

BIO-DATA Dr. Geetika Sirhindi

1. Name : DR. GEETIKA SIRHINDI
2. Designation : PROFESSOR IN PLANT
PHYSIOLOGY
3. Department : BOTANY
4. Date of Birth : 8th May, 1972
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- 6 Areas of Specialisation : Physiology & Biochemistry of Plants,
Stress Physiology

7. Academic Qualifications:

S. No	Degree Held	Year	Board/Univ./ Inst.	% of Marks	Div./ Rank	Subjects Taken
1	10 th	1987	Pb. S. Ed. B.	72 %	I st	Science & Humanity Group
2	B.Sc.	1993	Pbi. Univ. Pta.	60 %	I st	Medical
3	M.Sc.	1995	-do-	63 %	I st	Botany
4	Ph.D.	2001	-do-			Plant Physiology & Biochemistry

8. Membership of Professional Bodies/Organisations

- i) Life Member of Indian Society of Plant Physiology
- ii) Life Member of Punjab Academy of Sciences
- iii) Life Member K. K. Nanda Foundation
- iv) Life Member of Indian Botanical Society
- v) Life Member of Biotechnology Research Society of India
- vi) Life Member Indian Science Congress

9. Medals/Awards/Honours/Received

- i) Nature Publication Group Award 2007
- ii) A.C. Joshi Memorial Award, Botanical Society, Department of Botany, Punjabi University, Patiala 1993-95
- iii) Hooker Memorial Botanical Society, Department of Botany, Punjabi University, Patiala 1993-95

10. Scholarships: UGC - JRF 1995-1996**11. Details of Experience:**

S. No.	Name of the Inst./Employer	Position Held	Duration	Major Job Responsibilities and Nature of Experience
1.	Punjabi University, Patiala	Technician (Microphotography)	1999 to Jan.,06	Computers, Microphotography
2.	Punjabi University, Patiala	Assistant Professor in Plant Physiology (GP-6000/-)	2 nd Jan., 2006 to 1 st Jan., 2010	Teaching & Research
3.	Punjabi University, Patiala	Sr. Assistant Professor in Plant Physiology (GP 7000/-)	2 nd Jan., 2010 to 1 st Jan., 2015	Teaching & Research
4.	Punjabi University, Patiala	Sr. Assistant Professor in Plant Physiology (GP 8000/-)	2 nd Jan., 2015 to 1 st January, 2018	Teaching & Research
5.	Punjabi University, Patiala	Associate Professor in Plant Physiology (GP 9000/-)	2 nd January, 2018 to 1 st January, 2021	Teaching & Research
6.	Punjabi University, Patiala	Professor in Plant Physiology (GP 10000/-)	2 nd January, 2021 till date	Teaching & Research

12. Published Work (Please specify numbers only):

- a. Research Papers i) National = **06**
ii) International = **43**
- b. Book Chapters: **17**
- c. Conference/Seminar Presentation **43**
- d. Books **01**
- i) Original:
- ii) Edited: **One**

Book Name: Jasmonates and Brassinosteroids in Plants: Metabolism, Signalling and Biotechnological Applications

Edited by: Ramakrishnan Akula and Geetika Sirhindi

ISBN: 9780367627560

Publisher: CRC Press- Taylor & Francis

Publication Year: 2022

13. R & D Projects

**UGC Major Research Project 2008-2011
(Completed)**

Brassinostreoid regulated antioxidant defense system of *Brassica juncea* L. under temperature stress using biochemical and molecular approaches

**UGC Major Research Project 2013-2016
(Completed)**

Effect of 28-homobrassinolide oxidative and sugar metabolism and reproductive potential in *Brassica juncea* under temperature stress

SERB-DST Major Research Project 2014-2017 (Completed)

Comparative study of Jasmonic Acid and Methyl-Jasmonate effect on photosynthesis, growth and antioxidant defence system of *Brassica oleraceae* L.

Research Consultancy Project with Godrej Agrovet, Mumbai (2022-2024) [Going-on]

Exploration of the role of DOUBLE on growth and development of paddy, soyabean and tomato at seed germination and seedling level using physiological and biochemical tools

14. Invited Talks/Articles

03

- (i) Deen Dayal Upadhaya College of University of Delhi (02)
- (ii) Plant Signaling & Behavior 2014, Department of Botany, Delhi University, Delhi
- (iii) Plant Signaling & Behavior 2015, University of Diederot, Paris

15. Workshops Organized:

Workshop: Chemico-genetic innovative research: A new era of sustainable agriculture. 08th July, 2022. PB22 Plant Biology, Portland, Oregon, USA

16. Ph.D. Students guided/under guidance (Details): 15 (10+5)

S. No.	Name of the Student	Title of Thesis	Year of Registered/Enrolled
1.	Mr. Manish Kumar	24-epibrassinolide regulated antioxidant defense system of <i>Brassica juncea</i> L. under low temperature and H ₂ O ₂ stress	Awarded
2.	Mr. Sandeep Kumar	Brassinostreoid regulated antioxidant defense system of <i>Brassica juncea</i> L. under temperature stress using biochemical and molecular approaches	Awarded
3.	Ms Poonam Sharma	Jasmonate regulated signal cascade components and fatty acid metabolism of <i>Cajanus cajan</i> (L.) Millsp. under copper stress.	Awarded
4.	Ms Poonam	Insight into castasterone mediated physiological and biochemical changes in <i>Brassica juncea</i> L. plants grown under Cu stress	Awarded
5.	Mr. Mudassar	Jasmonic acid modulated photosynthetic potential and heavy metal tolerance under nickel stress in <i>Glycine max</i> (L.) Merr.	Awarded
6.	Ms Harpreet Kaur	Role of Jasmonates in carbohydrate metabolism and SOS gene expression in <i>Brassica napus</i> L. under salt stress	Awarded
7.	Mrs. Navneet Kaur	Molecular and phytochemical cahacterization of <i>Phyllanthus niruri</i> Linn. From Punjab in relation to prevention of <i>Helicobacter pylori</i> induced peptic ulcear disease	Awarded
8.	Mrs. Nirmal Goyal	Appraisal of brassinosteroids in modulating physiology, antioxidant potential and sugar metabolism of <i>Brassica oleracea</i> under temperature flux	Awarded
9.	Ms. Ruquia Mushtaq	Photoinhibition management in <i>Brassica oleraceae</i> L.by Jasmonates	Awarded
10.	Ms. Neha Dogra	Brassinosteroids mediated functional characterization and temperature stability properties of antioxidant defense system in <i>Brassica juncea</i> L. under	Awarded
11.	Ms. Shruti Kaushik	Role of Me-JA regulated cadmium tolerance through MAPKs and Ca ²⁺ - Calmodulin Kinases cascade in <i>Cajanus cajan</i>	Registered 2019
12.	Ms. Gurvarinder Kaur	Interactive role of 28-homobrassinolide and <i>Piriformospora indica</i> on antioxidant defense system of <i>Brassica juncea</i> under cadmium	Registered 2019

		stress	
13.	Ms. Isha Madaan	Brassinolides regulated photoinhibition and <i>MAPK</i> kinase cascade of <i>Vigna radiata</i> (L.) Wilczek under lead toxicity	Registered 2019
14.	Ms. Anmol Kaur	Jasmonates modulated expression and functional characterization of <i>WRKY</i> and <i>MAPK</i> transcription factors in <i>Glycine max.</i> for seed germination and seedling growth under dual stress of drought and salt.	Registered 2020
15.	Ms. Aarti	Role of strigolactones in millets sustainable growth under abiotic stress	Enrolled 2023

17. M.Phil. Students guided: 04

S. No.	Name of the Student	Title of Thesis	Year of Registration
1.	Ms. Uzma Azeem	Jasmonic acid regulated growth and defense system of <i>Zea mays</i> under metal stress	Completed 2009
2.	Ms. Harpreet Kaur	Role of Jasmonic Acid in regulating growth, productivity and protein expressions of <i>Braasica napus</i> under salt stress	Completed 2012
3.	Ms. Ruqia Mushtaq	Regulating role of Jasmonic Acid in Ascorbate-Glutathione Cycle and Phenolics in <i>Vigna radiata</i> under salinity stress	Completed 2014
4.	Ms. Shruti Kaushik	Jasmonates modulated nutrient potential of flower heads of <i>Brassica oleracea</i>	Completed 2018

18. M. Sc. Students guided: 13

S. No.	Name of the Student	Title of Thesis	Year of Registration
1.	Mr. Gagandeep Jain	Appraisal of protein and peroxidases in <i>Brassica juncea</i> L. under H ₂ O ₂ and CaCl ₂ stress	Completed 2009
2.	Ms. Jasmeet Kaur	Effect of 24-epibrassinolide on growth, productivity and protein expressions of <i>Brassica juncea</i> L. under high temperature stress	Completed 2011
3.	Ms. Navdeep Kaur	Interactive role of brassinosteroids and jasmonic acid on growth and photosynthetic pigments of <i>Brassica napus</i>	Completed 2015
4.	Ms. Renu Saini	Interactive role of jasmonic acid and magnesium on photosynthetic efficiency of <i>Cajanus cajan</i> (L.) Millsp. Seedling	Completed 2016
5.	Ms. Isha Madaan	Harmonized effect of 28-HBL on PSII activity and growth of <i>Cajanus cajan</i>	Completed 2017
6.	Ms. Parneet Kaur	Jasmonic acid modulated physiological	Completed 2018

		attributes in mungbean, gram and wheat sprouts	
7.	Ms. Amandeep Kaur	Interactive role of JA and NaCl on carbohydrate status and growth of <i>Cajanus cajan</i> seedlings	Completed 2019
8.	Ms. Mandeep Kaur	Effect of jasmonic acid on photosynthesis efficiency of <i>Cajanus cajan</i> under salt stress	Completed 2019
9.	Ms. Ruchi	Effect of Jasmonates on wheat seedlings exposed to salinity stress: grown under variable temperatures	Completed 2020
10.	Ms. Rashmi Mishra	Exogenous 24-EBL increase lead tolerance in seed germination and seedling growth of <i>Vigna radiate</i>	Completed 2021
11.	Ms. Harshita	Metalloids in Plants: A Review	Completed 2022
12.	Ms. Arshdeep Saini	A Review: Sprouts for health in post COVID – 19 era	Completed 2023
13.	Ms. Karnjot Dayal	Millet: Climate smart crops: A Review	Completed 2023

19. List of Papers/Courses taught at P.G. and U.G. Level

S. No.	Paper	Class
1.	Plant Physiology	M.Sc.-I
2.	Plant Metabolism	M.Sc.-I
3.	Biodiversity of Gymnosperms	M.Sc.-I
4.	Cell Biology	M. Sc. I
5.	Biology for Chemists	M. Sc. I
6.	Plant Development	M. Sc. II
7.	Plant reproduction	M. Sc. II
8.	Plant Tissue Culture	M. Sc. II & M. Sc. (Hon's) III Integrated Course
7.	Advances in Theory Paper I & II	M. Phil.
8.	Specialization in Plant Physiology	M. Phil.
9.	Advances in Plant growth and development	M. Sc. (Hon's) Integrated Course
10.	Advances in Plant Physiology	M. Sc. (Hon's) III Integrated Course
11.	Advances in Plant Metabolism	M. Sc. Hon's 2 year Course
12.	Basic Research Techniques	M. Sc. Hon's Two Year Course & M. Sc. Hon's FYIC V
13.	Plant Anatomy	M. Sc. Hon's FYIC III

20. Technical Proficiency

1. **Jasmonate and Brassinostreoids Signalling** in plants under heavy metal stress.
2. **Jasmonates & Brassinosteroids** physiological properties under abiotic stress.
3. **Antioxidant and ROS studies in plants.**
4. **Biochemical and Molecular Techniques** for Antioxidant Defense System in Plants. Study of Metallozymes, Stress Proteins, Signalling receptors and PKs Pathways study and profiling from plants, RT-PCR. Metal tolerance mechanisms in plants with chemico-genetic techniques.
5. **Bioinformatics:** Basic knowledge of data processing, word processing, installation of software's and handling of hardware's of computers.
6. **Biotechnological & Biochemistry Techniques:** HPLC, U.V. Spectrophotometer, Sonicator, Gas Liquid Chromatography, Atomic Absorption Unit, Electrophoresis, Confocal.
7. **Microphotography:** Histology, Cytology and study of ultra details of plant material

21. List of Papers Published

1. Kamini Devi, Arun Dev Singh, Shalini Dhiman, Jaspreet Kour, Tamanna Bhardwaj, Neerja Sharma, Isha Madaan, Kanika Khanna, Puja Ohri, Amrit Pal Singh, **Geetika Sirhindi**, Renu Bhardwaj, Vinod Kumar (2023). Current studies on the degradation of microplastics in the terrestrial and aquatic ecosystem. *Environmental Science and Pollution Research* <https://doi.org/10.1007/s11356-023-29640-0>. (IF:5.8).
2. Kaur, B. Kumar, B. **Sirhindi**, G. Guleria, N. Kaur, J. (2023). Phenolic Biotransformations in Wheatgrass Juice after Primary and Secondary Fermentation. *Foods* 2023, 12, 1624. <https://doi.org/10.3390/foods12081624>. (IF: 5.5).
3. Neha, Twinkle, Sumanta Mohapatra, **Geetika Sirhindi**, Vivek Dogra (2022). Seed priming with brassinolides improves growth and reinforces antioxidative defenses under normal and heat stress conditions in seedlings of Brassica juncea. *Physiologia Plantarum*. DOI: 10.1111/ppl.13814. (IF: 5.08).

4. Neha, Gurvarinder Kaur, Isha Madaan, Anmol Sidhu and **Geetika Sirhindi** (2022). 28-Homobrassinolide Induced Temperature Stress Tolerance in Mustard (*Brassica juncea* L.) Seedlings. *Res. Jr. of Agril. Sci.* **13**: 1018–1023. (NAAS: 4.50).
5. Shruti Kaushik, Poonam Sharma, Gurvarinder Kaur, Anil Kumar Singh, Fahad A. Al-Misned, Hesham M. Shafik, **Geetika Sirhindi** (2022). Seed priming with methyl jasmonate mitigates copper and cadmium toxicity by modifying biochemical attributes and antioxidants in *Cajanus cajan*. *Saudi Journal of Biological Sciences.* 29 (2): 721-729. (IF: 4.219)
6. **Geetika Sirhindi**, Shruti Kaushik, Ruqia Mushtaq, Poonam Sharma and Neha Dogra (2020). Jasmonates induce growth and modulation in pigments and vitamins of Brassica oleracea var. capitata, italica and botrytis edible heads (foliage/inflorescence). *Brazilian Journal of Botany.* **43:705–719.** (IF: 0.930),
7. **Geetika Sirhindi**, Ruqia Mushtaq, Sarvajeet Singh Gill, Poonam Sharma, Elsayed F. Abd_Allah and Parvaiz Ahmad (2020). Jasmonic acid and methyl jasmonate modulate growth, photosynthetic activity and expression of photosystem II subunit genes in Brassica oleracea L. *Scientific Reports* 10 (1): 1-14. (IF: 4.37).
8. **Sirhindi Geetika**, Mustaq Ruqia, Gill Sarvjeet Singh, Kaushik Shruti and Dogra Neha (2018). Effect of jasmonates on osmo-protectants in *Brassica oleracea* L. var. *italic*, *capitate* and *botrytis*. *J. Env. Bio-Sci.* 32(2): 305-308.
9. Poonam Yadav, Ravdeep Kaur, Mukesh Kumar Kanwar, Anket Sharma, Vinod Verma, **Geetika Sirhindi**, Renu Bhardwaj (2018). Castasterone confers copper stress tolerance by regulating antioxidant enzyme responses, antioxidants, and amino acid balance in *B. juncea* seedlings. *Ecotoxicology and Environmental Safety.* 147: 725–734. (IF: 4.527)
10. Kaur Harpreet, **Geetika Sirhindi**, Renu Bhardwaj, M. N. Alyemini, Kadambot H. M. Siddique and Parvaiz Ahmad (2018). 28-homobrassinolide regulates antioxidant enzyme activities and gene expression in response to salt- and temperature-induced oxidative stress in *Brassica juncea*. *Scientific Reports* 8:8735 | DOI:10.1038/s41598-018-27032-w. (IF: 4.122)
11. Mudaser A. M., **Sirhindi, Geetika**, Alyemini, M. N., Alam, P. and Ahmad, P. (2018). Jasmonic acid improves growth performance of soyabean under nickel toxicity by regulating nickel uptake, redox balance and oxidative stress metabolism. *J. Plant Growth Regul.* **37**, pages 1195–1209. DOI 10.1007/s00344-018-9814-y. (IF: 2.073).
12. Poonam Yadav, Ravdeep Kaur, Mukesh Kumar Kanwar, Renu Bhardwaj, **Geetika Sirhindi**, Leonard Wijaya, M. N. Alyemini and Parvaiz Ahmad. (2018). Ameliorative Role of Castasterone on Copper Metal Toxicity by Improving Redox Homeostasis in *Brassica juncea* L. *J Plant Growth Regul* 37:575–590. (IF: 2.073).
13. **Sirhindi, G.**, Ruqia Mushtaq, Mudasser Ahmed Mir, Mohammad Nassar Alyemini, Pravez Alam and Parvaiz Ahmad. (2017). Characterization of jasmonic acid-induced phenols in *Vigna radiate* under salt stress. *Pak. J. Bot.*

- 49(5): 1647-1654. (IF: 0.822; NAAS: 6.82).
14. Sharma, P., **Sirhindi, G.**, Singh, A. K., Kaur H. and Mushtaq, R. (2017). Consequences of copper treatment on pigeon pea photosynthesis, osmolytes and antioxidants defense. *Physiol. Mol. Biol. Plants*. 23(4):809–816. (IF: 0.883; NAAS: 4.63).
 15. **Sirhindi, G.**, Kaur, H., Bhardwaj, R., Sharma, P. and Mushtaq, R. (2017). 28-Homobrassinolide potential for oxidative interface in *Brassica juncea* under temperature stress. *Acta Physiol Plant*. 39:228. DOI 10.1007/s11738-017-2524-4. (IF: 1.364; NAAS: 7.58).
 16. Kaur, H., **Sirhindi, G.** and Sharma, P. (2017). Effect of jasmonic acid on some biochemical and physiological parameters in salt-stressed *Brassica napus* seedlings. *International Journal of Plant Physiology and Biochemistry*. 9(4): 36-42.
 17. Kaur, H., **Sirhindi, G.** and Bhardwaj, R. (2017). Influence of 28-homobrassinolide on photochemical efficiency in *Brassica juncea* under stress of extreme temperatures and salt. *Canadian Journal of Pure and Applied Sciences*. 11(2): 4205-4213.
 18. Kaur, N., Kaur, B. and **Sirhindi, G.** (2017). Phytochemistry and of *Phyllanthus niruri* L.: A Review. *Phytother. Res*. 31(7):980-1004. (IF: 2.66; NAAS: 8.66).
 19. Sharma, P., **Sirhindi, G.**, Kaur, H. and Singh, A. K. (2017). Methyl jasmonate regulated antioxidants and oxidative stress management in *Cajanus cajan* (L.) Millsp. Under copper stress condition. *International Journal of Advance Research in Science and Engineering*. 6(3): 184-192.
 20. Kaur H., **Sirhindi, G.**, Bhardwaj R. and Sharma, P. (2017). Interactive effect of 28-homobrassinolide and salinity on morpho-physiological attributes of 60 day old *Brassica juncea* plants. *International Journal of Advance Research in Science and Engineering*. 6(3): 315-324.
 21. Kaur, H. and **Sirhindi, G.** (2017). Exogenous application of jasmonic acid offers tolerance to salinity by altering stress responses in *Brassica napus* L. variety GSC 6. *International Journal of Science and Research*. 6(2): 1930-1934.
 22. Yadav, P., Kaur, R., Kohli, S. K., **Sirhindi, G.** and Bhardwaj, R. (2016). Castasterone assisted accumulation of polyphenols and antioxidant to increase tolerance of *B. juncea* plants towards copper toxicity. *Soil & Crop Sciences*. Doi: <https://doi.org/10.1080/23311932.2016.1276821>.
 23. **Sirhindi, G.**, Mir, M. A., Abd-Allah E.F., Ahmad P. and Gucl, S. (2016). Jasmonic acid modulates the Physio-biochemical attributes, antioxidant enzyme activity and gene expression in *Glycine max* under Nickel toxicity. *Frontiers in Plant Science*. 7: | doi: 10.3389/fpls.2016.00591. (IF: 4.298; NAAS: 9.95).
 24. **Sirhindi G.**, Sharma P., Kaur H., and Mir M.A., (2016). Methyl-jasmonate induced accumulation of vitamins and osmolytes in *Cajanus cajan* (L.) Millsp. under copper stress. *International Journal of Recent Scientific Research*. 7 (1): 8451-8454.
 25. **Sirhindi G.**, Sharma P., Arya P., Goel P., Kumar G., Acharya V. and Singh A. K. (2016). Genome-wide characterization and expression profiling of *TIFY* gene

- family in pigeonpea. *Journal of Plant Biochemistry and Biotechnology*. 25(3):301–310. (IF-0.954; NAAS: 7.09).
26. **Sirhindi, G.**, Mir, M. A., Sharma, P., Gill, S. S., Kaur, H. and Mustaq, R (2015). Modulatory role of jasmonic acid on photosynthetic pigments, antioxidants and stress markers of *Glycine max* L. under nickel stress. *Physiology and Molecular Biology of Plants*. **21(4)**: 559-565.(IF: **0.883**; NAAS: **4.63**).
 27. **Sirhindi, G.**, Sharma, P., Singh, A., Kaur, H. and Mir, M. (2015). Alteration in photosynthetic pigments, osmolytes and antioxidants in imparting copper stress tolerance by exogenous jasmonic acid treatment in *Cajanus cajan*. *International Journal of Plant Physiology and Biochemistry*. **7(3)**:30-39.
 28. Poonam, Kaur, R., Bhardwaj, R. and Sirhindi, G. (2015). Castasterone regulated polyphenolic metabolism and photosynthetic system in *Brassica juncea* plants under copper stress. *Journal of Pharmacognosy and Phytochemistry*. 4(4): 282-289. (NAAS: **5.21**).
 29. Kaur, H., **Sirhindi, G.**, Bhardwaj, R. and Sharma, P. (2015). 28-homobrassinolide modulation of osmolytes in *Brassica juncea* L. under salt stress. *International Journal of Scientific Research*. **4**: 27-29.
 30. Kaur S.N. K., **Sirhindi, G.** and Kumar, S. (2015). Comparative influence of Brassinosteroids correspondents (24-Epibl and 28-Homobl) on the Morpho-physiological constraints of *Brassica oleracea* (Cabbage, Cauliflower and Broccoli). *Biochem. Physiol*. 5:1.
 31. Harpreet, K., **Sirhindi, G.** and Bhardwaj, R. (2015). Alteration of antioxidant machinery by 28-homobrassinolide in *Brassica juncea* L. under salt stress. *Advances in Applied Science Research*. **6(4)**: 166-172.
 32. Poonam, R Bhardwaj, R Kaur, S Bali, P Kaur, **G Sirhindi**, AK Thukral, P Ohri, AP Vig (2015). Role of various Hormones in Photosynthetic Responses of Green Plants under Environmental Stresses. *Current Protein & Peptide Science*. **16(5)**: 435-449. (IF: **2.576**)
 33. **Sirhindi, G.**, Kaur, H., Bhardwaj, R., Spall, K. and Sharma, P. (2014). Thermoprotective role of 28-homobrassinolide in *Brassica juncea* plants. *American Journal of Plant Sciences*. **5**: 2431-2439.
 34. Kumar, S., **Sirhindi, G.** and Bhardwaj, R. (2014). 28-Homobrassinolide-Induced Exaggerated Growth, Biochemical Molecular Aspects of Brassica Juncea L. RLM-619 Seedlings under High Temperature Stress. *J Plant Biochem Physiol*. **2(2)**: 1-27. doi:10.4172/2329-9029.1000127.
 35. Kaur, H., **Sirhindi, G.**, Bhardwaj, R., Sharma, P. and Mudasir, M. (2014). 28-homobrassinolide modulate antenna complexes and carbon skeleton of *Brassica juncea* L. under temperature stress. *Journal of Stress Physiology and Biochemistry*. **10(3)**: 186-196.
 36. Kumar, S., **Sirhindi, G.**, Bhardwaj, R. and Kumar, M. (2014). Brassinosteroids denigrate the seasonal stress through antioxidant defense system in seedlings of *Brassica juncea* L. *Journal of Stress Physiology & Biochemistry*. **10(2)**: 74-83
 37. Kaur, B., Kumar, B., Kaur, N., **Sirhindi, G.**, Om Silakari, O., Garg, N. and

- Kaur, P. (2014). Role of *Lactobacillus fermentum* as a starter culture for malolactic fermentation to improve quality of white wines. *World Journal of Pharmacy and Pharmaceutical Sciences*. **3(3)**: 1687-1712.
38. Kaur, H., Sharma, P. and **Sirhindi, G.** (2013), Sugar accumulation and its regulation by jasmonic acid in *Brassica napus* L. under salt stress. *Journal of Stress Physiology and Biochemistry*. **9(4)**: 53-64.
 39. Sharma, P., Kaur, H., and **Sirhindi, G.** (2013). Effect of Jasmonic Acid on Photosynthetic Pigments and Stress Markers in *Cajanus cajan* (L.) Millsp. Seedlings under Copper Stress. *American Journal of Plant Sciences*. **4(4)**: 817-823.
 40. Kumar, S., **Sirhindi, G.**, Bhardwaj, R., Kumar M. and Arora, P. (2012) Role of 24- epibrassinolide in amelioration of high temperature stress through antioxidant defence system in *Brassica juncea* L. *Plant Stress* **6(1)**: 55-58.
 41. Kumar, S., **Sirhindi, G.**, Bhardwaj, R. and Kumar, M. (2011). Evaluation of brassinolide effect on growth, proteins and antioxidative enzyme activities in *Brassica juncea* L. *Indian J. Bot Soc.* **90 (1&2)**: 154-158.
 42. **Sirhindi, G.**, Kumar, M., Bhardwaj, R., Kumar, S. and Pardhan, S. K. (2011). Effects of 24-epibrassinolide on dynamics of growth, total proteins and antioxidant defense system in leaf tissues of *Brassica juncea* L. in relations to H₂O₂. *Indian J. Plant Physiol.* **16(1)**: 68-71.
 43. Kumar, M., **Sirhindi, G.**, Bhardwaj, R., Kumar, S. and Jain, G. (2010). Effect of exogenous H₂O₂ on antioxidant enzymes of *Brassica juncea* L. seedlings in relation to 24-epibrassinolide under chilling stress. *Indian J. of Biochemistry and Biophysics*. **47 (6)**: 378-382.
 44. **Sirhindi, G.**, Kumar S., Bhardwaj R. and Kumar M. (2009). Effect of 24-epibrassinolide and 28-homobrassinolide on growth and antioxidant enzyme activities in seedling of *Brassica juncea* L. *Physiol. Mol. Biol. Plants*. **15(4)**: 335-341.
 45. **Sirhindi, G.** and Singh, A. (2004). Seasonal Effect on Biomass Production in Some Conifers. *Journal of Punjab Academy of Sciences*. **1(2)**: 145-146.
 46. **Sirhindi, G.** (2004). Environmental control of energy management in form of carbohydrate dynamics in trees of exotic conifers. *Environmental Information Achieves*. **2**: 653-663.
 47. **Sirhindi, G.** (2003). Polyphenol oxidase production and activity under high temperature exotherm in vegetative organs of *Thuja orientalis*. *Environmental Informatics Archives*. **1**: 574-580.
 48. **Sirhindi, G.** (2003) Environmental Impacts on Bud Development and its relationship with chlorophyll and biomass production in some conifers In: Proceedings of National Seminar on “Physiological Interventions for Improved Crop Productivity and Quality: Opportunities and Constraints” pp 227-233.
 49. Singh, A., Singh, K., Kaur, H. and **Sirhindi, G.** (1999). Biomass evaluation of *Azolla pinnata* R. Brown. under certain soils coupled with organic matters. *Indian Fern Journal*. **15**: 198-204.

Book Chapters:

1. Kaur, G., Dogra, N., Kaushik, S., Madaan, I., Sidhu, A. and Sirhindi, G. (2022). Biochemical responses of plants towards heavy metals in soil. In *Hazardous and Trace Materials in Soil and Plants* (pp. 179-195). Academic Press.
2. Madaan, I., Dogra, N., Kaushik, S., Kaur, G., Sidhu, A., Bhardwaj, R. and Sirhindi, G. (2022). Implications of Phytohormones as Agrochemicals in Dynamic Environmental Conditions. In *Agrochemicals in Soil and Environment* (pp. 535-563). Springer, Singapore.
3. Dogra, N., Kaur, G., Madaan, I., Gill, S.S. and **Sirhindi, G.** (2022). Brassinosteroids:: Crucial Regulators of Growth under Stress. In *Jasmonates and Brassinosteroids in Plants: Metabolism, Signalling and Biotechnological Applications* (pp. 35-50). CRC Press.
4. Kaushik, S., Sidhu, A., Singh, A.K. and **Sirhindi, G.** (2022). Bioscience of Jasmonates in Harmonizing Plant Stress Conditions. In *Jasmonates and Brassinosteroids in Plants: Metabolism, Signalling and Biotechnological Applications* (pp. 99-118). CRC Press.
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22. SYMPOSIA/CONFERENCES/WORKSHOPS/ WEBINAR ATTENDED:

Sr. No.	Year	Conference/Symposium
1.	1997	First Punjab Science Congress. April 28-30
2.	2001	National Symposium on Plant Biodiversity and its Conservation, Department of Botany, Punjabi University, Patiala. February 14 -15.
3.	2002	National Symposium on Fungal Diversity: Present Status and Future Challenges. Botany Department, Punjabi University, Patiala.
4.	2006	National Symposium on Germplasm Evaluation: Present trends. Department of Botany Punjabi University, Patiala. January 23 – 24.
5.	2006	5th International Conference on Environmental Informatics, Bowling Green, Kentucky, USA August 1-3, 2006
6.	2007	International Conference on “Floral and Vegetative Volatile” Gordon Research Conference, Les Diablerets, Switzerland. October 8-12.
7.	2008	Silver Jubilee Conference of Indian Society for Plant Physiology at IARI, New Delhi, November 12-14.
8.	2008	National Seminar on "Recent Trends in Modern Biosciences and integrated workshop on Techniques in Tissue culture" Jalandhar.
9.	2009	4 th International Congress on "Stress Responses in Biology and Medicine" at Sapporo Medical University School of Medicine, Japan.
10.	2009	International Conference on "Advances in Free Radical Research", C. S. M. Medical University, Lucknow.
11.	2009	National Symposium on Biotechnology Research, Department of Biotechnology, Punjabi University, Patiala March, 19-20
12.	2009	National Seminar on "Environmental and Sustainable Development" at Guru Nanak Dev University, Amritsar.
13.	2010	National Conference of Plant Physiology on "Physiological and Molecular Approaches for Crop Improvement under Changing Environment" at Banaras Hindu University, Varanasi
14.	2010	National Symposium on "Botanical Research- Present Scenario" at Punjabi University, Patiala
15.	2011	National Symposium on Mycology and Plant Pathology at Punjabi University, Patiala
16.	2012	National Symposium on Cytogenetics at Punjabi University, Patiala
17.	2012	National conference held on Advances in Environmental sciences And Plant Biotechnology, Deen Dayal Upadhaya College, Delhi University, Delhi
18.	2013	National symposium on Fundamental and applied phycology at Punjabi University, Patiala

19.	2013	ISCA Patiala Chapter in Punjabi University, Patiala
20.	2013	National conference held on Preservation of Environment: Challenges Before Humanity Department of Environmental Sciences, Sri Guru Granth Sahib University, Fatehgarh Sahib
21.	2013	16 th Punjab Science Congress held on Science for Health in Baba Farid University of Health Sciences, Faridkot
22.	2014	National Conference on Perspective & Trends in Plant Sciences and Biotechnology. February 21-23, 2014. Punjab University, Chandigarh.
23.	2014	International Symposium on Plant Signaling & Behavior, March 7-10, 2014, Organized by Society for Plant Signaling and Behaviour and Delhi University, Delhi.
24.	2015	National Conference on Climate Change: Impacts, Adaptation, Mitigation Scenario and Future Challenges in India, Department of Botany, Dean Dayal Upadyaha College, University of Delhi, 02-03March, 2015.
25.	2015	International Symposium on Plant Signaling & Behavior, June 29- July, 2, 2015, Organized by Society for Plant Signaling and Behaviour, University Diderot, Paris.
26.	2015	International Conference on Plant Physiology Organized by Indian Society for Plant Physiology at JNU, New Delhi, December, 2015.
27.	2016	ICEMCH-2016, Guru Nanak Dev University, Amritsar, February 17-19, 2016.
28.	2016	National Symposium on New Vistas in Plants and Microbes, March 18-19, 2016, Department of Botany, Jammu University, Jammu.
29.	2016	International Symposium on Plant Signaling & Behavior, June 29- July, 2, 2016, Organized by Society for Plant Signaling and Behaviour, St. Petersburg, Russia.
30.	2016	National Conference on Basic and Applied Researches in Plants and Microbes, Department of Botany, Punjabi University, Patiala 3-5 November, 2016
31.	2017	Swarna Jyanti National Conference on Biodiversity and Sustainable Utilization of Plant Resources, Department of Botany, Kurukshetra University, Kurukshetra, 17-18 February, 2017
32.	2017	2day International Conference on Recent Innovations in Engineering, Science, Humanities and Management, Dev Smaj College for Women, Ferozpur City, 18-19 March, 2017.
33.	2017	Indian Botanical Society Annual Meet and National Symposium on Evaluation of Plant Germplasm at Department of Botany, Punjabi University, Patiala from 15-17 September, 2017.
34.	2018	National Conference on Plant Science and Agricultural Sciences in Health and Environment, Department of Botany, Khalsa College, Amritsar, 30-31 October, 2018
35.	2018	International Conference of Plant Physiology, Organized by Indian Society for Plant Physiology, NBRI, Lucknow, 1-5 December, 2018.

36.	2019	National Symposium on Plant and Microbial Research, Department of Botany, Punjabi University, Patiala, 19-20 February, 2019
37.	2019	National Conference on Recent Advances in Plant and Agricultural Sciences, Organized by SGGSW University, Fatehgarh Sahib, 15-16 March, 2019.
38.	2020	UGC-SAP (DRS – II) Sponsored National Seminar on Diversity and Reproduction in Plant and Microbes: Present Scenario organized by Department of Botany, University of Jammu from February 7-8, 2020.
39.	2020	International E-conference on Genetics and Plant Breeding Research in Post COVID-19 Era. 13-14 th June, 2020. Department of Genetics and Plant Breeding, Ch. Charan Singh University, Meerut, UP, India
40.	2020	National online workshop on LC-MS: Instrumentation and its use in quantification and identification of Bioactive Molecules. 10-11 th June, 2020. Department of Botany, Mohanlal Sukhadia University, Udaipur, Rajasthan, India
41.	2020	Webinar on Translating Physiology into Techniques for Abiotic Stress Tolerance, October 9, 2020. ICAR – National Institute of Abiotic Stress Management (NIASM), Baramati, Pune, Maharashtra, India
42.	2021	Hands-on-training and workshop, PCR and Real Time PCR, CSIR-Skill Development Programme, March 1-5 th , 2021, CSIR-Indian Institute of Integrative Medicine, Jammu Tawi, J & K, India
43.	2022	National Conference on Managing Weather and Climate Risks in Agriculture (Adapting Crops to Climate Variability and Uncertainty) AGMET-2021. 24-26 th March, 2022. Sher-e-Kashmir University of Agricultural Sciences & technology of Kashmir (SKUAST-K), Kashmir & Association of Agrometeriologists, Anand Gujarat-Kashmir Chapter, J & K, India