

Dr. Afifa Younas

Botanist | Plant Physiologist | Nanotechnology in Agriculture | Stress Biology

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Profile Summary

Plant Scientist with a PhD in Botany and specialized expertise in plant physiology, stress tolerance, nanotechnology-enhanced crop production, and molecular techniques. Strong publication record in high-impact journals including Scientific Reports, Frontiers in Plant Science, and Functional & Integrative Genomics. Over 5 years of university-level teaching experience and collaborations with China National Rice Research Institute and KSK Rice Research Institute.

Core Competencies

- Plant Physiology & Anatomy
- Nanotechnology in Agriculture
- Molecular Biology Techniques
- Seed Priming & Stress Tolerance
- Rice Research & Grain Quality
- Scientific Writing & Publishing
- Teaching & Student Mentoring

Education

PhD (Botany) (2023)

Lahore College for Women University, Lahore (Research at CNRRI China & KSKRRI, Pakistan)

MS Botany (2011–2013)

Lahore College for Women University

BS Botany (2007–2011)
Lahore College for Women University

Professional Experience

IPFP Assistant Professor — Baba Guru Nanak University, Nankana Sahib Pakistan (2024–Present)

- Teaching undergraduate courses in Botany
- Editing John Wiley & Sons Book, publishing Review paper, Research Articles & Book chapters

Visiting Lecturer — University of Education, Lahore (2021–2024)

- Teaching undergraduate courses in Botany and Plant Physiology
- Supervising projects and lab sessions
- Organizing academic seminars and activities

Visiting Lecturer — Govt. College for Women Gulberg, Lahore (2013–2015)

- Delivered lectures on core Botany courses
- Conducted laboratory practical sessions

Selected Publications

Mehmooda Yousaf, Aasma Tufail, Kotb A. Attia, Umair Ashraf, Muhammad Ahsan, **Afifa Younas**, Sajid Fiaz, Sezai Ercisli & Arif Ahmed Mohammed (2025). Exogenous gamma amino butyric acid (GABA) enhanced salinity tolerance in wheat by modulating morphological and anatomical traits. *Scientific Reports* 15, 36998. <https://doi.org/10.1038/s41598-025-93904-7>

Muhammad Arif, Jaweria Shamshad, Faisal Khalid, Yakov Kuzyakov, **Afifa Younas**, and Luhua Li. (2025). "Biotechnological and Sustainable Approaches to Climate - Resilient Agriculture." *Journal of Agronomy and Crop Science* 211, no. 4 e70105.

Ayesha Ismail, Aasma Tufail, Mehmooda Yousaf, **Afifa Younas**, Kotb A. Attia, Yaser M. Hafez, Arif Ahmed Mohammed, Sajid Fiaz, and Hafiz Saeed-Ur-Rehman. (2025). "Effect of Different Fruit Peel Extracts to Evaluate the Growth, Physiological, and Anatomical Characters of Two Bitter Gourd (*Momordica charantia* L.) Varieties." *Polish Journal of Environmental Studies*.

Aqsa Shahzadi, Zahra Noreen, Salman Alamery, Fizza Zafar, Adeela Haroon, Madiha Rashid, Muhammad Aslam, **Afifa Younas**, Kotb A Attia, Arif Ahmed Mohammed, Sezai Ercisli, Sajid

Fiaz. (2024). Effects of biochar on growth and yield of Wheat (*Triticum aestivum* L.) under salt stress. *Scientific Reports*, 14(1), 20024.

Amina Aslam, Zahra Noreen, Madiha Rashid, Muhammad Aslam, Tanveer Hussain, **Afifa Younas**, Sajid Fiaz, Kotb A. Attia, and Arif Ahmed Mohammed. (2024). "Understanding the role of magnetic (Fe_3O_4) nanoparticle to mitigate cadmium stress in radish (*Raphanus sativus* L.)." *Botanical Studies* 65, no. 1: 20.

Hanif, Nageen, Humira Ashraf, Madiha Rashid, Afifa Younas, Sajid Fiaz, Kotb A. Attia, Arif Ahmed Mohammed, and Yaser M. Hafez. (2024). "Comparative evaluation of biological activities and allelopathic potential of Java plum plant parts." *Polish Journal of Environmental Studies* : 1-10.

- **Afifa Younas**, Zubaida Yousaf, Sajid Fiaz, Arusa Aftab, Madiha Rashid, Nadia Riaz and Shiwen Huang. (2023) Impact of Qiangdi 863 Nanosynergids treated water on rice physiology, grain production, and grain quality *Frontier in Plant Sciences*: 13: 916949. doi: 10.3389/fpls.2022.916949

- **Afifa Younas**, Zubaida Yousaf, Sajid Fiaz, Aamir Riaz, Sajid Hussain and Shiwen Haung. (2023). Various seed priming techniques altered the biochemical and physiological features of rice cultivars under temperature stress. *Brazilian Journal of Biology*: 83. <https://doi.org/10.1590/1519-6984.245206>

Aftab, Arusa, Zubaida Yousaf, Madiha Rashid, **Afifa Younas**, Hamna Yasin, Nadia Riaz, and Qaisar Mansoor. (2023). "Vegetative part of *Nigella sativa* L. potential antineoplastic sources against Hep2 and MCF7 human cancer cell lines." *Journal of Taibah University for Science* 17, no. 1 2161294.

Sajjad Hyder, Mushfaq Ul-Nisa, Humaira Shahid, Faryal Gohar, Amjad Shahzad Gondal, Nadia Riaz, **Afifa Younas** Sergio de los Santos-Villalobos, Amelia C. Montoya-Martínez, Anam Sehar, Fariha Latif, ZarrinFatima Rizvi, Rashid Iqbal (2023). "Recent trends and perspectives in the application of metal and metal oxide nanomaterials for sustainable agriculture." *Plant Physiology and Biochemistry* 202: 107960.

Huang, Ping, Rashida Hameed, Manzer Abbas, Sidra Balooch, Badr Alharthi, Yizhou Du, Adeel Abbas, **Afifa Younas**, and Daolin Du. (2023). "Integrated omic techniques and their genomic features for invasive weeds." *Functional & Integrative Genomics* 23, (1): 44.

Sajid Fiaz, Xiukang Wang, **Afifa Younas**, Badr Alharthi, Adeel Riaz, and Habib Ali. (2021) "Apomixis and strategies to induce apomixis to preserve hybrid vigor for multiple generations." *GM crops & food* 12, (1): 57-70.

Zahoor, Maria, Zubaida Yousaf, Hamna Yasin, Zabta Khan Shinwari, Manahil Haroon, Nadia Saleh, **Afifa Younas** et al. (2021) "Ethnobotanicals and commercial trends of herbal markets in Punjab, Pakistan." *Journal of Herbal Medicine* 26: 100425.

Sajid Fiaz, Shakeel Ahmad, Mehmood Ali Noor, Xiukang Wang, **Afifa Younas**, Aamir Riaz, Adeel Riaz and Fahad Ali. (2019). Applications of the CRISPR/Cas9 System for Rice Grain Quality Improvement: Perspectives and Opportunities. *International Journal of Molecular Science*, 20(4), 888; <https://doi.org/10.3390/ijms20040888>.

Arusa Aftab, Zubaida Yousaf, Dr. Arshad Javaid, Nadia Riaz, **Afifa Younas**, Madiha Rashid, Hafiza Bushra, Aysha Chahel. (2019). Antifungal Activity of Vegetative Methanolic Extracts of *Nigella sativa* against *Fusarium oxysporum* and *Macrophomina phaseolina* and its Phytochemical Profiling by GC-MS Analysis. *International Journal of Agriculture and Biology*. 21. 569-576. 10.17957/IJAB/15.0930.

Nadia Kausar, Zubaida Yousaf, **Afifa Younas**, Hafiza Sadia Ahmeda, Madiha Rasheeda, Ayesha Arif and Hafiza Ayesha Rehman 2015. Karyological analysis of bitter gourd (*Momordica charantia* L., Cucurbitaceae) from Southeast Asian countries. *Plant genetic resources*. doi: 10.1017/S147926211400077X, ppt 1-3.

Hafiza Ayesha Rehman, Zubaida Yousaf, Madiha Rashid, **Afifa Younas**, Ayesha Arif, Ismah Afzal & Waheed Akram. 2014. Phytochemical relationship of *Euphorbia helioscopia* and *Euphorbia Pulcherrima* with *Lactuca sativa*. *Natural Product Research* 28:20, 1725-1731, DOI: 10.1080/14786419.2014.942300.

Madiha Rashid, Zubaida Yousaf, M.S. Haider, Sana Khalid, H.A. Rehman, **Afifa Younas** & Ayesha Arif, *Natural Product Research* (2014): Genetic diversity of functional food species *Spinacia oleracea* L. by protein markers, *Natural Product Research: Formerly Natural Product Letters*, DOI: 10.1080/14786419.2014.881359.

Book Chapters Publications

Afifa Younas, Sajid Fiaz, Nadia Riaz, Madiha Rashid, Zahra Noreen, Aasma Tufail, Maha Noor, Sundas Fatima, and Hurmat Mehdi Mirrani. (2025). "Marker-Assisted Breeding in Lentil for Drought Tolerance." In *Marker-Assisted Breeding in Legumes for Drought Tolerance*, pp. 269-300. Singapore: Springer Nature Singapore,

Afifa Younas, Nadia Riaz, Madiha Rashid, Sajid Fiaz, Aasma Tufail, Zahra Noreen, Muhammad Aslam, Mehnoob Ullah Khan, and Mehwish Tabassum. (2025). "Modification in Conventional Methods and Modern Plant Breeding Techniques to Enhance Genetic Gain for Future Food Security." *Crop Biofortification: Biotechnological Approaches for Achieving Nutritional Security Under Changing Climate*: 377-394.

Riaz, Nadia, Zubaida Yousaf, **Afifa Younas**, Sajjad Hyder, Arusa Aftab, Zainab Maqbool, Zainab Shahzadi, and Samina Hanif. (2025). "Microbiomes: A Road Map of Medicinal Plant Growth, Disease Control, and Abiotic Stress Management." In *Symbiotic Association of Microorganisms with Medicinal and Herbal Plants*, pp. 97-116. CRC Press.

Afifa Younas, Sajid Fiaz, Rana Muhammad Waqar Younis, Nadia Riaz, Madiha Rashid, Aasma Tufail, Zahra Noreen, and Nimra Tariq. (2024). "Applicability of Nanomaterials in Agriculture." In *Revolutionizing Agriculture: A Comprehensive Exploration of Agri-Nanotechnology*, pp. 17-56. Cham: Springer Nature Switzerland.

Afifa Younas, Nadia Riaz, Madiha Rashid, Aasma Tufail, Sajjad Hyder, and Zahra Noreen. "CRISPR/Cas System for Achieving Abiotic Stress Tolerance." *OMICs - based Techniques for Global Food Security* (2024): 213-231.

Afifa Younas, Madiha Rashid, and Sajid Fiaz. Book chapter in Book title: *Plant production in the Era of Climate change (Genetic and Molecular prospective)*. (2023). Editor Shah Fahad. *Role of Nanotechnology for Climate Resilient Agriculture*.

Afifa Younas, Nadia Riaz, Madiha Rashid. (2023). Multi-Omics Approaches for Breeding in Medicinal Plants. In: Prakash, C.S., Fiaz, S., Nadeem, M.A., Baloch, F.S., Qayyum, A. (eds) *Sustainable Agriculture in the Era of the OMICs Revolution*. Springer, Cham. https://doi.org/10.1007/978-3-031-15568-0_8

Afifa Younas, Madiha Rashid, Nadia Riaz, Muneeb Munawar, Sajid Fiaz, Zahra Noreen. (2023). Emerging Techniques to Develop Biotic Stress Resistance in Fruits and Vegetables. In: Prakash, C.S., Fiaz, S., Nadeem, M.A., Baloch, F.S., Qayyum, A. (eds) *Sustainable Agriculture in the Era of the OMICs Revolution*. Springer, Cham. https://doi.org/10.1007/978-3-031-15568-0_12

Afifa Younas, Zubaida Yousaf, Madiha Rashid, Nadia Riaz, Arusa Aftab, Munazzam Jawad Shahid, Hamna Yasin et al. (2023). "Contribution of biotechnological approaches to micronutrient improvements in legumes." In *Legumes biofortification*, pp. 131-176. Cham: Springer International Publishing.

Aisha Umar, Zubaida Yousaf, **Afifa Younas**, Nadia Riaz, Madiha Rashid, Arusa Aftab, and Zoya Kashif. (2023). "Nutritional security approaches for legume biofortification—a major challenge." In *Legumes Biofortification*, pp. 17-45. Cham: Springer International Publishing.

Afifa Younas, Zubaida Yousaf, Nadia Riaz, Madiha Rashid, Munazzam Jawad Shahid, Arusa Aftab, Zainab Maqbool et al. (2023). "Nutritional enrichment in legumes through omics approaches." In *Legumes Biofortification*, pp. 177-206. Cham: Springer International Publishing.

Sajid Fiaz, Sher Aslam Khan, **Afifa Younas**, Khurram Shahzad, Habib Ali, Mehmood Ali Noor, Umair Ashraf, and Faisal Nadeem. (2021). "Application of CRISPR/Cas system for genome editing in cotton." In *CRISPR and RNAi systems*, pp. 277-301. Elsevier.

Gaballah, Mahmoud M., Sajid Fiaz, Xiukang Wang, **Afifa Younas**, Sher Aslam Khan, Fahad Masoud Wattoo, and Muhammad Rizwan Shafiq. (2021) "Identification of genetic diversity

among some promising lines of rice under drought stress using SSR markers." Journal of Taibah University for Science 15, (1): 468-478.

Afifa Younas, Zubaida Yousaf, Nadia Riaz, Madiha Rashid, Arusa Aftab, Zainab Razzaq, Maleeha Tanveer and Shiwen Huang. Springer Nature Singapore. 2019. Book title Nutrient dynamics for sustainable crop production Editor Ram Swaroop Meena. Role of nanotechnology for enhanced rice production.

Edited book Publications

Book Title: Desert Agriculture: Biotechnological Innovations for Global Food Security 2025
Editors: Sajid Fiaz; Muhammad Uzair; **Afifa Younas**; Rui Pan; Kaouthar Feki; Muhammad Khalid Publishers : John Wiley & Sons

Book Title: Leaf epidermal Anatomical characters and anatomical tools for Systematical Studies of some medicinal Angiospermic Families. 2015 Editors: Zubaida Yousaf, **Afifa Younas** and Arusa Aftab (Department of Botany, Lahore College for women University, Lahore, Pakistan Nova Publishers

Skills

- Microscopy and anatomical analysis
- GC-MS interpretation
- Seed priming & nanomaterial treatment
- MS Office , SPSS & EndNote
- English, Urdu, Punjabi

Awards

- Roll of Honour (MS Botany)
- Punjab Govt. Merit Laptop Award
- China National Rice Research Institute (CNRRI) Hangzhou, China GSCAAS Research Acceptance (China)
 - Letter of Intent signed China National Rice Research Institute & Lahore College for Women University for Research Collaboration