

Dr. Muhammad Ahsan Khan

Assistant Professor (TTS)
Department of Plant Breeding & Genetics
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EDUCATION:

Ph.D. in Crop Sciences (2015-2019) from the Department of Crop & Soil Sciences, Washington State University, Pullman, WA, USA

M.Sc. (Hons.) in Plant Breeding & Genetics (2010- 2012) from the Department of Plant Breeding & Genetics, University of Agriculture, Faisalabad, Pakistan.

B.Sc. (Hons.) in Plant Breeding & Genetics (2006-2010) from the Department of Plant Breeding & Genetics, University of Agriculture, Faisalabad, Pakistan.

Intermediate in (Pre- Medical) 2004-2006 from Government College University Faisalabad, Pakistan

PROFESSIONAL EXPERIENCE:

Jan 2022 to Present: Assistant Professor at the Department of Plant Breeding & Genetics, University of Agriculture, Faisalabad, Pakistan

May 2019 to Jan 2022: Lecturer, UAF Sub Campus Burewala-Vehari, Punjab, Pakistan

Jan 2015 to May 2019: Graduate Research Assistant, Department of Crop & Soil Sciences, Washington State University, Pullman, WA, USA

Sep 2013 to Jan 2015: Lecturer, UAF Sub Campus Burewala-Vehari, Punjab, Pakistan

Jan 2010 to June 2010: Internship at Agricultural Biotechnology Research Institute, Ayub Agricultural Research Institute, Faisalabad, Pakistan

Oct 2009 to Nov 2009: Internship in Grow More Wheat Campaign, Under DDO Agri. Faisalabad

RESEARCH EXPERIENCE:

MSc thesis research project title: Doubled haploid production in hexaploid wheat using various protocols.

PhD thesis research project title: Promoter characterization and protein identification of the *Ph1* gene that regulates chromosome pairing in wheat (*Triticum aestivum*)

Punjab Wheat Breeding Program since 2019

Co-PI of national project “ Gene editing of biological agents for nutritional, biochemical and therapeutic purpose; Crops” 2020 till present

Co-PI of HEC RTTG-124 project “Low cost domestic production of Taq polymerase enzymes for research and diagnostics”

EXTRA-CURRICULAR AND VOLUNTEER ACTIVITIES:

Campus Ambassador at Pakistan Innovative Foundation

Served as National Director Pakistan 2012-13 of the International Association of students in Agricultural and related Science

Served as President 2011-13 of The Agrarian Society ® U.A.F.

Served various committees for community services in various capacities

AWARDS & HONORS RECEIVED:

AIP-Pakistan USAID PhD Scholarship Award 2014

Star Award 2011 from South Asia Publications, 2012

Internal Merit Scholarship owned throughout B. Sc. (Hons) degree (2006 to 2010)

Faculty Colour Award, University of Agriculture, Faisalabad, Pakistan of 2009

Certificate of Quaid-e-Azam Scout Badge from Governor Punjab 2004

WORKSHOPS/CONFERENCE ATTENDED:

BGRI 2022 Technical Workshop held virtually on September 9, 2022

Pioneering ideas in agriculture symposium at WSU (USA) March 22, 2018.

Plant and Animal Genome Conference, San Diego (USA) 2018

Pioneering ideas in agriculture symposium at WSU (USA) March 16, 2017

AIP Scholars Symposium at UC Davis (USA) July 13-14, 2016

HeDWIC Conference by CGIAR at Frankfurt (Germany) 2-4 Dec 2014

International Conference on Applied Genetics and Biotechnology at UAF on 08-10 December 2011

TRAINING ATTENDED:

ADB-IRRI Knowledge-Sharing Workshop on Strengthening Climate Resilient and Low Carbon Agriculture on 11-13 December 2024, IRRI, Los Banos, Laguna, Philippines

Exploration of good research and development approach for improvement of agricultural productivity of Pakistan. July 15-28, 2023 by Seoul National University and Korea International Cooperation Agency

Patent and Plant breeder rights application and drafting. May 31- June 1, 2023. By National Institute for Genomics and Advanced Biotechnology, Islamabad

Basic Wheat Improvement Course. January 18 to May 31 2021 by International Maize and Wheat Improvement Center (CIMMYT)

Training Programme on “Plant Genetic Resources Use in Pre Breeding and Varietal Development Practices” 12-13 November 2019, by FAO

Applications of Biotechnology for Wheat Improvement at NIBGE on 28-29 February 2012

The testing of biotech crops at Agricultural Biotechnology Research Institute on May, 2011 and March 2012

RESEARCH AND REVIEW ARTICLES:

Khan, M. A. and J. Ahmad. 2011. In vitro haploid embryo production by wheat \times maize cross system under different environmental conditions. Pak. J. Agri. Sci. 48(1), 49-53. (Q3)

Khan, M. A., S. Shaukat, J. Ahmad, M. Kashif, A. S. Khan and M. Z. Iqbal. 2012. Use of intergeneric cross for production of doubled haploid wheat (*Triticum aestivum* L.). Sci., Tech. and Dev., 31 (4): 295-300.

Shaukat, S., **M. A. Khan**, and J. Ahmed. 2012. Recent biotechnological techniques applied in wheat (*Triticum aestivum* L.). Abstract. Minia International Conference for Agriculture and Irrigation in the Nile Basin Countries, 26th -29th March 2012, El-Minia, Egypt.

Hussain, B., **M. A. Khan**, Ali, Q. & Shaukat, S. 2012. Double Haploid Production is the Best Method for Genetic Improvement and Genetic Studies of Wheat. International Journal for Agro Veterinary and Medical Sciences, 6 (4), 216-228. doi:10.5455/ijavms.169.

Hussain, B., **M. A. Khan**, Q. Ali, & S. Shaukat. 2012. Double haploid production in wheat through microspore culture and wheat \times maize crossing system: An overview. International Journal for Agro Veterinary and Medical Sciences, Online First: 10 Sep, 2012. doi:10.5455/ijavms.168

Khan, M. A., M. Kashif, J. Ahmad, A.S. Khan, I. Khaliq, B. Fatima, S. Shaukat. 2014. Sadaf-A potential donor for enhancing frequency of doubled haploids in wheat \times maize crossing system. Pak. J. Agri. Sci. 51 (2), 353-357. (Q3)

Rawale, K.S., **M.A. Khan** & Gill, K.S. 2019. The novel function of the Ph1 gene to differentiate homologs from homoeologs evolved in *Triticum turgidum* ssp. *dicoccoides* via a dramatic meiosis-specific increase in the expression of the 5B copy of the C-Ph1 gene. Chromosoma 128, 561–570. <https://doi.org/10.1007/s00412-019-00724-6>. (Q2)

Ahmed, H. G. M. D. Muhammad, **M.A. Khan** and A. Ullah. 2022. Genetic Basis of Physiological and Yield Attributes in Spring Wheat for Water-Deficit Environments. Gesunde Pflanzen. <https://doi.org/10.1007/s10343-022-00690-7>. (Q2)

Ahmed H. G. M, Rizwan M, Naeem M, **M.A. Khan**, Baloch FS, Sun S, Chung G. Molecular characterization and validation of sunflower (*Helianthus annuus* L.) hybrids through SSR markers. PLoS One. 2022 May 19;17(5):e0267383. doi: 10.1371/journal.pone.0267383. PMID: 35588423; PMCID: PMC9119457. (Q1)

Ahmed, H. G. M. D. Muhammad, Y. Zeng, **M. A. Khan**, R. Rashid, M. Ameen, A. Akram and A. Saeed. 2023. Genome-wide association mapping of bread wheat genotypes using yield and grain morphology-related traits under different environments. Accepted

in *Frontiers in Genetics*. *Frontiers in Genetics*, 13, 1008024. <https://doi.org/10.3389/fgene.2022.1008024> (Q2)

Farooq, A., Khan, U.M., **M. A. Khan**, Ali, Z., Maqbool, R. and Sajjad, M., 2023. Male sterility systems and their applications in hybrid wheat breeding. *Cereal Research Communications*, pp.1-13. (Q2)

Rashid Kashif, U. S. Rana, M. A. Khan, **M. A. Khan**, J. A. Junaid, H. Saleem, W. Abbas, M. S. Ahmad, M. Imtiaz, S. Sardar. 2023. Identification of brown leaf rust (*Puccinia Triticina*) tolerant spring wheat genotypes and favourable environment supporting disease incidence. *Journal of Xi'an Shiyu University, Natural Science Edition*. 19(12), 635-645. (Q3)

Ghaffar, S. M., M. A. Khan, **M. A. Khan**, U. S. Rana, M. Nadeem, H. S. B. Mustafa, M. Zulfqar, M. Ghias, S. Habib, S. Rauf, and M. R. Bashir. "Salt Stress Impact on Brassica Seedlings." *INSIGHTS - Journal of Life and Social Sciences* 3, no. 2 (2025): 137–146. <https://insightsjlss.com/index.php/home/article/view/167>.

POSTER/PRESENTATIONS:

Production of Doubled Haploid in wheat (*Triticum aestivum* L.) through Wheat × Maize crossing system. Shadab Shoukat, M. Ahsan Khan, Rizwan Shoukat, Javed Ahmad at International Conference on Applied Genetics and Biotechnology at UAF on 08-10 December, 2011.

High frequency doubled haploid production in wheat (*Triticum aestivum* L.) by using different tiller culture media. M. Ahsan Khan, Shadab Shoukat, Javed Ahmad, M. Kashif at International Conference on Applied Genetics and Biotechnology at UAF on 08-10 December, 2011.

Gill K. S., Bhullar R., Singh K. and Khan M. A. 2017. Structure and function of *Ph1* (Pairing homoeologous 1) genes in wheat and other cereals, International wheat genetics symposium, Tulln, Austria.

K. Singh, Bhullar R., Khan M. A. and Gill K. S. 2017. Evolution of *Ph1* gene in wheat, International wheat genetics symposium, Tulln, Austria.

Khan M. A., Bhullar R., Singh K. and Gill K. S. 2018. Structure and function of *Ph1* gene in wheat, Plant and Animal Genome, San Diego, USA.

Singh K, Bhullar R, Khan M. A. and Gill K. S. 2018. Evolution of *Ph1* gene in polyploid wheat and application in wheat improvement, Plant and Animal Genome, San Diego, USA.

Singh K., Bhullar R., Khan M. A. and Gill K. S. 2018. Evolution of *Ph1* gene and its role in recombination, Gordon Conference-Meiosis, New Hampshire, USA.

Khan, M. A. 2019. Use of Advance Technologies for effective Selection in Breeding Programs. Training Programme on “Plant Genetic Resources Use in Pre Breeding and Varietal Development Practices” by FAO.

ABSTRACTS PUBLISHED:

Pre-breeding: bridging untapped genetic resources with breeding programs. 2021. 4th International Conference on Biosciences (ICBS-2021). Quaid-i-Azam University Islamabad.

Physiological and biochemical response of mutated M3 cotton (*Gossypium hirsutum* L.) to different levels of salt stress. First international conference on Revamped Scientific outlook of 21st Century, October 12, 2022 FOS, Rawalpindi Women University.

Cytoplasmic Diversity in Wheat New Source for Pre-breeding at International Wheat Conference 19-20 October 2022 at PBG, UAF.

Wheat Blast- A future threat to wheat production and possible strategies to cope with this challenge at the International Wheat Conference 19-20 October 2022 at PBG, UAF.

Wheat ideotype breeding for enhancing yield and developing climate resilient cultivars at International Conference on Sustainable Food Security Solutions CPEC consortium of universities, May 29-31, 2023. Hosted by Deptt. of Agronomy UAF, IAEE & RD, and ISHU University of Karachi.

The potential of perennial wheat as fodder and feed for sustainable agriculture at International Conference on Fodder Production in Climate Shift Paradigm Breeding: Better Nutrition for Better Dairy Production. November 29-30, 2023. Organised by MNS University of Agriculture, Multan.

MSC/MPHIL SUPERVISED THESIS TITLE:

Saniya Saeed (2019-ag-2985) MS, Phytoremediation- A vital strategy to cope with different environmental pollutants. 2021

Hina Mahmood (2019-ag-3016) MS, Types of fertilizers, their solubility and availability for plants. 2021

Nagina Aslam (2019-ag-3045) MS, Environmental signals for plant growth and development, their mechanism and life cycle. 2021

Sadia Shakoor (2019-ag-3054) MS, Soil Ph challenges and reclamation strategies in Pakistan. 2021

Ayesha Anwar (2019-ag-3080) MS, Global climate change and effects on weather pattern in Pakistan. 2021

Misbah Komal (2019-ag-3105) MS, Water quality regarding industrial wastes, salts and contaminants in Pakistan.

Saima Majeed (2021-ag-1359) MPhil, Impact of seed priming on germination under abiotic stress conditions in wheat (*Triticum aestivum* L.). 2023

MSC/MPHIL/PHD SUPERVISORY COMMITTEE MEMBER THESIS TITLE:

Taimoor Ali (2021-ag-130) MSc (Hons) PBG, Genetic gain and combining ability analysis of hexaploid wheat for yield and its related attributes. 2023

Iqra Nazir (2017-ag-9660) MSc (Hons) PBG, Assessment of F₁ population in bread wheat (*Triticum aestivum* L.) for yield and yield related traits. 2023

Nadeem Arif (2017-ag-8850) MSc (Hons) PBG, Analysis of combining ability for morphological traits in wheat utilizing line x tester mating design under drought conditions. 2023

Zainab Bibi (2017-ag-9967) PBG, Establishment of in-vitro regeneration protocol and guided RNA designing for efficient CRISPR-Cas9 mediated amylopectin gene editing in *Triticum aestivum* L. 2023

Hamza Altaf (2017-ag-9666) PBG, Morphological and molecular based screening of exotic wheat (*Triticum aestivum* L.) germplasm for 1000 grain weight against heat stress. 2023

Asad Azeem (2021-ag-140) Bioinformatics analysis of TaHRZ1 gene and morphological characterization of wheat genotypes for iron content. 2023

Zainab Tahir (2017-ag-9169) Genome wide study of starch synthase gene and designing of guide RNA CRISPR-Cas9 genome editing in wheat (*Triticum aestivum* L.)

ADMINISTRATIVE /ADDITIONAL ASSIGNMENTS

Member Senate, University of Agriculture, Faisalabad (UAF), Pakistan (2022 till present)

Secretary Faculty Board of Study, Faculty of Agriculture, UAF (2022 till continue)

Deputy Director, Students Affairs, UAF (2022 till present)

In charge Seed Science and Technology Labs (2022 till present)

Tutor, Tutorial Group number 155, UAF Main Campus (2022 till present)

In-charge PRP, UAF Sub Campus Burewala (2019 - 2022)

Focal person for UAF Office of the Research Innovation and Commercialization at UAF Sub Campus Burewala-Vehari (2019 till 2022)

COURSES TAUGHT:

BBAA-408/208 Seed Technology and Industry

BBAA-409/209 Cotton Production and its Value Chain

BBAA-421/221 Variety Development, Registration and Seed Production

Biotech-401 Basic Molecular Biotechnology

BOT-403 Cell Biology, Genetics and Evolution

BOT-510 Introductory Genetics

BOT-605 Advanced Genetics

PBG-301 Basic Concepts of Genetics

PBG-301 Introductory Genetics

PBG-301 Principles of Genetics

PBG-401 Introductory Plant Breeding

PBG-402 Introduction to Plant Biotechnology

PBG-501 Principles of Genetics
PBG-502 Modern Concepts in Plant Breeding
PBG-503 Breeding Field Crops
PBG-505 Cytogenetics
PBG-506 Breeding Oilseed Crops
PBG-508 Breeding Minor Crops
PBG-510 Breeding Climate Smart crops
PBG-513 Hybrid Seed Production Technology
PBG-603 Breeding Cereal Crops
PBG-609 Quantitative Genetics and Biometry
PBG-712 Advanced Genetics
PBG-712 Advances in Genetics
SST-502 Principles of Seed Technology
SST-506 Seed Certification and Registration
SST-702 Seed Legislation, Certification and IPR