RESUME

Personal Details

Name	Muqadas Aleem
Date & Place of Birth	05/08/1993, Pakistan
Nationality	Pakistani
CNIC	61101-5055331-4

Contact Details

Designation:	Assistant Prof
Responsibility:	Teaching and Research
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Google scholar Profile:
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Research Gate Profile:
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PROFILE AND SKILLS

- Assistant Professor, Plant Breeder, Agricultural scientist
- Won FDP scholarship and Nanjing Govt. Scholarship.
- Experienced in the field of traditional plant breeding to develop high-yielding crop varieties tolerant to abiotic stress (drought, salinity and heat) using physiological and morphological and molecular markers.
- Having expertise in GWAS, transcriptomic, functional genomics, and CRISPR/CAS9
- Academic and practical skills in genetic characterization of oilseed crops mainly soybean and sesame, pre-basic and basic seed production, winning and handling research projects, publishing the outcomes of research, participation in outreach activities especially for farmers and women of rural areas

Education

2021	PhD, Nanjing Agricultural University, China	A/1st Division
2016	Master of Science (M.Sc Hons) Plant Breeding and Genetics	3.97/4 A/1st Division
2014	Bachelor of Science (B.Sc.) Hons., Plant Breeding & Genetics, University of Agriculture, Faisalabad	3.8/4, A/1st Division
2009	Intermediate, (F. Sc.), Pre-Medical Group, B.I.S.E., Faisalabad	883/1100

2007	Secondary School Certificate (S.S.C.), Science Group, .B.I.S.E., Faisalabad	797/850 A/1st Division

PhD Dissertation Title

"Genome-wide association, transcriptomic profile and Class III peroxidase gene function analyses for drought tolerance at germination stage in diverse soybeans"

M.Phil. Dissertation Title

"Transcript abundance analysis of *TaMIPs* in drought responsive wheat genotypes"

PROFESSIONAL EXPERIENCE/APPOINTMENTS:

Total working Experience = 7 years, 9 months

January 2017 to July 13, 2021	Lecturer in the Dept. of Plant Breeding and Genetics, University of Agriculture Faisalabad.
July 14, 2021, to date	Assistant Professor (TTS) in the Dept. of Plant Breeding and Genetics, University of Agriculture Faisalabad.

JOB DUTIES

- Collection, maintenance and characterization of germplasm and development of high-yielding oilseed varieties to enhance crop productivity.
- Conduction of adaptability, advanced and national yield trials for assessment of genetic potential of elite lines, for high yield, quality (oil and protein), fodder (soybean) production.
- Conduction of adaptability trials of soybean and sesame to get a sufficient category of genotypes surviving under the change of climate scenario
- Development of high yielding, waterlogging tolerant lines in sesame whereas the heat tolerant lines in soybean
- Development of nutrient rich/bio fortified sesame (rich in Calcium and Iron) to overcome the problem of malnutrition
- Conducting greenhouse experiments to evaluate the genetic potential of different genotypes against abiotic stresses (particularly drought, salinity and heat stress). Selection of best-performing genotypes based upon information of collected data after proper statistical analysis.
- Organization and management of soybean laboratory. Optimization of protocols for tissue culture and in planta transformation of soybean crop.
- Teaching and supervising postgraduate students (M.Phil & PhD), advising them in preparation of layout for research work, synopsis and research thesis.
- Organized on farm demonstration of soybean and sesame crop to show the yield potential to the farmers and encourage them to grow these elite lines
- Arranging farmer days to counsel and train farmers about the cultivation of certified varieties to enhance productivity.
- Writing research articles to disseminate findings of research in peer reviewed journals as well as publishing articles in newspapers for at scientific and non-scientific community.

- Organized national and international workshop on scientific writing, genome editing
- Participation in national and international seminars, workshops, and conferences, to share conclusions of research work as oral talk
- Running research projects by record keeping of experimentation, report writing and budget maintenance of financial matters.

Research projects:

1. <u>As Principle Investigator</u>

- The title of the project "A key initiative of UAF: Development of waterlogging tolerant sesame under the change of climate scenario. Funded by ESF of worth amount of 7 million PKR.
- The project titled as "Bio fortified sesame: The Future of Nutrition Security" is in progress funded by PKNC (Pak-Korea nutrition center) of 5.99 million PKR.

2. <u>As Co-PI</u>

Establishment of soybean genetics and seed supply chain center approved by pdwp of worth 567 million PKR.

<u>3. As Team Scientist</u>

i.) The title of the project "Development of soybean to reduce the import bill of Pakistan" funded by Punjab Agricultural Research Board (PARB) of worth of 99.77 million PKR.

ii.) The title of the project "Gene Editing of Biological agents for Nutritional, Biochemical and therapeutic purposes (Establishment of National center for crop improvement and human health) Funded by the Ministry of Science and Technology of worth of 500 million PKR.

NUMBER OF STUDENTS PRODUCED IN THR DEGREE OF PLANT BREEDING AND BIOTECHNOLOGY DEGREE

• Ph.D. 1 • M.Sc. (Hons) 12

Worked as MEMBER, SUPERVISORY COMMITTEE DEGREE NUMBER OF STUDENTS

• Ph.D. 2 • M.Sc. (Hons) 9

Teaching

Omics in Plant Breeding
Breeding Pulses Crops
Introductory Genetics
Introductory Plant Breeding
Genetics of Plant diseases
Breeding for climate smart crops
Cytogenetics

Professional Experience

2021	Serving as Assistant Prof at University of Agriculture, Faisalabad
2016	Served as lecturer at University of Agriculture, Faisalabad One-year experience as Educator (BPS-14) in Government Girls Middle School
2015	One-year Experience as Volunteer in "**Varietal identification and purify checking of wheat cultivars/hybrids through PCR based DNA finger printing**
2015	
2014	Six-month experience of **Research Associate, CIMMYT** project," Genetic Diversity of wheat using molecular markers," at NIGAB, NARC, Islamabad.

Research Expertise

Working as **Co-PI** in national center for genome editing project (Soybean Section)

Working as **Team Scientist** in PARB Project: Development of soybean to reduce the import bill of pakistan

Techniques: Expert in Instrument handling of Microplate reader, Thermocycler, Centrifuge, Gel electrophoresis, Gel doc, Tissue culture and PAGE.

Utilize web based tools for genomic analysis i.e. gene identification, sequence alignment, transcriptome and Protein analysis using NCBI-BLAST

Experimental Designs like CRD, RCBD etc

Selfing & Crossing of wheat, rice, maize, cotton, Brassica, Tomato, Potato, Chillies, Peas, Chickpea

Publications

1. **Aleem, M**., R., Khan, M.I., Batool, A., Sarwar, G., Farooq, J., Iqbal, A. and Jan, B.L., 2024. Genome-wide association study provides new insight into the underlying mechanism of drought tolerance during seed germination stage in soybean. *Scientific Reports*, *14*(1), 20765.
2. **Aleem, M**., Riaz, A., Raza, Q., Aleem, M., Aslam, M., Kong, K., Atif, R.M., Kashif, M., Bhat, J.A. and Zhao, T., 2022. Genome-wide characterization and functional analysis of class III peroxidase gene family in soybean reveal regulatory roles of *GsPOD40* in drought tolerance. *Genomics*, *114*(1), pp.45-60.
3. **Aleem, M**., Aleem, S., Sharif, I., Aleem, M., Shahzad, R., Khan, M.I., Batool, A., Sarwar, G., Farooq, J., Iqbal, A. and Jan, B.L., 2022. Whole-Genome Identification of APX and CAT Gene Families in Cultivated and Wild Soybeans and Their Regulatory Function in Plant Development and Stress Response. *Antioxidants*, *11*(8), p.1626.
4. **Aleem, M**., Aleem, S., Sharif, I., Wu, Z., Aleem, M., Tahir, A., Atif, R.M., Cheema, H.M.N., Shakeel, A., Lei, S. and Yu, D., 2022. Characterization of SOD and GPX Gene Families in the Soybeans in Response to Drought and Salinity Stresses. *Antioxidants*, *11*(3), p.460.
5. Sharif, I., Aleem, S., Junaid, J.A., Ali, Z., Aleem, M., Shahzad, R., Farooq, J., Khan, M.I., Arshad, W. and Ellahi, F., 2024. Multiomics approaches to explore drought tolerance in cotton. Journal of Cotton Research, 7(1), p.32.
6. Manzoor, F., Atiq, M., **Aleem, M**., Naveed, K., Kachelo, G. A., Ali, M. U., ... & Rajput, N. A. (2024). Appraisal of antifungal potential of chemicals and plant extracts against brown leaf spot of

soybean caused by *Septoria glycine*. Plant Protection, *8*(3), 447-455.

7. Jamil, S., Shahzad, R., Ahmad, S., Nisar, A., **Aleem, M.,** Tabassum, J., Iqbal, M.M., Shehzad, A., Ghazy, A.I., Zeb, A. and Kanwal, S., 2022. Forward and Reverse Genetic Approaches for Improving Abiotic Stress Tolerance in Crop Plants. *Plant Abiotic Stress Physiology: Volume 1: Responses and Adaptations*, p.161.
8. Jamil, S., Shahzad, R., Ahmad, S., Ali, Z., Shaheen, S., Shahzadee, H., Fatima, N., Sharif, I., **Aleem, M.,** Sultana, R. and Fatima, R., 2021. Climate change and role of genetics and genomics in climate-resilient sorghum. In Developing Climate-Resilient Crops (pp. 111-138). CRC Press.
9. Aleem, S., Tahir, M., Sharif, I., **Aleem, M.,** Najeebullah, M., Nawaz, A., Batool, A., Khan, M.I. and Arshad, W., 2021. Principal Component and Cluster Analyses as Tools in the Assessment of Genetic Diversity for Late Season Cauliflower Genotypes. Pakistan Journal of Agricultural Research, *34*(1), pp.176-183.
10. **Aleem M**, Raza MM, Haider MS, Atif RM, Ali Z, Bhat JA, Zhao T (2021) Comprehensive RNA-seq analysis revealed molecular pathways and genes associated with drought tolerance in wild soybean (*Glycine soja* Sieb. and Zucc.). Physiologia Plantarum 172(2):707-732
11. Razzaq MK, **Aleem M**, Mansoor S, Khan MA, Rauf S, Iqbal S, Siddique KH (2021) Omics and CRISPR-Cas9 approaches for molecular insight, functional gene analysis, and stress tolerance development in crops. International Journal of Molecular Sciences 22:1292.
12. Zhao T, **Aleem M,** Sharmin RA. (2018) Adaptation to water stress in soybean: Morphology to genetics. In Andjelkovic V (ed): Plant, abiotic stress and responses to climate change. PP33-68. InTech. https://doi.org/10.5772/intechopen.72229
13. Iftikhar MS, Talha GM, **Aleem M**, Shamim A (2021) Bioinformatics–computer programming. In Nanotechnology in Cancer Management Elsevier.
14. Ali A, Iftikhar MS, Majid MU, Akram MS, Munawar T, **Aleem M**, Ali S, Azam S, Bajwa KS, Samiullah TR, Nasir IA (2014) Genes and transcriptional factors in chili plant with aspect to metabolism and resistance against virus, bacteria and fungi: a review. J. Agric. Sci. Tech.4:509-17.

Conferences/Workshops/Symposia/Events attended

2023	Use of R in agriculture
	International Hybrid Wheat conference Feb, 23-24 2023
2022	3rd **international** colloquium on Challenges and opportunities of maize production from 18-20 May, 2022
	International Symposium on network analysis in Agricultural Systems to address Grand challenges to Food Security"
	Four days **International** Training workshop on Scientific writing and Publishing 29 june to 2 july 2022
	On-farm demonstration of complete crop cycle of Soybean approved through ORIC
	National workshop "Hands on training on Crisper/CAS mediated genome editing"

2021	from Feb 21 to 26, 2022 under NCGE project Five Day training on "Capacity building and Professional Development Workshop (SWOT Analysis, Strategic and Succession Planning)", Dec 2021 at University of Agriculture, Faisalabad.
2015	Participated as event manager in 1st Pakistan Seed Congress in December 2015
2014	Appreciation Certificate obtained in 'International Seminar On Global Change & Pakistan Perspective, Climate, water and agriculture nexus: a future approach to fight hunger 'held on 16 September, 2014 at University of Agriculture, Faisalabad Opportunities and Challenges of Maize Production organized by UAF
2014	Symposium on rust diseases of wheat, organized by NARC
2013	Participated in International Seminar on "Seed Production and Supply System" held on 26th December, 2013 at University of Agriculture, Faisalabad, Pakistan. Participated in Workshop on "Capacity Building in Seed Technology" held on 7 June, 2014 at University of Agriculture, Faisalabad, Pakistan.

Awards and Honors

- **Nanjing Government Scholarship** during PhD from Nanjing Agricultural University, China
- **FDP scholarship** from Govt. of Punjab, Pakistan during PhD
- **Merit Scholarship** in F.S.C
- **C.G.P.A Scholarship** throughout degree from University Of Agriculture, Faisalabad.
- Secured **First Position** and Shield in **Flower exhibition** organized by UAF
- Got First position in **DEBATE** and **QUIZ COIMPETITON**
- Secured First Position in '**Master Mind Breeder Quiz Contest'**
- Got First Position In Interfaculty matches

Administrative Services

- Working as **Deputy Director Student Affairs**
- **Focal Person** of Women sports
- **Co-Advisor** of Undergraduate degree programs
- **Tutor** of Sir-syed group

Membership of Scientific Societies

Executive Member of Pakistan Society of Plant Breeders & Geneticists.

Computer Experience and Languages

- IELTS: 6 band overall Listening 6, Speaking 6, Writing 6, Reading 6
- International GRE: Quant 147, Verb 139, Analytical 2.5
- Window 7, MS Word, MS Excel, Power point
- STATISTICS 8.1 Version, Genstat, BIPLOT, Clustal W, Power Marker, MEGA5, Structure, Power Marker, Dnas, MAPMAN, CIRCOS, dChip, Mev, Map chart etc
- Fluent in Urdu, English and Punjabi, a little bit Chinese

Social skills and competences

I acquired social skills during the stay at university enabling me to interact with different personalities with their unique thoughts; which equipped me to adopt and survive in multicultural environments; Communicational skills were gained through interaction with people from different regions with different languages making me capable of understanding their cultural norms and traditions.

References

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