

Curriculum Vitae

Dr. Waqar Ali
Assistant Professor
Institute of Biotechnology and Genetic Engineering,
The University of Agriculture Peshawar, Pakistan
Cell: +923339304565
E-mail: waqar.ali@aup.edu.pk



Academic Qualification:

Ph.D. in Biology (Plant Biotechnology, 2012)
Biology Department, University of York, United Kingdom

M.Phil. in Biotechnology and Genetic Engineering
Institute of Biotechnology and Genetic Engineering,
The University of Agriculture Peshawar, Session 2003-2004

B.Sc (Hons) in Agriculture (Plant Breeding and Genetics)
Department of Plant Breeding and Genetics,
The University of Agriculture Peshawar, Session 1998-2002

Area of Specialization: Plant Biotechnology (Biology), Molecular Stress Physiology

Research Interests:

My research focuses on developing climate-resilient crop plants to enhance abiotic stress tolerance, addressing global challenges in sustainable agriculture and food security. My doctoral research on arsenic tolerance in rice elucidated genetic mechanisms for heavy metal stress resilience, while subsequent studies on bacterial dehydrins explored novel cross-kingdom solutions for drought and salinity tolerance. I have also pioneered eco-friendly nanoparticle synthesis using *Delphinium uncinatum* extracts to enhance plant stress mitigation against bacterial wilt of tomato and potato. Currently, I am planning to employ genome-wide association studies (GWAS) to map stress-tolerant genetic variants in cereals (wheat) and harness artificial intelligence (AI) to analyze complex genomic and phenotypic datasets, optimizing breeding strategies. This multidisciplinary approach aims to accelerate the development of climate resilient crops and contribute to sustainable agriculture.

Awards/Honors:

I have been awarded PhD scholarship under Faculty Development Program, University of Malakand funded by Higher Education Commission of Pakistan (2008-2012). One of my notable achievements was being a member of the research team that developed a new *Brassica* variety **Fakhr-e-IBGE**, which was approved by the Provincial Seed Council for general cultivation in 2023. The variety was developed to address key production

challenges and offers several valuable traits, including high yield potential, resistance to aphids and major diseases, adaptability to diverse agro-ecological zones, early maturity, higher oil recovery, and low erucic acid content. Its approval for general cultivation highlights its superior agronomic performance and its potential to enhance oilseed productivity, sustainability, and economic returns for farmers.

Research Projects completed as Co-PI

- Bacterial dehydrins; a potential source for the development of stress tolerant plants worth: 5.51 million 6649/KPK/NRPU/R&D/HEC/2016 (STATUS: COMPLETED)
- Surface energetics of diverse nature of biomass adsorption onto expanded bed chromatographic systems worth: 3.5 million 20-4046/NRPU/R&D/HEC (STATUS: COMPLETED)