

**ICAR –INDIAN INSTITUTEof SUGARCANE RESEARCH  
LUCKNOW 226002, UTTAR PRADESH**

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**Personal Information**

Name	Dr. Ranjit Singh Gujjar <a href="mailto:ranjit.gujjar@icar.gov.in">ranjit.gujjar@icar.gov.in</a> Date of joining: 28/04/2011	
Designation	Senior Scientist (Plant Biotechnology)	
Division/Section	Crop Improvement	
Research Area	Proteomics, Transcriptomics, Transgenic development, Red rot resistance in sugarcane, Tissue culture, Biotic and abiotic stress tolerance, Transcription factors	
<b>Institutional Projects</b>		
<ul style="list-style-type: none"><li>Investigating the differentially expressed proteins in red rot susceptible and resistant sugarcane cultivars during <i>C. falcatum</i> interactions.</li><li>Transcriptomics based identification of host and pathogen genes involved in red rot disease of sugarcane and their validation.</li></ul>		
<b>External Funded Projects</b>		
Enhancing climate resilience and ensuring food security with genome editing tools in sugarcane.		

## Publications

- **Gujjar RS**, Kumar R, Goswami SK, Singh A, Baidya A (2024) Colletotrichum falcatum infection influences the abundance of sucrose transporters and disease resistant proteins in sugarcane stalk. *Journal of Plant Biochemistry and Biotechnology*. <https://doi.org/10.1007/s13562-024-00899-9> (IF: 1.9; NAAS: 7.9).
- **Gujjar RS**, Supaibulwatana K, Srivastava S, Upadhyay AK (2024) Regulation of stress-responsive transcription factors of rice by CPPU, a synthetic cytokinin, during water deficit stress at protein level. *Cereal Research Communications*. <https://doi.org/10.1007/s42976-024-00540-4> (IF: 1.6; NAAS: 7.6).
- **Gujjar RS\***, Kumar R, Goswami SK, Srivastava S, Upadhyay AK (2024). Colletotrichum falcatum influences sucrose accumulation in sugarcane stalks by modulating the expression of SPS, SPP, SuSy, and invertases. *Physiological and Molecular Plant Pathology*, 130:102237; <https://doi.org/10.1016/j.pmpp.2024.102237> (IF: 2.8; NAAS: 8.8).
- Kumar R, Kumari VV, **Gujjar RS**, Kumari M, Goswami SK, Datta J, Pal S, Jha SK, Kumar A, Pathak AD, Skalicky M (2024) Evaluating the imazethapyr herbicide mediated regulation of phenol and glutathione metabolism and antioxidant activity in lentil seedlings. *PeerJ*, 12:e16370; <https://doi.org/10.7717/peerj.16370> (IF: 2.7; NAAS: 8.7).
- **Gujjar RS\***, Kumar R, Goswami SK, Srivastava S, Kumar S (2024) MAPK signaling pathway orchestrates and fine-tunes the pathogenicity of Colletotrichum falcatum. *Journal of Proteomics*, 292:105056; <https://doi.org/10.1016/j.jprot.2023.105056> (IF: 3.8; NAAS: 9.8).
- Goswami SK, Kashyap AS, Kumar R, **Gujjar RS\***, Singh A, Manzar N (2024) Harnessing Rhizospheric Microbes for Eco-friendly and Sustainable Crop Production in Saline Environments. *Current Microbiology*, 81(1):1-5; <https://doi.org/10.1007/s00284-023-03538-z> (IF: 2.8; NAAS: 8.8).
- Kumar R, Sagar V, Verma VC, Kumari M, **Gujjar RS**, Goswami SK, Jha SK, Pandey H, Dubey AK, Srivastava S, Singh SP, Prasad PV (2023) Drought and salinity stresses induced physio-biochemical changes in sugarcane: an overview of tolerance mechanism and mitigating approaches. *Frontiers in Plant Science*, 14: 1225234; <https://doi.org/10.3389/fpls.2023.1225234> (IF: 6.6; NAAS: 12.6).

- Worakan P, **Gujjar RS** and Supaibulwatana K (2022) Stable and reproducible expression of bacterial *ipt* gene under the control of SAM-specific promoter (pKNOX1) with interference of developmental patterns in transgenic *Peperomia pellucida* plants. *Frontiers in Plant Science*, 13: 984716; <https://doi.org/10.3389/fpls.2022.984716> (IF: 6.6; NAAS: 12.6).
- **Gujjar RS**, Roytrakul S, Chuekong W and Supaibulwattana K (2021) A synthetic cytokinin influences the accumulation of leaf soluble sugars and sugar transporters, and enhances the drought adaptability in rice. *3 Biotech*, 11:369 (2021); <https://doi.org/10.1007/s13205-021-02908-3> (IF: 2.9; NAAS: 8.9).
- **Gujjar RS**, Banyen P, Chuekong W, Worakan P, Roytrakul S, and Supaibulwatana K (2020) A synthetic cytokinin improves photosynthesis in rice under drought stress by modulating the abundance of proteins related to stomatal conductance, chlorophyll contents, and rubisco activity. *Plants*, 9(9):1106; <https://doi.org/10.3390/plants9091106> (IF: 4.7; NAAS: 10.7).
- **Gujjar RS**, and Supaibulwatana K (2019). The Mode of cytokinin functions assisting plant adaptations to osmotic stresses. *Plants*, 8(12):542; <https://doi.org/10.3390/plants8120542> (IF: 4.7; NAAS: 10.7).
- **Gujjar RS\***, Pathak AD, Karkute SG, and Supaibulwatana K (2019) Multifunctional proline rich proteins and their role in regulating cellular Pro level in plants under stress. *Biologia plantarum*, 63(1):448-454; <https://doi.org/10.32615/bp.2019.078> (IF: 1.4; NAAS: 7.4).
- **Gujjar RS\***, Karkute SG, Rai A, Singh M, and Singh B (2018) Proline-rich proteins may regulate free cellular proline levels during drought stress in tomato. *Current Science*, 114(4):915-920; <https://doi.org/10.18520/cs/v114/i04/915-920> (IF: 1.1; NAAS: 7.1).
- Karkute SG, **Gujjar RS\***, Rai A, Akhtar M, Singh M, and Singh B (2018) Genome wide expression analysis of WRKY genes in tomato (*Solanum lycopersicum*) under drought stress. *Plant Gene*, 13(1):8-17; <https://doi.org/10.1016/j.plgene.2017.11.002> (IF: 0.7; NAAS: 6.7).
- Karkute SG, Easwaran M, **Gujjar RS**, Piramanayagam S and Singh M\* (2015) Protein modeling and molecular dynamics simulation of SIWRKY4 protein cloned from drought tolerant tomato (*Solanum habrochaites*) line EC520061. *Journal of Molecular Modelling*, 21(10):255; <https://doi.org/10.1007/s00894-015-2798-7> (IF: 1.8; NAAS: 7.8).

- **Gujjar RS\***, Akhtar M and Singh M (2014) Transcription factors in abiotic stress tolerance. *Indian Journal of plant physiology*, 19:306-316; <https://doi.org/10.1007/s40502-014-0121-8> (IF: 0.8; NAAS: 6.8).
- **Gujjar RS\***, Akhtar M, Rai A and Singh M (2014) Expression analysis of drought induced genes in wild tomato line (*Solanum habrochaites*). *Current Science*, 107(3):496-502 (IF: 1.1; NAAS: 7.1).
- Ali K, **Gujjar RS**, Niwas R, Gopal M and Tyagi A (2011) A rapid method for estimation of abscisic acid and characterization of aba regulated gene in response to water deficit stress from rice. *American Journal of Plant Physiology*, 6(3):144-156 (IF: 0.1; NAAS: 6.1).

#### Books or Chapter Published

- **Ranjit Singh Gujjar** (2016) Transcription Factors in Abiotic Stress Tolerance. *Recent advances in plant stress physiology*, Chapter 3, Page 49-67.
- Singh M, Prasanna HC, Tiwari S, **Gujjar RS**, Karkute SG (2016) Biology of *Solanum lycopersicum* (tomato). *New Delhi: Ministry of Environment, Forest and Climate Change*, Government of India.
- Singh B, Mohanty D, Bakshi V, **Gujjar RS**, Upadhyay AK (2022) The Distinction of Omics in Amelioration of Food Crops Nutritional Value. *Bioinformatics for agriculture: High-throughput approaches*, 85.
- Basu T, Chugh R, Gujjar RS, Upadhyay AK (2023) Approaches for In Silico Validation of Safety (Toxicity) Data for Cosmetics. *Skin 3-D Models and Cosmetics Toxicity*. Springer, Singapore. [https://doi.org/10.1007/978-981-99-2804-0\\_1](https://doi.org/10.1007/978-981-99-2804-0_1)

#### Awards

S.No	Name of Award	Awarding Agency	Year
1.	Best oral presentation award in National Symposium on “Crop Health Management: Safeguarding Crop through Diagnostics and Innovations”	ICAR-VPKAS, Almora, Uttarakhand, India	2023
2.	2 <sup>nd</sup> best oral presentation award in 7 <sup>th</sup> IAPSIT International Sugar Conference-SUGARCON	ICAR- Indian Institute of Sugarcane Research, Lucknow, India	2022
3.	Excellence in Agricultural Research Award for Outstanding contribution in	International Conference, SERS and BBAU, Lucknow	2021

	Plant Biotechnology at 5th International Conference on “Innovative Approaches in Applied Sciences & Technology”		
3.	Best Oral Presentation Award in The 10 <sup>th</sup> RMUTP international conference on science, technology and innovation for sustainable development: Turning digital disruptions into opportunities.	Rajamangala University of Technology, Thailand	2019
4.	Netaji Subhas- ICAR International Fellowship Award 2015-16	Education Division, ICAR, New Delhi	2016
5.	Best Poster Presentation in National conference	Central Agricultural University, Arunachal Pradesh	2016

### **Miscellaneous:**

#### **Conference proceedings:**

1. **Gujjar R.S.**, Shweta Singh, Deeksha Joshi, Sangeeta Srivastava, Ashwini Dutt Pathak (2022) LCMS/MS analysis of differentially expressed *C. falcatum* proteins during red rot infection. SUGARCON-2022 & 7th IAPSIT International Sugar Conference on “Sustainability of the Sugar and Integrated Industries: Issues and Initiatives” during 16-19 Oct. 2022, held at ICAR-IISR, Lucknow, India.
2. **Gujjar, R.S.**, Joshi, J., Chuekong, W., & Supaibulwatana, K.S. (2019). Screening of candidate mutants of KDM105 rice using salinity tolerance score and physiological indices. *The 10<sup>th</sup> RMUTP international conference on science, technology and innovation for sustainable development: Turning digital disruptions into opportunities*, Bangkok, Thailand, 4-5 June 2019 page 2-16.

#### **Lead Lectures in conferences**

1. **Gujjar R.S.**, Shweta Singh, Deeksha Joshi, Sangeeta Srivastava, Ashwini Dutt Pathak (2022) LCMS/MS analysis of differentially expressed *C. falcatum* proteins during red rot infection. SUGARCON-2022 & 7th IAPSIT International Sugar Conference on “Sustainability of the Sugar and Integrated Industries: Issues and Initiatives” during 16-19 Oct. 2022, held at ICAR-IISR, Lucknow, India.
2. **Gujjar, R.S.**, Roytrakul S. & Supaibulwatana, K.S. (2021) Synthetic cytokinins curtail ABA signalling and enhance drought tolerance ability in rice. 5th International Conference on “Innovative Approaches in Applied Sciences & Technology” during 3-5 Dec. 2021 at Babasaheb Bhimrao Ambedkar University, Lucknow, India.

#### **Oral Presentations in conferences**

1. **Gujjar, R.S.**, Goswami S.K., Kumar, R., & Srivastava, S. (2023) Draft proteome of *Saccharum hybrid* cv. CoJ64 revealed abundance of novel defense-related proteins

during *C. falcatum* infection. National Symposium on “Crop Health Management: Safeguarding Crop through Diagnostics and Innovations, ICAR-VPKAS, Almora, Uttarakhand, India, Page 127.

2. **Gujjar, R.S.**, Goswami S.K., Kumar, R., & Srivastava, S. (2023) Unravelling proteome of *Saccharum officinarum* cv. BO91 for novel defense-related proteins during *C. falcatum* infection. National Seminar on Research Imperatives for Sustaining Sugarcane, Sugar and Ethanol Production, ICAR-SBI, Coimbatore, India, Page 40.
3. **Gujjar R.S.**, Shweta Singh, Deeksha Joshi, Sangeeta Srivastava, Ashwini Dutt Pathak (2022) LCMS/MS analysis of differentially expressed *C. falcatum* proteins during red rot infection. SUGARCON-2022 & 7th IAPSIT International Sugar Conference on “Sustainability of the Sugar and Integrated Industries: Issues and Initiatives” during 16-19 Oct. 2022, held at ICAR-IISR, Lucknow, India.
4. **Gujjar, R.S.**, Roytrakul S. & Supaibulwatana, K.S. (2021) Synthetic cytokinins curtail ABA signalling and enhance drought tolerance ability in rice. 5th International Conference on “Innovative Approaches in Applied Sciences & Technology” during 3-5 Dec. 2021 at Babasaheb Bhimrao Ambedkar University, Lucknow, India.
5. **Gujjar, R.S.**, Joshi, J., Chuekong, W., & Supaibulwatana, K.S. (2019) Screening of candidate mutants of KDML105 rice using salinity tolerance score and physiological indices. The 10<sup>th</sup> RMUTP international conference on science, technology and innovation for sustainable development: Turning digital disruptions into opportunities, Bangkok, Thailand, Page 2-16.
6. **Gujjar, R.S.**, Roytrakul S. & Supaibulwatana, K.S. (2019) Role of cytokinin in biochemical responses of rice to drought stress. National conference on integrative plant biochemistry and biotechnology, Hyderabad, India, Page 39.

#### **Conference abstracts**

1. **Gujjar, R.S.**, Goswami S.K., Kumar, R., & Srivastava, S. (2023) Draft proteome of *Saccharum hybrid* cv. CoJ64 revealed abundance of novel defense-related proteins during *C. falcatum* infection. National Symposium on “Crop Health Management: Safeguarding Crop through Diagnostics and Innovations, ICAR-VPKAS, Almora, Uttarakhand, India, Page 127.
2. **Gujjar, R.S.**, Goswami S.K., Kumar, R., & Srivastava, S. (2023) Unravelling proteome of *Saccharum officinarum* cv. BO91 for novel defense-related proteins during *C. falcatum* infection. National Seminar on Research Imperatives for Sustaining Sugarcane, Sugar and Ethanol Production, ICAR-SBI, Coimbatore, India, Page 40.
3. Goswami S.K., Singh, D. Singh, S.P., Kumar, R., **Gujjar, R.S.** (2023) Endophyte *Chaetomium globosum* strain CGSR13 enhances sugarcane growth and shows antifungal activity against *Fusarium sacchari* causing sugarcane wilt in India. INSOPP National Symposium, Banaras Hindu University, Varanasi, India, Page 89.
4. Goswami S.K., Singh, D. Singh, S.P., **Gujjar, R.S.**, Kumar, R. (2023) Endophyte *Chaetomium globosum* strain CGSR13 enhances sugarcane growth and bio-control of

*Colletotrichum falcatum*. National Symposium on “Crop Health Management: Safeguarding Crop through Diagnostics and Innovations, ICAR-VPKAS, Almora, Uttarakhand, India, Page 59.

5. Kumar, R., **Gujjar, R.S.**, Singh, S.P., Srivastava, M.K. (2023) Influence of organic source of nutrient and plant growth regulator on early growth and gas exchange attributes of sugarcane in subtropics. National Seminar on Research Imperatives for Sustaining Sugarcane, Sugar and Ethanol Production, ICAR-SBI, Coimbatore, India, Page 83.
6. **Gujjar R.S.**, Shweta Singh, Deeksha Joshi, Sangeeta Srivastava, Ashwini Dutt Pathak (2022) LCMS/MS analysis of differentially expressed *C. falcatum* proteins during red rot infection. SUGARCON-2022 & 7th IAPSIT International Sugar Conference on “Sustainability of the Sugar and Integrated Industries: Issues and Initiatives” during 16-19 Oct. 2022, held at ICAR-IISR, Lucknow, India.
7. Aalok Shiv, Rajeev Kumar, **Gujjar R.S.**, S. K. Goswami, A. K. Mall, Sanjeev Kumar, K. Gopalareddy, J. Singh and A. D. Pathak (2022) Harnessing modern biotechnological tools to augment bioethanol recovery from crop plants. SUGARCON-2022 & 7th IAPSIT International Sugar Conference on “Sustainability of the Sugar and Integrated Industries: Issues and Initiatives” during 16-19 Oct. 2022, held at ICAR-IISR, Lucknow, India.
8. Shweta Singh, Chandramani Raj, Arun Baitha, Sharmila Roy, Sangeeta Srivastava, Sanjay Kumar Goswami, **Gujjar R.S.**, N Krishna Kumar Rathod and Arjun Singh (2022) Sugarcane yellow leaf syndrome: The menace of virus or phytoplasma or both? SUGARCON-2022 & 7th IAPSIT International Sugar Conference on “Sustainability of the Sugar and Integrated Industries: Issues and Initiatives” during 16-19 Oct. 2022, held at ICAR-IISR, Lucknow, India.
9. N.K.K. Rathod, Shweta Singh, **Gujjar R.S.**, Sangeeta Srivastava, Anchal Singh (2022) CRISPR/Cas and sugarcane: Precautions to design sgRNA in effective genome editing. SUGARCON-2022 & 7th IAPSIT International Sugar Conference on “Sustainability of the Sugar and Integrated Industries: Issues and Initiatives” during 16-19 Oct. 2022, held at ICAR-IISR, Lucknow, India.
10. **Gujjar, R.S.**, Roytrakul S. & Supaibulwatana, K.S. (2021) Synthetic cytokinins curtail ABA signalling and enhance drought tolerance ability in rice. 5th International Conference on “Innovative Approaches in Applied Sciences & Technology” during 3-5 Dec. 2021 at Babasaheb Bhimrao Ambedkar University, Lucknow, India
11. **Gujjar, R.S.**, Joshi, J., Chuekong, W., & Supaibulwatana, K.S. (2019) Screening of candidate mutants of KDM105 rice using salinity tolerance score and physiological indices. *The 10<sup>th</sup> RMUTP international conference on science, technology and innovation for sustainable development: Turning digital disruptions into opportunities*, Bangkok, Thailand, page 2-16
12. **Gujjar, R.S.**, Roytrakul S. & Supaibulwatana, K.S. (2019) Role of cytokinin in biochemical responses of rice to drought stress. National conference on integrative plant biochemistry and biotechnology, Hyderabad, India, Page 39.
13. **Gujjar, R.S.**, Akhtar, M., Singh, M. (2014) Expression profiling of WRKY transcription factors in *Solanum habrochaites* under water stress. *National Symposium*

*on Pre Post Harvest Losses & Value Addition in Vegetables.* Page: 254-255 (TS4: P-10).

14. **Gujjar, R.S.** Akhtar, M., Singh, M. (2013) Cloning and Characterization of drought stress specific transcription factors from tomato. *National Symposium on Abiotic and Biotic Stress Management in Vegetable Crops*, Page: 108-109 (TS3: P-16).
15. Rai A., Kumar R., Tiwari S.K., **Gujjar RS**, Dubey R.S. and Singh M. 2012. Expression Profiling Revealed Involvement of Sucrose Degradation Pathway in Tomato for Heat Tolerance. International Conference on Plant Biotechnology for Food Security: New Frontiers. February 21-24, 2012, organised by Society for Plant Biochemistry and Biotechnology, NRCPB and IARI, New Delhi, pp. 134.

#### Reviewed Papers/proposals

1. Reviewed a research paper of “ENVIRONMENTAL AND EXPERIMENTAL BOTANY” entitled “Low R/FR can induce cytokinins degradation resulting in the inhibition of tillering in wheat (*Triticum aestivum L.*)” on 01 Jun 2022.
2. Reviewed a research paper of “ENVIRONMENTAL AND EXPERIMENTAL BOTANY” entitled “Proline-rich protein MdPRP6 alters low nitrogen stress tolerance by regulating lateral root formation and anthocyanin accumulation in transgenic apple (*Malus domestica*)” on 29 Jan 2022.
3. Reviewed a research paper of “ANNALS OF BOTANY” entitled “Multiple omics approach underly Genetic and molecular regulatory mechanisms of fruit-related traits in Pepper (*Capsicum annuum L.*)” on 31 Aug 2021.

#### Popular articles

1. Kumar P., Goswami S.K., **Gujjar R.S.** and Kumar R. (2023) Ganne ka Pokkah Boeing Rog : Samasya aur Samadhan Seaweed: an option to combat global warming. *Krishi Kiran*, 15: 29–31.
2. Yadav P., Kumar P., Goswami S.K., Kumar R. and **Gujjar R.S.** (2023) Ganne ki Fasal me Kharpatwar ka Ekkirat Prabandhan. *Krishi Kiran*, 15: 12–16.
3. Reddy Y.S., Tiwari S.K. and **Gujjar R.S.** (2013) Seaweed: an option to combat global warming. *Vumiputra*, 11: 101–103.
4. Singh M., Kumar R., Prasanna H.C., Tiwari S.K., **Gujjar R.S.** and Karkute S.G. (2016) Genetically Modified Vegetables for Farmers’ Welfare. *Indian Horticulture*, 61: 11-14.

#### Extension folders

1. Singh, B.K., Singh, B., Karmakar, P., Kodandaram, M.H., **Gujjar, R.S.**, Roy, S. and Gupta, S. (2015). MulikeevygyanikKheti. Extension Folder No. 18, ICAR-IIVR.
2. Singh, B.K., Singh, B., Singh, P.K., Ranjan, J.K., Saha, S., **Gujjar, R.S.** and Gupta, S. (2015). Gazar Ki VaigyanikKheti. Extension Folder No. 19, ICAR-IIVR.

#### Member of scientific societies

1. Association for Promotion of Invention in Vegetables (APIV, Varanasi)
2. Scientific & Educational Research Society (SERS, Meerut)