

Curriculum Vitae



Personal Profile:

Name: Asif Iqbal
Date of Birth: 19 April 1992
Passport No: TU1337281
Nationality: Pakistani
Permanent Address: Dir (Lower), Khyber Pakhtunkhwa Pakistan
Cell #: +8615510738545; +923015707928
E-mail: asif173aup@gmail.com, dr.asifiqbal@hu.edu.pk,
asifiqbal@pku-iaas.edu.cn

RESEARCH FOCUS

1. Crops' eco-physiology particularly the study of adaptive mechanisms in crop plants under biotic and abiotic stresses.
2. Genetic evaluation of crop germplasms against biotic and abiotic stress tolerance.
3. Evaluation of most important traits for future breeding.
4. Molecular evaluation of plants in response to various stresses.
5. Crop and soil management under varying environmental conditions for improved biomass production.

LANGUAGES

English	Speaking, reading and writing
Urdu	Speaking, reading and writing
Pashto	Speaking only (Mother tongue)
Chinese	Communication only

EDUCATION

Post Doctorate (2020-2022) – Biochemistry and molecular biology

Sponsored by China Postdoctoral Organization and Cotton Research Institute of Chinese Academy of Agricultural Sciences, Anyang, Henan, China. Research conducted on “The physiological and molecular mechanisms of phosphorus use efficiency in cotton”.

Advisor: Prof. Dr. Du Xiongming.

Ph.D. (2017 – 2020) Crop cultivation and farming system (Agronomy)

Sponsored by Chinese Scholarship Council, China

State Key Laboratory of Cotton Biology, Institute of Cotton Research, Chinese Academy of Agricultural Sciences, Anyang, Henan, China. Research conducted on “The physiological and molecular mechanisms of nitrogen use efficiency in cotton”.

Advisor: Prof. Dr. Song Meizhen.

Master of Science (Hons) in Agriculture (Agronomy) (2015 – 2016)

Department of Agronomy, The University of Agriculture, Peshawar, Pakistan. Worked on the “Plant residues, organic and inorganic phosphorus management for

improving growth and yield of hybrid maize with and without phosphate solubilizing bacteria”.

Bachelor of Science (Hons) in Agriculture (Agronomy) (2011 – 2014)

Department of Agronomy, The University of Agriculture, Peshawar, Pakistan.

Studied the department of Agronomy specialization courses and conducted researches on “Effect of potassium rates and application timing on growth and yield of maize with and without cattle manure”.

Higher Secondary School Certificate (2010)

Higher Secondary School Certificate from Board of Intermediate and Secondary Education, Malakand, Pakistan. (Pre-Medical Group, 1st division).

Secondary School Certificate (2009)

Secondary School Certificate from Board of Intermediate and Secondary Education, Malakand, Pakistan. (Science Group, 1st division).

ACADEMIC DISTINCTIONS AND AWARDS

1. **Young Scientist Award**, by the VDGGOOD professional association for international scientist awards on engineering, science and medicine (2021).
2. **Nominated for Best Thesis Award**, by the crop science committee of Chinese Academy of Agricultural Sciences for best performance during Ph.D. studies (July 2020).
3. **Outstanding Graduate Student**, awarded by the Chinese Academy of Agricultural Sciences for best performance during Ph.D. studies (July 2020).
4. **Chinese Government Scholarship for Ph.D.**, awarded by Chinese Scholarship Council (2017-2020).
5. **Departmental Gold Medal** for obtaining 1st position amongst all the successful candidates of the **M.Sc. (Hons) Agronomy** for academic session 2015-2016. (CGPA: 3.98/4.00).
6. **HEC merit and need-based scholarship for master studies**, awarded by Higher Education of Pakistan. (2015-2016).
7. **Naway Sahar Laptop** (A tribute to youth talent), awarded by the provincial government of Khyber Pukhtunkhwa, Pakistan, 2013.
8. **Best Academic Performance award** on occasion of Tameer-E-Pakistan talent tribute 2013. Organized by study aid foundation for excellence (SAFE) The University of Agriculture Peshawar.
9. **Merit Academic Certificate** awarded by society of young agronomist (SOYA) Department of Agronomy, The University of Agriculture Peshawar for Best Performance in the Class.

10. **Academic award for Best Performance** in the year 2014 by study aid foundation for excellence (SAFE) The University of Agriculture Peshawar.

CONFERENCE(S), WORKSHOP(S) & TRAINING(S) ATTENDED

1. Conference on “Sustainable Crop and Animal Production Systems. Organized by Pakistan Agricultural Scientist Forum and The University of Haripur. Held on December 8-10, 2016.
2. 2-Days Training Course on “Sericulture and Apiculture” from December 6-7, 2016.
3. Three-Days National Conference on “Thinking Climate Change Adaptation in Water and Farming” Think-Adapt. November, 28-30, 2016.
4. The Mega Event “Feature Film & Skit Competition” Organized by Agri-Anti Narcotics Society. The University of Agriculture Peshawar-Pakistan on May, 2016.
5. Four-day training course on “Integrated Rural Development” held at Pakistan Academy for Rural Development Peshawar. March 07-10, 2016.
6. Workshop on Informatics for Writing Manuscripts. February 25, 2016.
7. Mega Innovation and Entrepreneurship Event (DICE-2015) November 24-25, 2015.
8. One-day workshop/ training on “Urban Environmental Issues” Arrange by USAID. May 7, 2015.
9. Certificate Awarded after participated in one-day workshop on “Emergency Management” Organized by The University of Agriculture, Peshawar & Rescue 1122, Peshawar. April 15, 2015.
10. Nutrition and Health Awareness. Organized by Society of Nutrition & Dietetics Department of Human Nutrition, The University of Agriculture Peshawar. May 20, 2014.
11. One-day national seminar on “Exploitation of plants’ oil for direct use as biodiesel in the changing climate of Pakistan” Organized by Agriculture University Teachers Association (AUTA) Peshawar. June 19, 2014.
12. One-day workshop on “Role of Agriculture in Economic Development of Pakistan” Organized by provincial Youth Assembly.
13. International Conference on “Sustainable Crop Productivity: Threats and Options” April 11-12, 2013 at Ayub Agricultural Research Institute, Faisalabad-Pakistan.
14. International Conference on “Climate Change: A Challenge for Agriculturists” Organized under HEC Sponsored Project. May 28-30, 2012.
15. Certificate awarded on the occasion of “International Volunteer’s Day” By National Commission for Human Development. December 5, 2010.
16. The 3rd Sino-Pak International Conference on Innovations in Cotton Breeding and

Biotechnology. Xinjiang, China. September, 2019.

17. 2nd Talent Recruitment & Project Matchmaking Event for Innovation & Development and Opening-up Innovation and International Technology Transfer Conference, Zhengzhou, Henan, China. 2019.

18. 3rd Talent Recruitment & Project Matchmaking Event for Innovation & Development and Opening-up Innovation and International Technology Transfer Conference, Zhengzhou, Henan, China. 2020.

EMPLOYMENT / PROFESSIONAL EXPERIENCE

<u>POSITION</u>	<u>ORGANIZATION</u>	<u>PERIOD</u>
Assistant Professor	Hazara University Mansehra, Pakistan	Feb. 2022-till date
Associate Professor	Peking University Institute of Advanced Agriculture Sciences, China	Aug. 2022-Feb. 2023
Postdoctoral Fellow	Cotton Research Institute of Chinese Academy of Agricultural Sciences, China	Aug. 2020-Aug. 2022
Research Assistant	The University of Agriculture Peshawar, Pakistan	Jan. 2017-Sep. 2017

First-author SCI articles	Total SCI Articles	Articles under review	Book Chapter	Book	Total publications	Total impact factor	Total Citation	H- index
17	30	3	5	2	>60	~133.799	735	15

PEER-REVIEWED PUBLICATIONS (Impact factor Journals)

1. **Iqbal, A., Dong, Q., Wang, X., Gui, H., Zhang, H., Zhang, X., and Song, M. 2023.** Integrative physiological, transcriptome and metabolome analysis reveals the involvement of carbon and flavonoid biosynthesis in low phosphorus tolerance in cotton. **Plant Physiology and Biochemistry. 196: 302–317. (IF = 5.437).**
2. **Iqbal, A., Dong, Q., Wang, X., Gui, H., Zhang, H., Zhang, X., and Song, M. 2023.** Phosphorus and carbohydrate metabolism contributes to low phosphorus tolerance in cotton. **BMC Plant Biology. 23: 97, (IF = 5.26).**

3. **Kayoumu, M.[#], Iqbal, I.[#]**, Noor, M., Xiaotong, L., Leilei, L., Xiangru, W., Huiping, G., Qian, Q., Sijia, R., Ruishi, G., Xiling, Z., Meizhen, S. and Qiang, Dong. **2023**. Phosphorus Availability Affects the Photosynthesis and Anti-oxidant System of Contrasting Low P Tolerant Cotton Genotypes. **Antioxidants**. **12**, 466. (IF = 7.675).
4. **Iqbal, A.**, Niu, J., Dong, Q., Wang, X., Gui, H., Zhang, H., Nianchnag, P., Zhang, X., and Song, M. **2022**. Physiological characteristics of cotton subtending leaf are associated with yield in contrasting N-efficient cotton genotypes. **Frontiers in Plant Science**. **13**: 825116, (IF = 6.627).
5. **Iqbal, A.**, Gui, H., Wang, X., Zhang, H., Zhang, X., and Song, M. **2022**. Genome-wide expression analysis reveals involvement of asparagine synthetase family in cotton development and nitrogen metabolism. **BMC Plant Biology**. **22**: 122, (IF = 5.26).
6. **Iqbal, A.**, Niu, J., Gui, H., Wang, X., Zhang, H., Zhang, X., and Song, M. **2023**. Genotypic variation in carbon and nitrogen metabolism in the cotton subtending leaves and seed cotton yield under various nitrogen levels. **Journal of the Science of Food and Agriculture**. DOI: 10.1002/jsfa.12412, (IF = 4.125).
7. **Iqbal, A.**, Gui, H., Wang, X., Zhang, H., Zhang, X., and Song, M. **2022**. Low phosphorus tolerance in cotton genotypes is regulated by root morphology and physiology. **Journal of Plant Growth Regulation**. doi.org/10.1007/s00344-022-10829-5, (IF = 4.64).
8. **Iqbal, A.**, Dong, Q., Wang, X., Gui, H., Zhang, H., Nianchnag, P., Zhang, X., and Song, M. **2023**. Genotypic variation in cotton genotypes for low phosphorus tolerance and efficiency under different growth conditions. **Gesunde Pflanzen**. <https://doi.org/10.1007/s10343-022-00823-y>, (IF = 2.082).
9. **Iqbal, A.**, Dong, Q., Wang, X., Gui, H., Zhang, H., Nianchnag, P., Zhang, X., and Song, M. **2022**. N-efficient cotton genotype grown under low nitrogen shows relatively large root system, high biomass accumulation and nitrogen metabolism. **Agronomy Journal (Wiley)**. **114**: 582–600, (IF = 2.65).
10. **Iqbal, A.**, Dong, Q., Wang, X., Gui, H., Zhang, H., Zhang, X., and Song, M. **2020**. Transcriptome Analysis Reveals Differences in Key Genes and Pathways Regulating Carbon and Nitrogen Metabolism in Cotton Genotypes under N Starvation and Resupply. **International Journal of Molecular Sciences**, **21**, 1500; doi:10.3390/ijms21041500, (IF = 6.208).

11. **Iqbal, A.,** Dong, Q., Wang, Z., Wang, X., Gui, H., Zhang, H., Nianchnag, P., Zhang, X., and Song, M. **2020.** Growth and nitrogen metabolism are associated with nitrogen-use efficiency in cotton genotypes. **Plant Physiology and Biochemistry, 149, (2020): 61–74, (IF = 5.437).**
12. **Iqbal, A.,** Dong, Q., Wang, X., Gui, H., Zhang, H., Zhang, X., and Song, M. **2020.** Variations in nitrogen metabolism are closely linked with nitrogen uptake and utilization efficiency in cotton genotypes under various nitrogen supplies. **Plants, 9, 250; doi:10.3390/plants9020250, (IF = 4.658).**
13. **Iqbal, A.,** Dong, Q., Wang, X., Gui, H., Zhang, H., Zhang, X., and Song, M. **2020.** High nitrogen enhance drought tolerance in cotton through antioxidant enzymatic activities, nitrogen metabolism and osmotic adjustment. **Plants, 9, 178; doi:10.3390/plants9020178, (IF = 4.658).**
14. **Iqbal, A.,** Dong, Q., Madeeha A., Wang, X., Gui, H., Zhang, H., Nianchnag, P., Zhang, X., and Song, M. **2020.** Untangling the molecular mechanisms and functions of nitrate to improve nitrogen use efficiency. **Journal of the Science of Food and Agriculture, 100: 904–914, (IF = 4.125).**
15. **Iqbal, A.,** Dong, Q., Wang, X., Gui, H., Zhang, H., Nianchnag, P., Zhang, X., and Song, M. **2020.** Nitrogen preference and genetic variation of cotton genotypes for nitrogen use efficiency. **Journal of the Science of Food and Agriculture, (wileyonlinelibrary.com) DOI 10.1002/jsfa.10308, (IF = 4.125).**
16. **Iqbal, A.,** Gui, H., Zhang, H., Wang, X., Nianchnag, P., Dong, Q., and Song, M. **2019.** Genotypic Variation in Cotton Genotypes for Phosphorus-Use Efficiency. **Agronomy, 9, 689; doi:10.3390/agronomy9110689, (IF = 3.949).**
17. **Iqbal, A.,** Amanullah, M. Iqbal. **2015.** Impact of potassium rates and their application time on dry matter partitioning, biomass and harvest index of maize (*Zea mays*) with and without cattle dung application. **Emirates Journal of Food and Agriculture. 2015. 27(5): 447-453, (IF = 1.041).**
18. Amanullah, **Asif Iqbal,** Ali A, Fahad S and Parmar B. **2016.** Nitrogen Source and Rate Management Improve Maize Productivity of Smallholders under Semiarid Climates. **Frontiers in Plant Science. 7: 1-9. doi: 10.3389/fpls.2016.01773, (IF = 6.627).**
19. Amanullah, Shams. Ul Tamraiz Khan, **Asif Iqbal** and Shah Fahad. **2016.** Growth and productivity response of hybrid rice to application of animal manures, plant residues and phosphorus. **Frontiers in Plant Sciences.7: 1-10, (IF = 6.627).**

20. Amanullah, **Asif Iqbal**, Irfanullah & Zeeshan Hidayat. **2016**. Potassium management for improving growth and grain yield of maize (*Zea mays* L.) under moisture stress condition. **Scientific Reports (Nature)**, **6**, 34627; doi: 10.1038/srep34627, (IF = 4.996).
21. Amanullah, **Asif Iqbal**, et al. **2019**. Integrated Management of Phosphorus, Organic Sources, and Beneficial Microbes Improve Dry Matter Partitioning of Maize. **Communications in Soil Science and Plant Analysis**. doi.org/10.1080/00103624.2019. 1667378, (IF = 1.58).
22. Shah, S. A. A. Mian, I. A. Sharif, M., **Asif Iqbal** et al. **2020**. Foliar sulphur application and its timings improve wheat (*Triticum aestivum* L.) productivity in semiarid climate. **Applied Ecology and Environmental Research** **18(3):3873-3885**, (IF = 0.816).
23. Jing, N., H. Gui, **Asif Iqbal** et al. **2020**. N-Use Efficiency and yield of cotton (*G. hirsutum* L.) are improved through the combination of N-Fertilizer reduction and N-efficient cultivar. **Agronomy** **2021, 11, 55**. <https://doi.org/10.3390/11010055> (IF = 3.949).
24. Saeed, M. **Asif Iqbal** et al. **2020**. Comparisons of weed suppression and strawberry yield obtained with organic and synthetic mulches and herbicides. **Pakistan Journal of Botany**. **52(6): 1999-2002**. (IF = 1.101).
25. Waqar Afzal Malik, Imran Mahmood, Abdul Razzaq, Maria Afzal, Ghulam Abbas Shah, **Asif Iqbal**, Muhammad Zain, Allah Ditta, Saeed Ahmed Asad, Ishfaq Ahmad, Naimatullah Mangi & Wuwei Ye. **2021**. Exploring potential of copper and silver nano particles to establish efficient callogenesis and regeneration system for wheat (*Triticum aestivum* L.). **GM Crops & Food Biotechnology in Agriculture and the Food Chain**. <https://doi.org/10.1080/21645698.2021.1917975>. (IF = 3.118).
26. Ning W, Xiangru W, Qian Q, **A. Iqbal**, Hengheng Z, Jianbin S, Qiang D, Qinghua X, Xiaohong L, Huiping G, Meizhen S, Xiling Z, and Gentu Y. **2022**. Analysis of the effects of mepiquat chloride priming on the seedling growth-promoting in cotton under salt stress by multi-omics. **Industrial Crops & Products** **186 (2022) 115296**. (IF = 6.449).
27. Leilei L., Q. Qi, H. Zhang, Q. Dong, **A. Iqbal**, H. Gui, M. Kayoumu, M. Song, X. Zhang and X. Wang. **2022**. Ameliorative Effects of Silicon against Salt Stress in *Gossypium hirsutum* L. **Antioxidants** **2022, 11, 1520**. (IF = 7.675).
28. Dong, Q., W., Guoxin, W., **A. Iqbal**, M. Noor, Wang, X., Gui, H., Zhang, M. Kayoumu, X. Li, Zhang, X., and Song, M. **2022**. Identification and Expression

Analysis of the NPF Genes in Cotton. **International Journal of Molecular Sciences**. **23**, 14262. (IF = 6.208).

29. Mirezhatijiang, K., Xiaotong, L., **Iqbal, A.**, Wang, X., Gui, H., Qian Q., Sijia R., Ruishi, G., Dong, Q., Zhang, X., and Song, M. **2022**. Genetic variation in morphological traits in cotton and their roles in increasing phosphorus-use efficiency in response to low phosphorus availability. **Frontiers in Plant Science**. **13**:1051080, (IF = 6.627).
30. **Iqbal, A.**, Dong, Q., Wang, X., Gui, H., Zhang, H., Nianchnag, P., Zhang, X., and Song, M. **2021**. Genotypic variation in root morphology, cotton subtending leaf physiology and fiber quality against nitrogen. **Journal of Cotton Research**. **4**: 32. <https://doi.org/10.1186/s42397-021-00107-2>.
31. **Iqbal, A.**, Amanullah, Song, M., Shah, Z., Madeeha, A., Iqbal, M. 2019. Integrated use of plant residues, phosphorus and beneficial microbes improve hybrid maize productivity in semiarid climates. **Acta Ecologica Sinica** **39**: 348-355.

PUBLICATIONS in Non-Impact Factor Journals

32. **Iqbal, A.**, Amanullah, Song, M., Shah, Z., Madeeha, A., Iqbal, M. **2019**. Integrated use of plant residues, phosphorus and beneficial microbes improve hybrid maize productivity in semiarid climates. **Acta Ecologica Sinica** **39**: 348-355.
33. Iqbal, M., Bilal, S.A., **Iqbal, A.**, Madeeha, A. et al. **2019**. Distribution of *Quercus leucotrichophora* at different location and elevation in Jandool Valley, Northern Pakistan. **Acta Ecologica Sinica**. **39**: 438-442.
34. Amanullah, Khan, N., Khan, M.I., **Iqbal, A.** **2019**. Wheat biomass and harvest index increases with integrated use of phosphorus, zinc and beneficial microbes under semiarid climates. **Journal of Microbiol, Biotechnology and Food Sciscinces**. **9** (2) 242-247.
35. Madeeha, A., Shazma, A., **Iqbal, A.**, Song, M., Iqbal, M., Sara, Ramzan, M., and Tabassum, A. **2018**. Application of organic sources and nitrogen affect dry matter partitioning in wheat under tillage systems. **Pakistan Journal of Agricultural Research**. **31**(2): 106-115.
36. **Iqbal, A.**, Amanullah, Ali, A., Iqbal, M. et al. **2017**. Integrated use of phosphorus and organic matter improve fodder yield of Moth bean (*Vigna aconitifolia* (Jacq.) under irrigated and dryland conditions of Pakistan. **Journal of AgriSearch**. **4**(1):10-15.
37. Amanullah, Saifullah, Nawab, K., **Iqbal, A.** et al. **2017**. Response of summer pulses (mung bean vs. mash bean) to integrated use of organic carbon sources and

- phosphorus in dry lands. **African Journal of Agricultural Research**. **12(50): 3470-3490. DOI: 10.5897/AJAR2017.12745.**
38. Amanullah, Khan, S., **Iqbal, A.**, and Ali, A. **2017.** Beneficial microorganism and phosphorus application influence growth, biomass and harvest index in irrigated and dryland wheat under calcareous soils in semiarid condition. **Journal of AgriSearch**. **4(2): 92-97.**
 39. Madeeha, A., Anwar, S., **Iqbal, A.**, Parmar, B., and Iqbal, M. **2017.** Organic sources, nitrogen and tillage systems improve wheat productivity and profitability under semiarid climates. **Journal of Pharmacognosy and Phytochemistry**. **SP1: 73-78.**
 40. Fahad, U.K., Khan, A.A., **Iqbal, A.**, Iqbal, M., Madeeha, A. **2017.** Effect of phosphorus and rhizobium inoculation on yield and yield components of mungbean. **Journal of Pharmacognosy and Phytochemistry**. **SP1: 252-258.**
 41. Shazma, A., Faraz, M., **Iqbal, A.**, Islam, M., Iqbal, M., Madeeha, A. **2017.** Phosphorus management improve productivity of wheat varieties under semiarid climates. **Journal of Pharmacognosy and Phytochemistry**. **SP1: 259-263.**
 42. Rawan, S., Farzana, B., Nadeem, K., **Iqbal, A.**, and Madeeha, M. **2017.** Postharvest Life of Guava (*Psidium guajava* L.) Varieties as Affected by Storage Intervals at Room Temperature. **Pakistan Journal of Agricultural Research**. **30(2): 155-161.**
 43. Amanullah, Zahid, A., **Iqbal, A.**, and Ikramullah. **2016.** Phosphorus and Tillage Management for Maize under Irrigated and Dryland Conditions. **Annals of Plant Sciences**. **5.3: 1304-1311.**
 44. Muntaha, S., Iqbal, M., Shamia, Madeeha, A., **Iqbal, A.** **2018.** Identification of most important weed species in wheat crop under high altitude in northern Pakistan. **Journal of Pharmacognosy and Phytochemistry**. **SP1: 913-917.**
 45. Shah, S.T., Sami, U., Nadeem, K., **Iqbal, A.**, Iqbal, M. **2016.** Effect of zinc as a foliar spray on growth and flower production of Marigold (*Tagetes erecta* L.). **Pure and Applied Biology**, **5(4): 738-743.**
 46. Wasim, A., S. Anwar, W. Akram, Madeeha, A., and **Iqbal, A.** **2016.** Response of barley varieties to phosphorus and sulphur levels. **Pure and Applied Biology**. **Pure and Applied Biology**, <http://dx.doi.org/10.19045/bspab.2016.50032>.
 47. Khan, N., Shah, S.T., and **Iqbal, A.** **2016.** Propagating media affects mango seed germination at different depths. **Pure and Applied Biology**. <http://dx.doi.org/10.19045/bspab.2016.50051>.

48. Kakar, K.M., Amanullah, Saleem, M., and **Iqbal, A.** 2015. Effect of irrigation levels and planting methods on phenology, growth, biomass and harvest index of spring Wheat under semiarid condition. **Pure and Applied Biology.** 4(3): 375-383.
49. Amanullah, Bashir, S.F., Qahar, A., Shah, S., Ahmad, B., and **Iqbal, A.** 2015. Interactive effects of nitrogen and sulfur on growth, dry matter partitioning and yield of maize. **Pure and Applied Biology.** 4(2): 164-170.
50. Amanullah, Ijaz, M., Kakar, K.M., Jan, A., **Iqbal, A.**, and Fahad, S. 2015. Impact of tillage systems on growth and yield of Mungbean (*Vigna radiata* L., Wilczek) varieties under dryland condition. **Pure and Applied Biology.** 4(3): 331-339.
51. Kakar, K.M., Amanullah, and **Iqbal, A.** 2015. Effect of irrigation levels and bed-system of planting on seed fill duration, seed growth rate, yield and yield components of spring wheat (*Triticum aestivum*) under semiarid condition. **Pure and Applied Biology.** 4(4): 511-521.
52. Nadeem Khan, Abdul Mateen Khattak, Syed Tanveer Shah and **Asif Iqbal.** 2021. Influence of humic acid and potassium on the growth and yield of squash (*Praecitrullus fistulosus* L.). **Journal of horticultural science & ornamental plants.** 13(3): 321-329.
53. Nadeem Khan and **Asif Iqbal.** 2021. Foliar application of micronutrients on gladiolus plants. **Journal of innovative agriculture:** 8(3): 1-3.
54. Nadeem Khan, Muhammad Ayaz Khan, and **Asif Iqbal.** 2021. Weeds control through allelopathic extracts from different plants. **Journal of innovative agriculture:** 8(3): 4-7.

ARTICLES UNDER REVIEW/PROCESSING

55. **Iqbal, A.**, Dong, Q., Wang, X., Gui, H., Zhang, H., Nianchnag, P., Zhang, X., and Song, M. 2022. Cotton response to nitrogen fertilization: Strategies for improving nitrogen use efficiency and development of ideal genotype. **Journal of Plant Nutrition and Soil Science.** Under review.
56. **Iqbal, A.**, Dong, Q., Wang, X., Gui, H., Zhang, H., Nianchnag, P., Zhang, X., and Song, M. 2022. Phosphorus improves photosynthesis, antioxidant system, and osmotic adjustment of low P-tolerant cotton genotype under drought stress. **BMC Plant Biology.** Major revision submitted.
57. **Iqbal, A.**, Dong, Q., Wang, X., Gui, H., Zhang, H., Nianchnag, P., Zhang, X., and Song, M. 2022. Identification, structure analysis, and transcript profiling of purple acid phosphatases under Pi deficiency in cotton. **Under process.**

BOOK/BOOK CHAPTERS PUBLISHED/ACCEPTED

58. **Iqbal, A., Iqbal, M., Madeeha, and Song, M. 2022.** Sustainable Agriculture Reviews 58: Phosphorus Use Efficiency for Sustainable Agriculture, 58. **Springer Nature. ISBN: 978-3-031-16155-1.**
59. **Iqbal, A., Dong, Q., Madeeha A., Gui, H., Wang, X., Zhang, H., Nianchnag, P., Zhang, X., and Song, M. 2019.** Cotton crop responses to nitrogen fertilization: The potential for improving nitrogen use efficiency. **Book, Published. LAP, Lambert Academic Publisher, ISBN: 978-620-0-08667-9.**
60. **Iqbal, A., Iqbal, M., Madeeha, A., Dong, Q., Gui, H., Wang, X., Zhang, H., Nianchnag, P., Zhang, X., Fahad, S., and Song, M. 2022.** Climate change and cotton production. Improvement of Plant Production in the Era of Climate Change. **Book Chapter, Springer Nature. DOI: 10.1201/9781003286417-5.**
61. **Iqbal, A., Fahad, S., Iqbal, M., Madeeha, A., Ahmad, A., Shazma, A., Khan, A.K., Arif, M., Inamullah, Shaheenshah, Saeed, M., and Song, M. 2020.** Special adaptive features of plant species in response to drought. (eds) Salt and Drought Stress Tolerance in Plants. Signaling and Communication in Plants. **Springer, Cham, https://doi.org/10.1007/978-3-030-40277-8_4.**
62. **Iqbal, A., Iqbal, M., Madeeha, A., Dong, Q., Gui, H., Wang, X., Zhang, H., Nianchnag, P., Zhang, X., Fahad, S., and Song, M. 2020.** Cross-Talk Between Phytohormone Signaling Pathways Under Abiotic Stress Conditions **Book Chapter, Taylor & Francis. Published.**
63. Muhammad, Z., Muhammad, A., Noman, S., Muhammad, A., Saliha, M., Jiusheng, L., Shafeeq, R., Ming, X., **A. Iqbal.**, Waqar, A.M., and Aiwang, D. **2022.** Organic Phosphorous as an Alternative to Mineral Phosphatic Fertilizers. **A. Iqbal et al. (eds.), Sustainable Agriculture Reviews 58, https://doi.org/10.1007/978-3-031-16155-1_3. Published.**
64. Hafiza, A.M., Atta, R., Fazal, A., Nisar, A., Syed, S.A., Muhammad, S., Shahid, A., Zahid, H., Nasib, Z., Akhtar, R., Muzafar, S., Muhammad, I., and **A. Iqbal. 2022.** Advanced Biotechnological Tools for Improving Phosphorus Use Efficiency. **A. Iqbal et al. (eds.), Sustainable Agriculture Reviews 58, Sustainable Agriculture Reviews 58, https://doi.org/10.1007/978-3-031-16155-1_7.**

PATENT

1. **International patent** on “A special hydroponic device for cultivation and root phenotype observation of cotton throughout its growth period, **ZL202122565538.5.**
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RESEARCH GRANTS/PROJECTS

1. Elucidating the involvement of carbon and flavonoid biosynthesis in low phosphorus tolerance in cotton (200,000 RMB; Chinese yuan), awarded by the Standardization of Cotton Cropping Technology Department of the Institute of Cotton Research, Chinese Academy of Agricultural Sciences (Grant number; 263983).
2. Screening and physiological mechanism of low phosphorus tolerant genotypes in Cotton (80,000 RMB; Chinese yuan), awarded by the Special Fund for Basic Scientific Research of Central Public Welfare Research Institutes (Grant number; 1610162021025).
3. Physiological and molecular mechanism of low phosphorus tolerance in cotton (120,000 RMB; Chinese Yuan), awarded by the State Key Laboratory of Cotton Biology, Institute of Cotton Research, Chinese Academy of Agricultural Sciences (Grant number; CB2021C10).
4. Mechanism of arbuscular mycorrhiza promoting nitrogen and phosphorus uptake and transport in cotton in saline-alkali soil (100,000 RMB, Chinese yuan), awarded by Special Fund for Basic Scientific Research of Central Public Welfare Research Institutes (Grant number; 1610162022029).
5. Study on the establishment of super high yield of the cotton field of “Kuanzaoyou” in Xinjian and control theory of high photosynthetic efficiency population (120,000 RMB, Chinese yuan), awarded by Special Fund for Basic Scientific Research of Central Public Welfare Research Institutes (Grant number; 1610162022023).
6. Construction of a quality standard system of “Kuanzaoyou” cotton planting in Xinjian (120,000 RMB, Chinese yuan), awarded by Special Fund for Basic Scientific Research of Central Public Welfare Research Institutes (Grant number; 1610162022024).

PRACTICAL WORK and RELATED ANALYSIS

1. Field, pot, and greenhouse experiments
2. Spectrophotometry
3. RNA Extraction
4. PCR, qPCR
5. Collection & Preservation of Plant Specimen
6. Microscopy

7. Bran + Luebbe Continuous-Flow AutoAnalyzer (AA3, Braun, Germany)
 8. Photosynthesis (Licor-6800, USA), Fluorescence measurement (Handy-PEA)
 9. Root analysis (Epson & WinRHIZO)
 10. Soil nutrients Analysis
 11. Transcriptome Analysis
 12. Metabolome Analysis
 13. Bioinformatics Analysis
 14. Enzymatic Analysis
 15. Statistical Analysis, etc.
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REFERENCES

1. PROFESSOR SONG MEIZHEN
State Key Laboratory of Cotton Biology, Institute of Cotton Research, Chinese Academy of Agricultural Biology, Anyang, Henan, China
Phone: +86-0372-2562308
Mobile: +86 13903729694
Fax: +86-0372-2562308
Email: songmeizhencaas@163.com
 2. PROFESSOR DU XIONGMING
State Key Laboratory of Cotton Biology, Institute of Cotton Research, Chinese Academy of Agricultural Biology, Anyang, Henan, China
Phone: +86-372-2562252
Fax: +86-372- 2562256
Email: duxm@cricaas.com.cn; dujefrey8848@hotmail.com
 3. Dr. Sajid Ali
Associate Professor/Chairman Department of Agriculture, Mansehra, KPK, Pakistan
Phone: +92-3355950429
Email: bioscientist122@yahoo.com
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