SHAMIM GUL

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CURRENT EMPLOYMENT

University of Balochistan, Saryab road, Quetta Pakistan	2004—
Associate Professor, Department of Botany	present
McGill University, Macdonald Campus, Montreal, Quebec, Canada	2016 — 2018
Visiting Professor, Department of Natural Resource Sciences	2022—2023
Sardar Bahadur Khan Women's University, Quetta, Pakistan	2013 —2016
Visiting Faculty, Department of Botany and Department of Environmental Science	

EDUCATION

McGill University, Montreal, Quebec, Canada
Ph.D.; Soil Ecology
Dissertation title: "Influence of genetically modified cell wall mutants on carbon dioxide and nitrous oxide emissions from soil: a study with *Arabidopsis thaliana*" 2012

University of Balochistan, Quetta, Balochistan, Pakistan
M.Phil.; Plant Population Ecology
Thesis title: "Regeneration Ecology of *Seriphidium quettense* in Highland Balochistan, Pakistan" 2008

PUBLICATIONS

Year 2025

Whalen, J.K., Gul, S. (2025). Managing soil health for resilient crop production. Nature Food 6: 535–536. https://doi.org/10.1038/s43016-025-01186-z

Whalen, J.K., Gul, S. (2025). Assessing the impact of inorganic fertilizers on soil microbiomes. Dunfield K. E. (ed.), Understanding and utilizing soil microbiomes for a more sustainable agriculture, pp. 365–390, Burleigh Dodds Science Publishing, Cambridge, UK (ISBN: 978 1 80146 474 1; www.bdspublishing.com)

Khan, A., Gul, S., Agha, S.A., Panezai, S., Khan, N., Ziad, T., Akber, A. 2025. Agricultural management practices and soil quality - A study on agricultural lands of Hanna Village, Balochistan, Pakistan. Journal of Mountain Science 22(3): 846-859

Year 2024

Qasim, S., Gul, S., Buriro, A.H., Shafiq, F., Ismail, T. 2024. Biochar-based organic fertilizers: Influence on yield and concentration of antioxidants in the stigma of saffron and rhizosphere bacterial diversity of slightly saline and non-saline soils. Saudi Journal of Biological Sciences 103922 (ELSEVIER ScienceDirect)

Qasim S, Gul S, Ziad T, Yunus AW, Khan RU, Akbar A, Buriro AH. 2024. Influence of composted manures and co-composted biochar on growth performance of saffron and soil

nutrients under varying electrical conductivity soil conditions: A two-year field study. Journal of Agriculture and Food Research. 18:101467 (ELSEVIER ScienceDirect)

Khan, M., Gul, S., Kakar, H., Panezai, S., Khan, N., Ziad, T., ... & Shaheen, U. (2024). Physico-chemical properties and macrofauna of soils under various farming systems of cold arid region in Balochistan, Pakistan. Journal of Mountain Science, 21(8), 2618-2630 (Springer Nature).

Qasim, S., Gul., S., Ziad, T., Younus, AW. 2024. Influence of manures and co-composted biochars on soil properties, flowering period and stigma yield of saffron (Crocus sativus L.) under salinity stress conditions - a two yeas field study. Polish Journal of Environmental Studies (accepted for publication).

Year 2023

Whalen, J.K., Gul, S. 2023. Root interactions with the microbiome from the rhizoplane to the bulk soil: An overview. Encyclopedia of Soils in the Environment, Second Edition. https://doi.org/10.1016/B978-0-12-822974-3.00243-3 (ELSEVIER ScienceDirect)

Achakzai, A.G., Gul, S., Buriro, A.H., Khan, H., Mushtaq, A., Bano, A., Agha, S., Kamran, K., Ponya, Z., Ismail, T. (2023) Biochar-fertilizer mixture: does plant life history trait determine fertilizer application rate? Environmental Pollutants and Bioavailability, 35:1, DOI: 10.1080/26395940.2023.2170282 (Taylor and Francis Groups)

Achakzai, A.G., Buriro, A.H., Gul, S., Ziad, T., Bano, A., Ghori, S.A., Ponya, Z., Ismail, T. (2022). Evaluation of the effect of biochar-based organic fertilizer on the growth performance of fennel and cumin plants for three years. Environmental Pollutants and Bioavailability, 34:374–384 (Taylor and Francis Groups)

Sher, B., Asrar, M., Leghari, S.K., Gul, S., Khattak, M.I., Wali, S. 2023. Influence of native weeds species on germination, growth performance and survival of barley seedlings. Pakistan Journal of Botany, 55(3): 925-931 (Pakistan Botanical Society)

Islam, M., Razzaq, A., Hassan, S. Zubair, M., Kalroo, M.W., Khan, A., Gul, S. et al. 2023. Influence of rangeland protection and seasonal grazing on aboveground vegetation, forage quality and weight gain of small ruminants — a study in Thar Desert, Pakistan. Journal of Mountain Science 20:403–414 (Springer Nature)

Taran, M.T., Gul, S., Panezai, S., Naseem, M., Shaheen, U., Ziad, T., Laghari, SK., Chandio, T.A., Kakar, A., Agha, S., Panezai, A. 2023. Does land use history have an influence on soil quality? A case study with agricultural lands of Rodh Mulazai, Pishin, Balochistan Pakistan. Food Science and Technology, 43.

Year 2022

Gul, S., Whalen, J. 2022. Perspectives and strategies to increase the microbial-derived soil organic matter that persists in agroecosystems. *Advances in Agronomy,* 175: 347-401 (ELSEVIER ScienceDirect)

Islam, M., Razzaq, A., Zubair, M., Hassan, S., Ahmad, S., Gul, S., Rischkowsky, B., Louhaichi, M. 2022. Impact of rangeland enclosure and seasonal grazing on protected and unprotected rangelands in Chakwal region, Pakistan. *Journal of Mountain Science* 19(4):1215-1216 (Springer Nature)

Khan, I., Chandio, T., Gul, S., Shaheen, U., Rehman, G.B., Jan, S. 2022. Soil quality and growth performance of crops of agroecosystems in the vicinity of fluorite mining. Applied Ecology and Environmental Research 20(3):2365-2379 (ALÖKI Applied Ecological Research and Forensic Institute Ltd., Budapest)

Year 2021

Islam, M., Razzaq, A., Zubair, M., Hassan, S., Ahmad, S., Gul, S., Barbara, R., Mounir, L. 2021. Impact of rangeland enclosure and seasonal grazing on protected and unprotected rangelands in Chakwal region, Pakistan. Journal of Mountain Science 19(1): 46-57 (Springer Nature)

Ejack, L., Kernecker, M.L., Preito, R., Chen, C., Gul, S., Bradley, R.L., Whalen, J.K. 2021. Earthworms did not increase long-term nitrous oxide fluxes in perennial forage and riparian buffer ecosystems. Pedobiologia - Journal of Soil Ecology 150727 (ELSEVIER ScienceDirect)

Deng, H., Ejack, L., Gul, S., Prasher, S. O., Whalen, J. K. 2021. Slow pyrolysis pine wood-derived biochar reduces nitrous oxide production from surface but not subsurface soil. Canadian Journal of Soil Science 00: 1–8 (0000) dx.doi.org/10.1139/cjss-2021-0017 (Canadian Science Publishing)

Manzoor, M., Gul, S., Bibi, S., Gul, I., Akbar, A., Ali, I., Rehman, G.B. 2021. Harvest yield index of pea plant and soil properties influenced by a two-year amendment of biocarbons under municipal wastewater irrigation in arid climate. Applied Ecology and Environmental Research 19(3):2111-2132 (ALÖKI Applied Ecological Research and Forensic Institute Ltd., Budapest)

Altaf, F., Gul, S., Chandio, T.A., Rehman, G.B., Kakar, A-ur-R, Ullah, S., Khan, N., Shaheen, U., Shahwani, M.N., Ajmal, M., Manzoor, M. 2021. Influence of biochar based organic fertilizers on growth and concentration of heavy metals in tomato and lettuce in chromite mine tailing contaminated soil. Sarhad Journal of Agriculture, 37:315-324 (ResearchersLinks)

Year 2020

Khan, I., Gul, S., Ahmad, S., Bano, G., Gul, I., Yunus, A.W., Ali, I., Akbar, A., Islam, M. 2020. Litter decay in rangeland sites with varying history of human disturbance: a study with Hazargangi Chiltan mountain. *Journal of Mountain Science* 17(4): 898-906 (Springer Nature)

Siddiqui, H.J., Gul, S., Kakar, A-R, Shaheen, U., Rehman, G.B., Khan, N., Samiullah. 2020. Poultry manure as an organic fertilizer with or without biochar amendment: influence on growth and heavy metal accumulation in lettuce and spinach and soil nutrients. Phyton-*International Journal of Experimental Botany,* 90:651-676 (Tech Science Press)

Year 2019

Batool, S., Gul, S., Ghori, S.A., Sohail, M., Kiran, S., Rehman, G.B. Panezai, N. 2019. Biochar influences nitrogen and phosphorus use efficiency of tomato and soil nutrients under groundwater and wastewater irrigation. *Agriculture and Natural Resources* 53:283-291 (ELSEVIER ScienceDirect)

Ghori, S.A., Gul, S., Tahir, S., Sohail, M., Batool, S., Shahwani, M.N., Bano, G., Butt, M.R. 2019. Wood-derived biochar influences nutrient use efficiency of heavy metals in spinach (*Spinacia oleracea*) under groundwater and wastewater irrigation. *Journal of Environmental Engineering and Landscape Management* 27:144-152 (Taylor and Frances Groups)

Manzoor, M., Gul, S., Khan, H. 2019. Influence of biochars on yield and nitrogen and phosphorus use efficiency of *Pisum sativum* under groundwater and wastewater irrigation in arid climate. *Communications in Soil Science and Plant Analysis* 50:1563–1579 (Taylor and Francis Groups)

Hameeda, Gul, S., Bano, G., Manzoor, M., Chandio, T.A., Awan, A.A. 2019. Biochar and manure influences tomato fruit yield, heavy metal accumulation and concentration of soil nutrients under groundwater and wastewater irrigation in arid climatic conditions. *Cogent Food and Agriculture* 5: 1-15 (Taylor and Francis Groups)

Year 2018

Zubair, M., Saleem, A., Baig, M.A., Islam, M., Razzaq, A., Gul, S., Ahmad, S., et al. 2018. The influence of protection from grazing on Cholistan desert vegetation, Pakistan. Rangelands 40(5):136—145 (ELSEVIER ScienceDirect)

Islam, M., Razzaq, A., Gul, S., Ahmad, S., Muhammad, T., Hassan, S., Rischkowsky, B., Ibrahim, M.N.M., Louhaichi, M. 2018. Impact of grazing on soil, vegetation and ewe production performances in a semi-arid rangeland. Journal of Mountain Science 15:685–694 (Springer Nature).

Haider, F., Gul, S., Hussain, A., Ghori, S.A., Shahwani, M.N., Murad, M., Kakar, A.M. 2018. Influence of biochar on yield and heavy metal accumulation in roots of Brassica rapa under groundwater and wastewater irrigation. Sarhad Journal of Agriculture 34:418-427 (ResearchersLinks)

Tahir, S., Gul, S., Ghori, S.A., Sohail, M., Batool, S., Jamil, N., Shahwani, M.N., But, M-R. 2018. Biochar influences growth performance and heavy metal accumulation in spinach under wastewater irrigation. Cogent Food and Agriculture 4:1-12 (Tylor and Francis Groups).

Year 2017

Qasim, S., Gul, S., Shah, M.H., Hussain, F., Ahmad, S., Islam, M., Bano, G., Yaqoob, M., Shah, S.Q. 2017. Influence of grazing exclosure on vegetation biomass and soil quality. *International Soil and Water Conservation Research* 5:62-68 (ELSEVIER ScienceDirect)

Year 2016

Bano, G., Islam, M., Ahmad, S, Gul, S. 2016. Aboveground biomass and concentration of nutrients in semiarid rangeland plant species: Influence of grazing and soil moisture. Phyton *International Journal of Experimental Botany,* 85:94-99 (Tech Science Press)

Gul, S., Whalen, J.K. 2016. Biochemical cycling of nitrogen and phosphorus cycling in biochar-amended soils. Soil Biology and Biochemistry, 103:1-15 (ELSEVIER ScienceDirect)

Year 2015

Gul, S., Whalen, J.K., Thomas, B.W., Sachdeva, V. and Deng, H. 2015. Physico-chemical properties and microbial responses in biochar-amended soils: Mechanisms and future directions. *Agriculture, Ecosystems and Environment,* 206:46-59 (ELSEVIER ScienceDirect)

Year 2014

Gul, S., Winans, K.S., Leila, M., Whalen, J.K. 2014. Sustaining soil carbon reserves of bioenergy cropping systems in northern temperate regions. *CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources* 9:1-23 (Cambridge University Press)

Bano, G., Islam, M., Ahmad, S., Gul, S. 2014. Effect of prescribed fire on forage production and nutritive value of the perennial grass *Saccharum griffithii*. *Phyton International Journal of Experimental Botany* 83: 415-421 (Tech Science Press)

Gul S, Yanni SF, Whalen KJ. 2014. Lignin controls on soil ecosystem services: implications for biotechnological advances in biofuel crops. Chapter 14, Lignin: Structural Analysis, Applications in Biomaterials and Ecological Significance (editor Fachuange Lu). Biochemistry Research Trends, Nova Science Publishers, New York. pp, 375-416.

Year 2013

Whalen, J.K., Gul, S., Poirier, V., Yanni, S.F., Simpson, M., Clemente, J.S., Feng, X., Grayston, S., Barker, J.S., Ishimaru, K., Gregorich, E., Angers, D., Rochette, P., Janzen, H. 2013. Transforming plant carbon into soil carbon: process-level controls on carbon sequestration. *Canadian Journal of Plant Science,* 94: 1-9 (ELSEVIER ScienceDirect)

Gul, S., Whalen, J.K., 2013. Plant life history and residue chemistry influences emissions of CO_2 and N_2O from soil – perspectives for genetically modified cell wall mutants. *Critical Reviews in Plant Sciences*, 32:344–368 (Tylor and Frances Groups)

Gul, S., Whalen, J.K. 2013. Phenology, morphology, aboveground biomass and root-associated soil respiration of *Arabidopsis thaliana* down-regulated cell wall mutants of *MYB75*, *KNAT7*, and CCR1. *Pedobiologia* 56:69-77 (ELSEVIER ScienceDirect)

Year 2012

Gul, S., Whalen, J.K., Ellis, B.E., Graystone, S. 2012. Plant residue chemistry impacts soil processes and microbial community structure: A study with *Arabidopsis thaliana* cell wall mutants. *Applied Soil Ecology*, 60:84-91 (ELSEVIER ScienceDirect)

Gul, S., Whalen, J.K., Ellis, B.E., Mustafa, A.F. 2012. Influence of plant residue chemistry on soil CO_2-C production: A study with Arabidopsis thaliana cell wall mutants of KNAT7, MYB75 and CCR1. *Pedobiologia* 55:349-356.

Year 2010

Ahmad, S., Gul, S., Achakzai, A.K.K., Islam, M. 2010.Seedling growth response of *Seriphidium quettense* to water stress and non-water stress conditions. *Phyton International Journal of Experimental Botany*, 79:19-23 (ELSEVIER ScienceDirect)

Year 2007

Gul, S., Ahmad, S., Achakzai, A.K.K., Islam, M. 2007. Impact of microhabitat on survival of *Seriphidium quettense* seedlings. *Pakistan Journal of Botany*, 39:1717-1724 (Pakistan Botanical Society)

Ahmad, S., Islam, M., Gul, S., Athar, M. 2007. Seed dispersal and soil seed bank of *Seriphidium quettence* in highland Balochistan Pakistan. *Journal of Botanical Research Institute of Texas*, 1: 569-575.

CHAPTERS IN BOOK

Whalen, J.K., Gul, S. (2025). Assessing the impact of inorganic fertilizers on soil microbiomes. Dunfield K. E. (ed.), Understanding and utilizing soil microbiomes for a more sustainable agriculture, pp. 365–390, Burleigh Dodds Science Publishing, Cambridge, UK (ISBN: 978 1 80146 474 1; www.bdspublishing.com)

Whalen, J., Gul, S. 2023. Root interactions with the microbiome from the rhizoplane to the bulk soil: An overview. In book: Reference Module in Earth Systems and Environmental Sciences, Elsevier.

Gul S, Yanni SF, Whalen KJ. 2014. Lignin controls on soil ecosystem services: implications for biotechnological advances in biofuel crops. Chapter 14, Lignin: Structural Analysis, Applications in Biomaterials and Ecological Significance (editor Fachuange Lu). Biochemistry Research Trends, Nova Science Publishers, New York. pp, 375-416.