

DR. AMIR SHAKEEL

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INFORMATION

Father's Name:	Muhammad Nawaz
Date of Birth:	April 4, 1975.
Marital Status:	Married
Nationality:	Pakistani
National ID:	33100-0677214-5
Domicile:	Faisalabad

EDUCATION

Year	Degree
2010	Post-Doc. Training, The University of Georgia, USA
2008	Ph.D. in Plant Breeding and Genetics. (Biological Sciences)
2000	M.Sc. (Hons) in Plant Breeding and Genetics.
1998	B.Sc. (Hons) in Plant Breeding and Genetics
1993	F.Sc. Pre-Medical Group.
1991	Matriculation. Science Group.

DISTINCTION

Year	Distinction
2000	Silver Medalist in the University in M.Sc. (Hons) PBG
2000	Merit scholarship holder in B.Sc. (Hons.) and M.Sc. (Hons) PBG
2010	Approved supervisor of Higher Education Commission of Pakistan
2023	Okra variety OKRA-3A approved for general cultivation in Punjab by PSC

AREA OF SPECIALIZATION

Plant Breeding and Genetics, Quantitative Genetics, Population Genetics, Cotton breeding,
Breeding crops for stress environment

Research Achievements

I am working as a member of the Vegetable and Cotton Research group in the Department of Plant Breeding and Genetics. We have developed elite lines of Cotton, Okra, Bottle gourd and Tomato and several cross combinations with desirable traits.

Okra

- An okra variety (OKRA-3A) with high yield and disease resistance has been approved by Punjab Seed Council for general cultivation in Punjab, Pakistan.

Bottle Gourd

- Two Bottle Gourd advanced lines UAF-B1 & UAF-B2 have completed two-year DUS and NYUT trials and VEC meeting is expected in few months.

Cotton

- Three cotton advanced lines PB896, PB-93 and Noor-21 have completed DUS trials.

PROFESSIONAL EXPERIENCE

October 3, 2024 to date	Professor in the Department of Plant Breeding & Genetics, University of Agriculture, Faisalabad, Pakistan
March 22, 2022 to October 2, 2024	Associate Professor in the Department of Plant Breeding & Genetics, University of Agriculture Faisalabad, Pakistan.
Aug. 08, 2008 to March 21, 2022	Assistant Professor in the Department of Plant Breeding & Genetics, University of Agriculture Faisalabad, Pakistan.
July 16, 2007 To August 7, 2008	Lecture on regular basis in the Department of Plant Breeding & Genetics, University of Agriculture Faisalabad, Pakistan
March 29, 2007 To July 15, 2007	Lecturer on a contract basis in the Department of Plant Breeding & Genetics, University of Agriculture, Faisalabad, Pakistan
April 29, 2003 To March 28, 2007.	Worked as a teacher on per lecture basis in the Department of Plant Breeding & Genetics, University of Agriculture Faisalabad, Pakistan.
Feb.12, 2001 To April 28, 2003.	Lecturer in the College of Agriculture, D. G. Khan Sub-Campus, University of Agriculture, Faisalabad

EXTRA-CURRICULAR ACTIVITIES

- Working as a tutor, University of Agriculture, Faisalabad.
- Worked as co-advisor for B.Sc. (Hons.) Agri. Students.
- National Cadet Corps
- Worked with National Volunteer Movement at Batagram Earthquake affected area.

TRAININGS/ SHORT COURSES

- EU-ASIA link project short course on principles of experimental design & analysis.
- Training course on “Integration of Modern Biotechnological Tools with Conventional Systems of Crop Genetic Improvement.

- Training course on Safety Measures in the use of Radiation in Agriculture and Biology.
- Statistical training for Biological Sciences.
- Third Staff Development Course. (SDC # 3) By Higher Education Commission of Pakistan. (Sep 5-to- Oct 1, 2005).
- Workshop on Applied Multivariate Statistical techniques using different statistical packages.
- Teachers training under Faculty Professional Development Program by Higher Education Commission Islamabad, Pakistan.
- Workshop on focusing on statistical education at the college level
- Workshop on WTO agreements and their impact on Pakistan economy
- Short training program on an introduction to R programming language for statistical computing
- Three days AIT Cascading workshop on Ensuring Training effectiveness.

POSTGRADUATE RESEARCH

Supervising students for research in the departments of Plant Breeding and Genetics, Seed Science and Technology and Botany.

Supervisor.

- Ten Ph.D and ninety-six M.Sc (Hons)/M.Phil students have completed their degrees.
- Ten MSc. (Hons.) and Three Ph.D. students are working on different crops.

Member of supervisory committee.

- Fifty- M.Sc. (Hons.) and Seven Ph.D. students have completed their degrees
- Fifteen M.Sc. (Hons) and Eight Ph.D. students are working on different crops

COURSES TAUGHT

(During last Five years)

Post Graduate		
2019-2024	PBG-704	Biometrical Techniques in Plant Breeding (Theory & Practical)
2019-2024	PBG-708	Population Genetics (Theory)
2020-2024	PBG-713	Recent Trends in Crop Breeding and Evolution
Under Graduate		
2019-2024	PBG-509	Experimentation in Plant Breeding(Theory & Practical)
2019-2024	PBG-504	Breeding of Fibre Crops (Theory &Practical)
2019-2024	PBG-609	Quantitative Genetics and Biometry (Theory &Practical)

RESEARCH PROJECTS

- Quality seed production and supply to the farming community for ensuring food security in Pakistan (As Co-Principal Investigator) Ongoing
- Enhancing yield and profitability of okra through technology transfer and farmer training (As Principal Investigator) Ongoing

- Cabbage and cauliflower seed production, self-sufficiency towards breeding and seed production in Punjab (As Team Leader) Ongoing
- Establishment of cotton wild species living herbarium for demonstration and research purpose (As Principal Investigator) completed
- Removal of early fruiting branches (REFB) at higher N dose improves growth, yield and insect control in Bt cotton by altering its senescence and Cry1Ac expression pattern (As Co-Principal Investigator) completed.
- Best cotton-picking practices for female workers using mechanical hand picker. (As Co-Principal Investigator) Completed.

BOOK/BOOK CHAPTER

1. Farooq, A., W.S. Chattha, M.T. Azhar, A.I. Khan and A. Shakeel. 2022. Phenotyping for assessing genotypic variation in phosphorus use efficiency. In: Iqbal, A., M. Iqbal, M. Alamzab, S. Meizhen, Z. Xiling, M. Arif, X. Du and E. Lichtfouse., ed. 2022. Sustainable Agriculture Reviews 58: Phosphorus Use Efficiency for Sustainable Agriculture (pp. 115-136). Cham: Springer International Publishing. ISBN 978-3-031-16155-1
2. Manzoor, Z., J. Liu, M.S. Qadir, M.A. Jamil, Z. Hassan, M.S. Jahan and A. Shakeel. 2022. Genomic approaches in wheat breeding for sustainable production under changing climate. In Ansari, Mahmood-ur-Rahman, ed. 2022. "Wheat," November. IntechOpen. doi:10.5772/intechopen.98157. ISBN. 978-1-80355-524-9
3. Khaliq, A., A. Shakeel, M. Kashif and G. Mustafa .2018. Stagnant yield. p. 282-310 *In* I. A. Khan and M. S. Khan (eds) *Developing sustainable Agriculture in Pakistan*" CRS press, Taylor and Francis Group. ISBN: 13: 978-0-8153-6653-9
4. Shakeel, A. and M. Kashif .2018. Experimental Considerations. p. 225-255. *In* A. S. Khan, Z. Ali and N. I. Khan (eds) *Plant Breeding*. University of Agriculture Press. Faisalabad Pakistan. ISBN: 978-969-8237-94-3
5. Saeed, A., A. Bibi, T. M. Khan T. A. Malik and A. Shakeel. 2018. Germplasm resources, conservation and diversity. p. 15-23. *In* A. S. Khan, Z. Ali and N. I. Khan (eds) *Plant Breeding*. University of Agriculture Press. Faisalabad Pakistan. ISBN: 978-969-8237-94-3
6. Ahsan, M. and A. Shakeel. 2018. Basic statistic and biometrical analysis. p. 253-282. *In* A. S. Khan, Z. Ali and N. I. Khan (eds) *Plant Breeding*. University of Agriculture Press. Faisalabad Pakistan. ISBN: 978-969-8237-94-3.
7. Saleem, H., M. T. Chaudhary, A. Shakeel, S. H. Wani, X. Du and M.T Azhar. 2021. Wild cotton genepool: An unopened treasure. p. 19-53 *In* Azhar, M. T and S.H Wani (eds) *Wild germplasm for Genetic Improvement in crop plants*. Academic Press, Elsevier. ISBN: 9780128221372

RESEARCH PUBLICATION

1. Zafar, M. M., A. Razzaq, W. S. Chattha, A. Ali, A. Parvaiz, J. Amin, H. Saleem, A. Shoukat, K.M Elhindi, A. Shakeel, S. Ercisli, F. Qiao and X. Jiang 2024. Investigation of salt tolerance in cotton germplasm by analyzing agro-physiological traits and ERF genes expression. *Sci. Reports*. 14(1): 11809.
2. Zafar, M. M., A. Ijaz, Z. Anwar, M. S. Iqbal, S. Zafar, M. Subhan, M. F. Seleiman, B. A. Alhammad, M. Aljabri, F. Qiao, A. Shoukat, A. Shakeel, S. Ercisli, A. Ali, A. Razzaq and X. Jiang (14 Dec 2024): Harnessing genetic diversity in cotton for enhanced resilience against

- salt stress by using agro-physiological characters, Plant Production Science, DOI: 10.1080/1343943X.2024.2439874
- 3 Khalid, M. N., A. Shakeel, A. Saeed and G. Mustafa. 2024. Morpho-physiological and biochemical markers for the selection of salt tolerant genotypes in *Gossypium hirsutum*. SABRAO J. Breed. Genet. 56(3):1110-1123.
 - 4 Anwar, M., A. Shakeel, A. Saeed, and M. F. Saleem. 2024. Deciphering salt tolerance in cotton: Unveiling insights from genetic diversity seedling stage growth parameters. Pak. J. Agric. Sci. 61(1):339-349.
 - 5 Zahid, S., I. Afzal, Z. Ahmed and A. Shakeel. 2024. Physiological and biochemical responses of a wide range of quinoa accessions to accelerated ageing conditions. Seed science and Technology. 52(3):343-365
 - 3 Zafar, M. M., A. Ijaz, Z. Anwar, A. Shakeel, F. Qadir, H. Kamal, A. Razzaq and X. Jiang. 2024. Ancient to modern origins: the evolutionary journey of *Gossypium* genus and its implications for cotton breeding. Agrobiological Records. <https://doi.org/10.47278/journal.abr/2024.019>
 - 4 Anam, H., A. Shakeel, A. Saeed, A. I. Khan, M. Jabran, S. Iqbal, A. Abbas and M. Amjad Ali. 2024. Assessment of genetic diversity in Bt cotton germplasm using multivariate analysis. Phytopathogenomics and Disease Control. 3(2): 267-275.
 - 5 Zafar, M. M., M. S. Iqbal, H. Kamal, A. I. Khan, Z. Sarfraz, A. Saeed, A. Razzaq, and A. Shakeel. 2024. Advancing heat tolerance in cotton through integration of multiple stress tolerance indices and multivariate analyses. Int. J. Agric. Biosci. 13(1): 65-75.
 - 6 Farooq, A., A. Shakeel, A. Saeed, J. Farooq, M. Rizwan, W, S, Chatta, G, Sarwar and Y, Rizwan. 2023. Genetic variability predicting breeding potential of upland cotton (*Gossypium hirsutum* L.) for high temperature tolerance. J. Cotton. Res.6:7 <https://doi.org/10.1186/s42397-023-00144-z>
 - 7 Ishaaq, I., R. Maqbool, .A. Shakeel and F. S. Awan. 2023. Identification and characterization of morphophysiological and yield-oriented traits for drought improvement in wheat. Pak. J. Agri. Sci. DOI:10.21162/PAKJAS/23.71
 - 8 Noor, A., K. Ziaf, M. Naveed, K. S. Khan, M. A. Ghani, I. Ahmad, M. H. Siddique, A. Shakeel and A.I. Khan. 2023. L-Tryptophan-dependent auxin-producing plant growth-promoting bacteria improve seed yield and quality of carrot altering the unbel order. Horticulturae.9:954. <https://doi.org/10.3390/horticulturae9090954>
 - 9 Zafar, M. M., W. S. Chatta, A. I. Khan, S. Zafar, M. Subhan, H. Saleem, A. Ali, A. Ijaz, Z. Anwar, F. Qiaie, A. Shakeel, M. F. Seleiman, D.O. Wasonga, A. Parwaz, A. Razzaq and J. Xuefei. 2023. Drought and heat stress on cotton genotypes suggested agro-physiological and biochemical features for climate resilience. Front. Plant Sci. 14:1265700. doi: 10.3389/fpls.2023.1265700
 - 10 Zaif, K., H. M. Talha, M. A. Ghani, I. Ahmad, R. Anwar, B. Ali, Y. Majeed, A. Shakeel, M. Iqbal and A. Zaid. 2023. Differential accumulation pattern of cadmium in plant parts of pea varieties in response to varying cadmium levels. South Afri. J. Bot. 1621:599-606. <https://doi.org/10.1016/j.sajb.2023.08.044>
 - 11 Tahir, M., M. A. Farooq, M.T. Chaudry, U. Akram, M. S. Shafique and A. Shakeel . 2023. A novel parent selection strategy for the development of salt-tolerant cotton cultivars. Plant Genetic Resources: Characterization and Utilization 1–9. <https://doi.org/10.1017/S1479262123000217>
 - 12 Farooq, M.A., W.S. Chattha, M.S. Shafique, U. Karamat, J. Tabusam , S. Zulfiqar and A. Shakeel. 2023. Transgenerational impact of climatic changes on cotton production. Front. Plant Sci. 14:987514. doi: 10.3389/fpls.2023.987514

- 13 Saleem, A. M., K. Ziaf, M. Amjed, A. Shakeel, M. A. Ghani and A. Noor. 2023. Assessment of genetic diversity among okra genotypes through PCA and correlation analysis for fruit tenderness, and morphological and yield traits. Pak. J. Bot. 55(2):555-562. DOI: [http://dx.doi.org/10.30848/PJB2023-2\(34\)](http://dx.doi.org/10.30848/PJB2023-2(34))
- 14 Imtiaz, M., A. Shakeel, A.I. Khan and M.S.N. Rehman. 2023. Identification of potential plant material and genetic analysis for drought tolerance in upland cotton based on physiological indicators. Pak. J. Bot., 55(4): DOI: [http://dx.doi.org/10.30848/PJB2023-4\(15\)](http://dx.doi.org/10.30848/PJB2023-4(15))
- 15 Zafar, M. M., A. Rehman, A. Razzaq, A. Parvaiz, G. Mustafa, F. Sharif, H. Mo, Y. Youlu, A. Shakeel and M. Ren. 2022. Genome-wide characterization and expression analysis of Erf gene family in cotton. BMC Plant Biology. 22(1): 1-18.
- 16 Zafar, M. M., Y. Zhang, M. A. Farooq, A. Ali, H. Firdous, M. Haseeb, S. Fiaz, A. Shakeel, A. Razzaq and M. Ren. 2022. Biochemical and associated agronomic traits in *Gossypium hirsutum* L. under high-temperature stress. Agronomy. 12(6): 1310.
- 17 Zafar, M. M., A. Razzaq, M. A. Farooq, A. Rehman, H. Firdous, A. Shakeel, H. Mo, M. Ren, M. Ashraf and Y. Youlu. 2022. Genetic variation studies of ionic and within boll yield components in cotton (*Gossypium Hirsutum* L.) Under salt stress. J. Nat. Fibers. 19(8): 3063-3082.
- 18 Aleem, M., S. Aleem, I. Sharif, Z. Wu, M. Aleem, A. Tahir, R. M. Atif, H. M. N. Cheema, A. Shakeel, S. Lei and D. Yu. 2022. Characterization of SOD and GPX Gene Families in the Soybeans in Response to Drought and Salinity Stresses. Antioxidants. 11(3): 460.
- 19 Manan, A., M. M. Zafar, M. Ren, M. Khurshid, A. Sahar, A. Rehman, H. Firdous, Y. Youlu, A. Razzaq and A. Shakeel. 2022. Genetic analysis of biochemical, fiber yield and quality traits of upland cotton under high-temperature. Plant Production Science. 25(1): 105-119.
- 20 Zafar, M. M., G. Mustafa, F. Shoukat, A. Idrees, A. Ali, F. Sharif, A. Shakeel, H. Mo, Y. Youlu, Q. Ali and A. Razzaq. 2022. Heterologous expression of cry3Bb1 and cry3 genes for enhanced resistance against insect pests in cotton. Scientific Reports. 12(1): 1-11.
- 21 Imtiaz, M., A. Shakeel, A.I. Khan and M. S. N. Rehman. 2022. Estimation of genetic effects and interrelationship of morpho-physiological and biochemical attributes for drought tolerance in upland cotton (*Gossypium hirsutum* L.). Pak. J. Agri. Sci. 59(3): 391-403.
- 22 Ali, I., A. Shakeel, M. T. Mahmood, M. Zubair, W. Anum, A. Zafar, A. Ali, M. I. Shahid, S. Naz and S. W. H. Shah. 2022. Breeding drought tolerant cotton; with an emphasis on within boll yield components. Pak-Euro Journal of Medical and Life Sciences. 5(2): 365-372.
- 23 Bilal, H., A. Shakeel, W. S. Chattha, M. T. Azhar, S. A. Azhar And M. Rizwan. 2021. Genetic variability studies of seed cotton yield and fibre quality in upland cotton (*Gossypium Hirsutum* L.) grown under salinity stress. Pak. J. Bot. 54: 6.
- 24 Zafar, M. M., A. Mana, A. Razzaq, M. Zulfiqar, A. Saeed, M. Kashif, A. I. Khan, Z. Sarfraz, H. Mo, M. S. Iqbal, A. Shakeel and M. Ren. 2021. Exploiting agronomic and biochemical traits to develop heat resilient cotton cultivars under climate change scenarios. Agronomy. 11(9): 1-14.
- 25 Zafer, M. M., A. Shakeel, M. Haroon, A. Manan, A. Sahar, A. Shoukat, H. Mo, M. A. Farooq and M. Ren. 2021. Effects of salinity stress on some growth, physiological, and biochemical parameters in cotton (*Gossypium hirsutum* L.). J. Nat. Fibers. DOI: [10.1080/15440478.2021.1975596](https://doi.org/10.1080/15440478.2021.1975596)
- 26 Farooq, A., A. Shakeel, W. S. Chattha, T. M. Khan, M. T. Azhar and A. Saeed. 2021. Genetic variability in cotton germplasm: predicting the agro physiological markers for high-temperature tolerance. The Journal of Agricultural Science 1–12. <https://doi.org/10.1017/S002185962100036>

- 27 Farooq, M. A., A. Shakeel, M. M. Zafar, M. Farooq, W. S. Chatta and T. Husnain. 2020. A study toward the development of salt tolerance upland cotton (*Gossypium hirsutum* L.). J. Natural Fibers.doi.org/10.1080/15440478.2020.1854144
- 28 Farooq, M. A., A. Shakeel, W. S. Chattha and M. Tahir.(2020) Two-year study on combining ability and heterotic potential in functional traits under salt stress in upland cotton *Gossypium hirsutum* L.. Plant Breed. 00:1–23. https://doi.org/10.1111/pbr.1287
- 29 Ali, S., T.M. Khan, A. Shakeel and M.F. Saleem. 2020. Genetic basis of variation for physiological and yield contributing traits under normal and high temperature stress in *Gossypium hirsutum* L. Pak. J. Agri. Sci. 57(6):1491-1501.
- 30 Zafar, M. M., A.Razzaq, M. A. Farooq, A. Rehman, H. Firdous, A. Shakeel, H.mo and M. Ren (2020). Insect resistance management in *Bacillus thuringiensis* cotton by MGPS (multiple genes pyramiding and silencing). J. Cotton. Res.3:33.doi.org/10.1186/s42397-020-00074-0
- 31 Chaudhary M. T, A Shakeel, I.A Rana, M.T Azhar. 2020. Evaluation of morpho-physiological and biochemical attributes of cotton under salt stress. Intl J Agric Biol 24:1061–169
- 32 Naeem, M., M. Iqbal, A. Shakeel, Sami-ul-Allah, M. Hussain, A. Rehman, Z. U. Zafar, H.R. Akhtar and M. Ashraf. 2020. Genetic basis of ion exclusion in salinity stressed wheat: implications in improving crop yield. Plant Growth Regul. Doi.org/10.1007/s10725-020-00659-4
- 33 Chatta, W.S., R. M. Atif, M. Iqbal, W. Shafqat, M. A. Farooq and A. Shakeel. 2020. Genome-wide identification and evolution of Dof transcription factor family in cultivated and ancestral cotton species. Genomics.112.4155-4170
- 34 Nazir M.S., T.A. Malik, A. Shakeel and J.N. Ahmad. 2020. Genetics of okra leaf and agronomic traits in Upland cotton. Pak. J. Agri. Sci. 57(1), 109-114
- 35 Aneeq-ur- Rehman., J. Iqbal, A. Shakeel, Zia ul Qamar and P. Rana . 2020. Hardy-Weinberg equilibrium study of six morphogenetic characters in a population of Punjab, Pakistan, All Life. 13:1, 213-222
- 36 Razzaq. A., A. Ali, L.B. Safdar, M.M. Zafar, Y. Rui, A. Shakeel, A. Shaukat, M. Ashraf, W. Gong and Y. Yuan. 2020. Salt stress induces physiochemical alteration in rice grain composition and quality. J. Food Sci. 85(1): 14-20.
- 37 Chatha, W.S., A. Shakeel, M. Iqbal, M. Yaseen, M. Amin and N. Mahmood. 2020. Quantifying the effects of water deficit on cotton genotypes using agro-physiological and biochemical parameters. Journal of Natural Fibers, DOI: 10.1080/15440478.2019.1710654.
- 38 Farooq, A., A. Shakeel, S. Ahmad, T.M. Khan and I. Afzal. 2020. Evaluation of breeding potential of cotton germplasm of Pakistan origin for fiber quality traits under heat stress. Int. J. Agric Biol. 23: 311-318.
- 39 Saleem, M.F., M.A. Kamal, M. Shahid, A. Saleem, A. Shakeel and S.A. Anjum. 2020. Exogenous selenium instigated physiochemical transformations impart terminal heat tolerance in Bt Cotton. J. Soil Sci. Plant Nutr. 20: 274-283.
- 40 Nazir M.S., T.A. Malik, A. Shakeel and J.N. Ahmad. 2019. Potential resistance of okra leaf Bt Cotton against insect pest. Applied Eco. Envir. Res. 17(3): 5465-5469.
- 41 Farooq, M.A., A. Shakeel, R.M. Atif and M.F. Saleem. 2019. Genotypic variations in salinity tolerance among Bt cotton. Pak. J. Bot., 51(6): 1945-1953.
- 42 Parveen, N., A. Shakeel, T.A. Malik and F.S. Awan. 2019. Genetic studies for improving seed yield and quality traits including carotenoids, chlorophyll and protein contents in pea (*Pisum sativum* L.). Pak. J. Bot., 51(6): 2110-2119.

- 43 Chattha, W.S., M. Iqbal, A. Shakeel, H.M. Akram, M.A. Khan, M. Naeem and S. Kamaran, 2019. Genetic analysis for some agro-physiological traits to improve drought tolerance in cotton. *Intl. J. Agric. Biol.*, 22: 355–362
- 44 Ullah, A., A. Shakeel, T. A. Malik and M. F. Saleem. 2019. Combining ability analysis of various fibre quality traits under normal and water deficit conditions in cotton. *Pak. J. Agri. Sci.* 56(2):359-366.
- 45 Rehman, F., A. Seed, M. Yaseen, A. Shakeel, K. Ziaf, H. Munir, S.A. Tariq, M.A. Raza and A. Riaz. 2019. Genetic evaluation and Characterization using cluster heat map to assess NaCl tolerant in tomato germplasm at seedling stage. *Chilean J. Agric. Res.* 79(1):56-65 DOI: 10.4067/507185839201900010056
- 46 Chaudhary, M.T., S. Majeed, **A. Shakeel**, Y. Jia, X. Du, M. T. Azhar. 2019. Estimation of heterosis and combining ability for some quantitative parameters in *Gossypium hirsutum*. *Intl J. Biosciences*, 15: 166-173
- 47 Saleem, M. F., A. Shakoor, M. Shahid, M. A. Cheema, A. Shakeel, M. Shahid, M. U. Tahir and M. F. Bilal. 2018. Removal of early fruit branches as potential regulator of Cry 1Ac, antioxidants, senescence and yield in Bt. Cotton. *Industrial crops & Products*. 124:885-898
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- 49 Shakoor, A., M. F. Saleem, S. A. Anjum, A. Shakeel and M. Shahid. 2018. Evaluating cotton genotypes for heat stress tolerance using biochemical markers and seedling traits as screening tool. *Philipp Agric Scientist* 101(2):119-127
- 50 Shakeel, A., M.T. Azhar, I. Ali, Qurat-ul-Ain, Zia Ullah Zia, W. Anum, A. Ammar and A. Zafar. 2018. Genetic diversity for seed cotton yield parameter, protein and oil contents among various Bt. Cotton cultivar. *Int. J. Biosci.* 12(1):242-251.
- 51 Nazir, M.S., A.A. Khan, R.S.A. Khan, H.M.N. Cheema and A. Shakeel. 2018. Sustainable cotton production under Clcu D threats. *Pak. J. Agri. Sci.* 55(2):279-285.
- 52 Arfan, M., A. Shakeel, T.M. Khan and I. Afzal. 2018. Genetic basis of variation for high temperature tolerant in upland cotton. *Int. J. Agric. Biol.* DOI:10.17957/IJAB/15.0801
- 53 Farooq, M.A., A. Shakeel, R.A. Atif and M.F. Saleem. 2018. Genetic variability studies for salinity tolerant in *Gossypium hirsutum*. *Int. J. Agric. Biol.* DOI:10.17957/IJAB/15.0849
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- 56 Khokhar, E.S., A. Shakeel, M.A. Maqbool, M.K. Abuzar, S. Zareen, S.S. Aamir and M. Asadullah. 2018. Studying combining ability and heterosis in different cotton (*Gossypium hirsutum* L.) genotypes for yield and yield contributing traits. *Pak. J. Agri. Res.* 31(1): 55-6
- 57 Rehman, A., A. Shakeel, M.T. Azhar and Ikram-ul-Haq. 2017. Biplot and cluster analysis of some water stress tolerance related traits in upland cotton. *J. Environ. Agric.* 2(1) 146-156.
- 58 Raza, H., I. A. Rana, A. Shakeel, L. Hinze, J. Ferlichowski and M. T. Azhar. 2017. Genetic diversity in *Gossypium hirsutum* L. for cotton leaf curl virus disease in association with agronomic and fibre traits. *Pak. J. Phytopathol.* 29(1) 47-56.
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ABSTRACTS PUBLISHED/PRESENTED

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URDU ARTICLE/ BROCHURE

- Recommendations for cotton picking.
- Cotton – The most profitable crop.
- Cultivation and benefits of hybrid maize
- Cultivation of short duration cotton
- Some important rules for the cultivation of cotton
- Cultivation of Cotton