

Bio-Data



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Post-Doctoral Research from the Department of Plant Pathology, North Carolina State University, Raleigh, North Carolina, United States of America.

- Ph. D (2001) from the Department of Botany, University of Delhi, Delhi.
- M. Phil (1997) from the Department of Botany, University of Delhi, Delhi.
- M. Sc. (Botany) (1996) from CCS University, Meerut, UP.
- B. Sc. (Life Sciences) (1994) from CCS University, Meerut, UP.

Research Publications and Indices

•	Citation status of publications:	5775
•	i10-index (recorded from Google scholar):	34
•	h – index (recorded from Google scholar):	25
•	Total publications:	48

Books Published with International Publisher:

1. **Root Biology** published by Springer International Publishing AG, a part of Springer Nature 2018, **Bhoopander Giri**, Ram Prasad and Ajit Varma (eds.), Soil Biology Series 52, ISBN 978-3-319-75909-8
2. **Biofertilizers for Sustainable Agriculture and Environment** published by Springer Nature Switzerland AG 2019, **Bhoopander Giri**, Ram Prasad, Qiang-Sheng Wu and Ajit Varma (eds.). Soil Biology Series ISBN 978-3-030-18932-7
3. **Microorganisms in Saline Environment: Strategies and Functions** published by Springer Nature Switzerland AG 2019, **Bhoopander Giri** and Ajit Varma (eds.). Soil Biology Series ISBN 978-3-030-18974-7.
4. **Soil Health** published by Springer Nature Switzerland AG 2020, **Bhoopander Giri** and Ajit Varma (eds.). Soil Biology Series ISBN 978-3-030-44363-4.

5. **Plant Stress Biology: Strategies and Trends** published by Springer Nature Singapore 2021, **Bhoopander Giri** and Mahaveer P Sharma (eds.). ISBN 978-981-15-9379-6.
6. **Pedosphere: Structure and Functions** shall be published by Springer Nature Singapore 2022, **Bhoopander Giri**, Rupam Kapoor, Qiang-Sheng Wu and Ajit Varma (eds.) ISBN 978-981-16-8769-3.

Research Publications:

1. Priya, Virmani Ishita, Pragya, Ravi Kumar Goswami, Bijender Singh, Jai Gopal Sharma and **Bhoopander Giri** (2023) Role of microbial phytases in improving fish health. Review in *Aquaculture* 1-21. doi:[10.1111/raq.12790](https://doi.org/10.1111/raq.12790) Impact Factor: 10.618
2. Bhawna Saxena, Karuna Sharma, Rupam Kapoor, Qiang-Sheng Wu and **Bhoopander Giri** (2022) Insights into the molecular aspects of salt stress tolerance in mycorrhizal plants. *World J Microbiology and Biotechnol* Nov 1;38(12):253. doi: 10.1007/s11274-022-03440-z. PMID: 36316429. IF: 4.290
3. Wen-Ya Ma, Qiu-Yun Qin, Ying-Ning Zou, Kamil Kuca, **Bhoopander Giri**, Qiang-Sheng Wu, Abeer Hashem, Al-Bandari Fahad Al-Arjani, Khalid F. Almutairi, Elsayed Fathi Abd_Allah and Yong-Jie Xu (2022) Arbuscular mycorrhiza induces low oxidative burst in drought-stressed walnut through activating antioxidant defense systems and heat shock transcription factor expression. *Frontiers in Plant Science* IF: 6.627 2022 Nov 29;13:1089420. doi: 10.3389/fpls.2022.1089420
4. **Bhoopander Giri**, Renuka Rawat, Geeta Saxena, Preet Manchanda, Qiang-Sheng Wu and Anuradha Sharma (2022) Effect of *Rhizoglomus fasciculatum* and *Paecilomyces lilacinus* in the biocontrol of root-knot nematode, *Meloidogyne incognita* in *Capsicum annuum* L, *Communicative and Integrative Biology* 15(1): 75-87. ISSN 19420889.
5. Harsh Pant, Vishesh Kumar, **Bhoopander Giri**, Qiang-Sheng Wu, Vijaya Lobo, Ishwer Singh, Anuradha Sharma (2022) Potential roles of phytochemicals in combating severe acute respiratory syndrome Corona virus infection. *Plant Science Today* Vol 9(2):427-437. IF 0.9
6. Hui-Qian Cheng, **Bhoopander Giri**, Qiang-Sheng Wu, Ying-Ning Zou and Kamil Kuča (2022) Arbuscular mycorrhizal fungi mitigate drought stress in citrus by modulating root microenvironment. *Archives of Agronomy and Soil Science* 68(9):1217-1228 ISSN 03650340. IF (2020): 3.092. DOI: 10.1080/03650340.2021.1878497
7. Lulu Meng, A. K. Srivastava, Kamil Kuča, **Bhoopander Giri**, Mohammed Mahabubur Rahman and Qiang-Sheng Wu (2021) Interaction between Earthworms and Arbuscular Mycorrhizal Fungi in Plants. *Phyton-International Journal of Experimental Botany* 90 (3): 687-699. ISSN 0031-9457 Tech Science Press (Scopus Indexed) IF (2020): 1.039

8. Lu-Lu Meng, Rui-Cheng Liu, Liu Yang, Ying-Ning Zou, Anoop Kumar Srivastava, Kamil Kuča, Abeer Hashem, Elsayed Fathi Abd_Allah, **Bhoopander Giri** and Qiang-Sheng Wu (2021) The Change in Fatty Acids and Sugars Reveals the Association between Trifoliate Orange and Endophytic Fungi. *Journal of Fungi* 2021, 7, 716. Impact Factor (IF) (2020): 5.816
9. Ying-Ning Zou, Hui-Hui Wu, **Bhoopander Giri**, Qiang-Sheng Wu, Kamil Kuča (2019) Mycorrhizal symbiosis down-regulates or not change root aquaporin expression in trifoliate orange under drought stress. *Plant Physiology and Biochemistry* 144: 192-199 ISSN 09819428. Elsevier (Scopus Indexed) IF (2020): 4.270
10. Rashmi Dwivedi, **Bhoopander Giri** and Kamlesh Shukla (2017) Efficient synthesis of plant-mediated silver nanoparticles and their screening for antimicrobial activity. *Plant Science Today*: 4(3): 143-150. ISSN 23481900 IF 0.9 (Scopus indexed).
11. **Bhoopander Giri** (2017) Mycorrhizal dependency and growth response of *Gliricidia sepium* (Jacq.) Kunth ex Walp. under saline conditions. *Plant Science Today*: 4(4): 154-160. ISSN 23481900 IF 0.9 (Scopus indexed).
12. Heikham Evelin, **Bhoopander Giri** and R Kapoor (2013) Ultrastructural evidence for AMF mediated salt stress mitigation in *Trigonella foenum-graecum*. *Mycorrhiza* 23(1):71-86 ISSN: 0940-6360, Springer (Scopus Indexed) IF (2020): 3.387
13. Shantanu Mandal, Heikham Evelin, **Bhoopander Giri**, VP Singh and Rupam Kapoor (2013) Arbuscular mycorrhiza enhances the production of stevioside and rebaudioside-A in *Stevia rebaudiana* via nutritional and non-nutritional mechanisms. *Applied Soil Ecology* 72: 187-194. ISSN: 0929-1393 Elsevier (Scopus Indexed) IF (2020): 4.046
14. Heikham Evelin, **Bhoopander Giri** and R Kapoor (2012) Contribution of *Glomus intraradices* inoculation on nutrient acquisition and mitigation of ionic imbalance in NaCl stressed *Trigonella foenum-graecum*. *Mycorrhiza* 22 (3): 203 -217. ISSN: 0940-6360, Springer (Scopus Indexed) IF (2020): 3.387
15. Heikham Evelin, R Kapoor and **Bhoopander Giri** (2009) Arbuscular mycorrhiza in alleviation of salt stress: A review (an invited review). *Annals of Botany* 104: 1263-1280 ISSN 0305-7364 Oxford press, UK. (Scopus Indexed) IF (2020): 4.357
16. **Bhoopander Giri**, R Kapoor and KG Mukerji (2007) Improved tolerance of *Acacia nilotica* to salt stress by arbuscular mycorrhiza, *Glomus fasciculatum* may be partly related to elevated K: Na ratios in root and shoot tissues. *Microbial Ecology* 54 (4): 753-760 ISSN: 0095-3628 Springer (Scopus Indexed). IF (2020): 4.552
17. **Bhoopander Giri**, R Kapoor and KG Mukerji (2005) Effect of the arbuscular mycorrhizae *Glomus macrocarpum* and *Glomus fasciculatum* on the growth and nutrient content of *Cassia siamea* in a semi-arid Indian wasteland soil. *New Forests* 27: 1-11 ISSN: 0169-4286, Springer (Scopus Indexed) IF (2020): 2.560

18. **Bhoopander Giri** and KG Mukerji (2004) Mycorrhizal inoculant alleviates salinity stress in *Sesbania aegyptiaca* and *S. grandiflora* under field conditions: Evidence for improved magnesium and decreased sodium uptake. *Mycorrhiza* 14 (5): 307-312 ISSN: 0940-6360 Springer (Scopus Indexed) IF (2020): 3.387
19. **Bhoopander Giri**, R Kapoor and KG Mukerji (2004) Preinoculation with arbuscular mycorrhizae helps *Acacia auriculiformis* in a degraded Indian wasteland soil. *Communications in Soil Science and Plant Analysis* 35: 193-204 ISSN 0010-3624 Taylor & Francis (Scopus Indexed) IF (2020): 1.327
20. Rupam Kapoor, **Bhoopander Giri** and KG Mukerji (2004) Improved growth and essential oil yield and quality in *Foeniculum vulgare* mill on mycorrhizal inoculation supplemented with P-fertilizer. *Bioresource Technology* 93 (3): 307-311 ISSN: 0960-8524 Elsevier (Scopus Indexed). IF (2020): 9.642
21. **Bhoopander Giri**, Rupam Kapoor and KG Mukerji (2003) Influence of arbuscular mycorrhizal fungi and salinity on growth, biomass, and mineral nutrition of *Acacia auriculiformis*. *Biology and Fertility of Soils* 38: 170-175 ISSN: 0178-2762 Springer (Scopus Indexed) IF (2020): 6.432
22. R K Saxena, W S Davidson, A Sheoran, and **Bhoopander Giri** (2003) Purification and characterization of an alkaline thermostable lipase from *Aspergillus carneus*. *Process Biochemistry* 39: 339-345 ISSN: 1359-5113 Elsevier (Scopus Indexed) IF (2020): 3.757
23. R K Saxena, A Sheoran, **Bhoopander Giri** and W S Davidson (2003) Purification strategies for microbial lipases. *Journal of Microbiological Methods* ISSN: 0167-7012, 52: 1-18, Elsevier (Scopus Indexed) IF (2020): 2.363
24. M A Rahim, R K Saxena, A Sheoran, **Bhoopander Giri** and R Gupta (2003) A novel and quick plate assay for acetamidase producer and process optimization for its production by *Aspergillus candidus*. *Process Biochemistry* ISSN: 1359-5113 38: 861-866, Elsevier Science UK. Scopus Indexed. IF (2020): 3.757
25. Rupam Kapoor, **Bhoopander Giri** and KG Mukerji (2002) *Glomus macrocarpum*: a potential bioinoculant to improve essential oil quality and concentration in Dill (*Anethum graveolens*) and Carum (*Trachyspermum ammi* (Linn.) Sprague). *World Journal of Microbiology and Biotechnology* 18: 459-463, ISSN: 0959-3993 Springer (Scopus Indexed). IF (2020): 3.312
26. Rupam Kapoor, **Bhoopander Giri** and KG Mukerji (2002) Mycorrhization of coriander (*Coriandrum sativum L.*) to enhance the concentration and quality of essential oil. *Journal of the Science of Food and Agriculture* 82: 339-342, ISSN: 0022-5142 John Wiley & Sons (Society of Chemical Industry, UK) (Scopus Indexed) Impact Factor (IF) (2020): 3.638

27. Rupam Kapoor, **Bhoopander Giri** and KG Mukerji (2001) Effect of VAM inoculation on growth responses and essential oil of *Anethium graveolens L.* *Plant Physiology Reports* (previous Indian J Plant Physiol.) 6: 77-80, ISSN: 0974-0252, Springer (Scopus Indexed).
28. **Bhoopander Giri**, R Kapoor and KG Mukerji (2000) *Sesbania aegyptiaca* (Pers) seedling response to VA mycorrhization in two types of soil. *Phytomorphology* 50: 327-332. ISSN. 0031-9449 International Phytomorphological Society, India.
29. **Bhoopander Giri** and K G Mukerji (1999) Improved Growth and Productivity of *Sesbania grandiflora* (Pers) under Salinity Stress through Mycorrhizal Technology. *J Phytol Res* 12(1-2): 35-38. ISSN 0970-5767, Peer Reviewed, Refereed, UGC CARE indexed.

Publications in Edited Books:

30. BP Chamola, **Bhoopander Giri** and KG Mukerji (1999) Vesicular arbuscular mycorrhiza: biofertilizer for future. In: From Ethno-mycology to Fungal Biotechnology, J Singh and RK Aneja (eds) Plenum Publishing Corporation, New York, ISBN 978-1-4613-7182-3 pp. 225-234.
31. **Bhoopander Giri** and BP Chamola (1999) Vesicular arbuscular mycorrhizal fungi under salinity and drought stress. In: Advances in Microbial Biotechnology, JP Tewari, TN Lakhanpal, J Singh, R Gupta, and BP Chamola (eds). APH Publishing Corporation, New Delhi, ISBN: 8176482048, 9788176482042, pp. 421-430.
32. **Bhoopander Giri**, BP Chamola, Neelu and KG Mukerji (2000) Vesicular arbuscular mycorrhizal fungal association under stress conditions. In: Glimpses in Botany, KG Mukerji, BP Chamola and AK Sharma (eds) APH Publishing Corporation, New Delhi ISBN: 9788176482042 pp. 407-420.
33. **Bhoopander Giri**, R Kapoor and KG Mukerji (2001) VAM/VA mycorrhizal technology in establishment of plants under salinity stress conditions. In: Techniques in Mycorrhizal Studies, KG Mukerji, C Manorachari and BP Chamola (eds) Kluwer Academic Publishers ISBN 978-94-017-3209-3, The Netherlands, pp. 313-327.
34. R Kapoor, **Bhoopander Giri** and KG Mukerji (2001) Soil factors in relation to distribution and occurrence of vesicular arbuscular mycorrhiza. In: Techniques in Mycorrhizal Studies, KG Mukerji, C Manorachari and BP Chamola (eds) Kluwer Academic Publishers, ISBN 978-94-017-3209-3 The Netherlands pp. 51-85.
35. **Bhoopander Giri**, P H Giang, R Kumari and A Varma (2004) Microbial Diversity in Soils. In: Microorganisms in Soils: Roles in Genesis and Functions, Soil Biology Series vol. 3: 15-40, F Buscot and A Varma (eds) Springer Varleg, Germany. ISBN: 978-3-540-22220-0 (Print)

36. **Bhoopander Giri**, M Suchdev, P H Giang, R Kumari, R Olemuler and A Varma (2004) Mycorrhizosphere: Strategies and Functions. In: Microorganisms in Soils: Roles in Genesis and Functions, Soil Biology Series vol. 3: 213-252, F Buscot and A Varma (eds) Springer Varleg, Germany. ISBN: 978-3-540-22220-0 (Print)

37. **Bhoopander Giri** and KG Mukerji (2004) Ecology and distribution of vesicular arbuscular mycorrhizal fungi. In: Plant Diversity in India, JS Dargan and TA Sarma (eds) Published by BSMPS, Dehra dun, ISBN 10: 8121103002, India, pp. 397-426.

38. Rupam Kapoor, Haikhem Evelin, P Mathur and **Bhoopander Giri** (2013) Arbuscular mycorrhiza: approaches for abiotic stress tolerance in crop plants for sustainable agriculture" In: Plant Acclimation to Environmental Stress, N Tuteja and SS Gill (eds) pp 359-401, Springer Science, New York, ISBN 978-1-4614-5000-9 USA.

39. **Bhoopander Giri** and Bhawna Saxena (2014) Mycorrhizal associations in plants, Institute of Life Long Learning, University of Delhi, Delhi, pp. 1-33.

40. Ishwar Singh and **Bhoopander Giri** (2017) **Arbuscular mycorrhiza-mediated control of plant pathogens.** In: Mycorrhiza - Nutrient Uptake, Biocontrol, Ecorestoration, Varma A, Prasad R and Tuteja N (eds) Springer International Publishing AG, a part of Springer Nature, pp. 131-160 ISBN: 978-3-319-68866-4.

41. Priyanka Srivastava, Bhawna Saxena and **Bhoopander Giri** (2017) **Arbuscular mycorrhizal fungi: green approach/technology for sustainable agriculture and environment.** In: Mycorrhiza - Nutrient Uptake, Biocontrol, Ecorestoration, Varma A, Prasad R and Tuteja N (eds) Springer International Publishing AG, a part of Springer Nature, pp 355-376, ISBN: 978-3-319-68866-4.

42. Kamlesh Shukla, **Bhoopander Giri** and R. V. Shukla (2017) **Occurrence and Distribution of Mushrooms in Semi-evergreen Sal (*Shorea robusta*) Forest Chhattisgarh, Central India.** In: Developments in Fungal Biology and Applied Mycology, Satyanarayana T et al. (eds.) pp 501-523, Springer Nature Singapore Pte Ltd ISBN 978-981-10-4767-1.

43. **Bhoopander Giri** and Bhawna Saxena (2017) **Response of arbuscular mycorrhizal fungi to global climate change and their role in terrestrial ecosystem C and N cycling.** In: Mycorrhiza - Function, Diversity, State of the Art. Varma A, Prasad R, Tuteja N (eds.) pp 305-327, Springer nature, Cham ISBN: 978-3-319-53063-5

44. Bhawna Saxena and **Bhoopander Giri** (2017) **Arbuscular mycorrhizal association improves secondary metabolite production in medicinal and aromatic plants: a sustainable approach.** In: Microbes and Sustainable Agriculture (Prasad R and Kumar N eds.) pp 1-31, I K International Publishing, New Delhi ISBN 978938590948-1.

45. Bhawna Saxena, Kamlesh Shukla and **Bhoopander Giri** (2017) **Arbuscular Mycorrhizal Fungi and Tolerance of Salt Stress in Plants.** In: Arbuscular Mycorrhizas

and Stress Tolerance of Plants (Wu Qiang-Sheng ed.) pp 67-98, Springer Nature Singapore, ISBN 978-981-10-4114-3

46. Haishui Yang, Michelle Schroeder-Moreno, **Bhoopander Giri**, and Hu Shuijin (2018) **Arbuscular Mycorrhizal Fungi and Their Responses to Nutrient Enrichment**. In: Root Biology, Giri B et al. (eds.), Springer International Publishing AG, a part of Springer Nature, Soil Biology 52, pp 429-450 ISBN 978-3-319-75909-8.

47. Priyanka Srivastava, Wu Qiang-Sheng and Bhoopander Giri (2019) **Salinity: An Overview**. In: Giri B and Varma A (eds), Microorganisms in Saline Environments: Strategies and Functions, Springer Nature, Switzerland AG, pp 3-18 ISBN 978-3-030-18974-7

48. Priyanka Srivastava, Manju Balhara and Bhoopander Giri (2020) **Soil Health in India: Past History and Future Perspective**. In: Giri B and Varma A (eds), Soil Health, Springer Nature, Switzerland AG, pp 3-18 ISBN 978-3-030-18974-7.

Contribution in International Conferences/Seminars/Workshops:

1. Organized an Add-on course on “**Mushroom Cultivation**” from 14 March to 8th April 2022 (30 hours) under the aegis of IQAC and Department of Botany, Swami Shraddhanand College, University of Delhi, Delhi.
2. Organized a 6-day workshop on “**Microbes in Sustainable and Resilient Future**” from 6-11 December 2021, sponsored by SERB, conducted by DUBS the Department of Botany, University of Delhi, Delhi.
3. Paper presentation on “**सर जगदीश चंद्र बोस 'रेडिओ विज्ञान के जनक' की चिरस्थायी विरासत और भारत के स्वतंत्रता संग्राम में उनका योगदान**” in the National Seminar on Contribution of Indian scientists in Freedom Struggle, organized by Swami Shraddhanand College, University of Delhi on 22nd November 2021.
4. Organized an online series of talks entitled “**Trichoderma and Its Potentials on 29-09-2021; Nanomycorrhiza: Second Generation of Research on 30-09-2021 and Forward Genetics to Understand Pathogenesis in Botrytis cinerea-A Broad Host Range Fungal Necrotroph on 02-10-2021**” to celebrate **Fungal Awareness Week** from 27th September to 2nd October 2021 at the Swami Shraddhanand College, University of Delhi, Delhi.
5. Delivered a talk on “Mitigation of Salinity Stress by Arbuscular Mycorrhizal Fungi” in **Plant Biologicals Symposium-2019** held during 13-14 November 2019, University of Copenhagen, Denmark.
6. Delivered a talk on “Combating Salinity Stress through Microbial Biotechnology” in the National Workshop on “**Bioinformatics: An Application of Computers in**

Biological and Chemical Sciences” during 14-16 October 2019, organized by Pt. Dwarkadas Vigyan Mahavidyalaya Athner, Betual, M.P., India

7. Chaired sessions at the **5th Annual Congress on Plant & Soil Science** held during February 28-March 01, 2019 in London, UK, organized by EuroSciCon Ltd. 40 Bloomsbury Way Lower Ground Floor, London United Kingdom WC1A 2SE.
8. Delivered an oral presentation on “Glomeromycotan fungus, *Rhizophagus intraradices* improves plant tolerance to salt stress by modulating physiological and biochemical processes under saline conditions” in the at the **5th Annual Congress on Plant & Soil Science** held during February 28-March 01, 2019 in London, UK.
9. Paper presented in the **International Conference and Outreach Program on Environment and Ecology: Sustainability and Challenges** on “Mycorrhiza-mediated soil carbon sequestration to mitigate climate change” organized by Sri Venkateswara College, University of Delhi, India from 4-6 January 2017.
10. Paper presented in the **International Conference on Green Chemistry in Environmental Sustainability and Chemical Education** on “Arbuscular Mycorrhizae: Green Technology for Sustainable Agriculture and Environment” organized by Daulat Ram College, University of Delhi, India from 17-18 November 2016.
11. Paper presented on “Regulatory Effect of Arbuscular Mycorrhizal Fungi on the Uptake of Na⁺ and Cl⁻ ions and Alteration in Plant Under Salinity Stress” in the **20th Penn State University Plant Biology Symposium** held on May 13-16, 2015 University Park, Pennsylvania, PA, USA.
12. Participated in the **29th Annual Plant Molecular Biology Retreat** organized by Plant Molecular Biology Consortium, Asheville, North Carolina, United States, held on 18-20, September 2015.
13. Paper presentation on the Influence of arbuscular mycorrhizal symbiosis on physiological and biochemical processes in multipurpose tree species grown in degraded wasteland in **5th International Symposium on the Physiological Processes in Roots of Woody Plants**, held at the University of Victoria, BC, Canada from 8-12 August 2010.
14. Poster presented in the mycorrhizal conference **“Mycorrhiza: Systems Research from Genes to Communities”** held in Monte Verita, Ascona, Switzerland from March 4-9, 2006.

Contribution in National Conferences, Seminars/Workshops:

1. Chaired a session in the National Conference on **Recent Development in Plant Stress Biology: Translating Laboratory Research for Human Welfare (RDPSB-2018)** held on Dec 7-8, 2018 organized by the Department of Botany, Central University of Jammu, J & K, India.

2. Delivered an invited talk on ‘Arbuscular Mycorrhiza as an Environment Stress Reliever’ in the national conference on **Recent Development in Plant Stress Biology: Translating Laboratory Research for Human Welfare (RDPSB-2018)** held on Dec 7-8, 2018 organized by the Department of Botany, Central University of Jammu, J & K, India.
3. Chaired a session in the ‘**National Workshop on Current Trends in Mushroom Cultivation**’ held on 12-13 January 2017, organized by the Department of Microbiology and Biotechnology, DLS PG College, Bilaspur, Chhattisgarh, India.
4. Paper presented on “**Process development for the production of extracellular fungal lipases**” in National Seminar on Recent Innovations in Chemical Science and Environment Technology held on 3-4 March 2017 organized by Sri Aurobindo College, University of Delhi, Delhi.
5. Paper presented in **National Conference on Climate Change Adaptation and Sustainable Development** on “Role of Mycorrhizal Fungi in Mitigation and Adaptation to Global Climate Change” organized by Swami Shraddhanand College, University of Delhi, Delhi from 28-29 September 2016.
6. Paper presented on Understanding Salt-Stress Tolerance in Arbuscular Mycorrhizal Plants in the **National Conference on Plant Science Research: looking beyond 21st Century**, held on 5th to 7th February 2016, organized by Society of Plant Science Research & Department of Botany, University of Delhi, India.
7. Delivered a talk on *Trigonella*-AM fungus Interaction in a **National conference on Environmental Sciences and Plant Biotechnology** held on 4-5 February 2013 organized by Deen Dyal Upadhyaya College, University of Delhi, Delhi, India.
8. Attended 7th **International Conference on Mycorrhiza (ICOM 7)** on Mycorrhiza for All: An Under-Earth Revolution from 6-11 January 2013, held at The Energy and Resources Institute, New Delhi, India
9. Delivered a talk on Integrated nutritional, biochemical and physiological response to salinity stress in arbuscular mycorrhiza colonized plants in the **53rd Annual conference of Association of Microbiologists of India (AMI)**, and International Conference on Microbial World: Recent Innovations and Future Trends from 22-25 Nov. 2012 held at KIIT University Bhubaneswar, Orissa, India
10. Attended a workshop on **Fundamentals of Bioinformatics**, organized by the Department of Botany, Ramjas College at the Institute of Life Long Learning, University of Delhi, Delhi from 26th to 30th September 2011.
11. Poster presentation on “Mitigation of salt stress in *Trigonella foenum-graecum* by inoculation with *Glomus intraradices*” in **98th Indian Science Congress** held at SRM University, Chennai, India from 3-7 January 2011. [Received best poster presentation award]
12. Delivered a talk on “Arbuscular mycorrhizal fungi under salt stress conditions: genesis

and functions" in **Indo-German workshop in the frame of the program "Initiation and Intensification of Bilateral Cooperation** held on March 22nd -24th, 2011 at Amity University Campus, Noida, India.

13. Attended "**Indo-Italian Workshop on Bacteria and Fungi for Environmental Sustainability**" held on November 29th, 30th, & December 1st 2010 at Amity University Campus, Noida, India.
14. Attended **International Workshop on Rhizosphere Biology of Agriculture, Horticulture and Forestry: Present & Future**, held at the Department of Biological sciences, College of Basic Sciences and Humanities, G B Pant University of Agriculture and Technology, Pantnagar, U S Nagar, Uttarakhand, from February 25-27, 2010.
15. Participated in workshop entitled **Development of online Quizzes in Life Sciences**, organized by Institute of Life Long Learning, University of Delhi, Delhi April 8, 9 and 16, 2009.
16. Participated in the National Workshop on **Understanding Educational TV Programmes: Problems and Prospects**, December 17, 2009 organized by UGC-Consortium for Educational Communication, New Delhi.
17. Participated in the workshop on the **Developments in Bacterial Diversity and Systematics** held during March 10-11, 2007, at the Department of Microbiology, University of Delhi South Campus, New Delhi, sponsored by the Ministry of Environment and Forests, Govt. of India.
18. Participated in national seminar on **Genetically Modified Organisms-Biosafety Aspects**, organized by Delhi University Botanical Society, Department of Botany, University of Delhi, Delhi from March 10-11, 2005.
19. Participated in the DBT-CAMS sponsored training workshop on **Molecular Taxonomy of the Symbiotic Fungi** held during December 1-21, 2003, at the School of Life Sciences, Jawaharlal Nehru University, New Delhi, India.
20. Participated in 44th annual conference of the association of microbiologists of India on **Microbes and Human Sustenance** at the Department of Agricultural Microbiology, University of Agricultural Sciences, Dharward, Karnataka from 12-14 November 2003.
21. Participated in the Indo-US workshop and national congress on **Molecular Biology and Microbial Biotechnology** held during March 23-28, 2003, at the School of Life Sciences, Jawaharlal Nehru University, New Delhi, India.
22. Participated in the Basic training on **Recombinant DNA technology and PCR** conducted from December 17-20, 2002 by Genei Pvt Ltd., Bangalore, India.

23. Participated in orientation programme in NMITLI- Biotechnology for Leather from November 18-22, 2002, conducted by CLRI, Chennai, India.
24. Participated in workshop-cum-training course on **Molecular tagging of inoculants strains for ecological studies** held at the Division of Microbiology, IARI, New Delhi, from August 24 - 30, 2000 under NATP programme of Team of Excellence, HRD.
25. Participated in Training course on **Biofertilizers** held at the Division of Microbiology, IARI, New Delhi, from March 13-26, 2000, under NATP programme of Team of Excellence, HRD.
26. Participated in National training course on **Biology and Biotechnology of Ectomycorrhiza** organized by the Department of Bio-Sciences, Himachal Pradesh University, Shimla, H.P. from October 9-14, 1999 sponsored by DST, Govt. of India.

Invited Talks/Resource Person

1. Delivered a lecture on '**Salt stress tolerance in mycorrhizal plants**' on 01 September 2018 at the Department of Biochemistry, G. B. Pant University of Agriculture and Technology, Pant Nagar, Uttrakhand.
2. Delivered a lecture on '**Arbuscular mycorrhizal fungi and abiotic stress tolerance in plants**' on 28 February 2018 at the TERI School of Advanced Studies (Formerly TERI University), Vasant Kunj, New Delhi.
3. Delivers a lecture on '**Soil organic carbon sequestration using arbuscular mycorrhizal fungi**' in the refresher course organized for the college and university teachers by CPDHE, University of Delhi, Delhi, on Climate Change and Disaster Management, from June 9-30, 2017.
4. Delivers a lecture on '**Role of microbes in climate change**' in the Orientation Programme (OR 90) organized for the college and university teachers by CPDHE, University of Delhi, Delhi, on Climate Change and Disaster Management, from 21 November – 19 December 2017.
5. Delivered a lecture on '**Mycorrhizal Fungi: Potential Biofertilizers for Future**' in the National Workshop on Mushroom Cultivation' held on 12-13 January 2017, organized by the Department of Microbiology and Biotechnology, DLS PG College, Bilaspur, Chhattisgarh, India.
6. Delivered a guest lecture on the topic "**Abiotic Stress Tolerance in Mycorrhizal Plants**" on Jan 13, 2017 at the Department of Botany, Guru Ghasidas Vishwavidyalaya, Bilaspur, Chhattisgarh, India.
7. Delivers a lecture on '**Mycorrhiza-mediated salt-stress tolerance in plants**' on 11/01/2017 at the Department of Biotechnology, Seth Phoolchand Agrawal Smriti Mahavidyalaya, Navapara, Rajim, Raipur, C.G.
8. Delivered a lecture on '**Microbial Lipases and their Industrial Application**' in Add-on

course entitled ‘An Integral Perspectives for Skill Augmentation’ held from 23 February to 5 March 2016 at the Department of Zoology, Swami Shraddhanand College, University of Delhi, Delhi.

Research Projects Completed/Ongoing:

- Cost Effective *Glomus Fasciculatum* formulation to improve the yield of three commercially important medicinal plants—*Artemisia annua*, *Stevia rebaudiana* and *Andrographis paniculata*. Funded by the Department of Biotechnology, Government of India 2009 (47.74 Lakhs). Completed
- Biochemical and physiological characterization of salt-tolerance mechanisms in mycorrhizal plants for optimum usage of mycorrhizal technology for the reclamation of saline soils. Funded by UGC, Government of India, 2009 (12.69 Lakhs). Completed
- Innovation Project SSNC 201 “Isolation, Identification and Process Development of Fungal Lipases for their Potential Applications in Industry”. Funded by University of Delhi, 2013 (5.0 Lakhs). Completed
- Decoding the mechanisms of altered terpenoid and phenylpropanoid profile in *Ocimum tenuiflorum* L. colonized by arbuscular mycorrhizal fungus to improve potential of AM technology in sustainable agriculture. Funded by the University of Delhi, 2020 (5.0 Lakhs).

Fellowships/Awards Received:

- Council of Scientific and Industrial Research Associateship 2003
- Department of Science and Technology Young Scientist Fast-Track Project 2006
- Best poster presentation award in 98th Indian Science Congress, SRM University Chennai from 3-7 January 2011.
- Raman Post-Doctoral Fellowship for North Carolina State University, USA 2014-2015.

National/International Realizations

- The Paper “Arbuscular mycorrhiza in alleviation of salt stress: A review. *Annals of Botany* ISSN 0305-7364 104: 1263-1280 Oxford Press, UK has been listed among **TOP 10 Cited Publications** (from 2009-2014) in the area of Biological Science and agriculture by International Comparative Performance of India’s Research Base, Department of Science and Technology, Report 2015, India.
- Travel support/grant provided by Pennsylvania State University, USA to attend **The 20th Penn State Plant Biology Symposium** held during 13-16 May, 2015.
- Travel support/grant provided by the University Grant Commission to attend **5th International Symposium on Physiological Processes in the Roots of Woody Plants**, University of Victoria, BC, Canada, held during 8-12 August 2010.

- Travel support/grant provided by the University Grant Commission to attend **5th Annual Congress on Plant & Soil Science** held during February 28- March 01, 2019 in London, UK, organized by EuroSciCon 40 Bloomsbury Way Lower Ground Floor, London United Kingdom WC1A 2SE.

Foreign Academic Visits:

- Delivered a talk in **Plant Biologicals Symposium-2019** held during 13-14 November 2019, University of Copenhagen, Denmark.
- Session Chair in **5th Annual Congress on Plant & Soil Science** held during February 28-March 01, 2019 in London, UK.
- Paper presentation in the **20th Penn State University Plant Biology Symposium** held on May 13-16, 2015 University Park, Pennsylvania, PA, USA.
- Paper presentation in the **5th International Symposium on the Physiological Processes in Roots of Woody Plants**, held at the University of Victoria, BC, Canada from 8-12 August 2010.
- Paper presentation in mycorrhizal conference “**Mycorrhiza: Systems Research from Genes to Communities**” held during 4-9 March 2006 in Monte Verita, Ascona, Switzerland.

Professional Association and Memberships of Learned Bodies:

- **Member** International Symbiosis Society (2012-13), USA (**Secretary**)
- **Life Member** Delhi University Botanical Society, India
- **Life member** Indian Science Congress Association, India
- **Life member** Association of Microbiologists of India (AMI), India
- **Life member** Mycological Society of India (MSI-195), India
- **Life member** Indian Society of Mycology and Plant Pathology, India
- **Member** Botanical Society of America (2012-13), USA
- **Member** American Society of Plant Biologists (2013, USA)
- **Life Member** International Society of Applied Life sciences, Turkey

Acting as manuscript reviewer for the following journals:

- Experimental and Environmental Botany, Elsevier Science; Frontiers in Plant Sciences; Planta, Springer Verlag; Agroforestry System, Springer Verlag; Colloids and Surfaces B: Biointerfaces, Elsevier Science; Scientia Horticulture, Elsevier Science; Acta Physiologia Plantarum, Springer Verlag; Spanish Journal of Agricultural Research; Journal of Agricultural Extension and Rural Development, Academic journals; Institute for Life Long Learning (ILL), University of Delhi, Delhi.

Acting as Guest Editor for Special Volumes

- FRONTIERS IN AGRONOMY
- BIOCELL
- FRONTIERS IN MICROBIOLOGY

Administrative activities:

- **Member** Environmental committee (2009-2010) Swami Shraddhanand College, University of Delhi, Delhi.
- **Member** Environmental Society (2009-2010) Swami Shraddhanand College, University of Delhi, Delhi.
- **Member** Prospectus committee (2009-2010) Swami Shraddhanand College, University of Delhi, Delhi.
- **Member** Grievance committee (2011-2012) Swami Shraddhanand College, University of Delhi, Delhi.
- **Convener** Botany (H) Admission committee (2013-2014) Swami Shraddhanand College, University of Delhi, Delhi.
- **Teacher-In-Charge** Botany (2013-2014) Swami Shraddhanand College, University of Delhi, Delhi.
- **Member** (2014) Liaison Committee, Swami Shraddhanand College, University of Delhi, Delhi.
- **Member** NAAC committee (2016-2017) Swami Shraddhanand College, University of Delhi, Delhi.
- **Convener** Computer committee (2016-2017) Swami Shraddhanand College, University of Delhi, Delhi.
- **Convener** Eco-club (2013-2017) Swami Shraddhanand College, University of Delhi, Delhi.
- **Convener** Life Sciences and Applied Life Sciences Admission committee (2017-2018) Swami Shraddhanand College, University of Delhi, Delhi.
- **Resource fellow** Institute for Life Long Learning (ILLL), University of Delhi, Delhi.
- **Subject expert** Consortium for Educational Communication (CEC), University Grant Commission (UGC), Aruna Asaf Ali Marg, New Delhi 110067.

Participation in UGC sponsored FDP programme

- Participated in a four weeks **Orientation Programme** (Code OR-62) from 2-30th March 2010, organized by CPDHE, University of Delhi, Delhi.
- Participated in a three weeks **Refresher course** in Contemporary Studies (ID) during June 07, 2016 to June 27, 2016 organized by CPDHE, University of Delhi, Delhi.
- Attended a UGC-HRDC sponsored short-term workshop on **Environmental Impact Assessment** organized by the Department of Environmental Sciences, MDS University, Ajmer from 13-18 February 2017.

- Participated in a two-day (15-16 March 2019) FDP programme organized by Mahatama Hansraj Faculty Development Center, Hans Raj College, University of Delhi, Delhi.
- Participated in a 5-days (13-17 June 2019) FDP programme on “MOOCs and e-Content Development” at Deen Dayal Upadhyaya College, University of Delhi, jointly organized by SWYAM, CEC and DDU.

Signature