Dr Waseem Ashfaq

EDUCATION

12/2022 **Doctor of Philosophy – Agricultural Sciences**
Dookie Campus, The University of Melbourne — Australia
Dissertation: Impact of silicon on tolerance mechanisms of wheat (*Triticum aestivum* L.) under drought and heat stress environments. Conferred 31 Jul 2023.

08/2011 **M.Sc. (Hons.) Agriculture – Plant Breeding and Genetics**
University of Agriculture, Faisalabad — Pakistan
Thesis: Line × Tester analysis for genetic variability among wheat genotypes under normal and drought conditions.

07/2009 **B.Sc. (Hons.) Agriculture**
University of Agriculture, Faisalabad — Pakistan

RESEARCH POSITIONS

Present – 05/2024 **Research Scientist**
Department of Primary Industries and Regional Development, WA
Katanning, WA, Australia
Project: Western Australian Farming Systems

- As a crop science researcher based in medium rainfall zone of southern WA, my work is centred on helping farmers manage water ($/ha/mm), nitrogen, and climate variability across diverse production systems—tackling the big challenges from sustainability to productivity and beyond.
- I manage systems trials focused on exploring system break options, assessing opportunities and risks of changing seeding times, and analysing management options to sustain productivity under low GHG emissions scenarios. My role involves designing and implementing trials across diverse crop species, including cereals, oilseeds, legumes, and pasture. Extensive measurements are conducted covering soils, weather, nitrogen dynamics, weeds, soil pathogens, crop yield and quality to assess a wide range of production constraints.
- I actively engage with farmers, grower groups, and research organisations to present trials results and participate in field days, contributing to the adoption of best practices in WA.

05/2024 – 07/2022 **Postdoctoral Research Fellow (Crop Production)**
The University of Melbourne — Dookie Campus, VIC, Australia
Project: Whole-System Redesign of Broadacre Farming of SE Australia

- **Key accomplishments**
- Successfully conducted two-year field experiments in broadacre grains at the Dookie campus site aimed at optimising farming systems' profitability and sustainability through crop diversification, crop rotation, micro-nutrient application and mixed farming for graze and grain.
- Developed the project's data recording protocol; recorded and analysed a wide range of agronomical, physiological, and socio-economic data, including crop yields, pre-sowing and post-harvest soil sampling data, gross margin, and farmer perception surveys, using rigorous scientific methods and statistical analyses to identify trends, challenges, and opportunities for sustainable grain production.
- Communicated research findings on sustainable farming practices to diverse audiences at BCG, Riverine Plains Inc., Dookie campus field days, and national conferences.

CONTACT INFO

waseemishfaq@gmail.com, waseem.ashfaq@dpird.wa.gov.au

+61 470 302 555

Unit 3/27 Bokarup St, Katanning 6317, WA, Australia.

SKILLS & EXPERTISE

Crop science and grain production

Farming systems research

Cereal physiology

Agronomy

Plant breeding & genetics

R Statistics using the Tidyverse and Tidymodels meta-packages

Scientific communication

Last updated on 2025-12-13

2019 | 2018

Research Assistant
The University of Melbourne — Dookie Campus, VIC, Australia
Project: Optimization of dual-purpose crop management practices for wheat grazing and wheat grain production systems.

02/2018 | 02/2012

Research Agronomist
Monsanto Pakistan Pvt Ltd — Pakistan
- **Key accomplishments**
- Contributed significantly to the development of commercial corn hybrids (DK6317, DK7024, DK6714, DK8148), supporting genetic advancement and market readiness.
- Led the planning and successful execution of multi-location breeding trials (PS1–PS3) to evaluate temperate and subtropical germplasm for key traits such as heat stress tolerance, resistance to leaf and stalk diseases, improved standability (against green snapping and lodging), and enhanced grain yield. Used multi-season and multi-segment data to advance hybrids and establish agronomic recommendations.
- Managed research nurseries and produced high-quality seed for VT2PRO (genetically modified) corn hybrids like DK6789 and DK6714, intended for government evaluation trials.
- Championed the adoption of digital mobility tools—including Plot Walker and Field Guide—in Pakistan Corn Breeding, which significantly improved the efficiency and accuracy of field data collection.
- Gained hands-on experience in agro-mechanization, operating equipment such as the Wintersteiger Classic ST stationary thresher and the Wintersteiger Quantum Pro plot combine for harvesting Monsanto research trials.

HONORS & AWARDS

2022 **The Company of Biologist Travel Grant (A$850)**
Awarded by The Society of Experimental Biology for conference travel.

2021 **Student Travel Grant (A$4,000)**
Awarded by The University of Melbourne.

2021 **Studentship (A$1,322)**
Awarded by the Faculty of Veterinary and Agricultural Sciences, The University of Melbourne.

2020 **Old Agricultural Fellow Society Award (A$2,500)**
Awarded by the Faculty of Veterinary and Agricultural Sciences, The University of Melbourne.

2020 **Faculty Travel Award (A$1,500)**
Awarded by the Faculty of Veterinary and Agricultural Sciences, The University of Melbourne.

2020 **Postgraduate Internship Award (A$9,643)**
Awarded by Australian Plant Phenomics Facility, The University of Adelaide, SA, Australia.

2017 **Melbourne Research Scholarship**
Awarded by The University of Melbourne for PhD Research.

2017 **Asia-Africa Corn Breeding Sustainability Award**
Awarded by Monsanto Company.

2017 **Rapid Recognition Award**
Awarded by Monsanto Company.

2017 **Asia Row-Crops Breeding Quarterly Recognition**
Recognised by Monsanto Company under the category “Choose Action” and “Win Together Globally”.

2016 **Asia-Africa Corn Breeding Award (Commercial Impact)**
Awarded by Monsanto Company.

2015 **Rapid Recognition Award**
Awarded by Monsanto Company.

2013 **Recognition of Outstanding Technology Employee**
Nominated by Monsanto Technology Leadership Team and awarded by Monsanto Company.

2011 **University Merit Scholarship**
Awarded by the University of Agriculture, Faisalabad, Pakistan.

PEER-REVIEWED PUBLICATIONS

(12 publications, citations count: 180, h-index: 7, i10-index: 7)

2025 **Ashfaq, W.**, Shackley, B., Bowey, R., & Hunter, K. (2025). Lake Grace systems trial. In Field trials report 2024: WA farming systems project (DAW2204-003RTX) (pp. 34–52). Department of Primary Industries and Regional Development, Western Australia.

2025 **Ashfaq, W.**, Shackley, B., Bowey, R., & Hunter, K. (2025). Lake Grace- species comparison.In Field trials report 2024: WA farming systems project (DAW2204-003RTX) (pp. 138–143). Department of Primary Industries and Regional Development, Western Australia.

2025 **Ashfaq, W.**, Kaleem, M., Brodie, G., Fuentes, S., Pang, A., and Gupta, D. (2025) Silicon alleviates drought stress by up-regulating physiological and biochemical responses in two contrasting bread wheat cultivars. *Cereal Res. Commun.,* pp. 1-13.

2024 **Ashfaq, W.,** Brodie, G., Fuentes, S., Pang, A., and Gupta, D. (2024). Silicon improves root system and canopy physiology in wheat under drought stress. *Plant and Soil*, 502(1), pp. 279-296.

2022 **Ashfaq, W.** (2022). Impact of Silicon on Tolerance Mechanisms of Wheat (*Triticum aestivum* L.) under Drought and Heat Stress Environments. *Graduate Thesis and Dissertation, Minerva Access*, The University of Melbourne, Melbourne, Australia.

2022 **Ashfaq, W.,** Brodie, G., Fuentes, S., and Gupta, D. (2022). Infrared Thermal Imaging and Morpho-Physiological Indices Used for Wheat Genotypes Screening Under Drought and Heat Stress. *Plants,* 11(23), p. 3269.

2022 **Ashfaq, W.,** Fuentes, S., Brodie, G., and Gupta, D. (2022). The Role of Silicon in Regulating Physiological and Biochemical Mechanisms of Contrasting Bread Wheat Cultivars Under Terminal Drought and Heat Stress Environments. *Frontiers in Plant Science,* 2022; 13: 955490.

2022 Kaleem, M., Shabir, F., Hussain, I., Hameed, M., Ahmad, M.S.A., Mehmood, A., **Ashfaq, W.,** Riaz, S., Afzaal, Z., Maqsood, M.F., and Iqbal, U. (2022). Alleviation of Cadmium Toxicity in *Zea mays* L. Through Up-Regulation of Growth, Antioxidant Defense System and Organic Osmolytes Under Calcium Supplementation. *Plos one*, 17(6), p.e0269162.

2018 Ul-Allah, S., Iqbal, M., Maqsood, S., Naeem, M., Ijaz, M., **Ashfaq, W.,** and Hussain, M. (2018). Improving the Performance of Bread Wheat Genotypes by Managing Irrigation and Nitrogen Under Semi-Arid Conditions. *Archives of Agronomy and Soil Science,* 64(12), pp.1678-1689.

2016 **Ashfaq, W.,** Ul-Allah, S., Kashif, M., Sattar, A., and Nabi, H.G. (2016). Genetic Variability Study Among Wheat Genotypes Under Normal and Drought Conditions. *J. Glob. Innov. Agric. Soc. Sci,* 4(3), pp.111-116.

2014 Allah, S.U., Khan, A.S., Saeed, M.F., **Ashfaq, W.,** Iqbal, M., Shah, G.M., Naeem, M., and Rashid, M.A.R. (2014). Genetic Variability and Correlation Studies for Seedling Traits of Wheat (*Triticum aestivum*L.) Genotypes Under Normal and Water Stress Conditions. *Journal of Agricultural and Crop Research,* 2(9), pp.173-180.

2011 Ul-Allah, S., Khan, A.S., and **Ashfaq, W.** (2011). Genetic Analysis of Physio-Morphological Traits in Bread Wheat (*Triticum aestivum* L.) Under Water Stress Conditions. *Cereal Res. Commun.,* 39, pp.544-550.

CONFERENCES & SYMPOSIUMS

(Total 20 conferences attended and presented)

2025 Harries, M., Shackley, B., Nicol, D., Boyce, S., Kharel, S., Mason, R., **Ashfaq, W.** and Kaur, A., 2025. WA Farming systems - initial findings. *GRDC Grains Research Updates*, 24-25 Feb 2025, Perth, WA, Australia.

2025 **W. Ashfaq** and D. Gupta, (2025). Exploring silicon's role in mitigating drought and heat stress in wheat. *5th Int. conference on biological research and applied science*. Session 5: Impact of climate change on agricultural production. Jinnah University for Women, Karachi, Pakistan, January 30, 2025. **[Keynote talk]**

2024 **Ashfaq, W.,** Azman, R., Alasti, O., Hunt, J., Chauhan, S. S., Anderson, N. and Gupta, D. (2024). Paddock-scale evaluation of dual-purpose wheat grain yield and sheep live weight gain in South-East Australia. *Australian Agronomy Conference*, Albany, Western Australia, October 21-24, 2024. **[Talk]**

2024 Harries, M., Shackley, B., Nicol, D., Abrahams, M., **Ashfaq, W.,** Boyce, S., Farre, I., Ferris, D., Mason, R., Reeves, K., Stewart, V. and Williams, G. (2024). Initiation of a farming systems trial series in Western Australia. *Australian Agronomy Conference*, Albany, Western Australia, October 21-24, 2024.

2024 Alasti, O., **Ashfaq, W.,** Azman, R., Pang, A., and Gupta, D. (2024). Silicon fertilisation: Wheat grain yield and soil organic carbon improvement — Hitting two targets with one arrow. 3*rd International Wheat Congress*, Perth, Western Australia, September 22-27, 2024. *Poster Presentation Abstract Book,* p. 340.

2024 **W. Ashfaq** and D. Gupta, (2024). Multidimensional Role of Silicon in Mitigating Seasonal Risks for Improved Crop Production. *4th International conference on biological research and applied science*, Session 1: Impact of Climate Change on Agriculture Production and Its Sustainable Solutions. Jinnah University for Women, Karachi, Pakistan, January 23, 2024. **[Keynote talk]**

2024 **Ashfaq, W.**, Halimi, R. A., Anderson, N., Hunt, J., Chauhan, S. S., and Gupta, D. (2024). Integrating dual-purpose wheat for forage and grain improves whole-farm profitability and environmental performance in Australia's low rainfall zones. *Science Early Career Academic Network Research Summit*, Faculty of Science, The University of Melbourne, Australia, February 20, 2024, p. 13. **[Talk]**

2024 Halimi, R. A., **Ashfaq, W.**, Hunt, J., Reeves, T., and Gupta, D. (2024). Silicon (Si) mitigates biotic and abiotic stresses in legumes under rainfed field conditions. *Science Early Career Academic Network Research Summit*, Faculty of Science, The University of Melbourne, Australia, February 20, 2024, p. 15.

2023 **Ashfaq, W.**, Halimi, R. A., Anderson, N., Hunt, J., Chauhan, S. S., and Gupta, D. (2023). Dual-purpose wheat offers increased productivity across diverse regions of Australia's low-rainfall zone. *Australian Society of Plant Scientists Conference*, University of Tasmania, Hobart, Australia, Nov 28 - Dec 1, 2023. **[Poster]**

2023 Halimi, R. A., **Ashfaq, W.**, Hunt, J., Reeves, T., and Gupta, D. (2023). Tales from the paddock: Role of silicon to mitigate climatic stresses for legumes. *Australian Society of Plant Scientists Conference*, University of Tasmania, Hobart, Australia, Nov 28 - Dec 1, 2023.

2023 Colombi, E., Halimi, R. A., **Ashfaq, W.**, Hu, H. W., Pang, A., Hunt, J., He, J., and Gupta, D. (2023). Foliar silicon application as a drought tolerance strategy for legumes has no effects on soil microbiome. *Australian Society of Plant Scientists Conference*, University of Tasmania, Hobart, Australia, Nov 28 - Dec 1, 2023.

2023 Halimi, R. A., **Ashfaq, W.**, Khan, J., Hunt, J., Reeves, T., and Gupta, D. (2023). Role of Legumes to Improve the Resilience & Diversity of Farming System in SE Australia. *Fourth International Legume Society Conference*, Granada, Spain, September 19-22, 2023. Book of abstracts, p. 18.

2023 **Ashfaq, W.,** Brodie, G., Fuentes, S., Pang, A., and Gupta, D. (2023). Silicon Improves Root System and Canopy Physiology in Wheat under Drought Conditions. *Science Early Career Academic Network Research Summit (SECAN)*, Faculty of Science, The University of Melbourne, Australia, March 24, 2023, p. 71. **[Talk]**

2023 Halimi, R. A., **Ashfaq, W.,** Khan, J., Gerardi, T., McPhee, R., Chauhan, S.S., Hunt, J., Reeves, T., Hely, S., and Gupta, D. (2023). Can We Improve the Resilience of Broadacre Farming? *Science Early Career Academic Network Research Summit*, Faculty of Science, The University of Melbourne, Australia, March 24, 2023, p. 58.

2023 **Ashfaq, W.** (2023). Attended sessions to enhance scientific knowledge in agricultural innovations and practices. *Australian Pulse Conference*, Empire Theatre, Toowoomba, Australia, 21–23 March 2023.

2022 **Ashfaq, W.** (2022). Attended sessions on "Sustainable Agrifood Systems" and "Predictive Agriculture" to enhance professional knowledge in agricultural innovations and practices. *TropAg International Agricultural Conference*, Brisbane Convention and Exhibition Centre, Brisbane, Australia, 31 October – 2 November 2022.

2022 **Ashfaq, W.,** Fuentes, S., Brodie, G., and Gupta, D. (2022). Exogenous Silicon Application Improves the Physiological and Biochemical Mechanisms in Contrasting Bread Wheat Cultivars Under Drought and Heat Stress. *Faculty of Veterinary and Agricultural Sciences Research Symposium*, The University of Melbourne, Australia, October 24 - 25, 2022, p. 8. **[Talk]**

2020 **Ashfaq, W.,** Brodie, G., Fuentes, S., and Gupta, D. (2020). Silicon Application Improves Drought and Heat Stress Tolerance Through Physiological and Biochemical Mechanisms in Wheat. *InterDrought-VI Conference*, Mexico City, Mexico. Abstract book p. 3. (conference cancelled due to COVID-19)

2019 **Ashfaq, W.,** Brodie, G., Fuentes, S., and Gupta, D. (2019). Application of Infrared Thermal Imaging Technique and Physiological Indices for Wheat Genotypes Screening Against Drought and Heat Stress. *Australian Society of Plant Scientists Conference*, AgriBio, La Trobe University, Melbourne, Australia. 26 - 29 November 2019. Abstract no 70. **[Poster]**

2018 **Ashfaq, W.,** Brodie, G., Fuentes, S., and Gupta, D. (2018). Unravelling the Physiological and Molecular Basis of Combined Drought and Heat Stress Tolerance in Wheat Crop Under Silicon (Si) Mediated Treatments. *Faculty of Veterinary and Agricultural Sciences Postgraduate Symposium*, The University of Melbourne, Australia, November 29 - 30, 2018. **[Talk]**

PROJECT MILESTONE REPORTS CONTRIBUTIONS

03/2025 **WA Farming Systems Project - DPIRD, WA**
Milestone 116 Report: "*Identifying low greenhouse gas emission farming systems - early insights from trial data and modelling"* contributed to trial data recording, analysis and early identification of sustainable, low-emission systems.

08/2024 **Milestone 113 Report: "***Preliminary analysis of the profitability of selected break crop options and sowing times for farming systems in Western Australia, presented in a grower-friendly format for dissemination*" contributed for providing inputs into modelling assumptions and feedback and/or ground truthing of modelling outputs.

PUBLIC VALUE ARTICLES

2023 McPhee, R., **Ashfaq, W.**, Azman, R., and Gupta, D. (2023). Silicon fertilizer for drought resilience in broadacre farming. 2023 Trial Book. Research for the Riverine Plains.

2022 Geraredi, T., **Ashfaq, W.**, and Gupta, D. (2022). Using silicon fertilizer for drought resilience. 2022 BCG Season Research results.

2019 Gupta, D., **Ashfaq, W.**, Brodie, G., Cheng, P.L., and Dadu, R.H. (2019). Optimising dual-purpose wheat management practices for grazing and grain production in drier environments. Research for the Riverine Plains, P 50-52.

CERTIFICATIONS & ON-THE-JOB TRAININGS

2025 | 2018 **Proficient in R for statistical analysis, leveraging the Tidyverse and Tidymodels meta-packages for data manipulation, visualization, and modeling**
The University of Melbourne, DPIRD — Australia

12/2025 **PREDICTA®B: 2025 Soilborne Disease Workshop**
South Australian Research and Development Institute and DPIRD — Perth, WA, Australia

04/2025 **Focus on peer review**
A Nature Masterclasses online course — Online

02/2025 **Christie soil sampling machine operator (competent driller)**
DPIRD — Esperance, WA, Australia

11/2024 **GRDC speaker training & presenter workshop**
Grains research and development corporation — Perth, WA, Australia

10/2024 **Masterclass: resilient agronomy 101 (21st Australian agronomy conference)**
The University of Western Australia — Albany Campus, WA, Australia

09/2023 **LI-6800 portable photosynthesis system training (4-5th September)**
The Australian National University — Canberra, Australia

07/2023 **Melbourne teaching certificate**
The University of Melbourne — VIC, Australia

11/2023 **Certificate in small-group teaching**
The University of Melbourne — VIC, Australia

06/2023 **AgVet chemical users course certification (AusChem registration no: 103907)**
GOTAFE — VIC, Australia

ACADEMIC ENGAGEMENT

2022 **Co-supervision - Master of Agricultural Sciences (minor research project)**
Faculty of Veterinary and Agricultural Sciences, The University of Melbourne — VIC, Australia

2019 | 2018 **Tutor - Ecology and Grazing Management**
Faculty of Veterinary and Agricultural Sciences, The University of Melbourne. — VIC, Australia

2019 **Demonstrator - Applied Crop Production and Horticulture**
Faculty of Veterinary and Agricultural Sciences, The University of Melbourne. — VIC, Australia

INDUSTRY/FIELD DAY TALKS

09/2025 **LIFT Group Spring Field Walk**
Ashfaq, W., Shackley, B., Harries, M., Bowey, R., Sampson, M., Reeves, K., Kharel, S. (2025). WA Farming Systems project – medium rainfall south trial and Species by Time of sowing trial at Lake Grace. Presented at the Lakes Information & Farming Technology (LIFT) Group Spring Field Walk, Lake Grace, WA, Australia.

08/2025 **Field Walk with Australian Soil Planners**
Ashfaq, W., Shackley, B., Harries, M., Bowey, R., Sampson, M., Reeves, K., Kharel, S. (2025). WA Farming Systems project – medium rainfall south trial and Species by Time of sowing trial at Lake Grace. Presented in a field walk with Australian Soil Planners, including farmers and consultants at Lake Grace, WA, Australia.

03/2025 **GRDC Regional Grains Research Updates**
Ashfaq, W., Shackley, B., Harries, M., Bowey, R., Hunter, K., Reeves, K., Kharel, S. (2025). WA Farming Systems project – an update from the systems trial at Lake Grace. GRDC regional grains research updates, Kulin, WA, Australia.

10/2023 **Dookie Field Day**
Ashfaq, W., Khan, J., Azman, R., Hunt, J., and Gupta, D. (2023). Diversification in a broadacre farming system for sustainable crop production. The University of Melbourne, Dookie Campus, VIC, Australia.

09/2023 **Birchip Cropping Group Main Field Day**
Ashfaq, W., Khan, J., Azman, R., Hunt, J., and Gupta, D. (2023). Redesigning and diversification in broadacre farming system to cope and recover from drought. BCG trials site, Kinnabulla, VIC, Australia.

10/2022 **Dookie Field Day**
Ashfaq, W., Khan, J., Azman, R., Hunt, J., and Gupta, D. (2022). Diversified farming system and application of silicon in mitigating abiotic stress effects". The University of Melbourne, Dookie Campus, VIC, Australia.

09/2022 **Birchip Cropping Group Main Field Day**
Ashfaq, W., Khan, J., Hunt, J., and Gupta, D. (2022). Silicon role in mitigating drought stress in cereals. Birchip Cropping Group trials site, Nullawil, VIC, Australia.

MEDIA COVERAGE

11/2022 North East and Goulburn Murray Farmer" newspaper, page 25

10/2022 Strong interest in risk-management cropping at Dookie Campus field day published at Victorian Drought Resilience Adoption and Innovation Hub; Focus on risk management cropping published at Shepparton News

7/2022 VIC Hub snapshot: Victorian Drought Resilience Adoption and Innovation Hub (Australian Government Department of Agriculture YouTube page video, span 2:13-2:24

9/2018 Gates open at Dookie Campus

INTERNATIONAL TRAININGS & EXPOSURE

2020 **Mexico**: Visited "Campo Experimental Norman E. Borlaug" wheat research station of the International Maize and Wheat Improvement Center (CIMMYT) for PhD field experiments.

2017 **Thailand:** Attended TOM meetings and participated in the wet-season corn breeders tour in North-Eastern Thailand to evaluate and identify best-performing corn hybrids for Pakistan mega-environments.

2016 **Thailand:** Participated in the wet-season corn breeders tour in the North and North-Central corn regions to evaluate and identify best-performing tropical corn hybrids for Pakistan mega-environments.

2015 **Thailand:** Participated in the wet-season corn breeders tour in the Northern corn regions to evaluate and identify best-performing tropical corn hybrids for Pakistan mega-environments.

2015 **Thailand:** Attended Monsanto digital tools (Plot Walker, Field Guide) and data quality training at Monsanto Corn Breeding Research Station, Phitsanulok.

2014 **United States:** Attend Monsanto North America Corn Base Meeting and Trainings at Monsanto Headquarters St Loius, MO and Thomasboro Corn Breeding Station, IL.

2012 **Thailand:** Participated in the wet-season corn breeders tour in the North and North-Central corn regions to evaluate and identify best-performing tropical corn hybrids for Pakistan mega-environments.

LEADERSHIP & SYNERGETIC ACTIVITIES

Leadership

• Member of the Western Australian Farming Systems - Regional Innovation Group **(2024 to present)**, for the medium rainfall zone. This group comprises farmers, industry professionals, and agricultural experts.

• Served on the Equity, Diversity, and Inclusion Committee in the School of Agriculture and Food at The University of Melbourne (2022).

Publisher-invited reviewer

Plant Molecular Biology, BMC Plant Biology, BMC Agriculture, Discover Plants, Molecular Biology Reports, Scientific Reports, Discover Agriculture, Euphytica,

Society Memberships

• Australian Society of Agronomy (2024 to present)

• International Society for Silicon in Agriculture (2018 to present).

• Australian Society of Plant Scientists (2023 to present).

• International Society of Root Research (2021 to present).