DR. ALLAH WASAYA

Personal Information:

Father's name	Haji Ahmad Yar
N.I.C. Number	32203-6204175-1
Date of Birth	13-10-1982
Religion	Islam
Marital status	Married
Domicile	Layyah (Punjab)
Permanent address	Mouza Bhand Nashaib P/O Shah Pur (Dorata) Tehsil & District Layyah, Pakistan
Postal Address	Institute of Agronomy, Bahauddin Zakariya University Multan, Multan, , Pakistan
Phone Number	+92-300-6765024
E-mail	wasayauaf@gmail.com; allah.wasaya@bzu.edu.pk

Educational Background

Degree	Passing Year	Major subject	CGPA	Percentage
B.Sc.(Hons.) Agriculture	2005	Agronomy	3.61/4.00	75.39
M.Sc. (Hons.) Agronomy	2007	Agronomy	3.77/ 4.00	77.77
Ph.D. Agronomy	2011	Agronomy	3.51/4.00	

M.Sc. (Hons.):

University: University of Agriculture, Faisalabad Pakistan

Title of Master's Thesis: "Agro-economic assessment of Wheat-Fenugreek intercropping system"

Supervisor's Name: Prof. Dr. Riaz Ahmad

Ph.D.:

University: University of Agriculture, Faisalabad Pakistan,

Date of obtaining degree: 2011

Title of Ph.D. Thesis: Growth and yield response of Maize (*Zea mays* L.) to nitrogen management and tillage practices

Supervisor's Name: Dr. Muhammad Tahir

Professional Experience:

Associate Professor (Tenured) Institute of Agronomy, Bahauddin Zakariya University, Multan, Pakistan, w.e.f. 20/12/2019 to date

Assistant Professor (TTS) College of Agriculture, Bahauddin Zakariya University, Bahadur Sub-Campus Layyah, Pakistan, w.e.f. 07/07/2015 to 19/12/2019

Post-doc. Researcher Chinese Academy of Sciences Institute of Genetics and Developmental Biology, Agro-Resources Research Center, Shijiazhuang, China

Assistant Professor (Contract) Department of Agronomy, Pir Mehr Ali Shah, Arid Agriculture University, Rawalpindi, Pakistan, w.e.f. 12/02/2015 to 05/07/2015

Assistant Professor (IPFP): Department of Agronomy, Pir Mehr Ali Shah, Arid Agriculture University, Rawalpindi, Pakistan, w.e.f. 03/10/2012 to 02/10/2013.

Lecturer: Department of Agronomy, Pir Mehr Ali Shah, Arid Agriculture University, Rawalpindi, Pakistan,w.e.f. 01/10/2009 to 01/08/2012

Soil Conservation Officer Punjab Agriculture Department, w.e.f. 24-06-2008 to 30-09-2009

Research interests: Nutrient management, Intercropping, Tillage and stress physiology in plants

Papers Published in HEC Recognized/ Impact Factor Journals

1. **Wasaya A,** Rehman I, Mohi Ud Din A, Hayder Bin Khalid M, Ahmad Yasir T, Mansoor Javaid M, El-Hefnawy M, Brestic M, Rahman MA and El Sabagh A (2023) Foliar application of putrescine alleviates terminal drought stress by modulating water status, membrane stability, and yield- related traits in wheat (Triticum aestivum L.). Front. Plant Sci. 13:1000877. doi: 10.3389/fpls.2022.1000877

2. **Wasaya, A.,** Hassan, J., Yasir, T.A., Ateeq, M. and Raza, M.A., 2022. Foliar Application of Silicon Improved Physiological Indicators, Yield Attributes, and Yield of Pearl Millet (Pennisetum glaucum L.) Under Terminal Drought Stress. *Journal of Soil Science and Plant Nutrition*, pp.1-15.
3. Javaid, M.M., Florentine, S., Mahmood, A., **Wasaya, A.,** Javed, T., Sattar, A., Sarwar, N., Kalaji, H.M., Ahmad, H.B., Worbel, J. and Ahmed, M.A., 2022. Interactive effect of elevated CO2 and drought on physiological traits of Datura stramonium. *Frontiers in Plant Science*, *13*, p.929378.
4. Javaid, M.M., Mahmood, A., Alshaya, D.S., AlKahtani, M.D., Waheed, H., **Wasaya, A.,** Khan, S.A., Naqve, M., Haider, I., Shahid, M.A. and Nadeem, M.A., 2022. Influence of environmental factors on seed germination and seedling characteristics of perennial ryegrass (Lolium perenne L.). Scientific Reports, 12(1), pp.1-11.
5. Javaid, M.M., Florentine, S.K., Ashraf, M., Mahmood, A., Sattar, A., **Wasaya, A.** and Li, F.M., 2022. Photosynthetic activity and water use efficiency of Salvia verbenaca L. under elevated CO2 and water deficit conditions. Journal of Agronomy and Crop Science.
6. Yasir, T.A., Aslam, S., Rizwan, M.S., **Wasaya, A.,** Ateeq, M., Khan, M.N., Tanveer, S.K., Soufan, W., Ali, B., Ditta, A. and Kumari, A., Role of Organic Amendments to Mitigate Cd Toxicity and Its Assimilation in Triticum aestivum L. Phyton, 2022, vol.91, no.11. 2491-2504
7. Hussain, M., Aziz, A., Javaid, M.M., Ashraf, M., **Wasaya, A.,** Majeed, M.Z., Akhtar, N., Asif, M., Adnan, M. and Bhatti, A., 2022. Evaluating the phytotoxic effects of some plant species of semi-arid regions. Plant cell biotechnology and molecular biology, pp.1-18.
8. Aziz , A., H. b. H. Tajaah, U. Shahid, A.Tanveer, M. Asif, **A.Wasaya**, M. Ashraf, A. Raza, N. Akhtar, S. M. Shahzad, M. S. Munir, M. E. Safdar and M. M. Javaid. 2021. Identification and validation of anti-microbial properties of some tropical folklore medicinal plant species against some multi-resistant bacterial pathogens. Pak. J. Agri. Sci.58:1581-1594
9. Zaman, I., Ali, M., Shahzad, K., Tahir, M.S., Matloob, A., Ahmad, W., Alamri, S., Khurshid, M.R., Qureshi, M.M., **Wasaya, A.** and Baig, K.S., 2021. Effect of Plant Spacings on Growth, Physiology, Yield and Fiber Quality Attributes of Cotton Genotypes under Nitrogen Fertilization. Agronomy, 11(12), p.2589.

10. Sabagh AE, Mbarki S, Hossain A, Iqbal MA, Islam MS, Raza A, Llanes A, Reginato M, Rahman MA, Mahboob W, Singhal RK, Kumari A, Rajendran K, **Wasaya A,** Javed T, Shabbir R, Rahim J, Barutçular C, Habib Ur Rahman M, Raza MA, Ratnasekera D, Konuskan Ö I, Hossain MA, Meena VS, Ahmed S, Ahmad Z, Mubeen M, Singh K, Skalicky M, Brestic M, Sytar O, Karademir E, Karademir C, Erman M and Farooq M (2021) Potential Role of Plant Growth Regulators in Administering Crucial Processes Against Abiotic Stresses. Front. Agron. 3:648694.
11. EL Sabagh A, Islam MS, Skalicky M, Ali Raza M, Singh K, Anwar Hossain M, Hossain A, Mahboob W, Iqbal MA, Ratnasekera D, Singhal RK, Ahmed S, Kumari A, **Wasaya A,** Sytar O, Brestic M, ÇIG F, Erman M, Habib Ur Rahman M, Ullah N and Arshad A (2021) Salinity Stress in Wheat (Triticum aestivum L.) in the Changing Climate: Adaptation and Management Strategies. Front. Agron. 3:661932.
12. Mubeen, K., **Wasaya, A.,** Rehman, H.U., Yasir, T.A., Farooq, O., Imran, M., Ikram, R.M., Nazeer, R., Zahoor, F., Yonas, M.W. and Aziz, M., 2021. Integrated phosphorus nutrient sources improve wheat yield and phosphorus use efficiency under sub humid conditions. Plos one, 16(10), p.e0255043.
13. Mubeen, K., Shehzad, M., Sarwar, N., Rehman, H.U., Yasir, T.A., **Wasaya, A.,** Ahmad, M., Hussain, M., Abbas, M.B., Yonas, M.W. and Farooq, S., 2021. The impact of horse purslane (*Trianthema portulacastrum* L.) infestation on soybean [*Glycine max* (L.) Merrill] productivity in northern irrigated plains of Pakistan. PloS one, 16(9), p.e0257083.
14. Javaid, M.M., Saeed, M.A., Waheed, H., Nadeem, M.A., Ahmad, M.F., Aziz, A., **Wasaya, A.,** Iqbal, M., Mahmood, A. and Balal, R.M., 2021. Optimizing the rate of phosphorus to enhance grain yield and quality in two Camelina sativa (L.) crantz accessions. Semina: Ciências Agrárias, 42(5), pp.2735-2750.
15. Sarwar, N., Farooq, O., **Wasaya, A.,** Hussain, M., El-Shehawi, A.M., Ahmad, S., Brestic, M., Mahmoud, S.F., Zivcak, M. and Farooq, S., 2021. Integrated nitrogen management improves productivity and economic returns of wheat-maize cropping system. Journal of King Saud University-Science, 33(5), p.101475.
16. **Wasaya, A.,** Affan, M., Ahmad Yasir, T., Mubeen, K., Ali, M., Nawaz, F., Galal, A., Iqbal, M.A., Islam, M.S., El-Sharnouby, M. and EL Sabagh, A., 2021. Foliar Potassium Sulfate Application Improved Photosynthetic Characteristics, Water

Relations and Seedling Growth of Drought-Stressed Maize. Atmosphere, 12(6), p.663.

17. **Wasaya, A.,** Abbas, T., Yasir, T.A., Sarwar, N., Aziz, A., Javaid, M.M. and Akram, S. 2021. Mitigating Drought Stress in Sunflower (*Helianthus annuus* L.) Through Exogenous Application of β-Aminobutyric Acid. J Soil Sci Plant Nutr. 21:936–948. https://doi.org/10.1007/s42729-021-00412-4
18. **Wasaya, A.,** Manzoor, S., Yasir, T.A., Sarwar, N., Mubeen, K., Ismail, I.A., Raza, A., Rehman, A., Hossain, A. and EL Sabagh, A. 2021. Evaluation of Fourteen Bread Wheat (*Triticum aestivum* L.) Genotypes by Observing Gas Exchange Parameters, Relative Water and Chlorophyll Content, and Yield Attributes under Drought Stress. Sustainability, 13(9), p.4799.
19. Ali, H., Sarwar, N., Muhammad, S., Farooq, O., Rehman, A.U., **Wasaya, A.,** Yasir, T.A., Mubeen, K. and Akhtar, M.N., 2021. Foliar Application of Magnesium at Critical Stages Improved the Productivity of Rice Crop Grown under Different Cultivation Systems. Sustainability, 13(9), p.4962.
20. Yasir, T.A., Khan, A., Skalicky, M., **Wasaya, A.,** Rehmani, M.I.A., Sarwar, N., Mubeen, K., Aziz, M., Hassan, M.M., Hassan, F.A. and Iqbal, M.A., 2021. Exogenous Sodium Nitroprusside Mitigates Salt Stress in Lentil (Lens culinaris Medik.) by Affecting the Growth, Yield, and Biochemical Properties. Molecules, 26(9), p.2576.
21. Mubeen, K., Yonas, M.W., Khalofah, A., Ikram, R.M., Sarwar, N., Shehzad, M., **Wasaya, A.,** ur Rehman, H., Yasir, T.A., Aziz, M. and Alam, M., 2021. Interference of horse purslane (*Trianthema portulacastrum* L.) and other weeds affect yield of autumn planted maize (*Zea mays* L.). Saudi Journal of Biological Sciences.
22. Ahmad, Z.; Anjum, S.; Skalicky, M.; Waraich, E.A.; Muhammad Sabir Tariq, R.; Ayub, M.A.; Hossain, A.; Hassan, M.M.; Brestic, M.; Sohidul Islam, M.; **Allah Wasaya** et al. 2021. Selenium Alleviates the Adverse Effect of Drought in Oilseed Crops Camelina (*Camelina sativa* L.) and Canola (*Brassica napus* L.). Molecules, 26, 1699.https://doi.org/ 10.3390/molecules26061699
23. Sohail, S., Ansar, M., Skalicky, M., **Wasaya, A.,** Soufan, W., Ahmad Yasir, T., El-Shehawi, A.M., Brestic, M., Sohidul Islam, M., Ali Raza, M. and EL Sabagh, A., 2021. Influence of Tillage Systems and Cereals–Legume Mixture on Fodder

Yield, Quality and Net Returns under Rainfed Conditions. Sustainability, 13(4), p.2172.

24. **Wasaya, A.,** Yasir, T.A., Sarwar, N., Farooq, O., ur Rehman, A., Mubeen, K., Ali, M., Affan, M. and Aziz, A., 2021. Foliage applied potassium improves stay green, photosynthesis and yield of maize (*Zea mays* L.) under rainfed condition. Plant Physiology Reports, 38-48.
25. Bhatti MA, PS Cocks, SG Kailis, A Aziz, A Wasaya, N Akhtar, A Raza (2020) Genetic diversity in seed lipid composition of some wild radish (*Raphanus raphanistrum*) populations unveil its potential utility for genetic improvement of oilseeds. J. Environ. Agric., 5(2): 455-463.
26. Aziz, A., Ashraf, M., Nadeem, M. A., Wasaya, A., Bhatti, M.A., Akhtar, N., Asif, M., Adnan, M., Munawar, A., & Ali, Z. (2020). Allelopathic Activity of Three Weed Species Against Morphological and Physiological Traits of *Parthenium hysterophorus* and *Trianthema partulacastrum*, Ind. J. Pure App. Biosci. 8(5), 553-560.
27. Iqbal, M.M., I. Ahmad, S.M.A. Basra, A.B. Ijaz, Z.H. Tarar, M. Ansar, U. Iqbal, T. Naz, B. Fatima, M. Akram, **A. Wasaya**, A. Iqbal, S.A. Anwar, K.S.U. Khan, A. Khalid, A. Aziz and R. Mehmood. 2020. Induction of heat tolerance in maize through exogenous application of salicylic acid, ascorbic acid and hydrogen peroxide in a field study. Pakistan Journal of Agricultural Research, 33(x): xxx-xxx.
28. Atiq-Ur Rehman, Qamar, R., Rehman, A., **Wasaya, A.,** Farooq, O., Sarwar, N Iqbal, M.M. and Ahmad, S., 2020. Silicon Coating on Maize Seed Mitigates Saline Stress in Yermosols of Southern Punjab. Silicon, 1-11.
29. Naeem Sarwar, Muhammad Haseeb Javaid, Asifa Neelam, Atique-ur-Rehaman, Omar Farooq, **Allah Wasaya**, Khuram Mubeen, Aamir Ghani and Muhammad Zaighum Mushtaq. 2020. Application of spermidine to manage waterstress for improved fine rice yield and quality. Pure and Applied Biology. 9(3):1813-1819.
30. Javaid, MM, AUH Zia, H. Waheed, J. Nargis, A. Shahid, A. Aziz, and **A. Wasaya**. 2020. Effect of Isoproturon With and Without Adjuvants on Photosynthetic Attributes of Wheat and Its Associated Weeds. Planta Daninha 38.
31. **Allah Wasaya**, Tauqeer Ahmad Yasir, Naeem Sarwar, Omer Farooq, Ghulam Rasool Sheikh and Abdul Wahid Baloch. 2020. Improving growth and yield of

mungbean (Vigna radiata L.) through foliar application of silver and zinc nanoparticles. Pure Appl. Biol., 9(1): 790-797.

32. Abdul Sattar, Mumtaz A. Cheema, Ahmad Sher, Muhammad Ijaz, **Allah Wasaya,** Tauqeer A. Yasir, Tahira Abbas and Mubshar Hussain. 2020. Foliar Applied Silicon Improves Water Relations, Stay Green and Enzymatic Antioxidants Activity in Late Sown Wheat. Silicon: 12, 223–230. https://doi.org/10.1007/s12633-019-00115-7
33. Naeem Sarwar, Khuram Mubeen, **Allah Wasaya**, Atique-ur-Rehman, Omer Farooq, Muhammad Shehzad. 2020. Response of hybrid maize to multiple soil organic amendments undersufficient or deficient soil zinc situation. Asian J Agric & Biol. 8(1):38-43.
34. S. Hussain; A. Rehman; M. Akram; J. Iqbal; T. B. qaisrani; **Allah Wasaya** and M. Nafees. 2019. Role of growth regulators and plant water extracts on the productivity and water use efficiency of wheat genotypes under limited water supply. Biosci. J., Uberlândia, v. 35, n. 6, p. 1674-1680.
35. Ahsan Aziz,, Muhammad Ashraf, Sultan Sikandar, Muhammad Asif, Naeem Akhtar, Sher Muhammad Shahzad, **Allah Wasaya**, Ali Raza and Babar Hussain Babar. 2019. Optimizing sulfur for improving salt tolerance of sunflower (*Helianthus annuus* L.). Soil Environ. 38(2): 222-233.
36. N. Sarwar, **A. Wasaya**, S. Saliq, A. Reham, O. Farooq, K. Mubeen, M. Shehzad, M. Usman Zahoor and A. Ghani. 2019. Use of natural nitrogen stabilizers to improve nitrogen use efficiency and wheat crop yield. Cercetari Agronomice în Moldova.Vol. LII , No. 2 (178): 107-115.
37. **Allah Wasaya,** Muhammad Tahir, Tauqeer Ahmad Yasir, Muhammad Mansoor Javed, Muhammad Ali Raza and Muhammad Akram. 2019. Tillage systems and nitrogen timings effect on growth, stay green and grain quality in maize (*Zea mays* L.). Semina: Ciências Agrárias, Londrina, v. 40, n. 6, suplemento 2, p. 3007-3020, 2019
38. Muhammad Ali Raza, Ling Yang Feng, Wopke van der Werf, Nasir Iqbal, Muhammad Hayder Bin Khalid, Yuan Kai Chen, **Allah Wasaya**, Shoaib Ahmed, Atta Mohi Ud Din, Ahsin Khan, Saeed Ahmed, Feng Yang & Wenyu Yang. 2019. Maize leaf-removal: A new agronomic approach to increase dry matter, flower number and seed yield of soybean in maize soybean relay intercropping system. Scientific Reports. 9:13453. doi.org/10.1038/s41598-019-49858-8.

39. Tauqeer Ahmad Yasir, **Allah Wasaya**, Mubshar Hussain. Muhammad Ijaz, Muhammad Farooq, Omer Farooq, Ahmad Nawaz and Yin-Gang Hu. 2019. Evaluation of physiological markers for assessing drought tolerance and yield potential in bread wheat. Physiol. Mol. Biol. Plants. 25:1163–1174 https://doi.org/10.1007/s12298-019-00694-0
40. Muhammad Ijaz, Abdul Waheed, Sami Ul-Allah, Ahmad Nawaz, **Allah Wasaya**, Abdul Sattar and Ahmad Sher. 2019. Sewage waste water application improves the productivity of diverse wheat (*Triticum aestivum* L.) cultivars on a sandy loam soil. Environmental Science and Pollution Research. 26:17045–17054
41. El Sabagh, A., Hossain, A., Barutcular, C., Gormus, O., Ahmad, Z., Hussain, S., Islam, M.S., Alharby, H., Bamagoos, A., Kumar, N. and Akdeniz, H., Fahad, S. Meena, R. S., Abdelhamid, M.,**Wasaya, A.,** Hasanuzzaman, M., Sorour, S., – Saneoka, H. 2019. Effects of drought stress on the quality of major oilseed crops: implications and possible mitigation strategies–a review. Applied Ecology and Environmental Research, 17(2), pp.4019-4043.
42. Ali, K., Khan, A., Sagheer, M., Hanif, C.M.S., Aatif, H.M., Yasir, T.A. and **Wasaya, A.,** 2019. Biological Activities of Medicinal Plants Against the Population of Trogoderma granarium Everts. ZEITSCHRIFT FUR ARZNEI-& GEWURZPFLANZEN, 24(1), pp.38-42.
43. O. Farooq, Atique-ur-rehman, N. Sarwar, M. Hussain, **A. Wasaya**, M. Naeem, M.M. Iqbal, A. Khaliq. 2018. Herbicidal potential of sorghum and brassica against the weeds of cotton. Planta Daninha 2018; v36:e018185592
44. Shoaib Ahmed, Muhammad Ali Raza, Tao Zhou, Sajad Hussain, Muhammad Hayder Bin Khalid, Lingyang Feng, **Allah Wasaya,** Nasir Iqbal, Aftab Ahmed, Weigou Liu and Wenyu Yang. 2018. Responses of Soybean Dry Matter Production, Phosphorus Accumulation, and Seed Yield to Sowing Time under Relay Intercropping with Maize. Agronomy. 8, 282. doi:10.3390/agronomy8120282.
45. **Allah Wasaya,** Muhammad Tahir, Tauqeer Ahmad Yasir, Muhammad Akram, Omer Farooq and Naeem Sarwar. 2018. Soil physical properties, nitrogen uptake and grain quality of maize (Zea mays L.) as affected by tillage systems and nitrogen application. Italian Journal of Agronomy 2018; 13: 324-331.

46. **Allah Wasaya,** Xiying Zhang, Qin Fang and Yan Zongzheng.2018. Root Phenotyping for Drought Tolerance: A Review. Agronomy. 8, 241; doi:10.3390/ agronomy 8110241.

47. Muhammad Ali Raza, Ling Yang Feng, Nasir Iqbal, Abdul Manaf, Muhammad Hayder Bin Khalid, Sana ur Rehman, **Allah Wasaya**, Muhammad Ansar, Masum Billah, Feng Yang and Wenyu Yang. 2018. Effect of Sulphur Application on Photosynthesis and Biomass Accumulation of Sesame Varieties under Rainfed Conditions. Agronomy. 8, 149; doi:10.3390/agronomy8080149
48. **Allah Wasaya**, Muhammad Tahir, Tauqeer Ahmad Yasir, Sami ul Allah and Mubshar Hussain. 2018. Impact of Tillage Systems and Temporal Nitrogen Application on soil Properties, Nitrogen Uptake and Net Returns in Maize. Int. J. Agric. Biol. 20:1953-1960.
49. Muhammad Ijaz, Muhammad Sarfraz, Ahmad Nawaz, Tauqeer Ahmad Yasir, Ahmad Sher, Abdul Sattar and **Allah Wasaya**. 2018. Diluted Sugar Mill Effluent Application with PGPR Improves the Performance of Maize (*Zea mays* L.) under an Arid Climate. Agronomy 2018, 8, 67; doi:10.3390/agronomy8050067.
50. Ghulam Farid, Asif Tanveer, Ahsan Aziz, Muhammad Ashraf, Muhammad Ehsan Safdar, **Allah Wasaya** and Arshad Mahmood. 2018. Improving weed control efficacy of bromoxynil + MCPA + metribuzin in sorghum by addition of bio-enhancer. 2018. Pak. J. Weed Sci. Res., 24: 55-67.
51. T. A. Yasir, H. Ali, **A. Wasaya**, H. M. Aatif, M. Hussain, M. Farooq, A. W. Baloch, and Y. G. Hu. 2018. Single nucleotide polymorphisms in TaER genes and their association with carbon isotope discrimination in wheat genotypes under drought." Biologia Plantarum. 62 (4): 703-710.
52. Umbreen Shahzad, Mohammad Jafar Jaskani, Faisal Saeed Awan, Muhammad Shahjahan, Summer Abbas Naqvi, **Allah Wasaya** and Brett James Ferguson. 2018. Genetic Divergence of *Moringa oleifera*, an Economically Important, Yet Endangered Species from Pakistan. Int. J. Agric. Biol. 1497–1504.
53. Muhammad Iqbal, Sami Ul-Allah, Muhammad Naeem, Mubshar Hussain, Muhammad Ijaz, **Allah Wasaya** and Muhammad Qadir Ahmad. 2018. Reproductive Development and Seed Cotton Yield of Gossypium hirsutum L. Affected by Genotype and Planting Time. Int. J. Agric. Biol. 1591–1596.

54. Noreen Fatima, Muhammad Akram, Muhammad Shahid, Ghulam Abbas, Mubshar Hussain, Muhammad Nafees, **Allah Wasaya**, Muhammad Tahir and Mauhammad Amjad. 2018. Germination, growth and ions uptake of moringa (*Moringa oleifera* L.) grown under saline condition. Journal of Plant Nutrition, 41:12, 1555-1565.
55. Fahad Ajmal, Muhammad Akram, Rana Muhammad Iqbal, Mubshar Hussain, Muhammad Waqar Hassan, Muhammad Abdullah, **Allah Wasaya**. 2018. Effect of exogenous application of micronutrients on growth and productivity of cotton (Gossypium hirsutum L.) Crop. Biosci. J. 34: 302-31
56. Muhammad Farooq Azhar, Shahid Aziz, Abida Aziz, Muhammad Javaid, Hafiz Muhammad Aatif, **Allah Wasaya**, Tauqeer Ahmad Yasir and Abdul Wahid Baloch. 2018. Morphological features of different accessions of *Chenopodium quinoa*. Pure and Applied Biology. 7: 374-383.
57. Hafiz Muhammad Aatif, Tauqeer Ahmad Yasir, Chaudhary Muhammad Shahid Hanif, **Allah Wasaya**, Muhammad Irfan Ullah, Farooq Azhar, Kazam Ali, Abdul Wahid Baloch. 2018. Response of different citrus cultivars to citrus root nematode (Tylenchulus semipenetrans Cobb.). Pure and Applied Biology. Vol. 7, Issue 1, pp349-355.
58. Ahmad Sher, Muhammad Suleman, Abdul Qayyum, Abdul Sattar, **Allah Wasaya**, Muhammad Ijaz and Ahmad Nawaz. 2018. Ridge sowing of sunflower (*Helianthus annuus* L.) in a minimum till system improves the productivity, oil quality, and profitability on a sandy loam soil under an arid climate. Environmental Science and Pollution Research. 25(12), 11905-11912 doi.org/10.1007/s11356-018-1336-4
59. Muhammad Ali Raza, Ling Yang Feng, Abdul Manaf, **Allah Wasaya**, Muhammad Ansar, Anwaar Hussain, Muhammad Hayder Bin Khalid, Nasir Iqbal, Zeng Jin Xi, Yuan Kai Chen, Jun Xu Chen, Feng Yang, Wenyu Yanga. 2018. Sulphur application increases seed yield and oil content in sesame seeds under rainfed conditions. Field Crops Research. 218: 51–58
60. Tauqeer Ahmad Yasir, **Allah Wasaya**, Zahra Masood Bhutta, Hafiz Muhammad Aatif, Omer Farooq, Muhammad Ijaz, Sajid Hussain, Abdul Wahid Baloch and Muhammad Muzammil. 2017. Seed bio-priming approach to amplify production potential of mungbean (*Vigna radiata* L.) in sandy soils. Pure Appl. Biol., 6(4):1410-1416.

61. Umbreen Shahzad, Sundas Rasheed, Tauqeer Ahmad Yasir, Muhammad Shah Jahan, Zeshan Hassan, **Allah Wasaya** and Abdul Wahid Baloch. 2017. Effect of growth media and foliar application of macro nutrients on agronomic performance of strawberry. Pure Appl. Biol., 6(4):1457-1463.
62. Sajida Memon, Abdul Wahid Baloch, Naila Gandahi, Tauqeer Ahmad Yasir, Saleem Muhammad Sarki, **Allah Wasaya**, Inayat Ali Mallano, Muharam Ali, Mukhtiar Ali Rind, Abdul Majeed Baloch and Abdul Sattar Khetran. 2017. Evaluation of genetic divergence, character associations and path analysis in upland cotton genotypes. Pure Appl. Biol., 6(4):1516-1521.
63. N. Sarwar, Atique-ur-Rehman, O. Farooq, K. Mubeen, **A. Wasaya**, W. Nouman, M. Zafar ali, M. Shehzad. 2017. Exogenous application of gibberellic acid improves the maize crop productivity under scarce and sufficient soil moisture condition. Cercetări Agronomice în Moldova. 4: 65-73.
64. **Allah Wasaya**, Muhammad Tahir, Tauqeer Ahmad Yasir, Hafiz Muhammad Aatif and Umbreen Shahzad. Response of maize (*Zea mays* L.) to different tillage regimes and nitrogen timings under semi-arid irrigated conditions. Pak. J. Agri. Sci., Vol. 54(3), 553-560.
65. Hafiz Muhammad Aatif, Tauqeer Ahmad Yasir, Chudary Muhammad Shahid Hanif, Tahira Abbas, Abdul Wahid Baloch, **Allah Wasaya**, Saqi Kosar Abbas and Saadia Pervaiz Lali. 2017. Evaluation of prevalence and incidence of citrus slow decline disease in citrus orchards in district Layyah. Pure Appl. Biol., 6(2): 664-668.
66. W. Hassan, S. Bashir, S. Hanif, A. Sher, A. Sattar, **A. Wasaya**, H. Atif and M. Hussain. 2017. Phosphorus solubilizing bacteria and growth and productivity of mung bean (*Vigna radiata*). Pak. J. Bot., 49(3): 331-336.
67. **Allah Wasaya,** Muhammad Shahzad Shabir, Mubshar Hussain, Muhammad Ansar, Ahsan Aziz, Waseem Hassan and Ijaz Ahmad. 2017. Foliar application of zinc and boron improved the productivity and net returns of maize grown under rainfed conditions of Pothwar Plateau. Journal of Soil Science and Plant Nutrition.17 (1): 33-45.
68. **Allah Wasaya**, Muhammad Tahir, Hakoomat Ali, Mubshar Hussaina, Tauqeer Ahmad Yasir, Ahmad Sher, Muhammad Ijaz and Abdul sattar. 2017. Influence of varying tillage systems and nitrogen application on crop allometry, chlorophyll

contents, biomass production and net returns of maize (*Zea mays* L.). Soil & Tillage Research.170:18–26

69. Ijaz Ahmad, Shehzad Maqsood Ahmed Basra, Muhammad Akram, **Allah Wasaya**, Muhammad Ansar, Safdar Hussain, Asif Iqbal, Syed Azhar Hussain. 2017. Improvement of antioxidant activities and yield of spring maize through seed priming and foliar application of plant growth regulators under heat stress conditions. Semina: Ciências Agrárias, Londrina. 38 (1): 47-56
70. M. Irfan, M. Ansar, A. Sher, **A. Wasaya** and A. Sattar. 2016. Improving forage yield and morphology of oat varieties through various row spacing and nitrogen application. The Journal of Animal & Plant Sciences, 26(6): 1718-1724
71. I. AHMAD, S.M.A. BASRA, M. AKRAM, M. ANSAR, **A. WASAYA** and S.A. HUSSAIN. 2016. Agrometeorological, phenological and yield response of spring maize as influenced by foliar application of different plant growth regulators under suboptimal temperature of Faisalabad, Pakistan. Vol. 18, *Journal of Agrometeorology 18 (2) : 315-319.*
72. M. Ijaz, A. Sattar, A. Sher, T. Abbas, T. A. Yasir, **Allah Wasaya** and Omer Farooq. 2016. Foliage applied zinc improve the growth and productivity of wheat. J. Glob. Innov. Agric. Soc. Sci., 4(2): 77-87.
73. I Ahmad, S.M.A. Basra, M. Akram, **Allah Wasaya**, S.A. Hussain and Asif Iqbal. 2016. Alleviation of oxidative stresses by potassium fertilizer in spring maize under early and late sown conditions. Bangladesh J. Sci. Ind. Res. 51(2): 101-110.
74. **Allah Wasaya**, R. Ahmad, F.U. Hassan, M. Ansar, A. Manaf and A. Sher. 2013. Enhancing crop productivity through Wheat (*Triticum aestivum* L.) - Fenugreek intercropping system. J. Anim. Plant Sci. 23(1): 452-456.
75. Mukhtar Ahmed, Muhammad Asif, Muhammad Sajad, Jabar Zaman Khan Khattak, Waqas Ijaz, Fayyaz-ul-Hassan, **Allah Wasaya** and Jong Ahn Chun. 2013. Could agricultural system be adapted to climate change? A Review. AJCS 7(11):1642-1653.
76. **Allah Wasaya**, Muhammad Tahir, A. Tanveer and M. Yaseen. 2012. Response of maize to tillage and nitrogen management. J. Anim. Plant Sci. 22(2): 452-456.
77. Sher, A., M. Ansar, M. A. Malik, **A. Wasaya,** G. Shabbir and R. H. Qureshi. 2012. Variability of hydrocyanic acids in fresh leaves of forage sorghum (*Sorghum*

bicolor (L.) Moench) grown under different soil moisture regimes. Archive De Sci. 65(11): 752-762.

78. **Allah Wasaya**, Muhammad Tahir, Abdul Manaf, Mukhtar Ahmed, Shuaib Kaleem and Ijaz Ahmad. 2011. Improving maize productivity through tillage and nitrogen management. Afr. J. Biotechnol., 10(81): 19025-19034.
79. Shuaib Kaleem, Fayyaz- ul- Hassan, M. Ahmad, Imran Mahmood, **Allah Wasaya**, M. A. Randhawa and Pervaiz Khaliq. 2011. Effect of growing degree days on autumn planted sunflower. Afr. J. Biotechnol. 10(44): 8840-8846.
80. Nadeem M.A., M. Abbas, A. Tanveer, A. Aziz, **Allah Wasaya**, B.H. Babar and M. Rasheed. 2009. Comparative performance of weed control options in sesame. International Journal on Weed Research and Control. Herbologia 10(2): 85-94.
81. Tahir M., A. Tanveer, T. H. Shah, N. Fiaz and **A. Wasaya**. 2009. Yield Response of Wheat *(Triticum aestivum* L.) to Boron Application at Different Growth Stages. Pak. j. life soc. sci., 7(1): 39-42
82. Tahir M., M. R. Javed, A. Tanveer , M. A., **Allah Wasaya**, S.A.H. Bukhari and J.Rehman. 2009. Effect of Different Herbicides on Weeds, Growth and Yield of Spring Planted Maize *(Zea mays* L.). Pak. j. life soc. sci., 7(2): 168-174
83. Ali A., M. Tahir, M. Ayub, I. Ali, **A. Wasaya** and F. Khalid. 2009. Studies on the Effect of Plant Spacing on the Yield of Recently Approved Varieties of Cotton. Pak. j. life soc. sci., 7(1):25-30
84. Ali A., M. Tahir, M. A. Nadeem, A. Tanveer , M. Asif , **A. Wasaya** and J. Rehman. 2009. Effect of Different Irrigation Management Strategies on Growth and Yield of Soybean Pak. j. life soc. sci., 7(2):181-184
85. Tahir M., A. Tanveer, A. Ali, M. Ashraf and **Allah Wasaya**. 2008. Growth and Yield Response of two Wheat (*Triticum aestivum* L.) Varieties to Different Potassium Levels. Pak. j. life soc. sci., 6(2): 92-95
86. Tahir M., A. Tanveer, A. Ali, M. Abbas and **Allah Wasaya**. 2008. Comparative Yield Performance of Different Maize (*Zea mays* L.) Hybrids under Local Conditions of Faisalabad-Pakistan. Pak. j. life soc. sci., 6(2): 118-120.

Book Chapters:

1. Sarwar, N., **Wasaya, A.,** Farooq, O., Mubeen, K., Dawood, M., Shehzad, M. and Ahmad, S., 2022. Rice-Based Cropping Systems. In Modern Techniques of Rice Crop Production (pp. 115-133). Springer, Singapore.

2. Yasir, T.A., **Wasaya, A.,** Azhar, W., Kanwal, S., Sarwar, N., Rehmani, M.I.A. and Wahid, A., 2022. Plant Growth Regulators for Rice Production in Changing Environment. In Modern Techniques of Rice Crop Production (pp. 257-274). Springer, Singapore.
3. Sarwar, N., Ali, H., **Wasaya, A.**, Farooq, O., Mubeen, K., Dawood, M., Shehzad, M. and Ahmad, S., 2022. Smart Nutrient Management in Rice Crop. In Modern Techniques of Rice Crop Production (pp. 85-103). Springer, Singapore.
4. Sarwar, N., Ali, H., **Wasaya, A.,** Farooq, O., Mubeen, K., Dawood, M., Shehzad, M. and Ahmad, S., 2022. Nursery Management of Transplanted Rice. In Modern Techniques of Rice Crop Production (pp. 59-70). Springer, Singapore.
5. **Wasaya, A.,** Yasir, T.A., Sarwar, N., Mubeen, K., Rajendran, K., Hadifa, A. and Sabagh, A.E., 2022. Climate Change and Global Rice Security. In Modern Techniques of Rice Crop Production (pp. 13-26). Springer, Singapore.
6. Ahmad, Z., Tariq, R.M.S., Ramzan, M., Bukhari, M.A., Raza, A., Iqbal, M.A., Meena, R.S., Islam, M.S., Sytar, O., Godswill, N.N. and **Wasaya, A.,** 2022. Biological Nitrogen Fixation: An Analysis of Intoxicating Tribulations from Pesticides for Sustainable Legume Production. In Managing Plant Production Under Changing Environment (pp. 351-374). Springer, Singapore.
7. Sabagh, A.E., Islam, M.S., Hossain, A., Iqbal, M.A., Imran, M., Raza, A., Çiğ, A., **Wasaya, A.,** Yasir, T.A., Sumiahadi, A. and Amanet, K., 2022. Prospects of beneficial microbes as a natural resource for sustainable legumes production under changing climate. In New and Future Developments in Microbial Biotechnology and Bioengineering (pp. 29-56). Elsevier.
8. Sabagh, A.E., Hossain, A., Islam, M.S., Iqbal, M.A., Amanet, K., Mubeen, M., Nasim, W., **Wasaya, A.,** Llanes, A., Ratnasekera, D. and Singhal, R.K., 2021. Prospective role of plant growth regulators for tolerance to abiotic stresses. In Plant Growth Regulators (pp. 1-38). Springer, Cham.
9. Sabagh, A.E., Islam, M.S., Iqbal, M.A., Hossain, A., Mubeen, M., Jabeen, T., Waleed, M., **Wasaya, A.,** Rahman, M.H.U., Ratnasekera, D. and Arif, M., 2021. Salinity Stress in Cotton: Adverse Effects, Survival Mechanisms and Management Strategies. In Engineering Tolerance in Crop Plants Against Abiotic Stress (pp. 59-80). CRC Press.
10. Sabagh, A.E., Hossain, A., Islam, M.S., Ahmed, S., Raza, A., Iqbal, M.A., **Wasaya, A.,** Ratnasekera, D., Arshad, A., Kumari, A. and Danish, S., 2021. Elevated CO2 in

Combination with Heat Stress Influences the Growth and Productivity of Cereals: Adverse Effect and Adaptive Mechanisms. In Engineering Tolerance in Crop Plants Against Abiotic Stress (pp. 125-161). CRC Press.

11. Sabagh, A.E., Çiğ, F., Seydoşoğlu, S., Battaglia, M.L., Javed, T., Iqbal, M.A., Mubeen, M., Ali, M., Ali, M., Bengisu, G. and Konuşkan, Ö., **Wasaya, A.,** 2021. Salinity Stress in Maize: Effects of Stress and Recent Developments of Tolerance for Improvement. In Cereal Grains. IntechOpen.
12. Yasir, T.A. and **Wasaya, A.,** 2021. Brassinosteroids Signaling Pathways in Plant Defense and Adaptation to Stress. Plant Growth Regulators: Signalling Under Stress Conditions, p.197.
13. Sabagh AE, Hossain A, Islam MS, Fahad S, Ratnasekera D, Meena RS, **Wasaya A,** Yasir TA, Ikram M, Mubeen M, Fatima M. 2020. Nitrogen Fixation of Legumes Under the Family Fabaceae: Adverse Effect of Abiotic Stresses and Mitigation Strategies. InThe Plant Family Fabaceae. (pp. 75-111). Springer, Singapore.
14. Ayman EL Sabagh, Akbar Hossain, Muhammad Aamir Iqbal, Celaleddin Barutçular, Mohammad Sohidul Islam, Fatih Çig, Murat Erman, Oksana Sytar, Marian Brestic, **Allah Wasaya,** Tasmiya Jabeen, Maham Asif Bukhari, Muhammad Mubeen, Habib-ur-Rehman Athar, Faraz Azeem, Hakki Akdeniz, Ömer Konuskan, Ferhat Kizilgeci, Muhammad Ikram, Sobhy Sorour, Wajid Nasim, Mabrouk Elsabagh, Muhammad Rizwan, Ram Swaroop Meena, Shah Fahad, Akihiro Ueda, Liyun Liu and Hirofumi Saneoka. 2020. Maize Adaptability to Heat Stress under Changing Climate. *http://dx.doi.org/10.5772/intechopen.92396*
15. Ayman EL Sabagh, Akbar Hossain, Mohammad Sohidul Islam, Muhammad Aamir Iqbal, Shah Fahad, Disna Ratnasekera, Faraz Azeem, **Allah Wasaya**, Oksana Sytar, Narendra Kumar, Analía Llanes, Murat Erman, Mustafa Ceritoglu, Huseyin Arslan, Dogan Arslan, Sajjad Hussain, Muhammad Mubeen, Muhammad Ikram, Ram Swaroop Meena, Hany Gharib, Ejaz Waraich, Wajid Nasim, Liyun Liu and Hirofumi Saneoka. 2020. Consequences and Mitigation Strategies of Heat Stress for Sustainability of Soybean (Glycine max L. Merr.) Production under the Changing Climate. http://dx.doi.org/10.5772/intechopen.92098.
16. Ayman EL Sabagh, Akbar Hossain, Celaleddin Barutçular, Mohammad Sohidul Islam, Zahoor Ahmad, **Allah Wasaya,** Ram Swaroop Meena, Shah Fahad, Sytar Oksana, Yaser Mohamed Hafez, Ullah Najeeb, Fatih ÇIG, Ömer Konuskan, and Mirza Hasanuzzaman. 2020. Adverse Effect of Drought on Quality of Major Cereal

Crops: Implications and Their Possible Mitigation Strategies. Agronomic Crops Volume 3: Stress Responses and Tolerance. 635-658.

17. **Allah Wasaya**, Tauqeer Ahmad Yasir, Muhammad Ijaz and Shakeel Ahmad. 2019. Tillage Effects on Agronomic Crop Production. *M. Hasanuzzaman (ed.) Agronomic Crops*. 73-98. https://doi.org/10.1007/978-981-32-9783-8_5
18. Muhammad Sarfraz, Sajid Hussain, Muhammad Ijaz, Ahmad Nawaz, Tauqeer Ahmad Yasir, Ahmad Sher, **Allah Wasaya**, and Shakeel Ahmad. 2019. Abiotic Stress Tolerance in Plants by Priming and Pretreatments with Phytohormones. M. Hasanuzzaman, V. Fotopoulos (eds.), *Priming and Pretreatment of Seeds and Seedlings*, 447-457. https://doi.org/10.1007/978-981-13-8625-1_22

Conference Proceedings:

1. Naeem Sarwar, Atique-ur-Rehman, Omer Farooq, **Allah Wasaya**, Suhail Saliq and Khuram Mubeen. 2019. Improved auxin level at panicle initiation stage enhance the heat stress tolerance in rice plants. Proceedings of the 2019 Agronomy Australia Conference, 25 – 29 August 2019, Wagga Wagga, Australia. www.agronomyaustralia.org/conference-proceedings
2. Yasir,T.A., Wasaya, A., 2020. Improving Wheat Production to Safeguard Food Security in Pakistan. Yangling International Agri-science Forum, China.

Paper presented in International/National Conferences:

1. Iqra Khan, **Allah Wasaya*,** Nimra Kousar, Tauqeer Ahmad Yasir, Muhammad Dilshad, Muhammad Saddam, Moin Akhter, Sarwar Shah, Lubna Shabir, Anum Bibi, Iqra Rehman. 2022. “Improving productivity of wheat through iron and boron priming under drought condition” for Oral Presentation in the 7 th International Conference on "Climate Smart Agriculture: Innovations and Adaptations" June 15-17, 2022 organised by the Faculty of Agriculture, University of Poonch Rawalakot, AJK.
2. **Allah Wasaya*,** Tanveer Abbas, Masooma Zahra, Amna Kainat, Wasif Azhar, Sabeela Yaqoob and Muhammad Imran. 2019. Improving drought tolerance in Sunflower (Helianthus annus L.) through exogenous application of ß-amino butyric acid (BABA). 1st International Conference on Sustainable Agriculture: Food Security under Changing Climate Scenarios. April, 3-5, 2019 at Ghazi University, D.G. Khan.
3. Allah Wasaya*, Sabeela Yaqoob, Tauqeer Ahmad Yasir, Tanveer Abbas, Masooma Zahra, Amna Kainat and Wasif Azhar. 2019. Improving yield of sunflower hybrids through foliar spray of β-amino butyric acid (BABA) under drought condition. 6th

International Conference on "Sustainable Agriculture in Changing Climate:Strategies and Management" 19-21 June, 2019 at University of Poonch Rawalakot

4. Masooma Zahra, Allah Wasaya*, Tauqeer Ahmad Yasir, Tanveer Abbas, Amna Kainat, Sabeela Yaqoob and Wasif Azhar. 2019. Improving drought tolerance in wheat through foliar application of salicylic acid. 6th International Conference on "Sustainable Agriculture in Changing Climate:Strategies and Management" 19-21 June, 2019 at University of Poonch Rawalakot
5. Allah Wasaya, Z, Hussain and T. A. Yasir. 2019. Exogenous application of nitric oxide improved productivity of peanut under drought stress. 4TH INTERNATIONAL CONFERENCE ON AGRICULTURE FOOD AND ANIMAL SCIENCES, 21-22 JANUARY 2019 at Sindh Agriculture University Tandojam-Pakistan
6. **Allah Wasaya**, T. A. Yasir, A. Sher, A. Sattar, M. Zahara, T. Abbas, S. Yaqoob. Improving growth and yield of mung bean (Vigna radiata L.) through foliar application of silver and zinc nano-particles under arid conditions. Poster presentation in 1st International and 2nd National conference Challenges and opportunities to boost agriculture in changing climate, dated march 26-28 2018 In Layyah, Pakistan. (Poster)
7. **Allah Wasaya**, M. Affan, T. A. Yassir, M. Hussain H. M. Atif, A. Sattar and M. ijaz. Enhancing drought tolerance in Maize through Potassium Application. Poster presented in 1st National conference Challenges and opportunities to boost agriculture in changing climate, dated march 29-30 2017 In Layyah, Pakistan (Poster)
8. **Allah Wayasa**, Fayyaz ul Hassan, H. Ali, A. Sattar, A. Sher, M. Ijaz, T.A. Yasir and W. Hassan. Physiological expressions of hybrid maize in response to tillage system and temporal nitrogen application. Presented in 14th National and 5th International conference of Botany , dated January 15-18, 2016 In University of Karachi, Pakistan. (Oral)
9. **Wasaya, A**., M. Tahir and A. Tanveer. 2011. Role of different tillage systems and nitrogen levels in improving maize yield. Abstract of the "*International seminar on Crop management: issues and options"* Faisalabad, Pakistan, June 01-02, 2011. (Oral)
10. **Wasaya, A.,** F.U. Hassan, M. Tahir, M. Ansar and A. Manaf. 2012. Physiological expression and dry matter production of maize in response to tillage and nitrogen application. Abstract of the "*12th National and 3rd International Conference of Botany*" Islamabad, Pakistan Sep. 01-03, 2012. (Poster)

Abstracts Published in International/National Conferences

1. Iqra Khan, **Allah Wasaya*,** Nimra Kousar, Tauqeer Ahmad Yasir, Muhammad Dilshad, Muhammad Saddam, Moin Akhter, Sarwar Shah, Lubna Shabir, Anum Bibi, Iqra Rehman. 2022. “Improving productivity of wheat through iron and boron priming under drought condition” for Oral Presentation in the 7 the International Conference on "Climate Smart Agriculture: Innovations and Adaptations" June 15-17, 2022 organized by the Faculty of Agriculture, University of Poonch Rawalakot, AJK.
2. Muhammad Dilshad, **Allah Wasaya**, Haji Muhammad, Muhammad Asif. 2022. enhancing the yield of desi and kabuli chickpea through soil application of boric acid” published in the 7 the International Conference on "Climate Smart Agriculture: Innovations and Adaptations" June 15-17, 2022 organised by the Faculty of Agriculture, University of Poonch Rawalakot, AJK.
3. Kousar Shehzadi, Saima Kanwal, Muhammad Ahmad, Muhammad Ateeq, Shoaib Bajwa, Abdul Basit, Muhammad Awais Ashraf, Shanza Arshad, Sonia Samreen, **Allah Wasaya**, Tauqeer Ahmad Yasir. 2022. Alleviation of terminal drought stress in wheat thorough foliar application of synthetic cytokinin (6-benzylaminopurine)” published in the 7 the International Conference on "Climate Smart Agriculture: Innovations and Adaptations" June 15-17, 2022 organised by the Faculty of Agriculture, University of Poonch Rawalakot, AJK.
4. Asma Basheer, Muhammad Ahmad, Muhammad Ateeq, Surriya Bibi, Rabia Noreen, Saima Kanwal, **Allah Wasaya**, Tauqeer Ahmad Yasir. 2022. Mitigation of moisture stress by using foliar application of chitosan to improve growth and yield of lentil (Lens culinaris L.)” published in the 7 the International Conference on "Climate Smart Agriculture: Innovations and Adaptations" June 15-17, 2022 organised by the Faculty of Agriculture, University of Poonch Rawalakot, AJK.
5. **Allah Wasaya*,** Tanveer Abbas, Masooma Zahra, Amna Kainat, Wasif Azhar, Sabeela Yaqoob and Muhammad Imran. 2019. Improving drought tolerance in Sunflower (Helianthus annus L.) through exogenous application of ß-amino butyric acid (BABA). 1st International Conference on Sustainable Agriculture: Food Security under Changing Climate Scenarios. April, 3-5, 2019 at Ghazi University, D.G. Khan.
6. **Allah Wasaya***, Masooma Zahra, Tanveer Abbas, Amna Kainat, Wasif Azhar and SabeelaYaqoob. 2019. Evaluation of Hybrid Maize under Drought Stress. 1st International Conference on Sustainable Agriculture: Food Security under Changing Climate Scenarios. April, 3-5, 2019 at Ghazi University, D.G. Khan.

7. O. Farooq, M.G. Asghar, **A. Wasaya,** T.A. Yasir, H. Nawaz, M.M. Iqbal, M.W. Abbas and S. Saleem. 2019. Chickpea and wheat seedling invigoration by foliar application of brassica extract. Published in 4th International Conference on Agriculture, Food and Animal Sciences held on21-22 January, 2019 at Sindh Agriculture University, Tandojam.
8. T. A. Yasir, M. Muzammil, **A. Wasaya** and A.W. Baloch. 2019. Biofortification of iron in chiclpea genotypes through different application methods. Published in 4th International Conference on Agriculture, Food and Animal Sciences held on21-22 January, 2019 at Sindh Agriculture University, Tandojam.
9. **Allah Wasaya**, T. A. Yasir, A. Sher, A. Sattar, M. Zahara, T. Abbas, S. Yaqoob. Improving growth and yield of mung bean *(Vigna radiata L.)* through foliar application of silver and zinc nano-particles under arid conditions. Published in 1st International and 2nd National conference Challenges and opportunities to boost agriculture in changing climate, dated march 26-28 2018 In Layyah, Pakistan.
10. Mubashir hussain, M. Ansar, S. Sohail Ijaz, Z. Iqbal Ahmad, A. Anwar, **A. Wasaya,** A. Ghaffar Khan, and M. Jamil. Mitigating climate effect on rain-fed wheat through tillage and foradges. Published in 1st International and 2nd National conference Challenges and opportunities to boost agriculture in changing climate, dated march 26-28 2018 In Layyah, Pakistan.
11. Sajid Hussain., M. Maqsood, M. Ijaz, **A. Wasaya**, T. A. Yasir, Samiullah, U. Shahzad, and M. Hussain. Combined application of zinc and potassium metigaties the negative consequences of drought stress in maize *(Zea mays L.)* Under semi-arid environment. Published in 1st International and 2nd National conference Challenges and opportunities to boost agriculture in changing climate, dated march 26-28 2018 In Layyah, Pakistan.
12. Tauqeer Ahmad yasir, S. Ali Hassan Bokhari, W. Azhar. **A. Wasaya**, A.Sher, M. Ijaz. A. Nawaz and A. W.Baloch. Potential of silver and zinc nano-particles as foliar nutrition to improve growth and yield of peanut *(Arachis hypogaea L.).* Published in 1st International and 2nd National conference Challenges and opportunities to boost agriculture in changing climate, dated march 26-28 2018 In Layyah, Pakistan.
13. Tauqeer Ahmad Yasir, F.Nawaz, M. Muzammil, A. Kainat, **A. Wasaya**, H.M. Atif, A. Sattar and M. Basil. Synergistic effect of amino acid and micro nutrients spray to enhance growth and yield of mung bean *(Vigna radiata L.)* . Published in 1st

International and 2nd National conference Challenges and opportunities to boost agriculture in changing climate, dated march 26-28 2018 In Layyah, Pakistan.

14. Muzaffar saleem, A. Sattar, A. Sher, A. Nawaz, **A. Wasaya,** M. Kashif, A. Mehboob. Foliar applied silicon improve the growth, boll retention, lint yield and quality of cotton. Published in 1st International and 2nd National conference Challenges and opportunities to boost agriculture in changing climate, dated march 26-28 2018 In Layyah, Pakistan.
15. Muhammad Ijaz, M. Sarfaraz, M. Hussain, T.A. Yasir, A.Sher, A. Sattar, **A. Wasaya** Q. Ali and A. Nawaz. Farm Yard manure boichar application improvers wheat performance and reduces the bio availability and phyto-toxicity of cadmium. Published in 1st International and 2nd National conference Challenges and opportunities to boost agriculture in changing climate, dated march 26-28 2018 In Layyah, Pakistan.
16. Tauqeer Ahmad Yasir, S. Ali, M. Muzammil. G. Mujtaba, **A. Wasaya,** K. Ali, Samiullah and S. Hussain. Agronomic performance of Bio-primed Soybean seed under sandy soil. Published in 1st International and 2nd National conference Challenges and opportunities to boost agriculture in changing climate, dated march 26-28 2018 In Layyah, Pakistan.
17. **Allah Wasaya**, M. Affan, T. A. Yassir, M. Hussain H. M. Atif, A. Sattar and M. ijaz. Enhancing drought tolerance in Maize through Potassium Application. Published in 1st National conference Challenges and opportunities to boost agriculture in changing climate, dated march 29-30 2017 In Layyah, Pakistan.
18. Muhammad Ansar, S. Sohail, S. S. Ijaz, A. Anwar, **A. Wasaya**, M. jameel, A. G. Khan A. Hassan M. Sharif and Sana ur Rehmn. Prospects of cereal legumes forages grown in conventional vs Conservation tillage system under rain-fed conditions of pothowar- Pakistan. Published in 1st National conference Challenges and opportunities to boost agriculture in changing climate, dated march 29-30 2017 In Layyah, Pakistan.
19. Muhammad Ijaz, M.Sarfaraz, m. hussain, T. A. Yasir, A. Sher, A. Sattar, **A. Wasaya** and M. Saqib. Potential of diluted sugar mill effluent in improving the growth, morphology and quality of maize. Published in 1st National conference Challenges and opportunities to boost agriculture in changing climate, dated march 29-30 2017 In Layyah, Pakistan.

20. Tauqeer Ahmad Yasir, **A. Wasay**, O. Farooq, M. A. Arfat, A. W. baloch, S. Rizwan amd A.Sattar. Role of bacillus and Rhizobium inoculents in improving growth symbiotic and yield traits in chickpea. Published in 1st National conference Challenges and opportunities to boost agriculture in changing climate, dated march 29-30 2017 In Layyah, Pakistan.
21. Sehrish Faheem, A. Sher, A. Sattar, M. Ijaz, and **A. Wasaya.** Evaluating the potential of silver nano-particles on growth, physiology and forage yield of sorghum (Sorghum bicolor L.) Moench. Published in 1st National conference Challenges and opportunities to boost agriculture in changing climate, dated march 29-30 2017 In Layyah, Pakistan.
22. **Allah Wayasa,** Fayyaz ul Hassan, H. Ali, A. Sattar, A. Sher, M. Ijaz, T.A. Yasir and W. Hassan. Physiological expressions of hybrid maize in response to tillage system and temporal nitrogen application. Published in 14th National and 5th International conference of Botany , dated January 15-18, 2016 In University of Karachi, Pakistan.
23. Shah Nawaz, Z. I. Ahmad, M. Ansar, A. Sher, **A. Wasaya**, W. Hassan and m. Irfan. Agronomic Efficiency and HCN of Sorghum Cultivars as influenced by zinc and boron application under sub- tropical condition. Published in 14th National and 5th International conference of Botany , dated January 15-18, 2016 In University of Karachi, Pakistan.
24. Muhammad Ansar, S.S. Ijaz, A. Anwar, Y. mehmood, M .Nadeem, M. Irfan , **A. Wasaya,** A. Sher, M. Hussain and Abdul Ghafar. Problems and prospects of forage production in changing rain-fed condition of Pakistan. Published in 14th National and 5th International conference of Botany , dated January 15-18, 2016 In University of Karachi, Pakistan.
25. Tauqeer Ahmed yasir, Y.G. Hu, H. Ali, A. wahid, M. Ijaz, A. Sher, A. Sattar, **A. Wasaya** and Umer Farooq. Identification of SNPs in TaER genes and their association CID related traits in CHINESE bread wheat genotypes under water-stress conditions. Published in 14th National and 5th International conference of Botany , dated January 15-18, 2016 In University of Karachi, Pakistan.

Popular Articles in Newspaper:

1. Fertilizer Choice for a good crop yield published in “Daily DAWN”.
2. Silage making-a quality forage preservation published in “Daily DAWN”.

Urdu Booklets/Leaflets:

1. Method/procedure of producing standard seed of wheat crop.

2. Production technology of groundnut seed and its importance.

Post-graduate Students Supervised:

1. Muhammad Affan. 2012. “Enhancing drought tolerance in maize by potassium application”
2. M. S. Shabir. 2013. Efficacy of different Methods of Zinc and Boron Application on Terminal Droughts of Maize under Rainfed Conditions.
3. Qari Muhammad Hanif. 2018. Exploring genetic diversity of maize hybrids under terminal drought.
4. Zamurd Hussain. 2018. Effect of foliage applied nitric oxide on productivity and quality of peanut under different irrigation regimes.
5. Muhammad Rizwan Akram. 2018. Modelling the impact of different wheat varieties in various agro-environments of the southern Punjab, Pakistan.
6. Jamshaid Hassan. 2019. Mitigating terminal drought in Pearl Millet through exogenous application of silicon.
7. Sibtain Ali. 2019. Foliar application of different growth regulators for improving growth and yield of Canola Genotypes.
8. Abdul Waheed. 2019. Improving drought tolerance in Sunflower through foliar application of salicylic acid.
9. Farukh Nawaz. 2020. Improving growth and yield of wheat through different agro-management practices.
10. Muhammad Usama Javed. 2020. Biofortification of pearl millet with Zinc and Iron in arid climate.
11. Muhammad Shahid. 2021. Improving bread wheat productivity through iron and boron nutrition under drought stress.
12. Tanveer Abbas.2021. Agronomic biofortification of pearl millet with boron and iron.
13. Iqra Rehman 2022. Improving drought tolerance in wheat through exogenous application of putrescine.
14. Hafiz Muhammad Mubasher 2022. Improving growth and yield of bread wheat through exogenous application of boric acid under terminal drought stress
15. Muhmmad Aqib 2022. Effect of tillage practices and organic amendments on growth and yield of maize.
16. Anam Bibi 2022. Enhancing wheat productivity through foliar application of zinc and boron under drought stress.
17. Muhammad Zeeshan 2023. Enhancing productivity of wheat through foliar application of

selenium under drought conditions.

18. Iqra Khadim 2023. Improving growth and yield of wheat through zinc application.
19. Umar Farooq 2023. Improving drought tolerance in wheat through exogenous application of mannitol.
20. Fouzia Naz 2024. Enhancing yield of desi and kabuli chickpea (Cicer arietinum L.) through soil application of boric acid
21. Lubna Shabeer 2024. Improving growth and yield of canola through different tillage systems and organic amendments.
22. Mushahid Hussain 2024. Agronomic biofortification of mungbean (Vigna radiate L.) with Zinc.
23. Muhammad Zain ul Hassan 2024. Improving wheat productivity through tillage systems and organic mulches.

Member of Supervisory Committee:

1. M. Arfan. 2013. Effect of Agronomic on oat forage production and preservation.

Membership of Scientific Societies:

- Life member of Pakistan Society of Agronomy
- Annual member of Pakistan Botanical Society (2011)

Other Activities:

- Coordinator of departmental time table/date sheet
- Member of department Self-Assessment Report (SAR) team
- Member of board of studies of Agronomy Department

Research Projects/Grants:

1. Won a project as P.I. entitled “Agro-management of wheat in thal region by exploiting biochar, tillage and irrigation application” funded by Higher Education Commission of Pakistan (HEC) under “NRPU” research grant worth 2.45 million. 2018.
2. Won a project as CO-PI entitled “Improving the Productivity of Wheat-based Cropping System in Punjab, Pakistan” funded by Higher Education Commission of Pakistan (HEC) under “NRPU” research grant worth 2.45 million. 2018
3. Won a project as P.I. entitled “Improving growth and yield of mungbean (*Vigna radiata* L.) through foliar application of silver and zinc nanoparticles” approved and funded by Bahauddin Zakariya University, Multan, Pakistan worth 0.2 million. 2017.
4. Won a project as P.I. entitled “Evaluating the yield performance of bread wheat genotypes under varying planting times in arid climatic conditions” approved and funded by Bahauddin Zakariya University, Multan, Pakistan worth 0.2 million. 2015.

5. Won a project as P.I. entitled “To study the relationship between nitrate reductase activity, nitrogen levels and yield in wheat” approved and funded by Higher Education Commission of Pakistan (HEC) worth 0.5 million. 2013.
6. Won a project as P.I. entitled “Enhancement of drought tolerance in maize by potassium application” approved and funded by PMAS-Arid Agriculture University, Rawalpindi worth 0.2 million.2011.
7. Worked in a project as team member entitled“Seed technology transfer component-I” funded by Endowment Fund University of Agriculture, Faisalabad. 2011.

Research Training:

- Got training at nuclear institute for Agriculture and Biology on “Modern techniques in Research on Abiotic Stress Tolerance in Plants" on 05-09-2011 to 09-09-2011 Faisalabad, Pakistan.

Awards:

Won scholarship during M. Sc. and Ph. D. from University of Agriculture, Faisalabad and Higher education commission of Pakistan respectively.

Information technology:

- Word Processing (MS Word), Spreadsheet (MS Excel)
- Presentation (MS PowerPoint), Statistical soft wares (MSTATC, STATISTIX 9**)**

References

1) Dr. Muhammad Tahir
Department of Agronomy
University of Agriculture, Faisalaba
Email: drtahidfsd@hotmail.com
Ph.: +92 3009653377

2) Prof. Dr. Muhammad Ansar
Chaiman, Department of Agronomy
University of Arid Agriculture, Rawalpindi, Pakistan
Email: muhammad.ansar@gmail.com
Ph.: +92 3009514597

3) Prof. Dr. Xiying Zhang
Center for Agricultural Resources Research,
Institute of Genetics and Developmental Biology,
Chinese Academy of Sciences Shijiazhuang, Hebei, China
Email: xyzhang@sjziam.ac.cn
Ph.: +86 13833162338