

ADNAN AKHTER

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Personal Particulars

Date of Birth: May 10, 1985.
Nationality: Pakistani
Address: Faculty of Agricultural Sciences, Department of Plant Pathology,
Quaid-e-Azam Campus, P.O. Box 54590, University of the Punjab
Lahore
Permanent address: Taj Colony Street#3, House# P-39/C, near Sargodha road,
Faisalabad, Pakistan
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Position: Assistant Professor (TTS), 22-03-2022 to date at Faculty of
Agricultural Sciences, University of the Punjab Lahore.
Assistant Professor (IPFP), 20-04-2017 to 19-04-2018 at Institute
of Agricultural Sciences, University of the Punjab Lahore.
Assistant Professor (Visiting), 20-04-2018 to 21-03-2022 at
Faculty of Agricultural Sciences, Department of Plant Pathology,
University of the Punjab Lahore.

Academic Record

Jan. 2013- Oct 2016 **PhD** University of Natural Resources and Applied Life
Sciences, Vienna, Austria
Research title “Exploring the biochar and compost effects on
mycorrhizae and *Fusarium* wilt development in tomato”
PhD thesis supervisor: Univ. Prof. DI Dr. Siegrid Steinkellner
Pass with Distinction (Excellent Grade)

2006-2008 **M. Phil** studies in School of Biotechnology. National Institute for
Biotechnology and Genetic Engineering (NIBGE), Faisalabad.
Research title “Diversity and infectivity analysis of geminivirus
components from Chilies”

2001-2005 **B.Sc. (Hons.) Agri.** with the major subject of plant pathology
From University of Agriculture Faisalabad, Pakistan.

1999-2001	Government College of Science, Faisalabad, Pakistan. F.Sc. Pre-medical 1999-2001
1998-1999	Government Crescent Model High School. Faisalabad, Pakistan.

Previous Work Experience

2009-2012	Vice Principal at Faisalabad Institute of Research Science And Technology (FIRST), Faisalabad, Pakistan. (Affiliated with University of Health Sciences, Lahore) *<u>Supervised five graduate students research projects.</u>
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Coordinated Research Projects

1. Co-Principal Investigator of the research project entitled “**Development of Biopesticides using indigenous entomopathogenic fungi**”. Award of Joint Project-Industry participatory R&D (Duration 1.5 years), 2024-25, amounting Rs. 2.115 million Funded by Arrow International Lahore.
2. Principal Investigator of the research project entitled “**Elucidating the protective role of melatonin against Fusarium wilt of tomato**”. Research project grant for the fiscal year 2024-2025, amounting Rs. 200,000/-. Funded by University of the Punjab Lahore.
3. Principal Investigator of the research project entitled “**Biochemical & Physiological Elucidation of Biochar’s effect on Bacterial Wilt of Eggplants**”. Research project grant for the fiscal year 2022-2023, amounting Rs. 200,000/-. Funded by University of the Punjab Lahore.
4. Principal Investigator of the research project entitled “*Biochar and selected rhizobacterial strains mediated systemic resistance against Fusarium wilt of tomato*”. Start-up research grant project (SRGP) amounting Rs. 453000/- funded by Higher Education Commission, Pakistan (Funds received- 2017-18).
5. Principal Investigator of the research project entitled “*Rhizobacteria and biochar induced alteration of tomato physiology and resistance against Fusarium wilt*”. Research project grant for the fiscal year 2017-2018, amounting Rs. 150000/-. Funded by University of the Punjab Lahore.

B. Sc. (Hons.) Students Supervised

1. Tayyaba Raza
2. Muhammad Taqqi Abbas
3. Zainab Sattar

4. Uqsal Mannan
5. Faiqa Yousaf
6. Laiba Zahid
7. Laiba Shahid

M. Sc. (Hons.) Students Supervised

1. Ansar Ali (Co-Supervision)
2. H. M. Talha Waleed (Co-Supervision)
3. Waqas bin Nisar (Co-Supervision)
4. Syed Muhammad Jawad Raza (Co-Supervision)
5. Muhammad Taqqi Abbas (Co-Supervision)
6. Tehreem Niazi (Co-Supervision)
7. Muhammad Umer (Co-Supervision)

‘Lethal and Sub lethal Effects of Phenyl-Detergent on Biology of *Musca domestica*’

8. Zobia Waheed (Supervision)
9. Abdul Rehman (Supervision)
10. Aqib Saeed (Co-Supervision)
11. Mehwish Batool (Supervision)
12. Nimra Nadeem (Supervision)
13. Tuba Ashraf (Co-Supervision)
14. Hibba Arshad (Co-Supervision)
15. Umara Mushtaq (Co-Supervision)

PhD Students Supervised

1. Mujahid Rasool (Status: Completed)

Physiological and Molecular Characterization of Biochar Induced Resistance against Early Blight (*Alternaria solani*) in Tomato.

2. Chaudhry Ali Ahmad (Status: Completed)

‘Effect of Biochar on Bacterial Wilt (*Ralstonia solanacearum*) Development and Biochemical Alterations in Eggplant’

3. Ms. Mamoona Asif (Status: Completed)

Linking Biochar and Soil Microbial Community Dynamics with the Development of Cotton Wilt

Expertise

Soil-borne fungi, Microbial ecology of the soil, Biotechnology, Organic plant protection strategies, ISR and SAR mechanisms, Biologically induced disease resistance, Biocontrol, Mycorrhizae and its role in plant defense, Entomopathogenic fungi, Soil, plant and microbe interactions, Plant growth and physiology under stress conditions, Root exudates, *in vitro* testing of fungal development, Geminiviruses, PCR, RT-PCR, Cloning, ELISA and Cell culturing.

Recognitions

- 1- Received 'Technology Innovation Award' at 7th Invention to Innovation Summit 2018 held at University of the Punjab Lahore. March 7 and 8, 2018.
- 2- PhD completed with distinction.
- 3- Best poster award in PhD conference 3rd doc day, Tulln. Oct 13, 2015.
- 4- Nominated for merit scholarship consecutively for three years by University of Agriculture, Faisalabad, Pakistan.
- 5- Awarded a fully funded PhD scholarship at University of Natural Resources and Applied Life Sciences Vienna, Austria

Courses taken in PhD

- Bio-Resources and Technologies
- Doctoral Seminar
- Cell Factory
- Molecular Microbial ecology of Soils
- Exercises in Molecular Biology
- Laboratory Diagnosis of Plant Pathogens
- Phytopathology

M.Phil. course work

- Recombinant DNA technology
- Techniques in Biotechnology
- Environmental Biotechnology
- Bioprocess Technology (Biochemical engineering)
- Fundamentals of Biotechnology (Major focus was on Microbiology, Advance Molecular Biology, Industrial Enzymology)
- Application of Biotechnology (Nano-biotechnology, Diagnostic of diseases, Biopharming, Molecular virology)

Teaching Assignment

Courses taught at Faculty of Agricultural Sciences, Uni. of the Punjab Lahore.

Biotechnology and its application in Plant Pathology, Biological Control of Plant Pathogens, Plant Virology, Genetics of Plant Pathogens, Crop Management under Stressful Environment, Advances in Plant Pathology, Soil Borne Pathogen and Their Management, Introduction to Plant Parasitic Nematodes, Plant Resistance to Diseases, Post-Harvest Pathology, General Crop physiology, Agriculture Economics, Basics of Agriculture, Seed and Post-Harvest Pathology, Agriculture Education and Extension,

Publications (Cumulative Impact Factor = 79.78)

1. Batool, W., Saddique, M, A., **Akhter, A.** Khurshid, M., Tariq, H. M., Ali, N., Raza, U., & Zia Ullah, M. 2024. Nematicidal activity of *Pseudomonas* spp. against citrus nematode (*Tylenchulus semipenetrans*). *World Journal of Biology and Biotechnology*, 9(3): 33-37 doi: <https://doi.org/10.33865/wjb.009.03.1345> (HEC-Y category)
2. Waheed, Z., Anwar, W., Anjum, T. **Akhter, A.**, et al. Pyrolysed maize feedstock utilization in combination with *Trichoderma viride* against *Macrophomina phaseolina*. *Sci Rep* 14, 19762 (2024). <https://doi.org/10.1038/s41598-024-70975-6> (impact Factor: 3.8)
3. Abbas, M. T., Anjum, T., Anwar, W., Khurshid, M., & **Akhter, A.** (2024). Characterization and Induction of Biochar Induced *Capsicum annumm* Defense Against Bacterial Wilt. *J Soil Sci Plant Nutr*, 24: 6211–6223. <https://doi.org/10.1007/s42729-024-01991-8> (impact Factor: 3.4)
4. Shakeel, I., Khurshid, M., Manzoor, M., Ali, S., **Akhter, A.**, Anwar, W., Mushtaq, Z., Faiq, M., & Abbas, M. (2024). Biochar Improves Tomatoes Growth Challenged With Khokhran Virus Infection. *Biological and Clinical Sciences Research Journal*, 2024(1), 810. <https://doi.org/10.54112/bcsrj.v2024i1.810> (HEC-Y category)
5. Ahmad, C.A, **Akhter, A.**, Haider, M.S., Abbas, M.T., Hashem, A., Avila-Quezada, G.D. and Abd_Allah, E.F. (2024) Demonstration of the synergistic effect of biochar and *Trichoderma harzianum* on the development of *Ralstonia solanacearum* in eggplant. *Front. Microbiol.* 15:1360703. doi: 10.3389/fmicb.2024.1360703 (Impact Factor: 5.2)
6. Nawaz, K., Anwar, W., Subhani, M.N. **Akhter, A.**, Iftikhar, S., Khan, H.A.A, & Shahid, A.A. 2024. Glucanase Gene of *Trichoderma*; New Strategy for the Management of Root Rot Disease in Chili. *J Soil Sci Plant Nutr* 24: 354-370. <https://doi.org/10.1007/s42729-023-01543-6> (impact Factor: 3.9)

7. Rehman, A. Ahmad, F., Abbas, M.T., **Akhter, A.**, Gulsher, M., Saeed, I., Hussain, A. & Rashid, S. (2023). Effect of *Trichoderma viride* and Rice Straw Biochar on the Development of charcoal rot in maize. *Pakistan Journal of Science*, 75(03), 455–467. <https://doi.org/10.57041/pjs.v75i03.985> (HEC-Y category)
8. Ahmed, F. Mushtaq, Z., Itrat, N., Nazir, A., Hussain, A., **Akhter, A.**, Khurshid, M., Saeed, I., Rashid, S., CIG, A., CIG, F. & Siddique, A.R. 2023. Integrated application of organic amendments and mycorrhizae implementation for spinach (*Spinacia oleracea*) growth and development. *Pakistan Journal of Science*. 75 (03), 433–437. <https://doi.org/10.57041/pjs.v75i03.984> (HEC-Y category)
9. Saeed, A., Abbas, M. T., Khan, H. A. A., Anwar, W., Mushtaq, Z., Anjum, T., & **Akhter, A.** 2023. Impact of rice straw biochar in association with inorganic fertilizers and *Trichoderma harzianum* on charcoal rot (*Macrophomina phaseolina*) of maize. *World Journal of Biology and Biotechnology*, 8(3): 35-42 doi: <https://doi.org/10.33865/wjb.008.03.1142> (HEC-Y category)
10. Asif, M., Haider, M.S., **Akhter, A.** 2023. Impact of Biochar on Fusarium Wilt of Cotton and the Dynamics of Soil Microbial Community. *Sustainability*. 2023; 15(17):12936. <https://doi.org/10.3390/su151712936> (Impact Factor: 3.9)
11. Mushtaq, Z., **Akhter, A.**, Khan, H.A.A., Anwar, W., Hashem, A., Avila-Quezada, G.D., Abd_Allah, E.F. (2023). Impact Assessment of Lead-Tolerant Rhizobacteria to Improve Soil Health Using Indian Mustard (*Brassica juncea*) as an Indicator Plant. *Plants*, 12, 3005. <https://doi.org/10.3390/plants12163005> (Impact Factor: 4.5)
12. Anwar, W., Amin, H., Khan, H.A.A. **Akhter, A.** Bashir, U., Anjum, T., Kalsoom, R., Javed, M.A., Zohaib, K.A. 2023. Chitinase of *Trichoderma longibrachiatum* for control of *Aphis gossypii* in cotton plants. *Sci Rep* 13, 13181. <https://doi.org/10.1038/s41598-023-39965-y> (Impact Factor: 4.6)
13. Ahmad, C.A., Haider, M.S., **Akhter, A.** 2023. Physiological and biochemical characterization of biochar-induced resistance against bacterial wilt of eggplants. *R. Soc. Open Sci.* 10: 230442. <https://doi.org/10.1098/rsos.230442> (Impact Factor: 3.5)
14. **Akhter, A.**, Asif, M.S., Anwar, W., Aftab, Z.E.H., W., Khurshid, M., Hashem, A., Avela-Quezada, G. D., Abd_Allah, E. F. 2023. Biochemical and Physiological Elucidation of Biochar Induced Defense Response Activation Against Bacterial Leaf Spot In Chilies. *Applied Ecology and Environmental Research*. 21(4): 3057-3074. http://dx.doi.org/10.15666/aer/2104_30573074 (Impact Factor: 0.711)

15. Ahmad, F., Mushtaq, Z., Anwar, W., Nazir, A., **Akhter, A.**, Liaquat, M., Jaffar, M.T., Chaudhry, A., I. Saeed, I., Khan, H.A.A. (2023). Impact of Siderophore Producing Rhizobacteria on Growth And Iron Content In Potato. *Pakistan Journal of Science*, 75(2): 338-344. <https://doi.org/10.57041/pjs.v75i02.876> (HEC-Y category)
16. Abbas, M. T., Batool, Z., Ahmad, C. A., Khan, H. A. A. & **Akhter, A.** 2023. Application of modern biotechnology and bioinformatics approaches in agricultural sciences; A systematic review. *World Journal of Biology and Biotechnology*, 8(2): 13-17 doi: <https://doi.org/10.33865/wjb.008.02.906> (HEC-Y category)
17. Shafi, M.U., Khan, H.A.A., Khan, T., Anwar, W., **Akhter, A.**, and Zubair, M., 2023. Farmers perception of plant protection practices and management of insect pests of rice in Lahore Division, Pakistan. *Journal of Innovative Sciences*, 9(1): 132-143. Doi: <https://dx.doi.org/10.17582/journal.jis/2023/9.1.132.143> (HEC-Y category)
18. Khan, T., Khan, H. A. A., Haider, M. S., Anwar, W., & **Akhter, A.** (2023). Selection for resistance to pirimiphos-methyl, permethrin and spinosad in a field strain of *Sitophilus oryzae*: resistance risk assessment, cross-resistance potential and synergism of insecticides. *Environmental Science and Pollution Research*, 30: 29921–29928 (Impact factor: 5.19)
19. Ashraf, I., Ali, M., Asif, M., Anwar, W., **Akhter, A.**, Ali, M.A., Bukhari, N.T., Ali, Q., Shafiq, M. (2023). Unveiling antifungal proteins from *Trametes versicolor* as bio-pesticide to inhibit *Alternaria solani*. *Biol. Clin. Sci. Res. J.* 185. 1-8 doi: <https://doi.org/10.54112/bcsrj.v2023i1.185> (HEC-Y category)
20. **Akhter, A.**, Anwar, W., Abbas, M.T., Ibraheem, M and Khurshid, M. (2022). Effect of compost application on tomato root exudates and suppression of *Fusarium oxysporum* f. sp. *lycopersici* (Fol). *Agrobiological Records* 10: 51-58. <https://doi.org/10.47278/journal.abr/2022.024>
21. **Akhter, A.**, Nisar. W. B., Abbas. T. M., Khan. H. A. A, Khurshid. M., Anjum. T., Saeed. A., 2022 Characterization and evaluation of antifungal potential of rhizosphere bacterial communities of rice against *Fusarium moniliforme* and *Rhizoctonia solani*. *Agric. Sci. J.* 4(2): 13-27 <https://doi.org/10.56520/asj.v4i2.149> (HEC-Y category)
22. Haseeb, Z., Farman Ahmad, F., Abbas, M.T., Majid, M., **Akhter, A.**, and Choudhry, A. (2022). Environmental Health And Safety Issues Associated With Industrial Activity In Industrial Estate Lahore. *Pakistan Journal of Science* 74(4): 250-260 (HEC-Y category)

23. Anwar, W., Javed, S., Ahmad, F., **Akhter, A.**, Khan, H.A.A., Kalsoom, R. and Haider, M.S. (2022). *Boeremia exigua* leaf spot: a new emerging threat to *Gossypium Hirsutum* l. In Pakistan. *Plant Protection* 06 (03): 167-174 DOI: 10.33804/pp.006.03.4275 (HEC-Y category)
24. Siddique, A., Mushtaq, Z., Anwar, W., Zohaib, K.A., **Akhter, A.** and Ahmad, F. (2022). Interaction between mycorrhizae and organic amendments to improve growth and phosphorus uptake in brinjal. *Plant Protection* 06 (03): 233-238 DOI: 10.33804/pp.006.03.4277 (HEC-Y category)
25. Zahra, M.B., Fayyaz, B., Aftab, ZeH., **Akhter, A.**, Bahar, T., Anwar, W. and Haider, M. S. (2022) Characterization and Utilization of Cow Manure Biochar as Soil Amendment for the Management of Northern Corn Leaf Blight. *J Soil Sci Plant Nutr.* 1-16 <https://doi.org/10.1007/s42729-022-00891-z> (Impact Factor: 3.872)
26. Aftab, ZeH., Aslam, W., Aftab, A. Shah, A. N., **Akhter, A.**, and *et al.* (2022). Incorporation of engineered nanoparticles of biochar and fly ash against bacterial leaf spot of pepper. *Sci Rep* 12, 8561. <https://doi.org/10.1038/s41598-022-10795-8> (Impact factor: 4.996)
27. Khan, T., Khan, H. A. A., Khan, M. R., Umer, M., **Akhter, A.**, Akram, W. (2022). Comparative evaluation of four agrochemicals against *Cryptolestes ferrugineus* and *Tribolium castaneum* along with subsequent infection inhibition of aflatoxigenic *Aspergillus* spp. in stored wheat. *Pakistan Journal of Zoology.* 54(4): 1637-1642 <https://dx.doi.org/10.17582/journal.pjz/20201103171143> (Impact factor: 0.831)
28. Raza, S. M. J., **Akhter, A.**, Wahid, F., Hashem, A., & Abd_Allah, E. F. (2022). *Rhizophagus intraradices* and tomato-basil companionship affect root morphology and root exudate dynamics in tomato under fusarium wilt disease stress. *Applied Ecology and Environmental Research.* 20(1): 235-249. https://dx.doi.org/10.15666/aeer/2001_235249 (Impact Factor: 0.816)
29. Hashem, A., **Akhter, A.**, Alqarawi, A. A., Singh, G., Almutairi, K. F., & Abd_Allah, E. F. (2021). Mycorrhizal fungi induced activation of tomato defense system mitigates Fusarium wilt stress. *Saudi Journal of Biological Sciences.* 28: 5442-5450. <https://doi.org/10.1016/j.sjbs.2021.07.025> (Impact factor: 4.219)
30. Rasool, M., **Akhter, A.**, Haider, M. S., (2021). Molecular and biochemical insight into biochar and *Bacillus subtilis* induced defense in tomatoes against *Alternaria solani*,

Scientia Horticulturae, 285, 110203. <https://doi.org/10.1016/j.scienta.2021.110203>.

(Impact factor: 3.463)

31. Rasool, M., **Akhter, A.**, Soja, G., & Haider, M. S., (2021). Role of biochar, compost and plant growth promoting rhizobacteria in the management of tomato early blight disease. *Sci Rep* **11**, 6092. <https://doi.org/10.1038/s41598-021-85633-4> (Impact factor: 4.379)
32. Iftikhar. S., Anwar. W., **Akhter. A.**, Ali, S., Khan, H. A. A., Khurshid. M., & Haider, M. S., (2021). Genetic analysis and pathogenic characterization of *Alternaria tenuissima* induced fruit rot of bitter gourd. *Biodiversitas*. **22**: 615-623. <https://doi.org/10.13057/biodiv/d220213> (SJR: 0.27)
33. Zahra, M. B., Aftab, Z. H., **Akhter. A.**, & Haider, M. S. (2021). Cumulative effect of biochar and compost on nutritional profile of soil and maize productivity. *Journal of Plant Nutrition*. **44**(11): 1664-1676. <https://doi.org/10.1080/01904167.2021.1871743> (Impact factor: 1.707)
34. Fahad, S., Saud, S., **Akhter, A.**, Bajwa, A. A., Hassan, S., Battaglia, M., ... & Danish, S. (2021). Bio-based integrated pest management in rice: An agro-ecosystems friendly approach for agricultural sustainability. *Journal of the Saudi Society of Agricultural Sciences*. **20**(2): 94-102. <https://doi.org/10.1016/j.jssas.2020.12.004> (SJR: 1.063)
35. Anwar, W., Nawaz, K., Javed, M. A., **Akhter, A.**, Shahid A. A, Haider, M. S., Ur Rehman, M. Z., and Ali, S. (2021). Characterization of fungal flora associated with sternorrhyncha insects of cotton plants. *Biologia*. **76**: 533-547 <https://doi.org/10.2478/s11756-020-00549-0> (Impact factor: 1.350)
36. Rasool, M., Ahmad, F., **Akhter, A.**, Khan, H. A. A., Khurshid, M., Anwar, W., Asif, M. S., Waqar, M., Haider, M. S. (2019). Biochemical and molecular analyses of *Alstonia scholaris* L. leaf galls induced by *Pauropsylla tuberculata* (Psyllidae). *Mycopath* **17**(2): 79-88
37. Ahmad, F., Anwar, W., Javed, M. A., Basit, R., **Akhter, A.**, Ali, S., Khan, H. A. A., Amin, H., Haider, M. S. (2019). Infection mechanism of *Aspergillus* and *Fusarium* species against *Bemisia tabaci*. *Mycopath* **17** (2): 63-72
38. Anwar, W., Javed, M. A., Shahid AA, Nawaz, K., **Akhter, A.**, Ur Rehman, M. Z., Hameed, U., Iftikhar, S., Haider, M. S. (2019). Chitinase genes from *Metarhizium anisopliae* for the control of whitefly in cotton. *R. Soc. open sci.* **6** (8): 190412. <http://dx.doi.org/10.1098/rsos.190412> (Impact factor: 2.963)

39. Anwar, W., Ali, S., Nawaz, K., Iftikhar, S., Javed, M. A., Hashem, A., Alqarawi, A. A., Abd_Allah, E. F. and **Akhter, A** (2018). Entomopathogenic fungus *Clonostachys rosea* as a biocontrol agent against whitefly (*Bemisia tabaci*), *Biocontrol Science and Technology*, 28 (8): 750-760. doi: 10.1080/09583157.2018.1487030 (Impact factor: 1.665)

40. **Akhter, A.**, Hage-Ahmed, K., Soja, G. and Steinkellner, S. (2016). Potential of Fusarium wilt-inducing chlamydospores, *in vitro* behaviour in root exudates and physiology of tomato in biochar and compost amended soil. *Plant Soil*, 406(1-2):425–440. doi: 10.1007/s11104-016-2948-4 (Impact factor: 3.052)

41. **Akhter, A.**, Hage-Ahmed, K., Soja, G. and Steinkellner, S. (2015). Compost and biochar alter mycorrhization, tomato root exudation, and development of *Fusarium oxysporum* f. sp. *lycopersici*. *Front. Plant Sci.* 6: 529. doi: 10.3389/fpls.2015.00529 (Impact factor: 4.495)

42. **Akhter, A.**, S. Akhtar, M. Saeed and S. Mansoor, 2014. Chilli Leaf Curl Betasatellite enhances symptoms induced by Tomato Leaf Curl New Delhi Virus, a bipartite Begomovirus. *Int. J. Agric. Biol.*, 16 (6): 1225–1228 (Impact factor: 0.822)

43. **Akhter, A.**, J. Qazi, M. Saeed and S. Mansoor, 2009. A severe leaf curl disease on chilies in Pakistan is associated with multiple begomovirus components. *Plant Dis.*, 93 (9): 962. doi:10.1094/PDIS-93-9-0962B (Impact factor: 2.449)

Books/Book Chapters

1. **Adnan Akhter**, Muhammad Shafiq, Kramat Ali Zohaib, Waheed Anwar. (2024). Bacterial Endophytes. In *Pathogen Resistance and Biodiversity in Agriculture*. (pp. 1-19) The Running Line LLC Publishers. USA. ISBN# 979-8-9921800-8-4
2. Waheed Anwar, Farman Ahamd Chaudhry, Muhammad Arslan Abbas, **Adnan Akhter**, Muhammad Saleem Haider. (2024). Biodiversity. In *Pathogen Resistance and Biodiversity in Agriculture*. (pp. 20-51) The Running Line LLC Publishers. USA. ISBN# 979-8-9921800-8-4
3. Muhammad Saleem Haider, Muhammad Naveed Aslam, Waheed Anwar, **Adnan Akhter**. Plant Pathology. In *Pathogen Resistance and Biodiversity in Agriculture*. (pp. 79-104) The Running Line LLC Publishers. USA. ISBN# 979-8-9921800-8-4
4. **Akhter, A.**, Abbas, M. T., Anwar, W., Khan, T., & Khan, H. A. A. (2024). Impact of Biochar on Plant Pathogen Control. In *Biochar - Solid Carbon for Sustainable Agriculture*. (pp. 64-81) Bentham Science Publishers Pte. Ltd. Singapore. DOI: [10.2174/97898152380681240101](https://doi.org/10.2174/97898152380681240101)

5. Mushtaq, Z., Muzammil, A., Bellitürk, K., Anwar, W., **Akhter, A.**, Khan, H. A. A., ... & Rahman, S. U. (2024). Role of Rhizobacteria in Phytoremediation of Heavy Metal. In *Heavy Metal Remediation: Sustainable Nexus Approach* (pp. 183-211). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-53688-5_9

Conferences/ Symposium and Workshops

1. **Adnan Akhter***, Muhammad Abubakar Siddique, Sehrish Iftikhar. Fruit rot of Bitter gourd caused by *Alternaria tenuissima*: genetic investigation and pathogenic characterization (Oral Presentation). 1st International Microbiology Conference (IMC-2024), themed "Microbial World: Innovations, Challenges and Future Perspectives, held at Government College University, New Campus, Jhang Road, Faisalabad, Pakistan. **(13-15th of November, 2024)**
2. **Adnan Akhter***, Waheed Anwar, Muhammad Abubakar Siddique, Syed Muhammad Jawad Raza and Karamat Ali Zohaib. Study of physiology and in vitro behavior of tomato root exudates for chlamydo spores of Fusarium wilt using compost and biochar amended soils (Oral Presentation). The Sharjah International Conference in Biotechnology (SICBiotech), held at University of Sharjah, United Arab Emirates (UAE). **(29-31st of October, 2024)**
3. **Adnan Akhter*** participated as an organizer for an seminar on 'Invited talk on Allelopathy, themed as Allelopathy, a nature based solution and eco-friendly approach for the management of weeds, held at Department of Plant Pathology, University of the Punjab Lahore, Pakistan **(25th of October, 2024)**
4. **Adnan Akhter*** participated in Two days' Workshop on Nanotech Essentials held at Department of Plant Pathology, University of the Punjab Lahore, Pakistan **(21-22nd of October, 2024)**
5. **Adnan Akhter*** participated in International seminar on 'Urban Horticulture for a Sustainable Future', organized by Department of Horticulture, Faculty of Agricultural Sciences, University of the Punjab Lahore, Pakistan **(10th of October, 2024)**
6. **Adnan Akhter.** 9th Invention to Innovation Summit to Buy and Sell Technology held at University of the Punjab Lahore (Participated and represented the research work of Department of Plant Pathology, Faculty of Agricultural Sciences, University of the Punjab Lahore). **(27-28th of February, 2024)**
7. **Adnan Akhter*** participated in Training Workshop of NAEAC Program Evaluators, organized by National Agriculture Education Accreditation Council, HEC Islamabad. **(14th of February, 2024)**
8. **Adnan Akhter***, Karamat Ali Zohaib, Muhammad Taqqi Abbas, Waheed Anwar, Tehmina Anjum and Muhammad Saleem Haider. Biochar induced resistance against early blight (*Alternaria solani*) in tomato (Oral Presentation). 8th International Conference of Pakistan Phytopathological Society Phytopathology (8ICPP): "Sustainable

Agriculture & Food Security: A Nexus of Plant Pathogens, Climate Change, and Water Challenges". The Islamia University, Bahawalpur, Pakistan. **(26-28th of November, 2023)**

9. **Adnan Akhter*** participated in training workshop on Smart Agriculture Transformations at Department of Plant Pathology, FAS, University of the Punjab Lahore. **(2nd of November, 2023)**
10. **Adnan Akhter*** participated in two day workshop on faculty development program Outcome on 'Based Education' organized by Punjab Higher Education Commission at University of the Punjab Lahore. **(7-8th of June, 2023)**
11. **Adnan Akhter*** participated in one day seminar on 'Challenges and opportunities in the Agriculture Sector of Pakistan' organized by Department of Plant Pathology, Faculty of Agricultural Science, University of the Punjab Lahore. **(6th of February, 2023)**
12. **Adnan Akhter*** Flyash and Biochar induced defense response activation against bacterial leaf spot in chilies **(Oral Presentation)** in **First International Conference on Plant Protection (1stICPP-2022)**, Sultan Qaboos University, Muscat, Oman. **(5-7th of December, 2022)**
13. **Adnan Akhter*** participated in **2nd National Hands-on Training on CRISPR/CAS Mediated Genome Editing**, organized by National Center for Genome Editing (NCGE), Center for Advanced Studies in Agriculture and Food Security (CAS-AFS), at University of Agriculture, Faisalabad. **(23-27th of May, 2022)**
14. Muhammad Taqqi Abbas, Mujahid Rasool, **Adnan Akhter**, Muhammad Saleem Haider. Biochar induced resistance against early blight (*Alternaria solani*) in tomato (Poster). 7th International Conference of Pakistan Phytopathological Society. Phytopathology: Current Scenario and Future Prospects. University of Agriculture Faisalabad. **(21-23rd of November, 2021)**
15. **Adnan Akhter*** participated as **Organizer** in an **International Webinar** on 'Agricultural Nanotechnology: Influencing the Future of Farming Sustainability', organized by Department of Plant Pathology, Faculty of Agricultural Sciences, University of the Punjab, Lahore. **(29th of July, 2021)**
16. **Adnan Akhter*** participated as **Organizer** in an **International Webinar** on 'Mushrooms: As Future Diet', organized by 1st Fungal Culture Bank of Pakistan and Department of Plant Pathology, Faculty of Agricultural Sciences, University of the Punjab, Lahore. **(7th of July, 2021)**
17. **Adnan Akhter*** participated in **One -Day International Webinar World Food Safety Day-2021** on 'Safe Food Now For a Healthy Tomorrow Food Safety is Everyone's Business', conducted by Department of Food Sciences University of the Punjab in collaboration with the National Alliance for Safe Food. **(7th of June, 2021)**
18. **Adnan Akhter*** participated in an **International Webinar** on 'Transforming Food Systems through Climate Smart Agriculture', as a part of the **UN independent Food**

Systems Summit Dialogues, organized by Department of Agronomy, Faculty of Agricultural Sciences, University of the Punjab, Lahore. (25th of May, 2021)

19. Muhammad Taqqi Abbas, Muhammad Hafeez ul Haq, Muhammad Saleem Haider, Waheed Anwar, **Adnan Akhter*** (**Organizer and Participant**). Evaluation of the effect of biochar and compost as soil organic amendment against early blight (*Alternaria solani*) in tomato. International Horticulture Conference (Revolutionizing Horticulture for Secured Future). Institute of Agricultural Sciences, University of the Punjab Lahore, Pakistan. (26th to 28th of February, 2020).
20. **Adnan Akhter***, Waqas Bin Nisar, Syed M. Jawad Raza, Waheed Anwar, Muhammad Saleem Haider. Evaluation of biocontrol potential of rhizosphere associated bacterial endophytes against sheath blight (*Rhizoctonia solani*) and bakanae disease (*Fusarium moniliforme*) of rice. International Conference on “Recent Innovations in Molecular Sciences” University of the Punjab Lahore, Pakistan. (06th to 08th of November, 2019).
21. **Adnan Akhter***, Waqas Bin Nisar, Syed M. Jawad Raza, Waheed Anwar, Muhammad Saleem Haider. Basil and tomato companionship against soil-borne fungal wilt induced stress. International Conference on “Recent Innovations in Molecular Sciences” University of the Punjab Lahore, Pakistan. (06th to 08th of November, 2019).
22. Waheed Anwar, Huma Amin, **Adnan Akhter***, Muhammad Asim Javed, Muhammad Saleem Haider and Sajid Ali. Evaluation of fungal chitinases for the control of *Aphis gossypii*. International Conference on “Recent Innovations in Molecular Sciences” University of the Punjab Lahore, Pakistan. (06th to 08th of November, 2019).
23. Muhammad Asim Javed, Waheed Anwar, Adnan Zahid, Muhammad Saleem Haider, S.A. Ahmad, **Adnan Akhter***, and et al. The wheat associated bacterial microbiome; their diversity under long term conventional and conservational tillage practices in rice-wheat cropping system. International Conference on “Recent Innovations in Molecular Sciences” University of the Punjab Lahore, Pakistan. (06th to 08th of November, 2019).
24. **Adnan Akhter**. Training in Multiplication, Breeding, Plant Protection and Facility Department China at Sanya NanFan Science and Technology Institute, Hainan, China. 5th to 26th of October, 2019.
25. **Adnan Akhter**. Faculty development Training Program at Faculty of Life Sciences, University of the Central Punjab, Lahore. Participated as a Speaker. 17th and 18th of September, 2019.
26. **Adnan Akhter**. 8th Invention to Innovation Summit to Buy and Sell Technology held at University of the Punjab Lahore (Participated and presented a novel idea of environment protection from hazardous chemical contaminants). April 2 and 3, 2019.
27. Sajid Ali, **Adnan Akhter***, Waheed Anwar, Muhammad Saleem Haider. Betasatellite compatibility with begomovirus components associated with chilies leaf curl disease complex. 1st International Conference on “Agricultural and Biological Sciences” Haripur, Pakistan. Faculty of basic & applied sciences, The University of Haripur, Pakistan (27th to 30th of March 2019).

28. Sajid Ali, Ammara Fatima, Sohaib Afzaal, Waheed Anwar, Adnan Zahid, **Adnan Akhter**, Moazzam Anees, Muhammad Tariq Manzoor. Polyphenols for detoxification of heavy metals. ESCON, 2019: International Conference on Environmental Health and Toxicology. COMSATS university Islamabad (Vehari Campus) (25th to 27th of February 2019)
29. Imran Hussain, Markus Puschenreiter, Thomas G Reichenauer, Fazli Wahid, Ali Raza Irfan, **Adnan Akhter**. Enhanced photochemical and physiological performance of tomatoes grown in soil with biochar 'a carbon reservoir'. ESCON, 2019: International Conference on Environmental Health and Toxicology. COMSATS university Islamabad (Vehari Campus) (25th to 27th of February 2019)
30. **Adnan Akhter**. Invited speaker at GRIP#s International Conference, Food Agriculture Science and Technologies (IC-FAST) 2019. University of the Punjab and Expo center Lahore, Pakistan (15th to 17th of January, 2019)
31. **Adnan Akhter**, Waheed Anwar, Syed Muhammad Jawad Raza, Muhammad Khurshid. Effect of compost application on tomato root exudates and suppression of *Fusarium oxysporum* f. sp. *lycopersici*. 2nd International Conference on Plant Sciences. Department of Botany GC University, Lahore (5th to 7th of December 2018)
32. **Adnan Akhter**, Muhammad Tariq Manzoor, Sajid Ali, Asim Javed, Waheed Anwar. Impact of activated biochar on the disease causing potential of *Fusarium oxysporum* f. sp. *lycopersici* chlamydospores. Oral Presentation. International Conference on “Biological control of Pests & Diseases: Progress & Prospects”. Department of Agriculture and Agribusiness Management, University of Karachi, Pakistan (09th-11th of July 2018)
33. Muhammad Tariq Manzoor, Moazzam Anees, Sajid Ali, **Adnan Akhter**, Muhammad Saleem Haider. Expressiveness of Mastrevirus movement protein gene in *Nicotiana benthamiana*. International Conference on “Biological control of Pests & Diseases: Progress & Prospects”. Department of Agriculture and Agribusiness Management, University of Karachi, Pakistan (09th-11th of July 2018)
34. Muhammad Asim Javed, Waheed Anwar, Adnan Zahid, Kiran Nawaz, **Adnan Akhter**. Control of *Fusarium* wilt of onion and tomato through *Trichoderma longibrachiatum*. International Conference on “Biological control of Pests & Diseases: Progress & Prospects”. Department of Agriculture and Agribusiness Management, University of Karachi, Pakistan (09th-11th of July 2018)
35. **Adnan Akhter**. 1st International and 2nd National Conference: Challenges and Opportunities to Boost Agriculture in Changing Climate. College of Agriculture, BZU, Bahadur Sub-Campus Layyah, Pakistan. (26th – 28th of March 2018)
36. **Adnan Akhter**. 7th Invention to Innovation Summit to Buy and Sell Technology held at University of the Punjab Lahore. March 7 and 8, 2018.
37. **Adnan Akhter**. Plant Health for Sustainable Agriculture. A focused approach for food security under changing climate. 6th International Conference of Pakistan Phytopathological Society. Multan, Pakistan. (20th – 22nd November 2017)

38. Seminar on Global Climate Change by Ms. Tabitha Spence. Institute of Agricultural Sciences (IAGS), University of the Punjab Lahore. (23rd November 2017)
39. One day National Seminar on Kitchen Gardening and Seed Distribution. Institute of Agricultural Sciences, University of the Punjab, Lahore. Pakistan. (21st – September 2017)
40. Alqarawi, A. A., Hashem, A., Abd_Allah, E. F., **Akhter, A.** and Egamberdieva, D. (2017). Arbuscular mycorrhizal fungi induced acquired systemic resistance against *Botrytis cinerea* in *Cucumis sativa* via modulation of reactive oxygen species. 9th International Conference on Mycorrhiza (ICOM9) Prague, Czech Republic. (30th July- 4th August 2017)
41. **Akhter, A.**, Hage-Ahmed, K., Soja, G. and Steinkellner, S. (2016). Biochar in plant protection: Effects on the tomato pathogen *Fusarium oxysporum* f. sp. *lycopersici*. [Poster] [57. Österreichische Pflanzenschutztag, Wels, Austria, Nov 29-30, 2016] In: Österreichische Arbeitsgemeinschaft für den Integrierten Pflanzenschutz, 57. Österreichische Pflanzenschutztag. Zusammenfassung der Präsentationen, http://www.oeaip.at/fileadmin/oeaip.at/user_upload/fachinformationen/Tagungsband2016.pdf; ISBN: ISSN 1996-5028
42. **Akhter, A.**, Hage-Ahmed, K., Steinkellner, S. (2016). Biochar effects on the tomato pathogen *Fusarium oxysporum* f. sp. *lycopersici*. [Eiweißpflanzen - Strategien und Chancen für Landwirtschaft und Industrie. ALVA Jahrestagung 2016, Klagenfurt, Austria, May 30-31, 2016] In: Arbeitsgemeinschaft für Lebensmittel-, Veterinär- und Agrarwesen, ALVA Jahrestagung 2016; ISBN: ISSN 1606-612X
43. Symposium on “Innovations in food and feed safety: Education–Risk analysis–Novel methodologies. IFA-Tulln/BOKU Department of Agro-biotechnology. Konrad Lorenz Straße 20, 3430 Tulln, Austria. April 5th, 2016
44. **Akhter, A.**, Hage-Ahmed, K., Soja, G. and Steinkellner, S. (2016). Effect of mycorrhiza and biochar on tomato root exudation and on the development of *Fusarium oxysporum* f. sp. *lycopersici*. 1st International Conference on Advancements in Biotechnology (ICAB), Faisalabad, Pakistan, March 30-31, 2016
45. **Akhter, A.**, Hage-Ahmed, K., Soja, G. and Steinkellner, S. (2015). Development of *Fusarium oxysporum* f. sp. *lycopersici*, mycorrhization and alteration in root exudation of tomato in compost and biochar amended soil. International symposium, Micobe-Assisted Crop Production- Opportunities, Challenges and Needs (miCROP^e), Vienna, Nov 23-25, 2015
46. **Akhter, A.**, Hage-Ahmed, K., Soja, G. and Steinkellner, S. (2015). Biochar and compost: soil amendments altering root exudation and tomato-soil fungus interactions. PhD Conferences, 3rd Doc Day. Tulln, Austria Oct 13, 2015
47. Steinkellner, S. Hage-Ahmed, K., **Akhter A.**, Morauf, C. (2015). Compost and Biochar alter root exudation and root morphology in *Fusarium oxysporum* infected tomato plants. [XVIII International Plant Protection Congress, Berlin, Aug 24-27, 2015] In: German Scientific society for the Plant Protection Sciences, XVIII International Plant Protection

Congress - Mission possible: food for all through appropriate plant protection, ISBN 978-3-9816508-7-7

- 48. Akhter, A.,** Hage-Ahmed, K., Steinkellner, S. (2014). Biochar und Kompost im Einsatz gegen *Fusarium oxysporum* f. sp. *lycopersici*. (Poster) [55. Österreichische Pflanzenschutztage, Seggau, AUSTRIA, Nov 26-27, 2014]. In: Österreichische Arbeitsgemeinschaft für integrierten Pflanzenschutz, 55. Österreichische Pflanzenschutztage, ISSN 1996-5028
- 49.** Webcast on ethics in scientific article submission and publishing. Elsevier, BIGGERBRAINS™. Dublin. July 11, 2012
- 50.** Webcast on charting a course for a successful research career. Elsevier, BIGGERBRAINS™. Dublin. July 11, 2012
- 51.** Symposium on “DNA barcoding: a promising tool for species identification and biodiversity digitization. National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad, Jan 30, 2012
- 52.** Wheat Biotechnology workshop (‘Two days’ workshop on application of biotechnology for wheat Improvement). National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad, Feb 28-29, 2012