Dr. Basharat Ali

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Institute of Microbiology and Molecular Genetics
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ACADEMIC QUALIFICATION

Degrees	University	Year	Subjects/ Specialization
PhD	University of the Punjab	2009	Microbiology and Molecular Genetics
M.Phil.	-do-	2004	Botany (Specialization in Microbiology)
M.Sc.	-do-	2001	Botany (Specialization in Microbiology)

RESEARCH INTERESTS

Microbiology/ Bacteria-Plant Interactions/ Agricultural Microbiology/ Microbial Ecology

TEACHING/ RESEARCH EXPERIENCE

1. Professor, Institute of Microbiology and Molecular Genetics, University of the Punjab, Lahore, since 27th November 2024.

2. Associate Professor, Institute of Microbiology and Molecular Genetics, University of the Punjab, Lahore, 25th August 2020 to 27th November 2024.

3. Assistant Professor, Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, March 10, 2011 to 24th August 2020.

4. Lecturer, Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, January 2006 to March 2011.

5. Lecturer, Department of Botany, University of the Punjab, Lahore, January 2003 to January 2006.

6. Doctoral candidate at Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, 2004-2009.

6. Visiting PhD scholar at Centre of Microbial and Plant Genetics, Katholieke University, Leuven, Belgium, for one month, April 2008.

6. Visiting PhD scholar at Swedish University of Agricultural Sciences, Umeå, Sweden, under the Higher Education Commission scholarship program from October 2007 to September 2008 (Total 8 month duration).

M.PHIL THESIS: Screening of salt tolerant bacteria for auxin production and its impact on plant growth.

Distinctions: First position in M.Phil class.

PhD THESIS: Plant associated auxin producing bacteria: their genetical studies and impact on plant growth.

HONORS AND AWARDS

1). Scholarship award (2007) under International Research Support Initiative Program by Higher Education Commission of Pakistan to visit Sweden under PhD Scholar visiting program.

2). "Research Productivity Award 2012-Category G" by Pakistan Council for Science and Technology, Ministry of Science and Technology, Pakistan.

RESEARCH SUPERVISION

PhD

1). Waheed Akram (2015), "Studies on efficacy and mechanisms of *Bacillus* strains to induce systemic resistance to tomato against *Fusarium* wilt" (completed).

2). Asif Raheem (2017), "Plant growth promoting potential of rhizobacteria under abiotic stress" (Completed).

3). Hafsah Shahbaz (2018), "Plant growth promoting potential of nickel and chromium resistant bacteria" (Completed).

4). Sumaira Anwar (2021), "Isolation and identification of actinomycetes from rhizospheric soils their agricultural applications" (Completed).

5). Rabiya Ikram (2024), "Halotolerant rhizobacteria from *Suaeda fruticosa*: Phytohormone profiling and plant growth promotion under saline conditions" (Completed).

MS/ M.Phil

1). Iram Ghaffar (2004-2005). "*In vitro* impact of different combinations of hormones on regeneration of callus of *Gompherena globosa* L.".

2). Asma Sadiq (2010-2011). "Growth promotion of *Triticum aestivum* L. by rhizobacteria containing phytase and ACC-deaminase activity".

3). Maryam Zareen (2010-2011). “Isolation and detection of *Escherichia coli* O157 from potable water system of Lahore”.

4). Safa Akhtar (2011-2012). “Correlation analysis of *in vitro* auxin production by *Bacillus megaterium* and growth promotion of *Triticum aestivum* L.”.

5). Shahzadi Noreen (2011-2012). “Substrate dependent indole-3-acetic acid production by rhizobia and their effect on nodulation and growth of mung beans”.

6). Anam Imtiaz (2012-2013). “Evaluation of biocontrol potential of *Bacillus* spp. against *Fusarium* wilt of tomato”.

7). Nisma Farooq (2013-2014). “Phylogenetic and functional diversity of bacteria associated with the surfaces of fresh vegetables”.

8). Faiza Aslam (2014-2015). “Halotolerant rhizobacteria from *Suaeda fruticosa*: Phylogenetic diversity and their potential to enhance plant growth in salt amended soils”.

9). Rabiya Ikram (2015-2016). “Antifungal activity of indigenous *Bacillus* strains stimulated growth of tomato against *Fusarium* wilt”.

10). Nagina Mobeen (2015-2016). “Halotolerant rhizobacteria: Auxin production and growth enhancement of *Vigna mungo* (L.) under saline conditions”.

11). Abida Bano (2016-2017). “*Escherichia coli* from waste water: Biofilm formation and screening for shiga toxin producing genes”.

12). Sana Shahzadi (2017-2018). “Biofertilization and growth potential of *Vigna radiata* (L.) by bacterial communities isolated from forest soil”.

13). Iqra Bano (2018-2019). “Screening of Halotolerant Bacillus spp. to enhance growth of maize under salt stress”.

14). Sidra Gull (2019-2020). “Auxin production by Halomonas: Potential to enhance the growth of wheat and barley in salt amended soils”

15). Ali Ahsan (2019-2020). “Genetic and functional diversity of bacterial strains associated with *Prunus persica* (L.) Batsch.”

16). Komal Shahzadi (2020-2021). “Isolation of bacteria from *Prunus persica*: auxin production and screening as plant growth promoting rhizobacteria”

17). Bilal Ahmad (2020-2021). “Plant growth promoting potential of bacteria isolated from *Trifolium alexandrinum* L.”

18). Habiba Amin (2021-2022). “Evaluation of *Bacillus* and *Halomonas* strains to improve growth of barley under salt stress”.

19). Shafqat Nawaz (2022-2023). "Efficacy of charcoal and water-based formulations of *Bacillus subtilis* to promote the growth of *Triticum aestivum* (L.)."

20). Fiza Shoaib (2022-2023). "Auxin production and biocontrol potential of *Bacillus megaterium* and *Rhizobium* enhanced the growth of *Zea mays* L."

21). Sadia Malik (2023-2024). "Auxin production and antifungal activity of *Bacillus* spp. Promoting the growth of *Helianthus annuus* L."

22). Aiman Nazir Bajwa (2023-2024). "Isolation and characterization of rhizobacteria to enhance the growth of *Zea mays* L."

M.Sc/ BS

1). Zeenat Zhofreen (2006-2007). "Effectiveness of different hormonal combinations on *in vitro* propagation of *Brassica oleracea* L.".

2). Huma Shafique (2007-2008)." *In vitro* auxin production potential by isolated bacterial strains and their effect on plant growth (*Triticum aestivum*)".

3). Salik Nawaz (2008-2009). "Screening rhizobacteria for multiple plant growth promoting traits".

4). Shakir Hafeez (2009-2010). "Evaluation of *Bacillus* spp. as non-rhizobial inoculants for leguminous plant".

5) - Shahzadi Noreen (2009-2010). "Auxin production by *Pseudomonas*: ACC-deaminase activity and biofertilization of *Vigna mungo* (L.) Hepper".

6). Safa Akhtar (2009-2010). "Screening rhizobacteria for ACC-deaminase activity and their phytostimulatory effect on mungbeans".

7). Abdul Kadir Mohmud (2010-2011). "Phytostimulation of *Vigna radiata* (L.) by auxin producing rhizobacteria".

8). Anam Imtiaz (2010-2011). "Auxin production and plant growth promotion by phyllobacteria".

9). Amna Basharat (2010-2011). "L-Tryptophan dependent auxin production by rhizobacteria and their phytostimulatory effect on *Triticum aestivum* L.".

10). Amina Yaqoob (2010-2011). "Isolation and characterization *Azospirillum* strains from the rhizosphere of some grasses".

11). Nisma Farooq (2011-2012). "Screening of water borne *E. coli* 0157 for plant growth promoting traits".

12). Anam Jamil (2011-2012). “L-Tryptophan amendments enhance auxin production and growth of *Triticum aestivum* L. by rhizobacteria”.

13). Faiza Aslam (2011-2013). “Efficacy of charcoal based biofertilizers to enhance the growth and yield of Triticum aestivum L.”.

14). Maimoona Malik (2012-2013). “Screening, phylogenetic analysis and antibiotic susceptibility pattern of Enterobacteriaceae isolated from freshwater canal of Lahore, Pakistan”.

15). Rabiya Ikram (2013-2014). “Co-inoculation of rhizobia and *Bacillus* stimulated the growth of *Vigna mungo* (L.) grown in cadmium amended soil”.

16). Hifza Idrees (2013-2014). “Screening waterborne *Pseudomonas* and *Escherichia coli* as plant growth promoting rhizobacteria”.

17). Amina Muhammad (2013-2014). “Comparative study of charcoal and talc based biofertilizers to enhance the growth and yield of *Vigna radiata* (L.)”.

18). Abida Bano (2014-2015). “Culture dependent analysis of bacterial diversity associated with processed salads”.

19). Moon Sajid (2014-2015). “Evaluation of auxin producing *Bacillus* spp. in alleviation of water stress of *Zea mays* L.”.

20). Tayyaba Ishaq (2014-2015). Assessment of microbial quality of drinking from Kasur, Pakistan”.

21). Farhana Azam (2015-2016). “16S rDNA based analysis of bacterial diversity associated with commercial broiler chicken”.

22). Ayesha Rahat (2015-2016). “Culture dependent analysis of bacterial diversity associated with *Malus domestica”*.

23). Yahya Tariq (2015-2016). “Charcoal and water based formulations promoted growth of *Zea mays* L. under axenic conditions”.

24). Sana Tanveer (2016-2017). “Evaluation of *Bacillus* spp. to enhance plant growth under water stress”.

25). Iqra Bano (2016-2017). “Isolation and screening of plant growth promoting rhizobacteria from the rhizosphere of *Cannabis sativa* L.”.

26). Sidra Gull (2017-2018). “Isolation and screening of plant growth promoting rhizobacteria from the rhizosphere of *Parthenium hysterophorous* (L.)”.

27). Hamna (2017-2018). “Screening and plant growth promoting potential of rhizobacteria isolated from the rhizosphere of *Momordica charantia* L.”.

28). Aqsa Yasin (2017-2018). “Isolation and characterization of bacteria associated with the surfaces of *Cucumis sativus* L.”.

29). Sobia Afzal (2018-2019). “Screening halotolerant bacteria auxin production and plant growth promotion under saline conditions”.

30). Komal Shahzadi (2018-2019). “Plant growth promoting potential of Halotolerant bacteria isolated from saline soils”.

31). Qinza Ali Shahid (2019-2020). “Risk assessment and detection of coliforms from potable water systems of Lahore, Pakistan”.

32). Sana Shakeel (2019-2020). “The effect of halotolerant *Bacillus* on the growth of *Hordeum vulgare* under salt stress”.

33). Shafaq Navid (2022-2023). “Auxin production by Bacillus simplex: enhanced growth of *Zea mays* (L.) under *in-vitro* and *in-vivo* conditions”.

34). Ammara Khalid (2022-2023). “Screening *Bacillus aerius* to evaluate their growth promotion potential on *Vigna radiata* (L.)”.

35). Omeeha Nosha (2023-2024). “Efficacy of rhizobacteria to enhance the growth of *Vigna mungo* (L.).”

36). Manahil Saboor (2023-2024). “Screening *Bacillus* strains for auxin production and their potential to stimulate the growth of Vigna radiata (L.).”

PAPERS PRESENTED IN INTERNATIONAL CONFERENCES

1). Presented paper titled “*In vitro* plant growth induction potential of indolacetic acid of *Halomonas desiderata* RE1 and *H. variabilis HT1*” in 12th Microbiology conference held in Cairo, Egypt, 18-20 March, 2007.

2). Presented research work titled “Indole-3-acetic acid production by plant associated bacteria: potential to alter endogenous IAA content and growth of *Triticum aestivum* L.” in “III International conference on environmental, industrial and applied microbiology (BioMicroWorld2009)” held from 2-4 December, 2009, in Lisbon, Portugal.

3). Presented research work titled “Potential of bacterial auxin in agrobiotechnology” in 6th International Plant Tissue Culture and Biotechnology Conference” held in University of Dhaka, Dhaka, Bangladesh, from 2-6 December, 2010.

4). Presented research work titled "Rhizobacterial potential to alter auxin content and growth of *Vigna radiata* (L.)" IFS-AFASSA International Symposium on Natural Products and their Applications in Health and Agriculture Kandy, Sri Lanka, October 3-8, 2011.

5). Presented research work titled "Role of bacterial auxin signaling in plant growth promotion in "VI International conference on environmental, industrial and applied microbiology (BioMicroWorld2013)" held from 2-4 October, 2013, in Madrid, Spain.

6). Presented research work titled "Co-inoculation of *Steptomyces* and *Bacillus* enhanced *in vitro* auxin production and growth of *Triticum aestivum* L." in 17th International conference on the Biology of Actinomycetes (ISBA 17), held from 8-12th October, 2014, in Kussadasi, Turkey.

7). Presented research work titled "Biofertilization and growth promotion of Triticum aestivum L. by halotolerant rhizobacteria" in International Congress of the Malaysian Society for Microbiology 2015 (ICMSM2015), held from 7-10 December, 2015, Penang, Malaysia.

8). Presented research work titled "Auxin production and biofertilization of Triticum aestivum L. by halotolerant rhizobacteria" in International Conference on Bioscience and Biotechnology (BioTech2016), held from 12-13 January, 2016, Colombo, Sri Lanka.

9). Presented research work titled "Biofertilization by halotolerant rhizobacteria enhanced growth and yield of *Triticum aestivum* L. in salt amended soils" in 7th International Crop Science Congress (7th ICSC), held from 14-19th August, 2016, Beijing, China.

10). Presented research work titled "Auxin production by plant growth promoting rhizobacteria improved growth and yield of wheat (*Triticum aestivum* L.) under drought stress" in International Conference on Sustainable Agriculture and Bioeconomy 2017 (AGBIO2017), held from 27th to 2nd March, 2017 at Bangkok International Exhibition and Trade Centre (BITEC), Bangkok, Thailand.

11). Presented research work titled "Bacterial auxin production: Growth and yield enhancement of *Triticum aestivum* L. under drought stress" in VIII International Agriculture Symposium (AGROSYM 2017), held from 05-08th October, 2017 on Jahorina Mountain, Bosnia and Herzegovina.

12). Presented research work titled "Agronomic significance of salt tolerant bacterial communities associated with *Suaeda fruticsoa* (L.)" in IX International Agriculture Symposium (AGROSYM 2018), held from 04-07th October, 2018 at Jahorina, Bosnia and Herzegovina.

13). Presented research work titled "Halotolerant bacterial diversity of *Suaeda fruticosa* (L.): Screening for beneficial metabolites and plant growth promotion under salt stress" in Southeast Asian Regional Symposium on Microbial Ecology (SARSME-2020) held in Pokhara, Nepal from 12-14 February, 2020.

14). Presented research work titled "The Microphenotron: A method for screening auxin producing rhizobacterial for agricultural applications" in XIV International Scientific Agriculture Symposium (AGROSYM 2023) that was held from 5-8th October, 2023 on Jahorina mountain, Bosnia and Herzegovina.

PARTICIPATION IN SELECTED LOCAL CONFERENCES/WORKSHOPS

1). Participated in 4th National Training Course on "Modern Techniques on Biotechnology" from March 26-31, 2006 held in NIBGE, Faislabad, Pakistan.

2). Participated in workshop titiled "Unitilzation of DNA technology in plant improvement" held from 22-26th May, 2007 in department of Genetics, University of Hazara, NWFP, Pakistan.

3). Presented work in 1st Symposium on Genomics, Proteomics, Metabolomics: Recent Trends In Biotechnology, from 22-23 October, 2007, organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, Pakistan.

4). Participated in conference titled "Development and commercialization of biotechnology products" organized by NCB in collaboration with NIBGE from 19-20th June, 2009 at NIBGE, Faisalabad, Pakistan.

5). Participated in symposium on "Modern biotechnology: A resource for sustainable development, organized by department of Microbiology and Molecular Genetics, University of the Punjab, on 4th July, 2009.

6). Presented paper in international conference on "Advances in agriculture, Prospects and Potentials of Natural Resources in Food Security" held at University of Azad Jammu and Kashmir, Rawalakot, Pakistan, from 11-13 August, 2009.

7). Organized and participated in "Pre-Conference Workshop on Molecular Hematology" held at Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, on 9th February, 2010.

8). Participated in "2nd Academic Retreat for HEC Approved Ph.D Supervisors" held at COMSATS Institute of Information Technology, Abbottabad, June 3-5, 2010.

9). Presented research work titled "Bacterial auxin: Biofertilization and phytostimulation of agronomically important crops" in symposium on "Current Agro Biotechnology and Transgenic Plants" organized by department of Microbiology and Molecular Genetics, University of the Punjab, on 21st June, 2010.

10). Participated in "HRDC New Faculty Orientation Program" organized by Institute of Administrative Sciences, University of the Punjab, Lahore, July 5-8, 2010.

11). Attended international workshop on "Modern techniques in structural biology" held at ICCBS, University of Karachi, from 1-4 October, 2011.

12). Presented research work titled "Auxin production and ACC-deaminase activity of *Pseudomonas* and their phytostimulatory effect on *Vigna mungo* (L.)" in 32nd Pakistan Congress of Zoology (International) held at GC University, Lahore, March 6-8, 2012.

13). Attended international workshop on "Bioinformatics: Database Mining and High Throughput Genomic Analyses" held at COMSTECH, Islamabad, from March 19-21, 2012.

14). Organized and participated in "Bio-physicochemical basis for Technopreneurship" held at Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, from 2nd to 3rd April, 2013.

15). Participated in 11th Biennial conference in "Molecular Biosciences-Challenges and Opportunities" held at University of the Punjab, Lahore, Pakistan, from 25-28 November, 2013.

16). Participated in "International Conference on Innovative Biological and Public Health Research" held at Government College University, Lahore, from 06-08 May, 2014.

17). Participated in "Indigenous On-Campus Training Program for Management Team" arranged by University of the Punjab in collaboration with Higher Education Commission from 22-26th December, 2014.

18). Presented work titled "Phylogenetic diversity and agricultural applications of auxin producing rhizobacteria" in 10th Biennial International Conference of Pakistan Society for Microbiology, at department of Microbiology and Molecular Genetics, University of the Punjab, from 25-28 March, 2015.

19). Attended "Biosafety Awareness Workshop" organized by Pakistan Biological Safety Association in collaboration with NIH and ICLS at Pakistan Academy of Sciences, Islamabad from 27-29 August, 2015.

20). Participated in 5th International/ 10th National Conference of Pakistan Phytopathological Society held at Institute of Agricultural Sciences, University of the Punjab, Lahore, from 23-25 November, 2015.

21). Presented research work titled "Functional and genetic diversity of halotolerant rhizobacteria and their biofertilization potential in salt amended soils" in 14th National and 5th International Conference of Pakistan Botanical Society held at University of Karachi from 15-18 January, 2016, Karachi, Pakistan.

22). Attended "Master Trainer Program" organized by Pakistan Biological Safety Association in collaboration with NIH and ICLS at Pakistan Academy of Sciences, Islamabad from 14-18 March, 2016.

23). Presented research work titled "Drought tolerant rhizobacteria: Screening for in vitro auxin production and their growth promoting effects on *Triticum aestivum* L. under drought stress" in First International conference on "Plants: Their Chemical and Biological Applications for Today and Tomorrow", held at University of Gujrat, Gujrat from 12-14th April, 2017.

24). Presented research work titled "Indole-3-acetic acid production by rhizobacteria was associated with improved growth and yield of *Triticum aestivum* L. under drought stress" in Conference on Microbiology and Molecular Genetics (MMG2018) held at University of the Punjab, Lahore, Pakistan from 7-9th February, 2018.

25). Presented research work titled "Agricultural applications of halotolerant bacteria associated with *Suaeda fruticosa*" in International Conference of Punjab University 2019 (ICPU 2019), held in Lahore, Pakistan from November 6-8th, 2019.

26). Presented research work titled "The Microphenotron: A novel method for screening rhizobacteria for agricultural applications" in 5th International Conference on "Advances in Biosciences: Bridging the gap between research and sustainable development goals" held at University of Swat, KPK, from May 24-26th, 2022.

PUBLICATIONS

1). Ali, B. and Hasnain, S. (2007). Efficacy of bacterial auxin on *in vitro* growth of *Brassica oleracea* L. World J Microbiol Biotechnol, 23(6): 779-784.

2). Ali, B. and Hasnain, S. (2007). Potential of bacterial indoleacetic acid to induce adventitious shoots in plant tissue culture. Lett Appl Microbiol, 45(2): 128-133.

3). Ghaffar, I., **Ali, B.** and Hasnain, S. (2007). Effect of different hormonal combinations on regeneration of callus of *Gomphrena globosa* L. Pak J Biol Sci, 10(20): 3708-3712.

4). Ali, B. and Hasnain, S. (2007). *In vitro* plant growth induction potential of indoleacetic acid of *Halomonas desiderata* RE1 and *H. Variabilis* HT1. Proceedings of the 12th conference of the Egyptian Society of Applied Microbiology. p. 222-230.

5). Shafique, H., **Ali, B.** and Hasnain, S. (2008). Bacterial auxin production and its impact on plant growth. Proceedings of 1st symposium on Genomics, Proteomics and metabolomics: Recent trends in Biotechnology, Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, Pakistan. p. 219-228.

6). **Ali, B**., Sabri, A.N., Ljung, K. and Hasnain, S. (2009). Quantification of indole-3-acetic acid from plant associated *Bacillus* spp. and their phytostimulatory effect on *Vigna radiata* (L.). World J Microbiol Biotechnol, 25 (3): 519-526.

7). Ali, B., Sabri, A.N., Ljung, K. and Hasnain, S. (2009). Auxin production by plant associated bacteria: impact on endogenous IAA content and growth of *Triticum aestivum* L. Lett Appl Microbiol, 48(5): 542-547.

8). Ali, B., Sabri, A.N. and Hasnain, S. (2010). Rhizobacterial potential to alter auxin content and growth of *Vigna radiata* (L.). World J Microbiol Biotechnol, 26: 1379-1384.

9). Akhtar, S. and **Ali, B.** (2011). Evaluation of rhizobacteria as non-rhizobial inoculants for mung beans. Aust J Crop Sci, 5(13): 1723-1729.

10). Noreen, S., **Ali, B.** and Hasnain, S. (2012). Growth promotion of *Vigna mungo* (L.) by *Pseudomonas* spp. exhibiting auxin production and ACC-deaminase activity. Ann Microbiol, 62: 411-417.

11). Abbas, Z., **Ali, B.** and Sabri, A.N. (2012). Antimicrobial activity of biocides against different microorganisms isolated from biodeteriorated paints. Pak J Zool, 44(2): 570-572.

12). Sadiq, A. and **Ali, B.** (2013). Growth and yield enhancement of *Triticum aestivum* L. by rhizobacteria isolated from agronomic plants. Aust J Crop Sci, 7(10): 1544-1550.

13). Akram, W., Anjum, T., **Ali, B.** and Ahmad, A. (2013). Screening of native *Bacillus* strains to induce systemic resistance in tomato plants against *Fusarium* wilt in split system and its field applications. Int J Agric Biol, 15: 1289-1294.

14). Yaqoob, A., Farooq, N., Sajid, I. and **Ali, B.** (2013). Auxin production by *Azospirillum*: Role in growth promotion of *Triticum aestivum* L. and *Lens culinaris* Medik. Glob J Sci Res, 1(1): 26-32.

15). Anwar, S., **Ali, B.,** Qamar, F. and Sajid, I. (2014). Insecticidal activity of actinomycetes isolated from salt range Pakistan against mosquitoes and red flour beetle. Pak J Zool, 46(1): 83-92.

16). Imtiaz, A. and **Ali, B.** (2014). Auxin production by phyllospheric bacteria and their growth promoting effects on *Cicer arientinum* L. Glob J Sci Res, 2(1): 1-6.

17). Farooq, N., Raheem, A. and **Ali, B.** (2014). Waterborne *Escherichia coli*: Biosafety and screening as plant growth promoting rhizobacteria. J Pure Appl Microbiol, 8(5): 3963-3971.

18). Zareen, M., Sajid, I. and **Ali, B.** (2014). Isolation and detection of *Escherichia coli* O157 from potable water system of Lahore, Pakistan. Pak J Zool, 46(5): 1239-1247.

19). Hassan, A., **Ali, B.** and Sajid I. (2014). Antimicrobial screening and metabolic fingerprinting of soil bacilli against urinary tract infections (UTIs) causing E. coli. Sci Int (Lahore), 26 (4): 1569-1576.

20). Jamil, A. and **Ali, B.** (2014). L-tryptophan amendments enhanced auxin production and growth of *Triticum aestivum* L. by rhizobacteria. Asian J Agric Biol, 2(4): 250-257.

21). Ali, B. (2015). Bacterial auxin signaling: Comparative study of growth induction in *Arabidopsis thaliana* and *Triticum aestivum*. Turk J Bot, 39(1): 1-9.

22). Akram, W., Anjum, T. and **Ali, B.** (2015). Searching ISR determinant/s from *B. subtilis* IAGS174 against *Fusarium* wilt of tomato. BioControl, 60(2): 271-280.

23). Aslam, F. and **Ali, B.** (2015). Efficacy of charcoal based formulations of *Bacillus* and *Escherichia coli* to enhance the growth and yield of *Triticum aestivum* L. Res J Biotechnol, 10(7): 81-88

24). Raheem, A. and **Ali, B.** (2015). Halotolerant rhizobacteria: Beneficial plant metabolites and growth enhancement of *Triticum aestivum* L. in salt amended soils. Arch Agron Soil Sci, 61: 1691-1705.

25). Akram, W., Anjum, T. and **Ali, B.** (2015). Co-cultivation of tomato with two *Bacillus* strains: effects on growth and yield. J Anim Plant Sci, 25(6): 1644-1651.

26). Akram, W., Anjum, T. and **Ali, B.** (2016). Phenylacetic acid is ISR determinant produced by *Bacillus fortis* IAGS162, which involves extensive re-modulation in metabolomics of tomato to protect against *Fusarium* wilt. Front Plant Sci, 7: 498; doi: 10.3389/fpls.2016.00498

27). Anwar, S., **Ali. B.** and Sajid, I. (2016). Screening of rhizospheric actinomycetes for various in-vitro and in-vivo plant growth promoting (PGP) traits and for agroactive compounds. Front Microbiol, 7: 1334.

28). Bano, A. and **Ali, B.** (2016). 16S rRNA gene sequencing and culture dependent analysis of bacterial diversity associated with commercially processed salads. Res J Biotechnol, 11(12): 8-16.

29). Fatima, S., Anjum, T., Hussain, R. and **Ali, B.** (2017). PGPR mediated bio-fortification of tomato fruit metabolites with nutritional and pharmacological importance. Pak J Biotechnol, 14(1): 17-21.

30). Farooq, N., Raheem, A. and **Ali, B.** (2017). Microbiological biosafety, multiple drug resistance and functional diversity of bacteria associated with the surfaces of raw vegetables. Iran J Public Health, 46(3): 425-427.

31). Sajid, M., Raheem, A and **Ali, B.** (2017). Phylogenetic diversity of drought tolerant *Bacillus* spp. and their growth stimulation of *Zea mays* L. under different water regimes. Res J Biotechnol 12(10): 38-46.

32). Raheem, A., Shaposhnikov, A., Belimov, A.A., Dodd, I.C. and **Ali, B.** (2018). Auxin production by rhizobacteria was associated with improved yield of wheat (*Triticum aestivum* L.) under drought stress. Arch Agron Soil Sci 64(4): 574-587.

33). Ikram, R. and **Ali, B.** (2017). Co-inoculation of auxin producing PGPR and rhizobia enhanced growth of *Vigna mungo* (L.) under cadmium stress. Asian J Agric Biol 6(1): 46-54.

34). Ishaq, T. and **Ali , B.** (2018). Risk assessment and biofilm formation of bacterial communities associated with drinking water distribution network. J. Environ. Biol, 39(5): 693-701.

35). Aslam ,F. and **Ali, B.** (2018). Halotolerant bacterial diversity associated with *Suaeda fruticosa* (L.) Forssk. improved growth of Maize under salinity stress. Agronomy-Basel, 8(8): 131; doi:10.3390/agronomy8080131

36). Jafari, M.J., Akram, W., Pang, Y., Ahmad, A., Ahmed, S., Yasin, N.A., Anjum, T., **Ali, B.,** Hu, X., Li, X., Dong, S., Cai, Q., Ciprian, M., Bielec, M., Hu, S., Sefidkon, F. and Hu, Z. (2018). Genetic diversity and biogeography of *T. officinale* inferred from multi locus sequence typing approach. PloS One, 13(9): e0203275

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RESEARCH PROJECTS (Funded by Higher Education Commission of Pakistan 2013-2016)

1). Auxin production and biofertilization potential of plant associated *Bacillus* sp. under different water regimes. (Total cost Rs. 3, 694, 260; Completed).

RESEARCH PROJECTS (Funded by University of the Punjab)

1). Bioremediation of toxic Cr (VI) by bacterial in association with hydrophytes. (Fiscal year 2007-08; Total cost Rs. 100,000; completed).

2). Auxin production potential of plant associated bacteria and their phytostimulatory effect on *Triticum aestivum* L. (Fiscal year 2008-09; Total cost Rs. 100,000; completed).

3). Auxin production by rhizobacteria: ACC-deaminase activity and phytostimulation of mungbeans (Fiscal year 2010-11; Total cost Rs. 125,000; completed).

4). Evaluation of plant growth promoting rhizobacteria as non-rhizobial inoculants for leguminous plant (Fiscal year 2011-12; Total cost Rs. 150,000; completed).

5). Phytostimulation of wheat by rhizobacteria isolated from agronomic crops (Fiscal year 2012-13; Total cost Rs. 150,000; completed).

6). Isolation and detection of *Escherichia coli* O157 from potable water system of Lahore, Pakistan (Fiscal year 2013-14; Total cost Rs. 150,000; completed).

7). Genetic and functional diversity of bacteria isolated from fresh vegetables (Fiscal year 2015-16; Total cost Rs. 150,000; completed).

8). Phylogenetic diversity and biofilm formation of bacterial communities associated with drinking water distribution system (Fiscal year 2017-18; Total cost Rs. 150,000; completed).

9). Microphenotyping system: Screening plant growth promoting rhizobacteria to grow wheat (*Triticum aestivum* L.) under drought stress (Fiscal year 2019-2020; Total cost Rs. 150,000; completed).

10). Genetic and functional diversity of microorganisms associated with *Prunus persica* (L.) (Fiscal Year 2021-2022; Total Cost Rs. 359, 000; completed).

11). Efficacy of *Bacillus* and *Halomonas* strains to improve the growth of barley under salt stress. (Fiscal Year 2022-2023; Total Cost Rs. 200, 000; completed).

INSTITUTIONAL RESPONSIBILITIES

1). Coordinator/ Incharge of the BS program at the Department of Microbiology and Molecular Genetics, University of the Punjab, since May, 2010 to date.

2). Member of the management committee of "Conventional and Non-conventional Vegetable Research Farm" at the University of the Punjab since February, 2010.

3). Incharge/ Member of the management committee of "Floriculture Research Farm" at the University of the Punjab since February, 2010.

MEMBERSHIPS

1). American Society for Microbiology (ASM)
2). International Society for Molecular Plant-Microbe Interactions (IS-MPMI)
3). Pakistan Biological Safety Association (PBSA)