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Dr FARMAN ALI (*Associate Professor*)

RESEARCH INTERESTS

My research area is Environmental Physiology of animals, specifically cold tolerance mechanisms of nematodes and insects. I aim to work on freezing and preserving live organisms and tissues. Also, I am interested to study all aspects of Entomopathogenic Nematodes, and am working on them as biocontrol agents, as well as their use in integrated pest management. In addition, I am teaching and working on plant parasitic nematodes of economic importance, such as Root knot and cyst nematodes.

ACADEMIC QUALIFICATIONS

- 2012 **PhD (Zoology)**, University of Otago, New Zealand.
Thesis title: Cold tolerance mechanisms of entomopathogenic nematodes
- 2005 **M. Sc. (Nematology)** Ghent University, Belgium.
Thesis title: Susceptibility of *Hoplia philanthus* (Coleoptera: Scarabaeidae) larvae and pupae to different entomopathogenic nematodes (Rhabditida: Steinernematidae, Heterorhabditidae).
Grade: Great Distinction
- 2003 **M.Sc. (Hons) Agriculture (Plant Protection)** The University of Agriculture, Peshawar.
Thesis Title: Population density of major insect and mite pests of brinjal (Eggplant) and their chemical control.
Grade: A+
- 2001 **B.Sc. (Hons) Agriculture (Plant Protection)**, The University of Agriculture, Peshawar.
Grade: A
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DISTINCTIONS

- 2005 Great Distinction in M.Sc. (Nematology).
- 2003 University Silver medal in M.Sc. (Hons).
- 2001 12th Star award “Star Laureate 2001” from South Asia Publications on national level for academic excellence.
- 2001/2003 1st position in the department in B.Sc. (Hons) and M. Sc. (Hons).
- 1999/2000 Distinction certificate, shield and a cash prize for academic distinction in B.Sc. (Hons) Part III and IV.
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AWARDS/GRANTS

- 2016 Post-doctoral fellowship under the Chinese Ministry of Science and Technology’s talented young scientist program for China.

2015 Conference grant (full-funded) awarded by the American Association for the Advancement of Science, Washington DC, USA for international conference at Barcelona.

2012 Publishing bursary for post-doctoral research, University of Otago, New Zealand.

208/2009 University of Otago Science division grant to attend conferences in Japan, Australia and New Zealand.

2008 University of Otago PhD scholarship.

2008 Pakistan Higher Education Commission Overseas PhD scholarship, **Declined**.

2008 Otago University Department of Zoology PhD scholarship, **Declined**.

2004 Inter Flemish University Council (VLIR) scholarship for Master of Science in Nematology, Gent University, Belgium.

PROFESSIONAL EXPERIENCE:

Since Jul 2018 – **Associate Professor**, Abdul Wali Khan University Mardan, Pakistan

Jan 2013 – Jul 2018 **Assistant Professor**, Abdul Wali Khan University Mardan, Pakistan.

Jul 2016 – Jul 2017 **Talented Young Scientist**, Institute of Plant Protection & Agro-product safety, Anhui Academy of Agricultural Sciences, Hefei, China

2013-2105 **Chairman**, Department of Agriculture and Zoology

Jul 2012 – Jan 2013 **Post-Doctoral Fellow**, Department of Zoology, University of Otago, Dunedin, New Zealand.

2008–2012 **Demonstrator and PhD candidate** (Environmental Physiology), Department of Zoology, University of Otago, Dunedin, New Zealand.

2006–2008 **Lecturer**, Department of Plant Protection, The University of Agriculture, Peshawar, Pakistan.

2002– 2003 **Research Fellow** (Integrated Pest Management of Cereal Aphids), Department of Plant Protection, The University of Agriculture, Peshawar, Pakistan

Apr 2000 – Sep 2000 **Student Intern** (Integrated Pest Management of sugarcane and maize pests with emphasis on rearing, augmentation, conservation and redistribution of biological control agents), CAB International substation Mardan Pakistan.

INVITED TALKS/LECTURES:

1. Invited talk given on “Entomopathogenic nematodes and their use in IPM” at the Plant Quarantine Division of China Entry-Exit Inspection, Nanjing (2016).
2. Invited talk given on the “Role of Microorganisms in post-harvest losses of stored grains” in a training session organised by the University of Agriculture Peshawar for FATA Agriculture Extension Department.
3. Invited talk given on Nematodes to extension workers of FATA South project Pakistan.

As an organizer

4. Chief organiser of the international seminar on “conserving biodiversity for future prosperity: USM’s research on Primate-Human co-existence at Abdul Wali Khan University Mardan (October 10, 2018).

5. Organized an international seminar at Abdul Wali Khan University Mardan by inviting the Chinese delegates to offer scholarships to talented students of AWKUM for BS, MS and PhD programs in Chinese Universities (April 15, 2018)
6. Member organizer of a one-day workshop on “Data Presentation & Interpretation for Effective Publication at Abdul Wali Khan University Mardan.
7. Member organiser of the workshop held on Zoonosis at Abdul Wali Khan University Mardan.
8. Member organiser of the workshop on IPM and Pest Risk Analysis of insect pests of maize at the University of Agriculture Peshawar, Pakistan.

RESEARCH PUBLICATIONS

1. Yuankai, C; Wei, Z; Mengdi, Y; **Ali, F**; Tao, W; and Rende, Q (2019). Evaluation of recombinase polymerase amplification assay for detecting *Meloidogyne javanica*. *Plant Disease* <https://doi.org/10.1094/PDIS-07-19-1473-RE>
2. Chen, H; Qu, M; **Ali, F**; Lin, L; Xie, M; Zhang, G; and Su, W. (2019). Expression analysis of odorant-binding protein genes and chemosensory protein genes in *Anomala corpulenta* Motschulsky (Coleoptera: Scarabaeidae). *Journal of the Kansas Entomological Society* 92(1):376-389.
3. Chen, H; Lin, L; **Ali, F**; Xie, M; Zhang, G; and Su, W. (2019). Genome-wide analysis of developmental stage-specific transcriptome in *Bradysia odoriphaga*. *Comparative Biochemistry and Physiology-D Genomics and Proteomics* 30:45-54.
4. **Ali, F.**, Khan, J., Zada, A., Faheem, B., Khan, I., Salman, M and Khan, K. (2019). Bio-insecticidal efficacy of botanical extracts of Citronella and Cinnamon against *Tribolium castaneum*, *Sitophilus oryzae* and *Drosophila melanogaster* under laboratory conditions. *Fresenius Environmental Bulletin* 28 (4A):3104-3109.
5. Yang, X., Alattala, M.N., Zhang, Y., Zhang, A.F., Zang, H.Y., GU, C.Y., Gao, T.C., Chen, Y., **Ali, F.**, Yao, J., Li, Y.F. & Zhu, J.G. (2018). Rapid Detection of the Rice False Smut Disease caused by *Ustilagoideia virens* (teleomorph: *Villosiclava virens*) from rice using Loop Mediated Isothermal Amplification Assay. *Plant Disease* 102(9):1741-1747.
6. **Ali, F.**, Khan, MQ., Anjum, MZ., Khattak, I. (2018). Toxic effect of Atrazine herbicide on the hematological indices of Snow Carp (*Schizothorax plagiostomus*): An indigenous fish species of economic importance. *Fresenius Environmental Bulletin* 27(5):3075-3080.
7. Yuankai, C; Wei, Z; Tao, W; Qingqing, C; **Ali, F** and Rende, Q. (2018). Effect of different seed dressing agents on wheat rot and cereal cyst nematode. *Acta Phytopathologica Sinica* 48 (5): 693-699.
8. Khan, ZH., Khalil, SK., **Ali, F.**, Islam, B., Iqbal, A., Ullah, I., Ali, M. and Shah, F. (2018). Variations in planting dates of sweet corn affect its agronomic traits via altering crop micro-environment. *Fresenius Environmental Bulletin* 27(7):4822-4829.
9. Rehman, GU., Ali, M., Shah, F., Iqbal, A., Ahmad, A., Hayat, Z., Islam, B., **Ali, F.**, Ullah, I., Jamal, Y., Alam, S., Sajjad, M and Bhatti, MZ. (2017). Prevalence of Diabetes Type 2 in Hepatitis C Infected Patients in KPK-Pakistan. *Biomed Research International* 2017: 1-4.
10. Khan, N., Ullah, I., Khan, WA., Qadri, R., Khan, MM., Feixue, Z., Ruimin, T., Islam, B., Shah, F., **Ali, F.**, Hayat, Z and Iqbal, I (2017). Effect of Harvesting Stage on Quality Losses of Persimmon Fruits during Storage. *Madridge Journal of Food Technology* 2(1):79-84.
11. **Ali, F** and Wharton, DA. (2017). A survey of entomopathogenic nematodes from Otago, New Zealand, with the first record of *Steinernema kraussei* (Steiner, 1923) (Rhabditida:

Steinernematidae) from the Southern Hemisphere. *New Zealand Journal of Zoology* 44 (3):245-255.

12. Khan, ZH., Khalil, SK., Shah, F., Iqbal, A., **Ali, F.**, Islam, B., Ikramullah., and Ali, M. (2017). Plant density and nitrogen doses can affect growth of sweet corn. *Fresenius Environmental Bulletin* 26(2017):3872-3879.
13. Khan, AA., Sajid, M., Iqbal, A., Khan, ZH., Islam, B., **Ali, F.**, Ali, K., Ahmad, A., Sajjad, M., Arif, M., Ali, W., and Shah, F. (2017). Improving yield and mineral profile of tomato through changing crop micro-environment. *Fresenius Environmental Bulletin* 26(8):4911-4918.
14. Khan, AA., Sajid, M., Rab, A., Amin, NU., Iqbal, A., Shah, F., Islam, B., **Ali, F.** and Ali, W. (2017). Effect of mixture of nitrogen from poultry manure and urea on mineral profile of tomato grown in KPK-Pakistan. *Communications in Soil Science and Plant Analysis* 48(12):1486-1493. doi:10.1080/00103624.2017.1374395.
15. Khan, J; Khan, I; Qahar, A; Salman, M; **Ali, F**; Salman, M; Khan, K; Hussain, F and Abbasi, A. (2017). Efficacy of Citronella and Eucalyptus Oils against *Musca domestica*, *Cimex lectularius* and *Pediculus humanus*". *Asian Pacific Journal of Tropical Disease* 7 (11):691- 695.
16. Chen, H; Lin, L; **Ali, F**; Xie, M; Zhang, G; and Su, W. (2017). Using next-generation sequencing to detect differential expression genes in *Bradysia odoriphaga* after exposure to insecticides. *International Journal of Molecular Sciences* 18 (11) 2445.
17. **Ali, F.**, and Wharton, D.A. (2016). Ice active substances from the infective juveniles of the freeze tolerant entomopathogenic nematode, *Steinernema feltiae*. *PLoS ONE* 11(5): e0156502.
18. **Ali, F.**, Khan, I., Zakirullah., Ali, A and Rahman, AU (2016). Study on the population trend of brinjal fruit borer *Leucinodes orbonalis* guen. (Lepidoptera: Pyralidae) and its susceptibility to different insecticides. *ARPJN Journal of Agricultural and Biological Science* 11 (7):262-266.
19. **Ali, F.**, and Wharton, D.A. (2015). Infective juveniles of the entomopathogenic nematode, *Steinernema feltiae* produce cryoprotectants in response to freezing and cold acclimation. *PLoS ONE* 10(10): e0141810
20. **Ali, F.**, and Wharton, D.A. (2014). Intracellular freezing in the infective juveniles of *Steinernema feltiae*: An entomopathogenic nematode. *PLoS ONE* 9(4): e94179.
21. Wadood, A., Riaz, M., Mulk, AU., Khan, M., Haleem, SA., Shams, S., Gul, S., Ahmed, A., Qasim, M., **Ali, F** and Haq, ZU. (2014). Design of New and Potent Diethyl Thiobarbiturates as Urease Inhibitors: A Computational Approach. *Bioinformation* 10 (5): 299-307.
22. Uzair, K., Ullah, J., Saeed, B., and **Ali, F.** (2014). Effect of potassium sorbate and sodium benzoate on the quality and shelf-life of strawberry jam during storage. *ARPJN Journal of Agricultural and Biological Science* 9 (12): 454-458.
23. Wadood, A., Rehman, AU., Shams, S., Khan, M., Rahman, TU., Jamal, SB., Khan, A., Ahmad, A., and **Ali, F.** (2014). Homology Modeling, Molecular Dynamic Simulation and Phylogenetic Analysis of Human Transient Receptor Potential Melastatin 1 (TRPM1). *International Journal of Computational Bioinformatics and In Silico Modeling* 3 (3): 381-387.
24. **Ali, F.**, and Wharton, D.A. (2013). Cold tolerance abilities of two entomopathogenic nematodes, *Steinernema feltiae* and *Heterorhabditis bacteriophora*. *Cryobiology* 66:24- 29.
25. Saeed, B., Gul, H., **Ali, F.**, Zaman, AK., Nasrullah., Anwar, S., Alam, S., Khalid, S., Naz, A., and Azra. (2013). Effect of soil and foliar fertilization of nitrogen and sulfur on physiological and quality assessment of wheat (*Triticum aestivum* L.). *Natural Science* 5 (9): 1012-1018.

26. Khalid, S., Saeed, B., **Ali, F** and Alam, S. (2013). Hydro Meteorological characteristics of Chitral River at the peak of hindukash range. *Natural Science* 5 (9): 987-992.
27. Ansari, MA., Adhikari, NB., **Ali, F.**, and Moens, M. (2008). Susceptibility of *Hoplia philanthus* (Coleoptera: Scarabaeidae) Larvae and Pupae to Entomopathogenic Nematodes (Rhabditida: Steinernematidae, Heterorhabditidae). *Biological Control* 47:315-321.
28. Ansari, MA., **Ali, F.**, and Moens, M. (2006). Compared virulence of the Belgian isolate of *Steinernema glaseri* (Rhabditida: Steinernematidae) and the type population of *S. scarabaei* to white grub species (Coleoptera: Scarabaeidae). *Nematology* 8: 787-791.
29. **Ali, F.**, Hayat, B., Rahman, AR., and Shah, SB. (2004). Population density of cotton whitefly *Bemisia tabaci* and mites *Tetranychus urticae* on brinjal and their chemical control. *Asian Journal of Plant Sciences* 3 (5): 589-592.

Accepted

Huma, Z., Saljoqi, AR., **Ali, F.**, Khan, F., Usman, A. (2019). Efficacy of entomopathogenic nematodes against *Heterotermes indicola* (Isoptera: Rhinotermitidae) in the laboratory. *Proceedings of the Pakistan Congress of Zoology* 38:195-204.

CONFERENCE PROCEEDINGS

- 1) Huma, Z., Saljoqi, AR., Ali, F., Khan, F., Usman, A. (2018). Virulence of entomopathogenic nematodes to *Heterotermes indicola* (Isoptera: Rhinotermitidae) in the laboratory. Proceedings of the 38th Pakistan Congress of Zoology (International), Lahore. Para-40, 265.
- 2) Ali, F., and Wharton, D.A. (2015). Freeze them but not to death. Proceedings of the 1st International conference on “Biobanking and tissue preservation” Barcelona, Spain.
- 3) Ali, F., and Wharton, D.A. (2014). Intracellular freezing in entomopathogenic nematodes. Proceedings of the 5th International Conference on Agriculture, Food Security, and Climate Change, Rawalakot, Pakistan.
- 4) Ali, F., and Wharton, D.A. (2009). Cold tolerance of entomopathogenic nematodes. Proceedings of the 3rd international symposium on the Physiology of Ectotherms and Plants, Tsukuba, Japan.
- 5) Ali, F., and Wharton, D.A. (2009). Cold tolerance of entomopathogenic nematodes. Proceedings of the 62nd Plant Protection Conference at Dunedin, New Zealand.
- 6) Ali, F., and Wharton, D.A. (2008). Cold tolerance mechanisms of entomopathogenic nematodes. Proceedings of the 5th International Congress of Nematology, Brisbane, Australia.

SELECTED INTERNATIONAL CONFERENCES

Oral presentations

1. Fourth international Multidisciplinary Research Conference on “Global Prosperity through Research and Development at Sarhad University, Peshawar (October 9-11, 2018)
2. Talk given on cold tolerance mechanisms of entomopathogenic nematodes at Anhui Academy of Agricultural Sciences, Hefei, Anhui China (2016).
3. International conference on “Biobanking and tissue preservation” held at Barcelona, Spain (2015).
4. Fifth international conference on Agriculture, Food Security, and Climate Change at Rawalakot, AJK (2014).
5. Third International Symposium on the Physiology of Ectotherms and Plants at Tsukuba, Japan (2009).

6. Nineteenth Annual Zoology Postgraduate Symposium at Dunedin, Otago New Zealand (2008).

Poster presentations

- 7. 62nd Plant Protection Conference at Dunedin New Zealand (2009).
- 8. 20th Annual Zoology Postgraduate Symposium at Otago New Zealand (2009).
- 9. 5th International Congress of Nematology at Brisbane, Australia (2008).
- 10. 56th International symposium on Crop Protection at Gent University, Belgium (2005).

As a Session Chair

- 1. Fifth international Multidisciplinary Research Conference on “Global Prosperity through Research and Development at SBBW University, Peshawar (October 29-31, 2019).
- 2. First international conference on “Recent Trends in Biotechnology” at Allama Iqbal Open University, Islamabad (October, 16-18, 2019).

NUCLEOTIDE SEQUENCES SUBMITTED TO GENBANK

Accession numbers:

HQ436341 JQ247218 JQ247219 JQ247220 JQ247221 JQ247222 JQ247223
JQ247224

PROTEIN SEQUENCE SUBMITTED TO GENBANK

Accession number AEC03628

LAB SKILLS

- Collection and isolation of nematodes from soil/plants/insects.
- Identification of nematodes with morphological and molecular methods.
- Rearing and bioassays of entomopathogenic nematodes for insect pest control.
- Gas Chromatography (Analysis of sugars and polyols).
- Studying behaviour of nematodes under 3D system.
- Techniques for studying cold/freezing tolerance of nematodes and insects such as:
 - Cooling block assays.
 - Splat cooling assay and optical recrystallometry for studying RI activity.
 - Nanolitre osmometry for studying thermal hysteresis activity.
 - Ice nucleation spectrometry for studying antifreeze activity.
 - Freeze substitution for studying ultrastructure analysis of frozen samples.
 - Cryomicroscopy for visualizing freezing process.
- Rearing of parasitoids and predators, such as *Trichogramma spp.* and *Chrysoperla spp.*
- Basic molecular techniques (DNA/RNA extraction, PCR amplification, Gel electrophoresis).

IT SKILLS

- MS Office (MS Word, MS Excel, MS Power Point)
- SPSS (Statistical analysis package)
- Endnote (Reference management software)
- ImageJ and AxioVision (Image analysis software)
- Basic bioinformatics skills (Blast, multiple alignments, Primer designing, Phylogenetic analysis etc.)

ADDITIONAL SKILLS

- Low Countries studies certificate (Netherlands, Belgium) from Gent University Belgium. The study was about culture, geography and history of Low Countries.
- New Zealand full driver's licence.
- Pesticides dealer training certificate.

PROFESIONAL MEMBERSHIPS

- Vice President of the Pakistan Society of Nematologists.
- Member of the International Organization for Biological Control (IOBC).
- Member of the Australasian Association of Nematologists.
- Member of the New Zealand Plant Protection Society.
- Member of the Pakistan Higher Education Commission's National Curriculum Revision Committee (NCRC) for Plant Protection.

FOREIGN VISITS

- China (Anhui Academy of Agricultural Sciences, Hefei).
- Spain (Barcelona, for presentation in Biobanking and tissue preservation conference)
- United Kingdom (Imperial College London, Reading University, CAB International Biosciences, Rothamsted Research, Natural History Museum London and International Pesticide Application Research Centre Ascot).
- Germany [University of Kiel, e-nema GmbH (Biological control agents producing company) and University of Bonn].
- Netherlands (Wageningen University, Soil and crop testing Laboratory Osterbeek, Plant Research International and Plant Protection Services).
- Belgium (Gent University, Antwerp University, and Agricultural Research Station Marelbeke ILVO (formerly CLO).
- Australia (5th International Congress of Nematology in Brisbane).
- Japan (3rd international symposium on the physiology of ectotherms and plants in Tsukuba).
- New Zealand (University of Otago, AgResearch NZ, Cawthron Institute Nelson, Otago Museum).

REFERENCES

Available on request