

CURRICULUM VITAE

PERSONAL INFORMATION

Name: **SHOAIB FREED**
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JOB EXPERIENCE

Professor (Tenured)	19-03-2022 to date
<i>Department of Entomology, Faculty of Agricultural Sciences and Technology, Bahauddin Zakariya University, Multan</i>	
Associate Professor (Tenured)	05-02-2017 to 18-03-2022
<i>Department of Entomology, Faculty of Agricultural Sciences and Technology, Bahauddin Zakariya University, Multan</i>	
Assistant Professor (TTS)	04-02-2011 to 04-02-2017
<i>Department of Entomology, Faculty of Agricultural Sciences and Technology, Bahauddin Zakariya University, Multan</i>	
Assistant Professor (IPFP)	06-02-2010 to 03-02-2011
<i>Department of Entomology, Faculty of Agricultural Sciences and Technology, Bahauddin Zakariya University, Multan</i>	
Research Fellow:	04-09-2004 to 31-01-2005
Higher Education Commission Project entitled “Diagnostic and Research Centers for Mango orchards”.	

ACADEMICS

Ph.D. (Agricultural Entomology) <i>South China Agricultural University, Guangzhou, China</i>	2006-2009
M.Sc. (Hons.)/M.Phil. Agriculture (Entomology) <i>Bahauddin Zakariya University Multan, Pakistan</i> CGPA 3.81/4.00 (GOLD MEDALIST)	2003-2005
B.Sc. (Hons.) Agriculture (Entomology) <i>Bahauddin Zakariya University Multan, Pakistan</i> CGPA 3.41/4.00	1999-2003
Higher Secondary School Certificate (Pre-Medical) <i>BISE Multan (70.90%)</i>	1997-1999
Secondary School Certificate <i>BISE Multan (73.52%)</i>	1994-1996

RESEARCH PROJECTS

1. **2023, Co-PI, for the project entitled “Development of forecasting techniques and sustainable pest management of insects pests of summer vegetables” Worth 12.045**

Million PKR, by Punjab Agricultural Research Board (PARB), Pakistan (Under Progress).

2. **2022** Principal investigator for the project entitled “Development of molecular insecticidal proteins from entomopathogenic fungi for the management of *Bemisia tabaci* Gennadius (Hemiptera: Aleyrodidae)”. **Worth 7.8099 Million PKR, by Higher Education Commission, Pakistan (Under Progress)**
3. **2014** Principal investigator for the project entitled “Role of different detoxification enzymes for the resistance development in *Spodoptera litura* after exposure to *Metarhizium anisopliae* var. *anisopliae*”. **Worth 2.81592 Million PKR, by Higher Education Commission, Pakistan (Completed).**
4. **2014** Principal investigator for the project entitled “Genetic diversity of *Amrasca devastans* (Dist.) (Cicadellidae: Homoptera) in Southern Punjab, Pakistan and its infection with endosymbionts” (**Worth 3.489420 Million PKR, by Higher Education Commission, Pakistan (Completed).**
5. **2014** Principal Investigator for the project entitled “Assessment of combined efficacy of insect pathogenic fungi and botanical extracts on biological parameters of *Musca domestica* L. (Diptera: Muscidae)”. **Worth 0.0969 Million, Funded by Bahauddin Zakariya University, Multan (Completed).**
6. **2012** Principal investigator for the project entitled “Virulence of entomopathogenic fungi against different stages of *Bactrocera zonata* (Diptera: Tephritidae)”. **Worth 0.0741 Million, Funded by Bahauddin Zakariya University, Multan (Completed)**
7. **2011** Prevalence and Effectiveness of Entomopathogenic Fungi in Southern Punjab. **Worth 0.5 Million PKR, Funded by the Higher Education Commission, Pakistan (Completed).**

EXPERT/ADVISOR

- Expert for the Selection Board dated 18-04-2022 for the selection of Assistant Professor (Agriculture) and Research Officer (Fungal Taxonomy), University of The Punjab, Lahore.

MAJOR SUBJECTS OF INTEREST

- Molecular Microbiology.
- Insect Microbiology
- Evolutionary Genetics.
- Bioinformatics.
- Phylogenetics.
- Molecular Genetics.
- Toxicology.

PUBLICATIONS

1. Akhter W., F. M. Shah., M. Yang., S. Freed., M. Razaq., A. G. Mkindi., H. Akram., A. Ali., K. Mahmood and M. Hani (2023). Botanical biopesticides have an influence on tomato quality through pest control and are cost-effective for farmers in developing countries. PLoS ONE. 18(11): e0294775 (**Impact Factor: 3.7**).

2. Shaukat R.F., S. Freed., R. Ahmed., M. Raza and A. Naeem (2023). Virulence and trans-generational effects of *Metarhizium anisopliae* on *Oxycarenus hyalinipennis*. Pest Management Science 79:3853-3851 (**Impact Factor: 4.462**).
3. Azhar M., S. Freed., H. Sabir., S. Rafique., A. Naeem and R. Ahmed (2023). Effect of sub-lethal and lethal concentrations of the entomopathogenic fungus *Metarhizium anisopliae* Sorokin on detoxification enzymes and demographic parameters of *Mythimna separata* (Walker). Crop Protection 172:106323 (**Impact Factor: 3.306**).
4. Rizwan M., S. Freed, D. Batool, A. Naeem, R. Ahmed and Muhammad Akmal (2023). Lethal and sub-lethal effects of *Cordyceps fumosorosea* on the demography and biochemistry of *Phenacoccus solenopsis*. Biocontrol Science and Technology. 33(1): 76-97 <https://doi.org/10.1080/09583157.2022.2161474> (**Impact Factor: 1.810**).
5. Ahmed, R., S. Freed., A. Naeem., M. Akmal (2022). Lethal and trans-generational effects of *Metarhizium anisopliae* on red palm weevil, *Rhynchophorus ferrugineus*, using age-stage, two-sex life table. Journal of Asia-Pacific Entomology. 25(3):101946 (**Impact Factor: 1.580**).
6. Ahmed, R., S. Freed., A. Naeem., M. Akmal and C. H. Dietrich (2022). *Metarhizium anisopliae* and *Isaria fumosorosea* challenge the survival and immunity of the palm weevil, *Rhynchophorus ferrugineus* Olivier. Spanish Journal of Agricultural Research. 20(3): e1004 (**Impact Factor: 1.233**).
7. Nawaz, M. and S. Freed (2022). Pathogenicity of different isolates of entomopathogenic fungi on cotton mealybug, *Phenacoccus solenopsis* Tinsley. Pakistan Journal of Zoology. 54(1): 275-282 (**Impact Factor: 0.790**).
8. Ahmed, R. and S. Freed (2021). Biochemical resistance mechanisms against chlorpyrifos, imidacloprid and lambda-cyhalothrin in *Rhynchophorus ferrugineus* (Olivier) (Coleoptera: Curculionidae). Crop Protection. 143: 105568 (**Impact Factor: 2.381**).
9. Ahmed, R. and S. Freed (2021). Virulence of *Beauveria bassiana* Balsamo to Red Palm Weevil, *Rhynchophorus ferrugineus* (Olivier) (Coleoptera: Curculionidae). Egyptian Journal of Biological Pest Control 31:77 (**Impact Factor: 0.763**).
10. Ahmed, R., Freed, S., Naeem, A. and Akmal, M (2021). Activity of detoxification enzymes in *Rhynchophorus ferrugineus* (Olivier) (Coleoptera: Curculionidae) after exposure to *Beauveria bassiana* (Balsamo). Invertebrate Survival Journal. 18: 108-118. (**Impact Factor: 1.115**).
11. Sumra, M. W., S. Freed, M. S. Shah, M. Z. Nazar, S. Hussain, and A. Naeem (2021). Biochemical characterization of *Aedes aegypti* (Linnaeus) (Diptera: Culicidae) resistance to deltamethrin, fipronil and imidacloprid. Environmental Monitoring and Assessment 193:665 (**Impact Factor: 2.513**).
12. Zafar, J., Zhang, Y, Huang, J, Freed, S, Shoukat, R.F, Xu, X, Jin, F. (2021) Spatio-Temporal profiling of *Metarhizium anisopliae*—Responsive microRNAs involved in modulation of *Plutella xylostella* immunity and development. Journal of Fungi 7, 942 (**Impact Factor: 5.816**).
13. Naeem, A., S. Freed and Akmal, M (2020). Biochemical analysis and pathogenicity of entomopathogenic fungi to *Diaphorina citri* Kuwayama

- (Hemiptera: Liviidae). Entomological Research. 50:245-254 (**Impact Factor: 0.807**).
14. Nazar M. Z., S. Freed., S. Hussain, M. W. Sumra., M. S. Shah and A. Naeem (2020). Characteristics of biochemical resistance mechanism of novel insecticides in *Phenacoccus solenopsis* Tinsley (Hemiptera: Pseudococcidae). Crop Protection.138: 105320 (**Impact Factor: 2.381**).
 15. Akmal, M., S. Freed., M. Bilal and M. N. Malik (2020). A laboratory assessment for the potential of entomopathogenic fungi against *Tribolium castaneum* (Herbst.) (Coleoptera: Tenebrionidae). Turkish Journal of Agriculture - Food Science and Technology. 8(6): 1232-1235.
 16. Ismail, H. M., S. Freed., A. Naeem., S.J. Malik and N. Ali (2020). The effect of entomopathogenic fungi on enzymatic activity in chlorpyrifos resistant mosquitoes, *Culex quinquefasciatus* (Diptera: Culicidae). Journal of Medical Entomology. 57(1):204-213 (**Impact Factor: 1.925**).
 17. Akmal, M., S. Freed., M. A. Schäfer., W. U. Blankenhorn., M. Razaq and U.D. Umar (2020). Population genetic and phenotypic differentiation of cotton leafhoppers (Hemiptera: Cicadellidae) from Pakistan. Ecoscience. 27(1):33-43 (**Impact Factor: 1.250**).
 18. Ahmed, K., S. Freed., R. F. Shoukat and K. W. Ahmad (2020). Efficacy of entomopathogenic fungi with insecticides mixtures against *Oxycarenus hyalinipennis* (Costa) (Lygaeidae: Hemiptera). Pakistan Journal of Zoology 52(2):573-583 (**Impact Factor: 0.790**).
 19. Shoukat, R. F., B. Hassan., M. Shakeel., J. Zafar., S.H. Li., S. Freed., X. X. Xu and F.L. Jin (2020). Pathogenicity and transgenerational Effects of *Metarhizium anisopliae* on the demographic parameters of *Aedes albopictus* (Culicidae: Diptera). Journal of Medical Entomology. 57(3): 677-685 (**Impact Factor: 1.907**).
 20. Shoukat, R. F., J. Zafar., M. Shakeel., Y.X. Zhang., S. Freed., X. X. Xu and F.L. Jin (2020). Assessment of lethal, sublethal, and transgenerational effects of *Beauveria bassiana* on the demography of *Aedes albopictus* (Culicidae: Diptera). Insects, 11: 178(**Impact Factor: 2.20**).
 21. Shoukat, R. F., M. Shakeel., S. A. H. Rizvi., J. Zafar., Y.X. Zhang., S. Freed., X. X. Xu and F.L. Jin (2020). Larvicidal, ovicidal, synergistic, and repellent activities of *Sophora alopecuroides* and its dominant constituents against *Aedes albopictus*. Insects, 11: 246 (**Impact Factor: 2.20**).
 22. Zafar, J., R. F. Shoukat., Y.X. Zhang., S. Freed., X. X. Xu and F.L. Jin (2020). *Metarhizium anisopliae* challenges immunity and demography of *Plutella xylostella*. Insects, 11: 694 (**Impact Factor: 2.20**).
 23. Malik, S.J., S. Freed., N. Ali, H. M. Ismail and A. Naeem (2019). Nitenpyram selection, resistance and biochemical characterization in dusky cotton bug, *Oxycarenus hyalinipennis* Costa (Hemiptera: Lygaeidae). Crop Protection. 125: 104904 (**Impact Factor: 2.381**).
 24. Naqvi, S. A. H., S. Mushtaq., M. T. Malik., U. D. Umar., A. Rehman, S. Freed., M. A. Zulfiqar (2019). Factors leading towards *Dalbergia sissoo* decline

- (Syndrome) in Indian Sub-Continent: A critical review and future research agenda. Pakistan Journal of Agricultural Research, 32(2): 302-316 (**Impact Factor: 0.677**).
25. Naeem, A., Afzal, M.B.S., S. Freed, F. Hafeez, S. M. Zaka, Q. Ali, H. M. Z. Anwar, A. Iftikhar and M. Nawaz (2019). First report of thiamethoxam resistance selection, cross resistance to various insecticides and realized heritability in Asian citrus psyllid *Diaphorina citri* from Pakistan. Crop Protection, 121: 11-17(**Impact Factor: 2.381**).
 26. Naeem, A. and S. Freed (2018). Biochemical basis of conventional and novel mode of action insecticides resistance in field population of *Diaphorina citri* collected from Southern Punjab, Pakistan. ISJ-Invertebrate Survival Journal, 15: 327-337 (**Impact Factor: 0.806**).
 27. Farooq, M., T. Steenberg, D. H. Højland, S. Freed and M. Kristensen (2018). Impact of sequential exposure of *Beauveria bassiana* and imidacloprid against susceptible and resistant populations of *Musca domestica*. Biocontrol, 63:707–718 (**Impact Factor: 2.307**).
 28. Bilal, M., S. Freed, M. Z. Ashraf, S. M. Zaka and M. B. Khan (2018). Activity of acetylcholinesterase, acid and alkaline phosphatases in different insecticides treated *Helicoverpa armigera* (Hübner). Environmental Science and Pollution Research. 25: 22903–22910 (**Impact Factor: 2.741**).
 29. Bilal, M, S. Freed, M. Z. Ashraf and A. Rehan (2018). Resistance and detoxification enzyme activities to bifenthrin in *Oxycarenum hyalinipennis* (Hemiptera: Lygaeidae). Crop Protection, 111: 17-22. (**Impact Factor: 1.834**).
 30. Bilal, M, S. Freed, S. Muhammad, M. Z. Ashraf and M. B. Khan (2018). Activity of glutathione S-transferase and esterase enzymes in *Helicoverpa armigera* (Hübner) after exposure to entomopathogenic fungi. Entomological Research, 48: 279-287. (**Impact Factor: 0.573**).
 31. Farooq, M. and S. Freed (2018). Mortality, biological and biochemical response of *Musca domestica* (Diptera: Muscidae) to selected insecticides. Journal of Entomological Science, 53(1): 27-45 (**Impact Factor: 0.462**).
 32. Akmal M., S. Freed, C. H. Dietrich, M. Mehmood and M. Razaq (2018). Patterns of genetic differentiation among populations of *Amrasca biguttula biguttula* (Shiraki) (Cicadellidae: Hemiptera). Mitochondrial DNA Part A. 29(6): 897-904 (**Impact Factor: 1.073**).
 33. Farooq, M. and S. Freed (2018). Insecticidal activity of toxic crude proteins secreted by entomopathogenic fungi against *Musca domestica* L. (Diptera: Muscidae). Kuwait Journal of Science, 45(2):89-99 (**Impact Factor: 0.811**).
 34. Shoukat, R.F. S. Freed, K. W. Ahmad and A.U. Rehman (2018). Assessment of binary mixtures of entomopathogenic fungi and chemical insecticides on biological parameters of *Culex pipiens* (Diptera: Culicidae) under laboratory and field conditions. Pakistan Journal of Zoology, 50(1):299-309 (**Impact Factor: 0.478**).
 35. Bilal, M, S. Freed, M. Z. Ashraf and S. Muhammad (2017). Enhanced activities of acetylcholinesterase, acid and alkaline phosphatases in *Helicoverpa armigera* after exposure to entomopathogenic fungi. Invertebrate Survival Journal, 14: 464-476 (**Impact Factor: 0.824**).

36. Ahmad, K. W, S. Freed and R. F. Shoukat (2017). Efficacy of entomopathogenic fungi and botanicals on development of *Musca domestica*. Journal of Entomology and Zoology Studies. 5(2): 593-599.
37. Akmal, M. S. Freed, M. N. Malik and M. Bilal (2017). A laboratory assessment for the potential of entomopathogenic fungi to control *Rhyzopertha dominica* (F.) (Coleoptera: Bostrichidae). Journal of Entomology and Zoology Studies. 5(5): 40-45.
38. Farooq, M. and S. Freed (2016). Lethal and sublethal effects of mixtures of entomopathogenic fungi and synthetic insecticides on biological aspects of *Musca domestica* L. Turkish Journal of Entomology, 40(3): 211-225 (**Impact Factor: 0.375**).
39. Naeem, A., S. Freed, F. L. Jin, M. Akmal and M. Mehmood (2016). Monitoring of insecticide resistance in *Diaphorina citri* Kuwayama (Hemiptera: Psyllidae) from citrus groves of Punjab, Pakistan. Crop Protection, 86: 62-68. (**Impact Factor: 1.652**).
40. Zafar, J., S. Freed, B. A. Khan and M. Farooq (2016). Effectiveness of *Beauveria bassiana* against cotton whitefly, *Bemisia tabaci* (Gennadius) (Aleyrodidae: Homoptera) on different host plants. Pakistan Journal of Zoology, 48(1): 91-99 (**Impact Factor: 0.478**).
41. Farooq, M. and S. Freed (2016). Susceptibility of housefly, *Musca domestica* (Diptera: Muscidae) with different entomopathogenic fungi. Brazilian Journal of Microbiology, 47:807-816 (**Impact Factor: 0.865**).
42. Farooq, M. and S. Freed (2016). Combined Effects of *Beauveria bassiana* (Hypocreales: Clavicipitaceae) and Insecticide Mixtures on Biological Parameters of *Musca domestica* (Diptera: Muscidae). Pakistan Journal of Zoology, 48(5):1465-1476 (**Impact Factor: 0.478**).
43. Zhang, Y.Q., X. X. Xu, S. Freed., J. Yu, Y. F. Gao, S. Wang, L. N. Ouyang, W.Y. Ju, F. L. Jin (2016). An anionic defensin from *Plutella xylostella* with potential activity against *Bacillus thuringiensis*. Bulletin of Entomological Research, 106: 790-800 (**Impact Factor: 1.761**).
44. Gao, G., X. X. Xu, S. Freed, L.M. Li, W.Y. Ju, F. L. Jin (2016). Identification and molecular characterization of two serine proteases and their potential involvement in prophenoloxidase activation in *Plutella xylostella*. Archives of Insect Biochemistry and Physiology, 93(1):25-39 (**Impact Factor: 1.357**).
45. Farooq, Z., S. Freed, H. Karar, M. Rubab and S. F. H. Shah (2016). Efficacy of some botanical extracts against wheat aphids *Sitobion Avenae* (Homoptera: Aphididae) and their impact on predators population. Journal of Agriculture Research. 54(4): 697-706.
46. Shoukat, R. F., S. Freed and K. W. Ahmad (2016). Evaluation of binary mixtures of entomogenous fungi and botanicals on biological parameters of *Culex pipiens* (Diptera: Culicidae) under laboratory and field conditions. International Journal of Mosquito Research. 3(5); 17-24.
47. Lina O.Y., X. X. Xu, S. Freed, Y.F. Gao, J. Yu, S. Wang, W.Y. Ju, Y.Q. Zhang and F.L. Jin (2015). Cecropins from *Plutella xylostella* and their interaction with *Metarhizium anisopliae*. PLoS One, 10(11): e0142451 (**Impact Factor: 3.234**).

48. Huang W.J., X. X. Xu, S. Freed, Z. H. Zheng, S. Wang, S.X. Ren and F. L. Jin (2015). Molecular cloning and characterization of a β -1, 3-glucan recognition protein from *Plutella xylostella* (L.). *New Biotechnology*, 32(2): 290-299 (**Impact Factor: 3.199**).
49. Gul, H. T., S. Freed., M. Akmal and M. N. Malik (2015). Vulnerability of different life stages of *Bactrocera zonata* (Tephritidae: Diptera) against entomogenous fungi. *Pakistan Journal of Zoology*, 47(2):307-317. (**Impact Factor: 0.404**).
50. Rehman A. U., U.D. Umar, S.A.H. Naqvi, M. R. Latif, S. A. Khan, I. Haq and S. Freed (2015). Emerging resistance against different fungicides in *Lasiodiplodia theobromae*, cause of mango die-back in Pakistan. *Archives of Biological Sciences*, 67(1): 241-259. (**Impact Factor= 0.718**).
51. Rehan, A and S. Freed (2015). Fitness cost of methoxyfenozide and the effects of its sub-lethal doses on development, reproduction and survival of *Spodoptera litura* (Fabricius) (Lepidoptera: Noctuidae). *Neotropical Entomology*, 44:513-520 (**Impact Factor: 0.772**).
52. Rehan, A and S. Freed (2015). Lethal and sub-lethal effects of spinosad on the life-history traits of army worm, *Spodoptera litura* (Fabricius) (Lepidoptera: Noctuidae) and its fitness cost of resistance. *Entomological Research*, 45: 247-253 (**Impact Factor: 0.400**).
53. Xu, X.X., F.L. Jin, Y. S. Wang, S. Freed, Q.B. Hu, and S.X. Ren (2015). Molecular cloning and characterization of gloverin from the diamondback moth, *Plutella xylostella* L. and its interaction with bacterial membrane. *World Journal of Microbiology and Biotechnology*, 311:1529-541 (**Impact Factor: 1.779**).
54. Rehan, A and S. Freed (2014). Selection, mechanism, cross-resistance and stability of spinosad resistance in *Spodoptera litura* (Fabricius) (Lepidoptera: Noctuidae). *Crop Protection*. 56: 10-14 (**Impact Factor: 1.539**).
55. Rehan, A and S. Freed (2014). Resistance selection, mechanism and stability of *Spodoptera litura* (Lepidoptera: Noctuidae) to methoxyfenozide. *Pesticide Biochemistry and Physiology*. 110: 7-12 (**Impact Factor: 2.111**).
56. Huang, J. H., S. Freed., L. S. Wang, W. J. Qin, H. F. Chen and H. G. Qin (2014). Effect of temperature on development and reproduction of *Proprioseiopsis asetus* (Acari: Phytoseiidae) fed on asparagus thrips, *Thrips tabaci*. *Experimental and Applied Acarology*. 64:235-244 (**Impact Factor: 1.847**).
57. Freed, S., F. L. Jin and S.X. Ren (2014). Intraspecific Variability among the isolates of *Metarhizium anisopliae* var. *anisopliae* by RAPD Markers. *International Journal of Agriculture and Biology*.16: 899-904 (**Impact Factor: 0.808**).
58. Sun, Q., X. X. Xu, S. Freed, W. J. Huang, Z. Zheng, S. Wang, S. X. Ren and F. L. Jin (2014). Molecular characterization of a short peptidoglycan recognition protein (PGRP-S) from Asian corn borer (*Ostrinia furnacalis*) and its role in triggering proPO activity. *World Journal of Microbiology and Biotechnology*. 30:263-270 (**Impact Factor: 1.779**).
59. Khan, B. A., S. Freed, J. Zafar and M. Farooq (2014). Evaluation of three Different insect pathogenic fungi for the control of *Dysdercus koenigii* and *Oxycarenus hyalinipennis*. *Pakistan Journal of Zoology*. 46(6):1759-1766 (**Impact Factor: 0.309**).

60. Arshad, M.S., A. Hameed, S. Ahmad, A. Mehmood, M. Aslam, N. Khan, K. Mahmood and S. Freed (2014). Modelling populations dynamics of army worm (*Spodoptera litura* F.) (Lepidoptera: Noctuidae) in relation of meteorological factors in Multan, Punjab, Pakistan. *International Journal of Agronomy and Agricultural Research*. 5(1): 39-45.
61. Khan M. B., M. A. Gurchani, S. Freed, K. Jabran and M. Hussain (2014). Osmopriming improves the emergence, growth, nutrient uptake and soluble sugar contents of wheat seedlings. *Soil and Environment*. 33(2): 142-148.
62. Malik M. N., S. Freed., H. T. Gul., M. Akmal and M. Naeem (2013). Microbial control of maize army worm, *Mythimna separate* (Noctuidae : Lepidoptera) by entomopathogenic fungi. *Pakistan Journal of Zoology*. 45(6):1607-1614. **(Impact Factor: 0.309)**.
63. Khalid, M., W. Nazeer, M. Naeem, S. Freed, M.A Khan, G. Abbas, M. Iqbal, A.R. Kulachi, S. A. Sajid, M.A. Sadiq and M. Saleem (2013). Determination of genetic variation among chickpea genotypes and their F₁crosses with RAPD markers. *Genetics and Molecular Research*. 12 (2): 2127-2137. **(Impact Factor: 0.994)**.
64. Naeem, M., S. Freed and Z. G. Quan (2013). Molecular Genetic studies of Heading date gene *OsMADS50*, by using Single Segment Substitution Lines in *Oryza sativa* L. *International Journal of Agriculture and Biology*. 15: 631–639 **(Impact Factor: 0.808)**.
65. Akmal, M., S. Freed, M. N. Malik and H. T. Gul (2013). Efficacy of *Beauveria bassiana* (Deuteromycotina: Hypomycetes) against different aphid species under laboratory conditions. *Pakistan Journal of Zoology*. 45(1): 71-78. **(Impact Factor: 0.309)**.
66. Arshad, M. J., S. Freed, S. Akbar, M. Akmal and H. T. Gul (2013). Nitrogen fertilizer application in maize and its impact on the development of *Chilo partellus* (Lepidoptera: Pyralidae). *Pakistan Journal of Zoology*. 45(1):141-147. **(Impact Factor: 0.309)**.
67. Hameed, A., M. Saleem, H. Karar, S. Ahmad, M. Hussain, W. Nazir, M. Akram, H. Hussain and S. Freed (2013). Life history and predatory potential of eleven spotted beetle (*Coccinella undecimpunctata* Linnaeus) on cotton mealybug (*Phenacoccus solenopsis* Tinsley). *African Journal of Agricultural Research*. 8(48):6142-6148.
68. Freed, S., J. Feng-Liang, M. Naeem, R. Shun-Xiang and M. Hussian. (2012). Toxicity of proteins secreted by entomopathogenic fungi against *Plutella xylostella* (Lepidoptera: Plutellidae). *International Journal of Agriculture and Biology*. 14: 291-295. **(Impact Factor: 0.808)**.
69. Shakeel, A., S. Ahmad, M. Naeem, T. A. Malik, M. F. Saleem and S. Freed (2012). Assessment of best parents and superior cross combinations for earliness related traits in upland cotton (*Gossypium Hirsutum* L.). *Journal of Animal and Plant Sciences*. 22(3):722-727. **(Impact Factor: 0.638)**.
70. Akbar. S, S. Freed, A. Hameed, M. B. Khan, H. T. Gul, M. Akmal, M. N. Malik and M. Naeem (2012). Compatibility of *Metarhizium anisopliae* with different insecticides and fungicides. *African Journal of Microbiology Research*. 6(17): 3956-3962. **(Impact Factor: 0.539)**.

71. Freed S., M. A. Saleem, M. B. Khan and M. Naeem (2012). Prevalence and effectiveness of *Metarhizium anisopliae* against *Spodoptera exigua* (Lepidoptera: Noctuidae) in Southern Punjab, Pakistan. Pakistan Journal of Zoology. 44 (3): 753-758. **(Impact Factor: 0.309).**
72. Hussain, S. A., M. A. Saleem and S. Freed (2012). Toxicity of some insecticides to control mango mealy bug *Drosicha mangiferae* a serious pest of mango in Pakistan. Pakistan Journal of Zoology. 44(2):353-359. **(Impact Factor: 0.309).**
73. Hameed A., S. Freed, A. Hussain, M. Iqbal, M. Hussain, M. Naeem, A. Sajjad, H. Hussain, M. A. Sadiq and A. L. Tipu (2012). Toxicological effects of neem (*Azadirachta indica*), Kanair (*Nerium oleander*) and spinosad (Tracer 240 SC) on the red flour beetle (*Tribolium castaneum*) (Herbst.). African Journal of Agriculture Research. 7(4): 555-560.
74. Hussain T., W. Nazeer, M. Tauseef, J. Farooq, M. Naeem, S. Freed, M. Iqbal, A. Hameed, M. A. Sadiq, H. M. Nasrullah. (2012). Inheritance of some spike related polygenic traits in spring wheat (*Triticum aestivum* L). African Journal of Agricultural Research. 7(9):1381-1387.
75. Shakeel A., S. Ahmad., M. Naeem., T. A. Malik M. F. Saleem., S. Freed and W. Nazeer (2012). Evaluation of *Gossypium Hirsutum* L. genotypes for combining ability studies of yield and quality traits. İğdır University Journal of the Institute of Science and Technology. 2(1): 67-74.
76. Malik, M. N., S. Freed, H. T. Gul and M. Akmal (2012). Pathogenicity of insect pathogenic fungus *Isaria fumosorosea* to different aphid species. Proceedings of 3rd International Conference 'Frontiers in Agriculture' held at Dankook International Cooperation on Agriculture, Dankook University, Cheonansi, Republic of Korea during October 3-5, 2012
77. Freed, S., J. Feng-Liang and R. Shun-Xiang (2011). Determination of genetic variability among the isolates of *Metarhizium anisopliae* var. *anisopliae* from different geographical origins, World Journal of Microbiology and Biotechnology. 27(2):359-370 **(Impact Factor: 1.262).**
78. Khan M. B., M. A. Gurchani, M. Hussain, S. Freed and K. Mahmood (2011). Wheat Seed Enhancement by Vitamin and Hormonal Priming. Pakistan Journal of Botany. 43(3): 1495-1499 **(Impact Factor: 0.872).**
79. Freed, S., J. Feng-Liang and R. Shun-Xiang (2011). Phylogenetics of Entomopathogenic Fungi Isolated From the Soils of Different Ecosystems. Pakistan Journal of Zoology. 43(3): 417-425 **(Impact Factor: 0.309).**
80. Rehan, A., M. A. Saleem and S. Freed (2011). Baseline susceptibility and stability of insecticide resistance of *Spodoptera litura* (F.) (Lepidoptera: Noctuidae) in the absence of selection pressure. Pakistan Journal of Zoology. 43(5): 973-978 **(Impact Factor: 0.309).**
81. Hu, Q. B., X. C. An, J. Feng-Liang, S. Freed and R. Shun-Xiang (2009) Toxicities of destruxins against *Bemisia tabaci* and its natural enemy, *Serangium japonicum*, Toxicon, 53: 115-121 **(Impact Factor: 2.924).**
82. Xu, D., Haung, Z., Cen, Y J., Chen, Y., Freed S and Hu, X. G. (2009). Antifeedant activities of secondary metabolites from *Ajuga nipponensis* against adult of striped

- flea beetles, *Phyllotreta striolata*. Journal of Pest Science, 82(2): 195-202 (**Impact Factor: 2.174**).
83. Huang, Z., Zhou, C F., Xu, D., Afzal, M., Bashir, H M., Ali, S. and Freed, S. (2008). Antifeedant activities of secondary metabolites from *Ajuga nipponensis* against *Plutella xylostella*, Pakistan Journal of Botany 40(5): 1983-1992 (**Impact Factor: 0.872**).
 84. Nasreen, A., Cheema, G. M., Freed, S. and Saleem, A. M. (2004). Resistance of different cotton cultivars to chewing insect pests, Pakistan Entomologist. 26(1): 81-85.

CONFERENCES, PRESENTATIONS

1. Farooq, M. and S. Freed (2017). Influence of Entomopathogenic Fungi on Life History Traits and Enzyme Activity in *Musca domestica*. 6th Entomopathogens and Microbial Control Congress (International), 14-16 September, 2017 at Gaziosmanpaşa University, Faculty of Agriculture, Tokat, Turkey (Oral Presentation).
2. Akmal, M., S. Freed, H. T. Gul and M. N. Malik (2013). A laboratory assessment for the potential of entomopathogenic fungi against *Tribolium castaneum* (Herbst.) (Coleoptera: Tenebrionidae). 33rd Pakistan Congress of Zoology (International) 33: 163 (Conference Presentation).
3. Akbar, S., S. Freed and K. Sarwar (2012). Effectiveness of *Metarhizium anisopliae* against different instars of *Helicoverpa armigera* (Lepidoptera: Noctuidae). 32nd Pakistan Congress of Zoology (International) 32: 148.
4. Arshad, J., S. Freed and S. Akbar (2012). Effect of different nitrogen fertilizer doses to maize on the biology of *Chilo partellus* (Lepidoptera: Crambidae). 32nd Pakistan Congress of Zoology (International) 32: 148.
5. Akmal, M., S. Freed., M. N. Malik and H. T. Gul (2012). Entomopathogenic fungus *Isaria fumosorosea* as a biological control agent against *Rhizopertha dominica* F. (Coleoptera: Bostrychidae). 32nd Pakistan Congress of Zoology (International) 32: 149.
6. Freed S., Saleem M. A, Khan M. B. and Akmal M. (2011) Prevalence of Entomopathogenic Fungi in Different locations of Southern Punjab, Pakistan 31st Pakistan Congress of Zoology (International), 31: 95-96.
7. Freed, S. and Ren S.X. (2011). Insecticidal and Antifeedant Activities of Proteins Secreted by Entomopathogenic Fungi against *Plutella xylostella* (Lepidoptera: Plutellidae). 31st Pakistan Congress of Zoology (International), 31: 95.
8. Mustafa, G., Freed, S., Nasreen, A and Saleem, M. A. (March 2010). Enzyme as a predictor of insecticide resistance in *Chrysoperla carnea* larvae. 30th Pakistan Congress of Zoology (International), 30: 76-77.
9. Nasreen, A., Mustafa G., Freed, S., Saleem, M. A and Ashfaq, M. (March 2010). Biologically Based Pest Management of Corn. 30th Pakistan Congress of Zoology (International), 30: 78.
10. Saleem, M. A., Nazir, T., Nasreen, A., Freed, S and Mustafa, G. (March 2010). Monitoring of Resistance in *Helicoverpa armigera* against Insecticides with Novel Mode of Action. 30th Pakistan Congress of Zoology (International), 30: 90-91.

11. Saleem, M. A., Hussain, A., Mustafa, G., Freed, S and Nasreen, A. (March 2010). Management of Mango Mealy Bug (*Drosicha mangiferae*) Crawlers by Pesticides. 30th Pakistan Congress of Zoology (International), 30: 92.
12. Ahmed, M. Z., Freed, S., Maruthi, M. N., Ren, S. X., Mandour, S. N., Naveed, M., Shafeeq, S and Qiu, B. L. (December 2008). Genetic Variation of *B. tabaci* (Hemiptera: Aleyrodidae), potentially contribute the cotton leaf curl disease outbreak in Pakistan. 9th Conference of the Pakistan Society for Biochemistry and Molecular Biology (PSBMB) 17-20.
13. Nasreen, A., Freed S., Cheema, G. M., Fazal, S. and Saleem, M.A. (2005). Effect of different insecticides on eggs of *Chrysoperla carnea* (Stephens). The 25th Pakistan Congress of Zoology, 25:57-58.
14. Nasreen, A., Cheema, G. M., Freed, S. and Saleem, M. A. (2004). The natural mortality of *Helicoverpa armigera* in the cotton, The 24th Pakistan Congress of Zoology, 23: 34-35.

WORKSHOPS/SEMINARS ATTENDED

1. 11th April, 2016, One day Seminar on “Significance of micronutrients in crop production (Department of Soil Sciences, Bahauddin Zakariya University, Multan).
2. 24-28th August, 2015. Active Citizens Training of Facilitators (British Council and Bahauddin Zakariya University, Multan).
3. 04-05th March, 2013. Workshop on Simulating Modeling: A Decision Support System for Agro-technology transfer for improving the standards of Research. (Bahauddin Zakariya University, Multan).
4. 23-25th January, 2012. Workshop on Statistical modeling for improving the standards of research and education for university professionals. (Bahauddin Zakariya University, Multan).
5. 12-13th March, 2012. Seminar on recent developments in edible oil production and processing with special reference to Pakistan. (Bahauddin Zakariya University, Multan).
6. 24th February, 2012 Seminar on Cotton leaf curl disease (Central Cotton Research Institute, Multan).
7. 2011. Workshop on promotion of farmer field school based integrated pest management approach for OIC countries (Workshop at COMSTECH, Islamabad).
8. 2011. 4th Academic Workshop of Effective PhD supervision (Workshop at IUB, Bahawalpur).
9. 2011. Seminar on Cotton stainer- An emerging threat for cotton production (Seminar at CCRI, Multan).
10. 2011. Attended an awareness seminar related to the accreditation of agricultural institutes with HEC (Islamia University Bahawalpur).

ADMINISTRATIVE ASSIGNMENTS:

- Student advisor, B.Sc. (Hons.) Agriculture at Faculty of Agricultural Sciences and Technology, Bahauddin Zakariya University, Multan.

- Coordinator, M. Phil. Entomology, at Department of Entomology, Bahauddin Zakariya University, Multan.
- Incharge Examinations, Department of Entomology, Bahauddin Zakariya University, Multan.
- Secretary Admission Committee, Faculty of Agricultural Sciences and Technology, Bahauddin Zakariya University, Multan.
- Secretary Admission Committee, Department of Entomology, University College of Agriculture, Bahauddin Zakariya University, Multan.
- Secretary, Examination Committee, Department of Entomology, Bahauddin Zakariya University, Multan.

MEMBERSHIPS:

- Member Board of Faculty, Faculty of Agricultural Sciences and Technology, Bahauddin Zakariya University, Multan
- Member Board of Studies, Department of Entomology, University College of Agriculture, Bahauddin Zakariya University, Multan.
- Member Admission Committee (M.Sc. /M. Phil. and Ph.D.), Department of Entomology, Faculty of Agricultural Sciences and Technology, Bahauddin Zakariya University, Multan.
- Member, Examination Committee, Department of Entomology, Bahauddin Zakariya University, Multan.
- Member, DTRC, Department of Entomology, Faculty of Agriculture and Environment, The Islamia University of Bahawalpur.
- Member, DTRC, Department of Entomology, MNS University of Agriculture, Multan.
- Life Fellow, Zoological Society of Pakistan.
- Life Fellow, Pakistan Botanical Society.
- Team member of Agriculture Department, Government of the Punjab to evaluate the research publications of officers belonging of Directorate of Pest Warning and Quality Control of Pesticides.

AWARDS AND SCHOLARSHIPS:

- Research Productivity Award for the year 2015 by Pakistan Council for Science and Technology, Ministry of Science and Technology, Pakistan
- Gold Medal for M.Sc. (Hons.) Agriculture (Entomology) 2003-2005 for first position.
- Award for the graduates by Higher Education Commission of Pakistan (2003-2005).
- Cultural Exchange Scholarship (2006-2009) for doctoral studies in China under the collaboration of Pakistan and China.
- Best student (3rd position) award for the year 2008 at South China Agricultural University, China.
- Best student (2nd Position) award for the year 2009 at South China Agricultural University, China.

M.PHIL. THESES SUPERVISED

S. No.	Name of Student(s)	Session	Thesis title
1.	Saleem Akbar	2010-2012	In vitro study to evaluate the virulence of entomopathogenic fungi against <i>Helicoverpa armigera</i> and its compatibility with different insecticides
2.	Muhammad Jamshad Arshad	2010-2012	Response of nitrogen fertilizer and entomopathogenic fungus <i>Aspergillus flavus</i> on the bionomics of <i>Chilo partellus</i>
3.	Khalil Sarwar	2010-2012	Ovipositional preferences of maize borer (<i>Chilo partellus</i>) and its biological control through <i>Aspergillus flavus</i>
4.	Muhammad Akmal	2011-2013	Susceptibility of different insect pests of wheat against <i>Beauveria bassiana</i> (Balsamo) and <i>Isaria fumosorosea</i> (Wize)
5.	Hafiza Tahira Gul	2011-2013	Virulence of entomopathogenic fungi against different life stages of <i>Bactrocera zonata</i> (Saunders) (Diptera: Tephritidae)
6.	Muhammad Naeem Malik	2011-2013	Management of maize army worm <i>Mythimna separate</i> (Walker) (Noctuidae: Lepidoptera) by entomopathogenic fungi
7.	Junaid Zafar	2012-2014	Susceptibility of cotton white fly, <i>Bemisia tabaci</i> (Aleryodidae: Homoptera) to <i>Beauveria bassiana</i> on different host plants
8.	Basir Ali Khan	2012-2014	Evaluation of different entomopathogenic fungi for the microbial control of red cotton Bug (<i>Dysdercus koenigii</i>) and dusky cotton bug (<i>Oxycarenus hyalinipennis</i>)
9.	Kanwar Waqas Ahmad	2013-2015	Assessment of combined efficacy of insect pathogenic fungi and botanical extracts on biological parameters of <i>Musca domestica</i> L. (Diptera: Muscidae)
10.	Rana Fartab Shoukat	2013-2015	Susceptibility of <i>Culex</i> spp. (Diptera: Culicidae) to entomopathogenic fungi, insecticides and their binary mixtures
11.	Saleh Muhammad	2014-2016	Role of different detoxification enzymes for the resistance development in <i>Spodoptera litura</i> F. after exposure to <i>Metarhizium anisopliae</i> var. <i>anisopliae</i>

12.	Mudassir Mahmood	2014-2016	Genetic diversity of <i>Amrasca biguttula biguttula</i> (Ishida) in Khanewal and Bahawalpur Districts of Southern Punjab, Pakistan
13.	Khursheed Ahmad	2014-2016	Efficacy of mixtures of entomopathogenic fungi with insecticides and botanicals against <i>Oxycareus hyalinipennis</i> (Costa)
14.	Zahra Farooq	2014-2016	Detoxification enzymes activity associated with the exposure of entomopathogenic fungi in red cotton bug, <i>Dysdercus koenigii</i> F.
15.	Madiha Nawaz	2014-2016	Comparative study for the pathogenicity of different isolates of entomopathogenic fungi on biology of <i>Phenaccocus solenopsis</i> Tinsley
16.	Muhammad Afzal	2014-2016	Fitness cost of <i>Plutella xylostella</i> (Linnaeus) to Bt toxins and Deltamethrin on cabbage at different temperatures
17.	Muhammad Bilal	2015-2017	Role of xenobiotics in detoxification enzymes activity in <i>Helicoverpa armigera</i> (Hübner)
18.	Muhammad Zubair Ashraf	2015-2017	Biochemical changes in <i>Oxycareus hyalinipennis</i> (Costa) after exposure to entomopathogenic fungi and insecticides
19.	Haji Muhammad Ismail	2016-2018	Association of detoxification enzyme's activities with the insecticides and fungi resistance in <i>Culex quinquefasciatus</i> Say
20.	Shahjahan Malik	2016-2018	Biochemical characterization and development of resistance in fungi and insecticide treated <i>Oxycareus hyalinipennis</i> (Costa)
21.	Najaf Ali	2016-2018	Development of resistance and comparison of detoxification enzyme's activities in <i>Dysdercus koenigii</i> after exposure to insecticides and fungi
22.	Muhammad Sheraz Shah	2017-2019	Genetic diversity in Noctuid moths from Southern Punjab, Pakistan
23.	Sikandar Hussain	2017-2019	Role of detoxification enzymes in resistance development in <i>Amrasca biguttula</i> (Ishida) after exposure to insecticides

24.	Muhammad Zeeshan Nazar	2017-2019	Comparison of detoxification enzymes activities in <i>Phenacoccus solenopsis</i> L. after exposure to insecticides and entomopathogenic fungus
25.	Waqas Sumra	2017-2019	Comparison of different enzymes activities in <i>Aedes aegypti</i> L. after selection pressure of insecticides and entomopathogenic fungi
26.	Iffat Kulsoom	2018-20	Genetic diversity and biotype status of <i>Bemisia tabaci</i> (Gennadius) in Pakistan
27.	Mehtab Raza	2018-20	Detection of Wolbachia endosymbiont in sucking insect pests collected from Punjab, Pakistan
28.	Rana Farjad Shaukat	2018-20	Sublethal effects of entomopathogenic fungi on biological aspects of <i>Oxycarenus hyalinipennis</i> (Costa)
29.	Muhammad Rizwan	2019-21	Effects of lethal and sublethal dosage of <i>Isaria fumosorosea</i> Wize on the demographic and biochemical aspects of <i>Phenacoccus solenopsis</i> Tinsley
30.	Danish Batool	2019-21	Effect of <i>Metarhizium anisopliae</i> Sorokin on demographic parameters and activities of detoxifying enzymes in <i>Dysdercus koenigii</i> Fabricius
31.	Hira Sabir	2020-22	Transgenerational effect of <i>Metarhizium anisopliae</i> Sorokin on the biological parameters of <i>Spodoptera frugiperda</i> (Smith)
32.	Samina Rafique	2020-22	Evaluation of lethal and sublethal effects of <i>Isaria fumosorosea</i> Wize on the immunity and demographic parameters of <i>Spodoptera frugiperda</i> (Smith)
33.	Momina Azhar	2020-22	Transgenerational effect of <i>Metarhizium anisopliae</i> Sorokin on the biological parameters of <i>Mythimna separata</i> (Walker)
34.	Mudasar Raza	2021-23 (Spring)	Assessment of lethal, sublethal, transgenerational and biochemical effects of <i>Isaria fumosorosea</i> Wize on <i>Mythimna separata</i> (Walker)
35.	Javeria Abbas	2021-23 (Fall)	Bionomics of <i>Spodoptera frugiperda</i> (Smith) on various host plants under laboratory conditions

36.	Muddassir Ashiq	2021-23 (Fall)	Comparative effectiveness of <i>Metarhizium anisopliae</i> and different insecticides against <i>Bemisia tabaci</i> (Gennadius)
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PH.D. THESES SUPERVISED

S. No.	Name of Student	Session	Thesis title	Remarks
1.	Mr. Adeel Rehan	2010	Studies on mechanism and fitness cost of resistance in <i>Spodoptera litura</i> against some new chemistry insecticides in Pakistan	Completed
2.	Mr. Muzammil Farooq	2012	Pathological and biochemical characteristics of entomopathogenic fungi in <i>Musca domestica</i> L. (Muscidae: Diptera)	Completed
3.	Mr. Muhammad Akmal	2014	Biochemical and molecular characterization of cotton leaf hopper <i>Amrasca biguttula biguttula</i> (Ishida) (Cicadellidae: Hemiptera) and its interaction with bacterial endosymbionts	Completed
4.	Ms. Afifa Naeem	2014	Determination of insecticides and microbial resistance, its mechanisms and genetic characterization of Asian citrus psyllid <i>Diaphorina citri</i> Kuwayama (Hemiptera: Psyllidae)	Completed
5.	Ms. Waheed Akhtar	2015	Development of IPM strategy for insect pests of tomato <i>Lycopersicon esculentum</i> L. in Multan and Muzaffargarh districts of Punjab, Pakistan	Completed
6.	Rizwan Ahmed	2017	Evaluation of toxicity of different insecticides and entomopathogenic fungi, their resistance relationship with detoxification enzymes and genetic diversity of red palm weevil, <i>Rhynchophorus ferrugineus</i> Olivier (Coleoptera: Curculionidae) from Pakistan	Completed

7.	Mr. Hussain	Zafar	2022	Course work in Progress
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