orthophosphate as a foliar spray on winter wheat. Presented at 17<sup>th</sup> International Congress of Soil Science on “Soil: Ultimate Solution to Food Security and Climate Change” March 16-19, 2018, Faisalabad, Pakistan.
16. Aiman Usman\*, Dost Muhammad, Maria Mussrat, Farhan Zeb and Muhammad Waheed. 2018. Effect of Pretreated Composts on Soil pH, EC and Extractable Phosphorus During Incubation Study. Presented at 17<sup>th</sup> International Congress of Soil Science on “Soil: Ultimate Solution to Food Security and Climate Change” March 16-19, 2018, Faisalabad, Pakistan.
17. Dost Muhammad, Rafiullah, Mohammad Jamal Khan, and Maria Mussarat. 2018. Enhancing Phosphorus use efficiency through foliar application for Crop Production in Calcareous Soils. National Symposium on “Soil plant water interaction for orchard management under changing climate” Invited Speaker, June 4-6, University of Haripur, KP
18. Dost Muhammad, Abida Saleem, Jamil Ahmad, Muhammad Jamal Khan, Maria Mussarat, Adnan Farooqi, Salman Rahim and Muhammad Waheed. 2018. Enhancing Zn availability though combine use of ZnSO<sub>4</sub> with organic amendments and acidulated rock phosphate for crop production. Presented at 1<sup>st</sup> International Symposium on Climate Change Impacts on Agriculture and Food Supply 24-26<sup>th</sup> April, 2018 at University of Swabi, Swabi
19. Dost Muhammad, Muhammad Naseer, Muhammad Farooq, Jamil Ahmad, Muhammad Abbas, Maria Mussarat, Muhammad Jamal Khan, and Muhammad Waheed. 2018. Utilization of Hazara rock phosphate for enhanced crop production in calcareous soils of Peshawar. Presented at 2<sup>nd</sup> International on Crop modeling for smart agriculture. 13-14 May, 2018 at University of Agriculture, Peshawar
20. Dost Muhammad, Salman Rahim and Jamil Ahmad. 2018. Fortification of locally developed SSP with zinc sulfate for enhanced Zn nutrition to wheat and maize at National Conference on “Agricultural Problems and Food Security in the Changing Climate” 14-17<sup>th</sup> November, 2018 at University of agriculture, Peshawar.

21.

#### **09. Ph.D RESEARCH SUPERVISED as Major**

1. Naseer Muhammad. 2014. Enhancement of crop production through rock phosphate application in calcareous soils. **HEC sponsored Indigenous Scholar**. SES Department, The University of Agriculture, Peshawar (Degree awarded)
2. Muhammad Waheed. 2022. Effect of pretreated FYM compost on phosphorus availability,

fractionation and crop yield in calcareous soils. SES Department, The University of Agriculture, Peshawar (Degree awarded)

3. Ibadullah. 2022. Optimizing N:S ratio for higher maize-wheat productivity and nutrient uptake under different fertility management and climatic conditions. SES Department, The University of Agriculture, Peshawar (Degree awarded).
4. Sara. 2022. Carbon management for improving soil health and crop production. SES Department, The University of Agriculture, Peshawar. (Thesis has been reviewed from abroad after departmental BOS).
5. Bilal Ahmad. 2025. The interrelationship of zinc with iron in maize-wheat cropping system. SES Department, The University of Agriculture, Peshawar. (Positive evaluation reports have received and ready for degree award).
6. Irshad Ali. 2026. Enhancing phosphorus use efficiency through humic substances derived from lignitic coal and compost. SES Department, The University of Agriculture, Peshawar. (Positive evaluation reports have received and ready for degree award).

#### **7. Ph.D RESEARCH SUPERVISED as member**

Helped and supervised the following students in conducting field experiments, laboratory analysis, data analysis, and thesis writing as a team member.

1. Haroon. 2009. Increasing crop production through humic acid in salt-affected soils. Ph.D Thesis. SES Department, KPK Agric. Univ. Peshawar, Pakistan.
2. Zhaid Hussain. 2010. Evaluating the role of phosphorus and potassium fertilizers in nutrient dynamics and crop growth in salt-affected soils. Ph.D Thesis. SES Department, KPK Agric. Univ. Peshawar, Pakistan.
3. Hamid Gul. 2010. Nutrients losses evaluation in drainage drainage water of Mardan SCARP. Ph.D Thesis. SES Department, KPK Agric. Univ. Peshawar, Pakistan.
4. Manzoor Ahmad. 2010. Critical soil solution phosphorus concentrations essential for plant growth in calcareous soil series. Ph.D Thesis. SES Department, KPK Agric. Univ. Peshawar, Pakistan.
5. Rafiullah. 2015. Enhancing crop production and phosphorus use efficiency through supplementing soil with its foliar application under calcareous soil. **HEC sponsored Indigenous Scholar**. SES Department, KPK Agric. Univ. Peshawar, Pakistan.
6. Myra Nazir. 2022. Characterization of designed biochar for stabilization of heavy metals in agriculture soil. SES Department, The University of Agriculture, Peshawar
7. Farman Ullah Khan. 2026. Assessment and management of heavy metals in wastewater

irrigated soils using in-situ stabilization techniques. The University of Agriculture, Peshawar.

8. Sonia Summreen

9. Abdur Rehmand

#### **10. M.Sc (Hons) STUDENTS SUPERVISED**

1. Shahzad Afzal. 2011. Effect of Humic Acid on Selected Soil Properties. Department of Soil and Environmental Sciences, KPK Agric. Univ. Peshawar

2. Naveed Ahmad. 2011. Effect of acidified rock phosphate on wheat growth and p uptake in calcareous soil. Department of Soil and Environmental Sciences, KPK Agric. Univ. Peshawar.

3. Irshad Ali 2012. Effect pre-seed treatments on yield and nutrient uptake by maize. Department of Soil and Environmental Sciences, KPK Agric. Univ. Peshawar.

4. Muhammad Tariq. 2012. Effect different levels of K on growth and yield of two maize cultivars under calcareous soil conditions. Department of Soil and Environmental Sciences, The University of Agriculture, Peshawar.

5. Abdul Samad. 2013. Effect of foliar P application on growth and P uptake by maize under calcareous soil conditions. Department of Soil and Environmental Sciences, The University of Agriculture, Peshawar.

6. Alamgir Khan. 2014. Integration of residual biochar with organic and inorganic sources of phosphorus for improving wheat productivity. Department of Soil and Environmental Sciences, The University of Agriculture, Peshawar.

7. Izhar Shafi. 2015. Effect of humic acid treated single super phosphate on growth and phosphorus uptake by wheat crop. Department of Soil and Environmental Sciences, The University of Agriculture, Peshawar (However, due to BOS decision the thesis were finalized by the member)

8. Aftab Alam. 2015. Application of adsorption isotherm in optimizing phosphorus level for wheat crop in calcareous soil. Department of Soil and Environmental Sciences, The University of Agriculture, Peshawar (However, due to BOS decision the thesis were finalized by the member)

9. Mujib Ur Rahman. 2017. Effect of acidulation levels and application techniques of rock phosphate on phosphorus use efficiency and yield of wheat.

10. Jamil Ahmad. 2017. Fortification of locally developed single super phosphate with zinc sulphate for enhanced zinc nutrition to maize crop under calcareous soil conditions

11. Zakirullah Khan. 2017. Enhancing wheat crop production through priming in humic acid and zinc solutions
12. Muhammad Arif. 2017. Split application of phosphorus fertilizers for enhancing efficiency and wheat growth.
13. Adnan Farooqi. 2018. Effect of pre-mixing of zinc with fym on yield and its uptake by wheat in calcareous soil
14. Samiullah Khan. 2018. Relative phosphorus utilization efficiency of wheat genotypes in hydroponics
15. Fakhar Zaman. 2018. Comparative effect of potassium orthophosphate and sodium orthophosphate as foliar spray on wheat
16. Muhammad Farooq. 2018. Residual effect of citrus waste compost in rock phosphate solubility, p availability and uptake by wheat crop.
17. Farhan Zeb. 2018. Effect of phosphorus on compost process and its consequent effect on soil properties and P availability during incubation experiment.
18. Salman Rahim. 2018. Fortification of locally developed SSP with zinc sulphate for enhanced Zn nutrition to wheat crop under calcareous conditions.
19. Mussadiq Khan. 2018. Response of chickpea to different fractions of soil phosphorus following application of pre-treated compost.
20. Farooq Ishaq. 2019. Effect of wheat straw derived biochar on bio-availability of lead, chromium and cadmium using maize as test crop.
21. Salman Rahim. 2019. Fortification of locally developed SSP with zinc sulphate for enhanced Zn nutrition to wheat crop under calcareous soil
22. Mussadiq Khan. 2019. Response of chickpea to different fractions of soil phosphorus following application of pre-treated compost
23. Muhammad Ibrar. 2020. Effect of different nitrogen levels on soil and plant N content and its correlation with yielding potential of different wheat varieties.
24. Muhammad Ismail. 2020. Effect of foliar applied humic acid and phosphorus on P availability, use efficiency and wheat yield
25. Aiman Usman. 2020. Effect of urease and nitrification inhibitors on nitrogen leaching in column study
26. Saba Asif. 2021. Effect of zinc treated humic acid on performance and zinc uptake by wheat.
27. Munawar Khan. 2022. Mapping and spatial variability assessment of soil properties through GIS techniques in District Nowshehra OF SOIL PROPERTIES THROUGH GIS

## TECHNIQUES IN DISTRICT NOWSHERA

28. Muhammad Ayaz. 2022. Integrated effect of humic acid, farmyard manure and phosphatic fertilizers on yield and P uptake by wheat
29. Ajmall Khan. 2022. Influence of iron application through trunk injection on chlorosis in peach trees of Swat Valley
30. Shah Rukh Bakhtiar. 2022. Effect of time interval of NPK application on yield and quality off- season tomato grown under high tunnel
31. Hassam ul Haq. 2023. Soil fertility mapping and annual loss estimation using multi criteria analysis and revised universal soil loss equation: a case study of district Abbottabad, Pakistan
32. Shamsa. 2023. Effect of foliar zinc applied at different stages on wheat yield, recovery and partitioning of zinc
33. Tehleem. 2023. Soil solution-P and its concentration in plants from selected wheat fields for yield and traits
34. Ijaz Amin. 2023. Enhancing phosphorus use efficiency and profitability from wheat through humic acid application in combination with rock phosphate and single super phosphate fertilizers
35. Shah Zeb. 2023. Comparative evaluation of *Trichoderma harzianum* strains on wheat yield and phosphorus uptake at different P levels
36. Shah Zeb. 2024. Comparative evaluation of *Trichoderma harzianum* strains on wheat yield and phosphorus uptake at different P levels.
37. Zaryab Khan. 2024. Enrichment of FYM compost with rock phosphate and solubilizing bacteria for enhancing maize production and P use efficiency
38. Zahid Ilyas. 2024. Effect of phosphoric and sulfuric acids treated biochar on Maize yield and availability of phosphorous under calcareous soil condition.
39. Syed Latif Ullah Shah. 2024. Improving yield and quality of off-season cucumber with application frequency of NPK with drip irrigation system under high tunnel
40. Salman Ahmad. 2024. Effect of foliar application of boron, zinc and soil applied compost on growth and yield of off season cucumber.
41. Hassan Khan. 2025. Effect of *Trichoderma* on the availability of boron to common bean (*Phaseolus Vulgaris* L).
42. Abdul Majeed Khan. 2025. Combine application of bio-slurry and phosphatic fertilizer on the yield of maize and nutrient uptake
43. Bilal Afsar. 2205. Assessment of trichoderma and phosphorus solubilizing bacteria for NaCl-

induced salinity tolerance in sorghum

44. Nazeef ullah. 2025. Synthesis of humic acid coated urea and its effect on nitrogen recovery and maize yield in alkaline calcareous soil of Peshawar
45. Adnan Alam. 2025. Effect of phosphorous solubilizing bacteria and trichoderma applied with cattle manure on yield and nutrient uptake by maize plant
46. Nimra Iftikhar. 2025. “Effect of phosphoric acid and sulphuric acid treated biochar on availability of phosphorous and nitrogen uptake by mung bean”
47. Shomayela Afzal. 2025. “Mineralization potential and nitrogen losses from humic acid coated urea”
48. Waseem Jan. 2026. Response of various exotic and local wheat lines/varieties to natural field salinity under diverse agro-climatic conditions

**Currently another 06 students of M.Sc (hons) are conducting their research work under my supervision. Except this, I have been a member of supervisory committee of many students in Horticulture, Agronomy, Water Management, Agricultural Chemistry both at Ph.D and M.Sc levels.**

## 11. REFERENCES

1. Dr. Riaz A. Khattak, Meritorious Professor, Vice Chancellor, CECOS University, Peshawar, Pakistan.  
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