

# Waseem Abbas

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## Summary

The primary area of my research is the management of insect pests in stored grains using eco-friendly approaches to optimise both farm- and bulk-scale storage. I explore the largely ignored ecophysiology of stored pests to incorporate respiration physiology into Controlled atmospheres (CA) research to address the overwhelming need for overlap between both fields to potentiate CA as a promising alternative to chemical fumigation. I am amenable to expanding my expertise in ecophysiology to study water balance and gas exchange dynamics of insects found in diverse habitats ranging from deserts and households to field crops. I teach a range of courses from Advances in Insect Physiology (postgraduate course) to Insect Physiology, Insect Ecology, and Stored Grain Insect Pests (undergraduate courses) apart from teaching the foundation courses of Introductory and Applied Entomology.

## Terminal Qualification

- PhD - School of Biological Sciences, University of Western Australia, Australia

## Publications

- **Abbas, W.**, Withers, P.C. and Evans, T.A., 2023. Gas exchange patterns of a small, stored grain insect pest, *Tribolium castaneum*. *Bulletin of Entomological Research*, 113 (3), pp 361-367. <https://doi.org/10.1017/S0007485322000657>
- **Abbas, W.**, 2021. Insights from respiration physiology into controlled atmospheres for better management of insect pests of grain storage. <https://doi.org/10.26182/kp6h-v517>
- **Abbas, W.**, Withers, P.C. and Evans, T.A., 2020. Water Costs of Gas Exchange by a Speckled Cockroach and a Darkling Beetle. *Insects*, 11(9), p.632. <https://doi.org/10.3390/insects11090632>
- **Abbas, W.**, 2024 Transforming research libraries. OP-ED Article. *The Express Tribune*, April 6, 2024.
- **Abbas, W.**, Afzal, I., 2025 (In Press). Insect pests of grain storage ecosystem. In ISTA Storage Reference Book. *International Seed Testing Association*, Wallisellen, Switzerland.
- **Abbas, W.**, Withers, P.C. and Evans, T.A., (submitted). Insects, both large and small, actively ventilate their tracheal system for discontinuous gas exchange. *Australian Journal of Zoology*.
- **Abbas, W.**, Withers, P.C. and Evans, T.A., (in preparation). Knowledge gaps in controlled atmospheres maybe closed using respiration physiology, resulting in better protection of stored grain. *Journal of Pest Science*.

## Research Projects

Testing Synergistic Controlled Atmospheres against Stored Grain Pests, 2021. Industry Project, CBH Australia. (Prof. Theo Evans, Prof. Philip Withers, Dr Waseem Abbas, Dr Gongkui Xiao)

## Research Supervision and outreach (Trainings, Conferences and Workshops)

- supervised seven postgrad students as a primary supervisor in designing and conducting real-time experiments to fulfill the requirement of their thesis for graduation.
- delivered an industrial training titled "Innovative Storage Technologies" along with a panel of international experts to stakeholders of seed industry. International Seed Congress, CAS, UAF. 2-4 May 2024.

- attended an international training titled “Exploring Good Research Practices for Increased Agricultural Productivity of Pakistan”. Sponsored by **Korea International Cooperation Agency (KOICA), South Korea**. 14-28 July 2023.
- attended workshop on Use of R in Agriculture and Network analysis in R by Prof Karren A. Garrett, Preminent Professor (Food Systems Institute, Florida University). University of Agriculture Faisalabad, Centre for Advanced Studies in Agriculture Auditorium, 17 June, 2022.
- a newsletter published by the University of Western Australia (Institute of Agricultural Sciences) covered my presentation to the Australian High Commissioner to Pakistan on his visit to the University of Agriculture, Faisalabad (2021) in an article titled “Grain Preservation through Insect Respiration” to highlight the impact of my research for ensuring safe storage of grains using eco-friendly controlled atmospheres (UWA newsletter 46, April 2022, page 14 - [IoA-Newsletter-2022-April.pdf \(uwa.edu.au\)](#)).
- oral presentation on the impact of infestation of grain storage by insect pests on food security in Pakistan to the Australian High Commissioner visiting the University of Agriculture Faisalabad in August 2021. (Poster). The glimpse of this activity was highlighted as a picture in the UAF campus news (August 2021 edition,... [CAMPUS NEWS \(uaf.edu.pk\)](#))
- **Abbas, W\***, Withers, P.C., and Evans, T.A., “Bridging the gap between controlled atmosphere fumigation and respiration physiology for effective management of stored grain insect pests,” 36th Annual Meeting of Australia and New Zealand Society for Comparative Physiology and Biochemistry, Dec. 17-18, 2019, University of Western Australia, Perth, Australia. ([ANZSCPB2019AbstractBookFinal.pdf \(curtin.edu.au\)](#))
- attended workshop on an introduction to R and its use in handling large datasets. University of Western Australia, Baylis Lecture Theatre, 17-19 Feb, 2019.
- attended workshop on Foundational statistics and use of SPSS. University of Western Australia, School of Mathematics and Statistics, 22-24 August, 2018.

## Enabling Skillset and related experience

- Skilled in using R and R studio for data handling, statistical analysis and visualisation.
- Analytical techniques including use of gas chromatography and spectrophotometry (GC-MS), flow through respirometry and gas concentration measurement probes (O<sub>2</sub>, CO<sub>2</sub> and H<sub>2</sub>O analysers)
- Served as a focal person of the Sino-Pak joint education training program (April-December 2024) to develop the scheme of the studies of a dual diploma program “Grain Storage, Transportation and Quality Safety” to be taught at UAF, Pakistan and Jiangxi Vocational and Training Institute, China.
- Member of the advisory board of the Agrarian Society, Faculty of Agriculture, University of Agriculture, Faisalabad