

Dr. Muhammad Shafiq (PhD)

Assistant Professor,
Department of Horticulture
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Research Interests:

- Dr. Shafiq's research group (Horticultural Plant Biotechnology) at the University of the Punjab is committed to exploring and understanding the genomic landscape and molecular mechanisms related to gene families' diversity in horticultural plants, particularly under various biotic and abiotic stress conditions.
- Development of resistance strategies against diverse plant pathogens
- Investigating the molecular basis of resistance mechanisms against viral pathogens, focusing on host-virus interactions.
- I am adept at adapting my technical skills to contribute to any field of molecular biology research.

Education:

Ph.D (2013) Agricultural Biotechnology NIBGE/QAU Pakistan

M.Sc. (Hons) Agriculture (Horticulture) (2005) *University of Agriculture Faisalabad,*

B.Sc. (Hons) Agriculture (2003) *University of Agriculture Faisalabad, j*

Research and Academic Experience:

<i>Assistant Professor</i>	<i>01-01-2014 to date</i>	<i>University of the Punjab Pakistan</i>
<i>Lecturer</i>	<i>27-12-2010 to 31-12-2013</i>	<i>University of the Punjab Pakistan</i>
<i>Borlaug Fellow</i>	<i>28-09-2013 to 20-11-2013</i>	<i>Texas A&M University USA</i>
<i>Visiting Scientist</i>	<i>21-11-2013 to 20-12-2013</i>	<i>University of Arizona USA</i>
<i>Research Fellow</i>	<i>05-10-2007 to 15-03-2008</i>	<i>University of Glasgow UK</i>

Selected Research Publications:

1. Ali, M., Shafiq, M., Haider, M. Z., Sami, A., Alam, P., Albalawi, T., . . . Shahid, M. A. (2024). Genome-wide analysis of NPR1-like genes in citrus species and expression analysis in response to citrus canker (*Xanthomonas axonopodis* pv. *citri*). *Frontiers in Plant Science*, *15*, 1333286.
2. Ali, N., Abbas, S. A. A. A., Sharif, L., Shafiq, M., Kamran, Z., Haseeb, M., & Shahid, M. A. (2024). Microbial extracellular polymeric substance and impacts on soil aggregation *Bacterial Secondary Metabolites* (pp. 221-237): Elsevier.
3. Bhatti, M. H. T., Sami, A., Haider, M. Z., Shafiq, M., Naeem, S., Tariq, M. R., . . . Irfan, U. (2024). Genetic Diversity of Vegetable Crops and Utilization in Food and Nutritional Security *Sustainable Utilization and Conservation of Plant Genetic Diversity* (pp. 171-197): Springer.
4. Haseeb, M., Shafiq, M., Noman, F., Abbas, S. A. A. A., & Ali, N. (2024). Structure and potential applications of bacterial siderophores *Bacterial Secondary Metabolites* (pp. 159-175): Elsevier.
5. Hussain, M., Javed, M. M., Sami, A., Shafiq, M., Ali, Q., Mazhar, H. S.-U.-D., . . . Hussain, M. (2024). Genome-wide analysis of plant specific YABBY transcription factor gene family in carrot (*Dacus carota*) and its comparison with Arabidopsis. *BMC Genomic Data*, *25*(1), 26.
6. Sami, A., Haider, M. Z., & Shafiq, M. (2024). Microbial nanoenzymes: Features and applications *Fungal Secondary Metabolites* (pp. 353-367): Elsevier.
7. Sami, A., Haider, M. Z., Shafiq, M., Sadiq, S., & Ahmad, F. (2024). Genome-wide identification and in-silico expression analysis of CCO gene family in sunflower (*Helianthus annuus*) against abiotic stress. *Plant Molecular Biology*, *114*(2), 1-19.
8. Sami, A., Han, S., Haider, M. Z., Khizar, R., Ali, Q., Shafiq, M., . . . Sajid, M. (2024). Genetics aspect of vitamin C (Ascorbic Acid) biosynthesis and signaling pathways in fruits and vegetables crops. *Functional & Integrative Genomics*, *24*(2), 1-15.
9. Shafiq, M., Abbas, M. T., Mushtaq, S., Khaliq, R., Arshad, H., Haroon, R., . . . Haider, M. S. (2024). Viral diseases of ornamental plants-I *Viral Diseases of Field and Horticultural Crops* (pp. 777-787): Elsevier.
10. Shafiq, M., Ahmad, S., Abbas, M. T., Ahsan, A., Asif, M., & Haider, M. S. (2024). Potato *Viral Diseases of Field and Horticultural Crops* (pp. 353-359): Elsevier.
11. Shafiq, M., Maheen, N., Sadiq, S., Rizvi, S. S. B., & Abbas, M. T. (2024). Tea *Viral Diseases of Field and Horticultural Crops* (pp. 279-283): Elsevier.
12. Shafiq, M., Manzoor, M., Bilal, M., Manzoor, T., Anees, M. M., Rizwan, M., . . . Haider, M. S. (2024). Genome-wide Analysis of Plant Specific YABBY Transcription Factor Gene Family in Watermelon (*Citrullus lanatus*) and Arabidopsis. *Journal of Applied Research in Plant Sciences*, *5*(01), 63-78.
13. Shafiq, M., Riaz, H., & Haider, M. S. (2024). Tuber crops: Sweet potatoes *Viral Diseases of Field and Horticultural Crops* (pp. 537-543): Elsevier.

14. Akram, J., Siddique, R., **Shafiq, M.**, Tabassum, B., Manzoor, M. T., Javed, M. A., . . . Javed, B. (2023). Genome-wide identification of CCO gene family in cucumber (*Cucumis sativus*) and its comparative analysis with *A. thaliana*. *BMC Plant Biology*, *23*(1), 640.
15. ALMAS, M., Sami, A., **Shafiq, M.**, BHATTI, M., HAIDER, M., Hashmi, M., & KHALID, M. (2023). Sale price comparison of saggian flower market: a case study. *Bulletin of Biological and Allied Sciences Research*, *2023*(1), 39-39.
16. Almas, M. H., Shah, R. A., Tahir, S. M. H., Manzoor, M., **Shafiq, M.**, Shah, M. H., . . . Sami, A. (2023). The Effect of Substrate, Growth Condition and Nutrient Application Methods in Morphological and Commercial Attributes of Hybrid Rose (*Rosa indica* L.) Cv. Kardinal. *Journal of Applied Research in Plant Sciences*, *4*(01), 356-362.
17. Haider, M. Z., Sami, A., **Shafiq, M.**, Anwar, W., Ali, S., Ali, Q., . . . Ali, D. (2023). Genome-wide identification and in-silico expression analysis of carotenoid cleavage oxygenases gene family in *Oryza sativa* (rice) in response to abiotic stress. *Frontiers in plant science*, *14*.
18. Amna Hameed, Naeem Fatima, Hassan Iftikhar, Asim Mehmood, Muhammad Rizwan Tariq, Shinawar Waseem Ali, Sajid Ali, **Muhammad Shafiq**, Zulfiqar Ahmad, Umair Ali, Madiha Ghazanfar, Madiha Iftikhar, Waseem Safdar, Asif Ahmad, Zunaira Basharat, Zujaja Umer, Maham Khalid (2023). Effect of different drying and cooking treatments on phytochemicals and antioxidant activity in broccoli: an experimental in vitro study. *Food Science and Technology*, *43*, e101622.
19. Hussain, M., Iqbal, S., **Shafiq, M.**, Balal, R. M., Chater, J., Kadyampakeni, D., . . . Shahid, M. A. (2023). Silicon-induced hypoxia tolerance in citrus rootstocks associated with modulation in polyamine metabolism. *Scientia Horticulturae*, *318*, 112118.
20. IFTIKHAR, M., MUNIR, M., TARIQ, M. R., ALI, S. W., **SHAFIQ, M.**, ALI, S., . . . AHMAD, A. (2023). Development of cottonseed-based emulsions for encapsulation of vitamin A. *Food Science and Technology*, *43*.
21. Irfan, U., Haider, M., **Shafiq, M.**, Sami, A., & Ali, Q. (2023). Genome Editing For Early And Late Flowering In Plants. *Bulletin of Biological and Allied Sciences Research*, *2023*(1), 45-45.
22. Ishfaq, Q., **Shafiq, M.**, Ali, M. R., & Haider, M. S. (2023). Is the best resistance strategy against begomoviruses yet to come? A Comprehensive Review. *Summa Phytopathologica*, *48*, 151-157.
23. Islam, M. A. U., Nupur, J. A., **Shafiq, M.**, Ali, Q., Sami, A., & Shahid, M. A. (2023). In silico and computational analysis of zinc finger motif-associated homeodomain (ZF-HD) family genes in chilli (*Capsicum annuum* L). *BMC genomics*, *24*(1), 603.
24. Khan, F., **Shafiq, M.**, Haider, M., Sami, A., Arshad, A., & Anees, M. (2023). IMPACT OF VARIOUS CONCENTRATIONS OF NA CL ON MORPHOLOGICAL ATTRIBUTES OF DIFFERENT CITRUS ROOTSTOCKS UNDER FIELD CONDITIONS. *Bulletin of Biological and Allied Sciences Research*, *2023*(1), 50-50.
25. Latif, W., Ciniglia, C., Iovinella, M., **Shafiq, M.**, & Papa, S. (2023). Role of White Rot Fungi in Industrial Wastewater Treatment: A Review. *Applied Sciences*, *13*(14), 8318.
26. Maheen, N., **Shafiq, M.**, Sadiq, S., Farooq, M., Ali, Q., Habib, U., . . . Ali, F. (2023). Genome Identification and Characterization of WRKY Transcription Factor Gene Family in Mandarin (*Citrus reticulata*). *Agriculture*, *13*(6), 1182.

27. Mariyam, **Shafiq, M.**, Sadiq, S., Ali, Q., Haider, M. S., Habib, U., . . . Shahid, M. A. (2023). Identification and characterization of Glycolate oxidase gene family in garden lettuce (*Lactuca sativa* cv. 'Salinas') and its response under various biotic, abiotic, and developmental stresses. *Scientific Reports*, *13*(1), 19686.
28. Mazhar, H. S.-U.-D., **Shafiq, M.**, Ali, H., Ashfaq, M., Anwar, A., Tabassum, J., . . . Sahu, R. (2023). Genome-Wide Identification, and In-Silico Expression Analysis of YABBY Gene Family in Response to Biotic and Abiotic Stresses in Potato (*Solanum tuberosum*). *Genes*, *14*(4), 824.
29. Mushtaq, S., **Shafiq, M.**, Tariq, M. R., Sami, A., Nawaz-ul-Rehman, M. S., Bhatti, M. H. T., . . . Hussain, M. (2023). Interaction between bacterial endophytes and host plants. *Frontiers in plant science*, *13*, 1092105.
30. Sadiq, S., Hussain, M., Iqbal, S., **Shafiq, M.**, Balal, R. M., Seleiman, M. F., . . . Shahid, M. A. (2023). Genome-Wide Identification and Characterization of the Biosynthesis of the Polyamine Gene Family in Citrus unshiu. *Genes*, *14*(8), 1527.
31. Sami, A., Haider, M. Z., **Shafiq, M.**, Sadiq, S., & Ahmad, F. (2023). Genome-Wide Identification and In-silico Expression Analysis of CCO Gene Family in Sunflower (*Helianthus annuus*).
32. Sami, A., Saeed, M., **Shafiq, M.**, Abbas, S. M., Anum, A., Haider, H., . . . Shahid, N. A. (2023). Role of Horticulture in Disaster Risk Management *Disaster Risk Reduction in Agriculture* (pp. 393-406): Springer.
33. Shakeel, M., **Shafiq, M.**, Abbas, S. A. A. A., Haseeb, M., Ali, N., Batool, A., . . . Haider, M. S. (2023). GENOME-WIDE IDENTIFICATION AND CHARACTERIZATION OF PLANT-SPECIFIC DOF TRANSCRIPTION FACTOR GENE FAMILY IN CASHEW (*ANACARDIUM OCCIDENTALE*). *Agricultural Sciences Journal*, *5*(1), 83-107.

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34. Muhammad Ashfaq, Abdul Rasheed, Muhammad Ali, Muhammad Sajjad, Bilal Rasool, Shabnum Shaheen, **Muhammad Shafiq**, Muhammad Arshad Javed, Alia Anwar, Muhammad Saleem Haider, and Urooj Mubashar (2022) Identifying and characterizing the main causal pathogen responsible for rice grain discoloration in Pakistan *Pak. J. Agri. Sci.*, Vol. 59(2), 223-230; 2022 [IF: 0.85]
35. Naila Farooq, Laraib Ather, **Muhammad Shafiq**, Tehmina Anjum³, Mujahid Hussain, Muhammad Haseeb, Numan Ali, Sehrish Mushtaq, Muhammad Saleem Haider Muhammad Adnan Shahid, (2022) *Magnetofection approach for the transformation of okra using green iron nanoparticles* Scientific Reports. DOI : 10.1038/s41598-022-20569-x
36. Tariq, Muhammad Rizwan, Fouzia Shaheen, Sharmeen Mustafa, A. L. I. Sajid, Ammara Fatima, **Muhammad Shafiq**, Waseem Safdar, Muhammad Naveed Sheas, Amna Hameed, and Muhammad Adnan Nasir. "Phosphate solubilizing microorganisms isolated from medicinal plants improve growth of mint." *PeerJ* 10 (2022): e13782.
37. Ijaz, M., Arshad, A., Awan, M. A., Tariq, M. R., Ali, S. W., Ali, S., **Shafiq, M.**, Ahmed, S., Sheas, M. N., Iftikhar, M., Nasir, M. A., Kausar, G., Javed, A. U. I., and Safdar, W.

- (2022). Exploring the potential of curry leaves on mercury-induced hepatorenal toxicity in an animal model. *Food Sci Nutr* **10**, 499-506 [IF: 2.863]
38. Mushtaq S, Shafiq M, Haider MS, Nayik GA, Salmen SH, El Enshasy HA, Kenawy AA, Goksen G, Vázquez-Núñez E, Ansari MJ. Morphological and physiological response of sour orange (*Citrus aurantium* L.) seedlings to the inoculation of taxonomically characterized bacterial endophytes. *Saudi Journal of Biological Sciences*. 2022 May 1;29(5):3232-43. [IF: 4.219] (Publication of PhD Student)
39. Mobeen Ali, Syeda Shehar Bano Rizvi, **Muhammad Shafiq**, Muhammad Arshad Javed, Ahmad Ali Shahid, Numan Ali¹, Muhammad Haseeb, Nosheen. Tabassum, Shumaila Dastgir and Muhammad Saleem Haider (2021) Genome wide in-silico analysis of NPR1 gene family in *Citrus reticulata* and its comparison with *Arabidopsis* *Journal of Applied Horticulture*, 23(3): , 2022 [IF: 0.16] (Publication of PhD Student)
40. N. Tabassum, R. Mahmood, **M. Shafiq**, M. Ali, M.Hashmi (2021) Influence of nitrogen to phosphorus supply ratio on growth, yield and biochemical parameters of kalonji (*Nigella sativa* L.) *Journal of Applied Horticulture*, 23(3): , 2022 (Publication of MS Student) [IF: 0.16]
41. Mushtaq S, Shafiq M, Ashraf T, Haider MS, Atta S, Almaary KS, et al. (2022) Enumeration of citrus endophytic bacterial communities based on illumine metagenomics technique. *PLoS ONE* 17(4): e0263144. <https://doi.org/10.1371/journal.pone.0263144> [IF: 3.24] (Publication of PhD Student)

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42. Mushtaq, Sehrish; Shafiq, Muhammad; Ashfaq, Muhammad; Ali, Muhammad; Shaheen, Shabnum; Hsieh, Daniel; Finan, Turlough; Haider, Muhammad Saleem (2021) Study of varying pH ranges on the growth rate of bacterial strains isolated from plants. *Pakistan Journal of Agricultural Sciences* . Jun2021, Vol. 58 Issue 3, p1051-1057. 7p (Publication of PhD Student)
43. Mariyam, **Shafiq, M.**, Haseeb, M., Atif, R.M., Naqvi, S.A.A.A.A., Ali, N., Javed, M.A., Gillani, F. and Haider, M.S., 2021. Genome-wide identification and characterization of a plant-specific Dof transcription factor gene family in olive (*Olea europaea*) and its comparison with *Arabidopsis*. *Horticulture, Environment, and Biotechnology* (2021) 62:949–968 (Publication of BS Student)
44. Muhammad Ashfaq, Ansa Afzal, Muhammad Arshad Javed, Muhammad Ali, Bilal Rasool, Shabnum Shaheen, **Muhammad Shafiq**, Urooj Mubashar, Mubarak Ali Anjum and Abdul Rasheed (2021) Identification and pathogenic characterization of bacteria causing rice grain discoloration in Pakistan *INT. J. BIOL. BIOTECH.*, **18 (2): 239-246, 2021.**
45. Mubarak Ali Anjum, Muhammad Ashfaq, Muhammad Saleem Haider, Muhammad Arshad Javed, Muhammad Ali, Bilal Rasool³, **Muhammad Shafiq** and Urooj Mubashar (2021) Barley Chitinase Gene Confers Resistance against *Fusarium oxysporum* and *Alternaria solani* in transgenic Potato AK-22 *INT. J. BIOL. BIOTECH.*, 18 (4): 657-663, 2021.

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46. Humera Amin, Shumaila Dastgir, **Muhammad Shafiq** , Muhammad Arshad Javed, Muhammad Saleem Haider (2020) Genome-Wide Bioinformatics Analysis of DOF Transcription Factor Gene Family of Asparagus and Its Comparative Phylogenetic Assessment with Arabidopsis Int. J. Biosci. 17(6), 103-123, December 2020.
47. Sehrish Mushtaq, **Muhammad Shafiq** , Muhammad Asimb, Faiza Shafique Khana and Muhammad Saleem Haidera (2020) Culturable Bacterial Endophytes Isolated from Citrus Leaves Enhance Seedling Growth of Solanum melongena L. Journal of Horticultural Science and Technology 3(3): 67-74
48. **Muhammad Shafiq** , Nimra Khalid, Rimsha Zahid, Umair Ali, Sehrish Mushtaq, Mobeen Ali, Muneeb Hashmi and Muhammad Saleem Haider (2020) Effect of Postharvest Edible Coatings on Fruit Quality of Guava cv. Sufaid Gola under Ambient and Zero-Energy Cool Chamber Storage Conditions a Journal of Horticultural Science and Technology 3(3): 83-89
49. Muhammad Ashfaq , Iqra Saleem , Muhammad Saleem Haider, Muhammad Ali , Javed Iqbal Watto , **Muhammad Shafiq** , Shahbaz Ahmad , Muhammad Asrar , Abdul Rasheed , Umair Ali , Muhammad Sajjad and Urooj Mubashar (2020) SSR based screening of rice germplasm against blast disease and its gis monitoring in Punjab, Pakistan INT. J. BIOL. BIOTECH., 17 (3): 571-581,
50. Umair Ali, Muhammad Ashfaq , **Muhammad Shafiq** , Muhammad Ali , Shabnum Shaheen , Bakhtawar Mubashar , Mubarak Ali Anjum And Muhammad Aqeel (2020) Effects Of Organic And Chemical Fertilizers On Growth And Yield Attributes Of Chili (Capsicum Annum L.) Int. J. Biol. Biotech., 17 (4): 731-738

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51. **Muhammad Shafiq**, Mukhtar Ahmad, Ayesha Nisar, Muhammad Tariq Manzoor, Arslan Abid, Sehrish Mushtaq, Adeel Riaz, Muhammad Ilyas, Waseem Sarwar, Muhammad Shah Nawaz-ul-Rehman, Saleem Haider, Ayesha Younus, Muhammad Mubin (2019) Molecular characterization and phylogenetic analysis of tomato leaf curl Palampur virus, a bipartite begomovirus, associated with Cucumis sativus L. in Pakistan, 3 Biotech (2019) 9:204 **IF 1.786**
52. Muhammad Usman Ashraf, Kanzal Iman, Talha Shaf, Muhammad Farhan Khalid, Hafiz Muhammad Salman, Momal Rafi, Nida Javaid, Rashad Hussain, Fayyaz Ahmad, Syed Shahzad ul Hussan, Shaper Mirza, **Muhammad Shafiq**, Samia Afzal, Sadia Hamera, Saima Anwar, Romena Qazi, Muhammad Idrees, Sohail A. Qureshi, Safee Ullah Chaudhary (2019) Evolution of Efficacious Pan-Genotypic HCV Therapies, Medicinal Research Review 2019;39:1091–1136.**IF 9.12**
53. **Sajid Ali**, A. Fatima, S. Khalid, F. Saeed, M. Shafiq, S. Afzaal, M. S. Haider, W. Tariq and J. Khan. **2019**. Virus titer as a disease resistance indicator in Tomato. Bangladesh J. Bot. 48 (3): 609-617 [**IF: 0.214**]
54. M. I. Qamar, M. U. Ghanzafar, M. F. Abbas, R. Zainab, S. Andleeb, M. Shafiq, and S. Mushtaq (2019) First Report of *Macrophomina phaseolina* Causing Crown and Root Rot on Strawberry in Sargodha, Pakistan; Plant Disease **Published Online:**19 Mar 2019

55. Mushtaq, S., M. Shafiq, T. Ashraf, M. S. Haider, M. Ashfaq* and M. Ali. 2019. Characterization of plant growth promoting activities of bacterial endophytes and their antibacterial potential isolated from citrus. *J. Ani. Pla. Sci.* 29 (4): 978-991(IF:0.529)
56. Ahmad, S. Alam, M. W, Majeed, S. Bilal, M. **Shafiq, M**, Khurshid, M. Sarwar, M. Shafeeq, T. Salman, S, Ali, Q. (2019) A study of morphological and qualitative plant traits against the infestation of *Chilo infuscatellus* L. (PYRALIDAE, LEPIDOPETRA), *APPLIED ECOLOGY AND ENVIRONMENTAL RESEARCH* 17(3): 7057-7065 **IF 0.687**
57. Sehrish Mushtaq, Muhammad Shafiq, Ummad Hussain, aFreeha Ali, Amna Ali, Faiza Khan, **Muhammad Asim, Muhammad S. Haider (2019) Incidence of *Pantoea agglomerans* associated with Barnyard grass (*Echinochloa crusgalli* l.) in Pakistan** *Pak. J. Phytopathol.*, Vol. 31 (01) 2019. 119-122
58. Zain Ali, Habiba Shahzad, Mubasshir Hussain, Sehrish Mushtaq, Muhammad Saleem Haider and **Muhammad Shafiq** (2019). Combined effect of different doses of plant growth regulators (IBA and Zeatin) on the physiology of *Capsicum annum* L. fruit. *World Journal of Biology and Biotechnology*, 4(3), 11-14.
59. Sehrish Mushtaq, **Muhammad Shafiq**, Muniba Abid, Muhammad Ajmal Rana, Shazia Yaqub and Muhammad Saleem Haider (2019). A review on Wheat Streak Mosaic Virus (WSMV) disease complex. *World Journal of Biology and Biotechnology*, 4(1), 29-33.

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60. Imtiaz, K., Subhani, M. N., Shafiq, M., Anwar, W., Ghaffar, R., & Haider, M. S. (2018). Genetic Diversity Of *Alternaria* Isolates In Pakistan. *Bionature*, 38(6), 355-365.
61. Naureen Akhtar, Komal Hanif, Muhammad Shafiq and Waheed Anwar (2018) New Report Of *Aspergillus Awamori* Fruit Rot Of Guava In Pakistan, *The J. Anim. Plant Sci.* 28(5):2018 IF 0.529
62. Sehrish Mushtaq, Muhammad Shafiq, Sohaib Afzaal, Tehseen Ashraf and Muhammad S. Haider (2018) An uncultured bacterium associated with infection in mandarin (*Citrus reticulata*) in Pakistan, ***World journal of biology and biotechnology*** 3(1)179-181
63. Sehrish Mushtaq, Muhammad Shafiq, Muhammad Asim, Muhammad Saleem Haider (2018) Effect of bacterial endophytes isolated from citrus on the physiology of Brassica Oleracea, ***International journal of Bioscience*** 12(6) 225-234
64. Sehrish Mushtaq, **Muhammad Shafiq**¹, Muhammad Ashfaq*¹ Faiza Khan¹, Sohaib Afzaal¹, Ummad Hussain¹, Mubasshir Hussain¹, Rashid Mukhtar Balal² & Muhammad Saleem Haider (2018) Isolation and morphological characterization of novel bacterial Endophytes from Citrus and evaluation for antifungal potential against *Alternaria solani*; ***Biologia(Pakistan)*** 64 (1), 119-128
65. Sehrish Mushtaq, **Muhammad Shafiq**, Faiza Khan, Tehseen Ashraf and Muhammad Saleem Haider (2018). Effect of bacterial endophytes isolated from the citrus on the physical parameter of bitter gourd (*Momordica charantia* L.). *World journal of biology and biotechnology*, 3(2), 193-197.

66. **Muhammad Shafiq**, Rida Fatima, Sehrish Mushtaq, Muhammad Hafiz Salman, Muhammad Talha, Saira Razaq, and Muhammd Saleem Haider (2018). Molecular Characterization of Asian Citrus Psyllid (*Diaphorina Citri*) using Mitochondrial Cytochrome Oxidase 1 (Mtco1) Gene from Punjab Pakistan. *World Journal of Biology and Biotechnology*, 3(3), 203-207
67. Sehrish Mushtaq, **Muhammad Shafiq**, Sohaib Afzaal, Tehseen Ashraf, Muhammad Saleem Haider (2018). An Uncultured Bacterium Associated with Infection in Mandarin (*Citrus reticulata*) In Pakistan. *World Journal of Biology and Biotechnology*, 3(1), 179-181.
68. Sehrish Mushtaq, **Muhammad Shafiq**, Muhammad Asim, Muhammad Saleem Haider (2018). Effect of bacterial Endophytes isolated from citrus on the physiology of Brassica Oleracea. *International Journal of Biosciences*, 12(6), 225-234.

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69. Sehrish Mushtaq, Faiza Khan, **Muhammad Shafiq**, Mubasshir Hussain, Muhammad Saleem Haider. **2017**. Endophytic Bacteria: A beneficial organism. *Int. J. Biosci.* 10(6), 1-12. <http://dx.doi.org/10.12692/ijb/10.6.1-12>

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70. Ruqeyah Abdul Majeed, Ahmad Ali Shahid, Gulraze Ahmad Liaqat, Kamran Saleem, Muhammad Asif, **Muhammad Shafiq**, and Muhammad Saleem Haider (2016) First Report of *Setosphaeria rostrata* Causing Brown Leaf Spots of Rice in Pakistan **Plant Disease**, 100:10, 2162 doi: <http://dx.doi.org/10.1094/PDIS-02-16-0220-PDN>
71. **Shafiq, M.**, S. Arif, A. Bibi, M. Ali, M.S. Haider, M. Ashfaq, S. Ahmad, M.T. Manzoor, M. Shahzad, A. Tanveer and A. Ahmad, 2016. Detection and geographical distribution of wolbachia endosymbiont in the natural populations of cotton leafhopper, (*Amrasca Devastans*) in Pakistan. *Pak. Entomol.*, 38(2):141-146 (HEC Y Categories)
72. Bibi, A., **M. Shafiq**, S. Arif, A. Tanveer, M.T. Manzoor and M.S. Haider, 2016. First report of the molecular characterization of the endosymbiont *Candidatus portiera aleyrodidarum* from cotton whiteflies collected from Pakistan. *Int. J. Agric. Biol.*, 18: 282–285 (**Impact Factor: 0.902**).
73. Nafisa, Amna Shoaib , **Muhammad Shafiq** and Arshad Javaid (2016) Effect of *Sclerotium rolfsii* on Uptake of Heavy Metal Copper in Pea (*Pisum sativum* L.) *International Journal of Agriculture & Biology* 18: 1225–1231 DOI: 10.17957/IJAB/15.0226

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74. Ali, M., Ali, Q., Anwer, S., Khalid, H., Ahmad, A., Ali, A., **M Shafiq**, S., Haider, M.S., Nasir, I.A. and Husnain, T. (2015). Estimation of correlation among various morphological traits of *Coronopus didymus*, *Euphorbia helioscopia*, *Cyperus difformis*

and *Aristida absensionis*. *New York Science Journal*, **8**(4): 47-52.

75. Khalid, H., Ali, Q., Anwer, S., Ali, M., Ahmad, A., Ali, A., **M. Shafiq**, S., Haider, M.S., Nasir, I.A. and Husnain, T. (2015). Biodiversity and correlation studies among various traits of *Digeria arvensis*, *Cyperus rotundus*, *Digitaria adscendense* and *Sorghum halepense*. *New York Science Journal*, **8**(4): 37-42.
76. Anwer, S., Ali, Q., Ali, M., Khalid, H., Ahmad, A., Ali, A., **M Shafiq**, S., Haider, M.S., Nasir, I.A. and Husnain, T. (2015). Assessment of association among various morphological traits of *Euphorbia granulate*, *Euphorbia hirta*, *Fumaria indica* and *Parthenium hysterophorus*. *Nature and Science*, **13**(5): 47-51.

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77. Muhammad Tariq Manzoor. Muhammad Ilyas. **Muhammad Shafiq**. Muhammad Saleem Haider. Ahmad Ali Shahid, Rob W Briddon (2014) A distinct strain of Chickpea chlorotic dwarf virus (genus Mastrevirus, family Geminiviridae) identified in leaf curl disease affected cotton plant **Arch Virol** DOI 10.1007/s00705-013-1911-4 **IF 2.261**
78. Sehrish Mushtaq, Fakhra Shamim, **Muhammad Shafiq**, Muhammad Slaeem Haider (2014) Effect of Whitefly Transmitted Geminiviruses on the Physiology of Tomato (*Lycopersicon esculentum* L.) and Tobacco (*Nicotiana benthamiana* L.) Plants **Journal of Natural Sciences Research** Vol.4, No.9,

2013

79. Muhammad Ilyas. Kiran Nawaz. **Muhammad Shafiq**. Muhammad Saleem Haider. Ahmad Ali Shahid (2013) Complete nucleotide sequences of two begomoviruses infecting Madagascar periwinkle (*Catharanthus roseus*) from Pakistan, **Arch Virol**. 2013 Feb;158(2):505-10 **IF 2.261**
80. W. Anwar, M. Shafiq, M. S. Haider, A. Bibi, and S. N. Khan (2013) First report of *Cochliobolus australiensis* causing leaf spot of Turfgrasses in Pakistan, *Journal of Plant Pathology* 95 (2), 447-452

2012

81. Uzma Bashir, Sidra Javed, **Muhammad Shafiq** (2012) Investigation of genetic variability among different isolates of *Fusarium solani* *African Journal of Microbiology Research* Vol. 6(24), pp. 5168-5172, 28 June, 2012
82. Arshad Jamal, Idrees Ahmad Nasir, Bushra Tabassum, Muhammad Tariq, Abdul Munim Farooq, Zahida Qamar, Mohsin Ahmad Khan, Nadeem Ahmad, **Muhammad Shafiq**, Muhammad Saleem Haider, M. Arshad Javed, and Tayyab Husnain (2012) Molecular characterization of capsid protein gene of potato virus X from Pakistan pp. 13854-13857 DOI: 10.5897/AJB11.2978

2010

83. **Muhammad Shafiq**, Shaheen Asad, Yusuf Zafar, Rob W. Briddon and Shahid Mansoor (2010), Pepper leaf curl Lahore virus requires DNA B of *Tomato leaf curl* *New Delhi* to

cause leaf curl symptoms. **Virology Journal** 7:367 . IF 2.44

2006

- 84. Muhammad Shafiq.**, Adnan. Yunas, Muhammad Aslam Khan, Asif Ali Khan and Atif Riaz (2006). Correlation Studies in Rosa Species under Faisalabad (Pakistan) Conditions. *Journal of Agriculture and Social Sciences* 2(1): 58-59.

Books Publications:

85. Saeed F., Haider M. S. and **Shafiq M.** (2102) Biotypes of Whitefly (*Bemisia tabaci*) in Pakistan. LAP Lambert Academic Publishing ISBN 978-3-8484-1231-0, paperback, 56 Pages
86. Qureshi F., Haider M. S. and **Shafiq M.** (2012) Molecular Characterization of Begomoviruses isolated from a Weed. LAP Lambert Academic Publishing ISBN 978-3-8484-9934-2, paperback, 68 Pages

BOOK Chapters

87. Muhammad Shafiq , Fasiha Qurashi , Sehrish Mushtaq , Mujahid Hussain , Amir Hameed and Muhammad Saleem Haider, (2020) DNA plant viruses: biochemistry, replication, and molecular genetics; Applied Plant Virology. DOI: <https://doi.org/10.1016/B978-0-12-818654-1.00013-X> © 2020 Elsevier Inc. All rights reserved.
88. Aiza Hasnain, Amna Sajid, Muhammad Shafiq, Syeda Shehar Bano Rizvi, Mukhtar Ahmed, Muhammad Rizwan Tariq (2022) Flowering, Fruit Set, and Pollination of Plum Book [Handbook of Plum Fruit](#) Edition1st Edition First Published2022 Imprint CRC Press Pages18 eBook ISBN9781003205449
89. Abbas, M.T., **Shafiq, M.**, Khaliq, R., Arshad, H., Haroon, R., Haider, M.S. (2022). Viral Diseases of Rice. In: Abd-Elsalam, K.A., Mohamed, H.I. (eds) Cereal Diseases: Nanobiotechnological Approaches for Diagnosis and Management. Springer, Singapore. https://doi.org/10.1007/978-981-19-3120-8_3
90. Abbas, M.T., **Shafiq, M.**, Arshad, H., Haroon, R., Maqsood, H., Haider, M.S. (2022). Viral Diseases of Maize. In: Abd-Elsalam, K.A., Mohamed, H.I. (eds) Cereal Diseases: Nanobiotechnological Approaches for Diagnosis and Management. Springer, Singapore. https://doi.org/10.1007/978-981-19-3120-8_5
91. Muhammad Rizwan Tariq, Shinawar Waseem Ali, Sajid Ali, **Muhamad Shafiq** (2022) Health and Medicinal Properties of Turmeric Oleoresin: Handbook of Oleoresins 2022, CRC Press, Taylor & Francis Group, LLC <https://doi.org/10.1201/9781003186205-14>

Fellowship Honors Projects and Awards

- HEC indigenous PhD Fellowship 2006-2010

- Travel Fellowship grant by American Society of microbiology to attend Next Generation sequencing for pathogen surveillance conference at Washington DC 24-27 September 2015
- Borlaug Fellowship by the United State department of Agriculture (USDA) 28-09-2013 to 20-12-2013
- HEC IRSIP Fellowship 05-10-2007 to 15-03-2008 for University of Glasgow
- ICGEB Fellowship for training course in **Center for Genetic Engineering and Biotechnology Cairo University** entitled “Biotic stress in plants” (February 2010)
- Chair of the Yung scientific division of Asian Federation of Biotechnology Pakistan Chapter October 2022-October 2026
- ICGEB fellowship for training course in Abuja Nigeria entitled “**plant tissue culture a tool for genetic engineering in plants**” (10-21 August 2014)
- **Merit Scholarship** by Faisalabad Borad of Intermediate and Secondary Education, Pakistan for achieving excellent mark during SSC (Matric) exams at GHS 343 G.B Toba Tek Singh
- Award of Research project entitled “**Molecular Characterization of Begomoviruses Infecting Solanaceous Crops**” by University of the Punjab 2011-2012
- Award of Research project entitled “**Virus induced gene silencing based genetic screening for the identification of gene involved in geminivirus resistance** ” by University of the Punjab 2013-2014
- Award of Research project entitled “**“Huanglongbing in Pakistan : PCR detection of the Candidatus liberibacter species associated with the disease.”**” by Higher Education Commission
- Award of **EMBO Scholarship** for EMBO Course "**Virus host: partners in pathogenicity**" in San Jose, Costa Rica, from 23 - 26 February 2010.
- Fellowship by International Centre for Genetic Engineering and Biotechnology (ICGEB) to attend **Theoretical Course "RNA Structure and Function"** on 29 March - 1 April 2010, at Trieste - Italy
- Award of Research project (0.5 million PKR) entitled “Standardization and identification of *Murraya exotica* species of Pakistan” by Higher Education Commission Islamabad in the year 2016

- Award of Research project entitled “**Establishment of disease free guava nursery plants using micro-propagation techniques** ” by University of the Punjab 2014-2015
- Award of Research project entitled “**Assesement of post harvest quality in broccoli by silencing Ethylene triple response factor (ETR) using floret specific promoter** ” by University of the Punjab 2015-2016
- Award of Research project (0.32 million PKR) entitled “Understanding resistance gene analogues in different citrus species and their response to citrus bacterial canker” by University of the Punjab 2021-2022
- Award of Research project (0.32 million PKR) entitled “Understanding resistance gene analogues in different citrus species and their response to citrus bacterial canker” by University of the Punjab 2021-2022
- Award of Research project (**17.649 Million PKR**) entitled “Introduction of premium yielding day neutral strawberry (*Fragaria × ananassa*) with extended fruiting period and improved shelf life.” by Punjab Agriculture Research Board 2023-24 for 36 months

Projects:

Projects Title	Principal/Co-Principal Investigation	Amount	Funding Agency	Duration
Huanglongbing in Pakistan : PCR detection of the Candidatus liberibacter species associated with the disease	Co-Principal Investigation	PKR 500,000	HEC	2012-2013
Standardization and identification of <i>Murraya exotica</i> species of Pakistan	Co-Principal Investigation	PKR 500,000	HEC	2016-2017
Introduction of premium yielding day neutral strawberry (<i>Fragaria × ananassa</i>) with extended fruiting period and improved shelf life.	Team Scientists	17.649 Million PKR	PARB	2024-2027
Functional characterization of novel late blight susceptibility genes in potato through Genome	Co-Principal Investigation	15 million PKR	ALP	Approve in initial Screening waiting for

editing				final Approval
Molecular Characterization of Begomoviruses Infecting Solanaceous Crops	Principal Investigator	150000	PU	2011-2012
Virus induced gene silencing based genetic screening for the identification of gene involved in geminivirus resistance	Principal Investigator	150000	PU	2013-2014
Establishment of disease free guava nursery plants using micro-propagation techniques	Principal Investigator	150000	PU	2014-2015
Assesement of post harvest quality in broccoli by silencing Ethylene triple response factor (ETR) using floret specific promoter	Principal Investigator	150000	PU	2015-2016
Genetic reduction of insoluble oxalic acid accumulation to improve iron uptake in spinach	Principal Investigator	150000	PU	2019-20
Understanding resistance gene analogues in different citrus species and their response to citrus bacterial canker	Principal Investigator	320000	PU	2021-22

Articles:

Haider M. S. and **Shafiq M.** (2011) Cotton leaf curl disease, a potential threat to Pakistan Cotton. *The Agricultural News* Vol. 1, Page 1

National/International conferences and proceedings:

- **Muhammad Shafiq** (2022) Genome-wide identification and characterization of WRKY transcription factor gene family in *Citrus reticulata* and its response against various biotic and abiotic stresses as invited speaker First International Conference on: Plant Protection Sultan Qaboos University, Conference Hall Venue: 5 - 7 December
- Muhammad Saleem Haider, Fasiha Qureshi, Muhammad Ilyas, **Muhammad Shafiq (2013)** Characterization of begomovirus isolated from a weed *Sonchus oleraceus* (Sowthistle) from Pakistan, at **The 7th International Geminivirus Symposium & 5th International ssDNA Comparative Virology Workshop Hangzhou, China. November 3-9, 2013**
- Attend CSEE/ESC joint annual meeting, August 18th-21st 2019, at the Fredericton Convention Centre, Fredericton, NB, Canada and presentation on “Evolution and diversity of cotton leaf curl disease complex and associated whitefly biotype complex species in Pakistan”.
- **Pak US ICARDA Cotton Productivity Enhancement Workshop** 3-4 September 2012

Organized by ICARDA Pakistan Office, NARC Islamabad Pakistan

- **Muhammad Shafiq***, Sehrish Mushtaq, Javeria Qazi, Misha Jabbar, Muhammad Tariq Manzoor, Ayesha Bibi, Muhammad Saleem Haider 6th ASM Conference On Beneficial Microbes, To Be Held In Seattle, Washington, September 9–12, 2016. Presentation On **“Diversity and phylogeny of geminivirus associated alphasatellites in Pakistan”**
- **Poster presentation at 6th** ASM Conference on Beneficial Microbes, Seattle, Washington, September 9–12, 2016. Presentation On "Assessment of potential trade-off in virus infected plant against drought stress in tomato
- **Muhammad Shafiq**, Freeha Ali, Muhammad Saleem Haider presentation on Next generation sequencing and citrus diseases; current status and future prospectus at ASM Conference on Rapid Next Generation Sequencing and Bioinformatic Pipelines for Enhanced Molecular Epidemiologic Investigation of Pathogen September 24-27, 2015, at the **Omni Shoreham Hotel in Washington, DC**
- Oral Presentation at the 2nd international conference on Horticultural Sciences February 18-20 2016 at University of Agriculture Faisalabad
- “Molecular characterization and pathogenicity of *Cucurbita pepo* infecting new variant of tomato leaf curl palampur virus in Pakistan” in the 34th Annual Meeting of the ASV, held from 11-15 July 2015 at Western University, London, Ontario, Canada.
- **Muhammad Shafiq** Genome wide analysis of DNA binding with one finger Transcription Factor Gene Family in *Olea europaea*. In International Conference on Advances in Biological Science and Technology (ICABST2020) October 28-30, 2020, Online Live Conference Organized by Asia-Pacific Asso. of Natural Science & Engineering (APANSE) Hanoi National University of Education Mahidol University Spanish Biomedical Investigation Center American Chemistry Society WILEY Online Library IOP Science
- Muhammad Shafiq (2014) Title: Molecular characterization of new variant of tomato leaf curl palampur virus infecting *Cucurbita pepo* in Pakistan. Presentation at the **The 37th Annual Meeting of the Molecular Biology Society of Japan** November 25 (Tue.) -27 (Thu.), 2014 **Yokohama Japan**
- Muhammad Shafiq (2014) **Oral** presentation at the International Conference on Biochemistry and Molecular Biology **17-19 April 2014, Vienna, Austria**
- **Muhammad Shafiq (2012)** The role of Cauliflower mosaic virus P6 protein in modulating Auxin signaling pathways **oral presentation at 10th Australasian Plant Virology Workshop (10th APVW) 19-22 November 2012 Hanmer Springs, New Zealand** organized by **The New Zealand Institute for Plant & Food Research Ltd**
- **Muhammad Shafiq**, Muhammad Arshad, Yusuf Zafar, Shahid Mansoor and Shaheen Aftab (2007), Response of different genotype for callus induction and plant regeneration in chili (*Capsicum annum* L) presented at **19th International IPGSA meeting on Plant growth substance 21-25, July 2007 Puerto Vallarta Mexico.**
- M. Ahmed, Khalid S., **M. Shafiq**, M.N. Sattar, , F. Shamim and M.S. Haider (2014), Molecular characterization of begomoviruses infecting cucumber in Pakistan. Presented at International conference of Pakistan Phytopathology Society “Plant diseases: Challenges and Opportunities” University of Karachi from 23-25 January (**Third position in poster**)

- Sehrish Mushtaq, Muhammad Saleem Haider, **Muhammad Shafiq**, Fakhra Shamim (2014) Effect of Whitefly Transmitted *Geminiviruses* on the Physiology of Tomato (*Lycopersicon esculentum*) and Tobacco (*Nicotiana benthamiana*) Plants. Presented at International conference of Pakistan Phytopathology Society “Plant diseases: Challenges and Oppurtunities” University of Karachi from 23-25 January
- Participated as session **co-chair** of the session at the 1st National students conference on Biological Sciences ; Socio-economic impact of research in academia organized by NIBGE March 27-28 2014
- Aees, M., S. Ali, M.S. Haider, **M. Shafiq** and F.M. Tahir. (2014) Effect of foliar application of micronutrients on the leaf nutritional status of mango (*Mangifera indica* L.) cv. Dusehri leaves. Presented at WORLD MANGO CONFERENCE June 24-25, 2014 University College of Agriculture & Environmental Sciences, The Islamia University of Bahawalpur
- **Shafiq, M.**, T. Aslam, F. Ali, M. Anees, M.S. Haider (2014) “The role of plant biotechnology in mango: Achievements, limitations and future directions” Presented at WORLD MANGO CONFERENCE June 24-25, 2014 University College of Agriculture & Environmental Sciences, The Islamia University of Bahawalpur
- Farah S., Haider M. S., **Shafiq M.** and Ilyas M. (2011) A study based on Molecular analyses of whitefly (*Bemisia tabaci*) populations from Punjab, Pakistan. Challenges and Options for Plant Health Management, 8th National Conference of Phytopathology, held November 28-29, University of Agriculture, Faisalabad p-97.
- Asad., S., Mukhtar, Z., Khan, S. A., Arshad M., Arif M., Jamil, M. A., **Shafiq, M.**, Raza G., Ali, K., Briddon, R. W., Zafar Y., Malik K. A. and Mansoor, S. ‘Engineering abiotic and biotic stress tolerance in crop’ plants at ‘**Development and Commercialization of Biotech. Products**’, 19-20 June 2009, held at NIBGE.
- International symposium on “**Prospects of Horticultural industry in Pakistan**” organized by Institute of Horticultural Sciences, University of Agriculture Faisalabad Pakistan on 28-29, March 2007.
- International symposium on “**Characterization and management of emerging viral diseases in the developing world**” organized by National Institute for Biotechnology and Genetic Engineering (NIBGE) Faisalabad Pakistan on 20-22, November 2006
- “**1st International/10th National Conference of Plant Scientists**” organized by Pakistan Botanical Society at University of Agriculture Faisalabad Pakistan April 21-24, 2008
- One day symposium on “**Insect genomics, application and potential for insect control**” organized by National Institute for Biotechnology and Genetic Engineering (NIBGE) Faisalabad Pakistan on 25 March, 2009
- International Conference on “**Genetically Modified Cotton for Risk Assessment and opportunities for small scale cotton Growers**” on March 06-08, 2007.Organized by NIBGE Faisalabad Pakistan.
- The **International Symposium on Microbial Technologies** on 12-16 March, 2007.Organized by NIBGE Faisalabad Pakistan
- **Shafiq M.**, Anwar W., Bibi A., Manzoor M. T. and **Haider M. S.** (2011). Effects of Humic Acid and Foliar NPK in Potato Fields. International Conference on Prospects and Challenges to Sustainable Agriculture. Organized by Faculty of Agriculture, Rawalakot, University of Azad Jammu and Kashmir. July 14-16

Conference, Workshop organized

- Organize workshop as a Coordinator on **An introduction to Next Generation sequencing and its application in Agricultural Sciences**, on April 14 2015 at University of the Punjab Lahore
- Organize workshop on **Next Generation sequencing (From Physiology to Bioinformatics) December 4-5 2015** , at University of the Punjab Lahore
- International conference on Significance of Potash use in Pakistani Agriculture 24-25 November 2016 at University of the Punjab Lahore
- Organize workshop as Workshop Coordinator entitled “Floriculture (Floral Design and Business) On 21st March 2017 at IAGS Punjab University Lahore.
- Organize Pre conference interactive session on Smart technologies for Horticultural crops under changing climate on 25th February 2020
- Organize PSHS International Horticulture conference from 26th to 28th February 2020 as Chief organizer in collaboration with Pakistan Society for Horticultural Sciences
- Organize workshop kitchen gardening and urban farming on February 5 2020

Training Course:

1. Training course entitled "**Biotic stress in plant**" at Genetic Engineering Research center University of Cairo Egypt, Funded by ICGEB Italy on 13-20 February, 2010.
2. Workshop on Next Generation Sequencing Data Analysis at Alphagenomics head office and CIIT, Islamabad on February 14th through 15th 2018
3. **10th Australasian Plant Virology Workshop (10th APVW)** 19-22 November 2012 **Hanmer Springs, New Zealand** organized by **The New Zealand Institute for Plant & Food Research Ltd**
4. Workshop on “**Intelligent data analysis methods in functional genomics**” organized by Lahore University of Management Sciences (LUMS) on 17-18, March 2007.
5. Research workshop on “**Writing Research Proposals**” organized by Institute of Research Promotion (IRP) Lahore at National Institute for Biotechnology and Genetic Engineering Faisalabad (NIBGE), Pakistan on 25 June 2010.
6. workshop on “**Application of Biotechnology for cotton and other crops** ” organized by National Institute for Biotechnology and Genetic Engineering Faisalabad (NIBGE), Pakistan on October 13-16 2014.
7. Workshop on **use of Bioinformatics in high throughput sequencing, Genomics, proteomics and Transcriptomics** Tuesday, March 31st, 2015 at NIBGE, Faisalabad
8. ICGEB funded Training course on The role microRNA in plant development and stress at ICGEB campus New Dehli India in 17 to 25 th November 2015.

9. Attend International *Workshop* On Diversification and Value Addition of *Floriculture* held at University of Agriculture, Faisalabad, Pakistan on March 1-2 2017

Student Supervised

- ✚ **B.Sc. (Hons.) Plant Pathology and Horticulture students supervised (20)**
- ✚ **M.Sc. (Hons.) Plant Pathology and Horticulture students Supervised (54)**
- ✚ **PhD (3)**

M.Sc. (Hons.) Plant Pathology

1. Kiran Nawaz (2011) **Molecular characterization of Begomoviruses infecting *Catharanthus roseus*, Ornamental plants in Pakistan**
2. Farah (2011) **A study on the biotyping of whitefly from Pakistan, A molecular study**
3. Fasiha Qureshi (2011) **Molecular characterization of begomoviruses isolated from weed *Sonchus oleraceus* L**
4. Mukhtar Ahmad (2012) **Molecular characterization of Begomoviruses infecting Cucumber and cotton from Pakistan**
5. Saima Arif (2013). **Identification and phylogenetic analysis of Wolbachia endosymbiont from leafhopper using 16s rDNA gene.**
6. Asma Tanvir (2013). **Characterization and identification *Arsenophonus* endosymbiont from whitefly using 23s rDNA gene.**
7. Mehwish Rauf (2013). **Diversity and phylogenetic analysis of *Bemisia tabaci* species complex from Punjab, Pakistan based on mitochondrial DNA marker.**
8. Sehrish Mushtaq (2013). **Effect of whitefly transmitted geminiviruses on the physiology of *Lycopersicon esculentum* and *Nicotiana benthamiana*.**
9. Shagufta Perveen (2013). **Cloning and *E. coli* expression from cotton leaf curl multan virus rep gene.**
10. Saniya Sattar (2013). **Cloning and *E. coli* expression of bC1 gene from cotton leaf curl burewala betasatelite.**
11. Tehmina Bahar (2014). **Plant response to transient expression of chickpea chlorotic dwarf virus coat protein gene and study of suppressor of RNA silencing.**
12. Rida-e-Fatima (2014). **PCR detection of the *Candidatus liberibacter* and biotyping of Asian citrus Psyllid species associated with Huanglongbing disease of citrus in Pakistan.**
13. Wajid Hussain (2014). **Detection and identification of begomoviruses from selected weeds of Lahore region.**
14. Khadija Imtiaz (2014). **Morphological and molecular characterization of Genera *Alternaria* from Pakistan.**
15. Rahat Ghaffar (2014). **Morphological and molecular characterization of Genera *Fusarium* from Pakistan.**

16. **Maimoona Asif Rehan (2015)** Transient and transgene expression of GFP and Malvesterum yellow vien Changamanga virus in different plants
17. **Ayesha Nisar (2015)** Host range and molecular characterization of Tomato leaf curl palampur virus isolated from cucurbits
18. **Ayesha yusuf (2015)** Resistance gene diversity in local cultivars of Rose in Pakistan
19. **Kamran Khilji (2017)** Management of Begomovirus in chilli crop by using high dosage of potash, Biopesticides,nitrogen from poultry manure and their molecular characterized comparison

M.Sc. (Hons.) Horticulture Students Supervised

20. **Adnan-ur-Rehman (2016)**. Use of hormonal treatments for propagation of carnation and Agrobacterium mediated transformation of antifungal chitinase gene in node of carnation
21. **Ummad Hussain (2016)**. Biodiversity and characterization of Bacteria from Weeds of Citrus in Punjab Pakistan
22. **Shagufta Umer (2016)** *Micro propagation of Guava (Psidium guajava L.)Cultivar safeda and Allahabad through shoot tip culture*
23. **Saher Sanaullah (2016)**. Establishment and improvement of plant regeneration system of gladiolus
24. **Freeha Ali (2016)** Development of DNA identification methods for the identification of citrus species in Pakistan
25. **Mr. Arslan Abid (2016)** Assessment of potential trade-offs in the response of virus and bacterial infection to drought stress in Tomato (*Lycopersicum esculentum L.*)
26. **Saher Sanaullah (2016)** Establishment and improvement of plant regeneration system of gladiolus
27. **Umbreen Fatima (2016)** Use of Preservative chemical to increase the shelf life of gladioulous variety red tissue
28. **Barrira Maeryum (2017)** Development of DNA barcoding system for the identification of world Broccoli species

29. Inab Ishaq (2017) Biodiversity and characterization of Bacteria from Murraya species in Pakistan
30. Mobeen Ali (2017) Importance of Nitrogen to Phosphorus proportionality of nutrient solution in regulating the growth yield and biochemical characteristics of linseed (*Linum usitatissimum*)
31. Bushra Yaseen (2017) Use of preservative chemical for the Improvement of the vase life of sunflower
32. Muneeb Hashmi (2017) *Nutrient use efficiency of chilli plants cultivated with acidified irrigation water*
33. Nosheen Tabassum (2017) Role of Nitrogen to Phosphorus ratios of input nutrient solution in improving medicinally important phytochemicals of kalonji (*Nigella sativa*) seeds
34. Tehseen Aslam (2018) Development of DNA barcoding system for the identification of Murraya Species in Pakistan
35. Mr. Waqar Arshad (2018) Understanding the Biodiversity of carrot *Daucus carota* accession in Pakistan
36. Aleem Ahmad (2018) Diversity analysis of citrus species in Pakistan using DNA barcoding tool
37. Yasha Jameel (2018) Effect of different biofertilizer on the growth and production of chilli crop
38. Zubaria Waqar (2018) A study on the identification of Palmae family species using DNA barcoding techniques

39. Iqra Paras (2018) Establishment of DNA database for Horticultural plant Species identification and development of DNA barcode marker for the identification of Guava species in Pakistan
40. Danish Ahmad (2020) Effect of different edible coatings on the quality and shelf life of Chinese Meyer lemon (*Citrus meyeri* L.)
41. Abeera Fatima (2020) Characterization and pathogenicity assays of xba34 enzyme in *Nicotiana benthamiana*
42. Nimra Khalid (2020) Growth and quality of *Zinnia elegans* L. in response to different growth stimulants
43. Abdul Latif (2020) Inventory of Different Weeds in Tomato Crop at Balochistan
44. Umair Ali (2020) Effect of foliar and basal application of organic and chemical fertilizers on growth and yield attributes of chili
45. Zainab Abid (2020) Screening of various Algal extracts for growth stimulation of Brinjal (*Solanum melongena*) Seedlings
46. Amna Mirza (2020) Transformation of triple gene/ binary construct in potato
47. Kakshan Khalid (2020) Transformation and expression studies of chitinase gene in transgenic potato lines
48. Faiza Sadiq (2021) Genome wide analysis of RBOH genes family of potato and its phylogenetic analysis with Arabidopsis and other plants
49. Muhammad Ahtsham Azam (2020) Genome wide identification and phylogenetic analysis of ACS and ETO Gene family and its interactional studies in *Daucus carota* (carrot)
50. Nabeela Maqbool (2020) Genome wide analysis of ACS and ETO genes in *Linum usitatissimum*
51. Fatima Shahid (2021) Genome-wide analysis of BHLH transcription factor gene family of Papaya and its comparative phylogenetic assessment with Arabidopsis and other plants.

52. Farwah Murtaza (2020) Genome wide identification and phylogenetic analysis of Dof transcriptional factor in Red Clover (*Trifolium pratense*) and its comparison with *Arabidopsis thaliana*
53. Muhammad Hammad Bin Asif (2020) Genome wide analysis of respiratory burst oxidase homolog of carrot

BSc(Hons) Agriculture Student Supervised

1. Sania Afzal (2015-19) Assesement of Morphological Characterization of different exotic citrus varieties through multivariate analysis
2. Abiha iftikhar (2015-19) Internship at jilani Park Race course Park Lahore
3. Quratul Ain (2015-19) Tomato AGO 4 homologues are regulated by pathogen activity
4. Shajia SAleem (2015-19) Basic Molecular techniques at CEMB Lahore
5. Saira Razzaq (2015-19) Authentic identification of various medicinal plant using DNA Barcoding
6. Muhammad Talha (2015-19) In-vitro propagation of different plants at CEMB lahore
7. Ch. Zain Gulraiz (2015-19) Optimization of Vegetable production using hydroponics and tunnel techniques at MA agri Farm
8. Maryam (2016-20) Genome wide in silico analysis of plant specific transcription Factor DNA binding with one finger Gene Family in *Olea europaea*
9. Fizaza Gilani (2016-20) Genome-wide bioinformatics analysis of Dof transcription factor gene family of Wild Strawberry and its comparative phylogenetic assessment with *Arabidopsis*
10. Muhammad Shoaib(2016-20) Genome Wide Analysis of DOF Gene Family in *Capsella rubella*
11. Zeeshan Ali (2016-20) Genome wide analysis of Dof Plant specific transcription factors family in lettuce (*Lactuca sativa* L.)
12. Ahsan (2016-20) Agronomic and Molecular Characterization of Capsicum Germplasm
13. Waqas (2016-20) *Genome Wide Analysis of DOF Gene Family in Lactuca sativa*
14. Wajeeha Fatima (2016-20) Internship on Lanscape design at Bahria Town Lahore
15. Mehwish Safdar (2012-2016) Sampling, rearing of *Helicoverpa armigera* for identification and isolataion of essential genes for RNAi

Ph.D's Produced:

1. Ms Sehrish Mushtaq Diversity and Phylogenic analysis of citrus associated bacteria from Pakistan (2019)
2. Mr. Muhammad Tariq Manzoor Isolation and characterization of a novel Cotton Mastrevirus and its interactional study with Begomovirus and associated satellites (2020)
3. Mr. Muhammad Muneeb Hashmi Genome wide analysis to determine the disease resistance in cucumber against begomovirus infection (2024)

Sr.No.	Student's Name	Thesis Title	Year
4.	Ms Sehrish Mushtaq	Diversity and Phylogenic analysis of citrus associated bacteria from Pakistan	(2019)
2.	Mr. Muhammad Tariq Manzoor	Isolation and characterization of a novel Cotton Mastrevirus and its interactional study with Begomovirus and associated satellites	(2020)
3.	Mr. Muhammad Muneeb Hashmi	Genome wide analysis to determine the disease resistance in cucumber against begomovirus infection	(2024)

Key Methodologies:

- Molecular cloning
- Genome wide Analysis
- Genome wide Association Studies
- Molecular identification of pathogen
- Genome sequencing and Sequencing analysis (NGS)
- Disease free Plant tissue culture system
- Evolutionary and Phylogenetic Analysis
- Gene transformation
- Bioinformatics

References:

Dr, Shaheen Asad
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