

**Dr. Kumudini Belur Satyan**

Associate Professor and Programme Head

**Specialization**

Plant Stress Physiology, Biofuels, Environmental biotechnology

**Education**

1998 - M.Phil., University of Mysore, Mysuru

2004 - Ph.D., University of Mysore, Mysuru

**Work Experience**

2005 onwards JAIN (Deemed-to-be University), Bangalore

**Key Areas of Research**

**Plant Stress Physiology; Biofuels; Environmental Biotechnology**

- Use of PGPR in management of biotic and abiotic stress in plants
- Use of algae for biodiesel production
- Degradation of dyes using PGPR



**PhD Guided/Guiding: 6/5**

**MPhil Guided: 6**

**Publications:**

1. Chhandama, M.V.L., Chetia, A.C., Satyan, K.B., Supongsena Ao, Ruatpuia, J.V., Rokhum, S.L. 2022. Valorisation of food waste to sustainable energy and other value-added products: A review. *Bioresource Technology Reports*, 17, 100945 Cite score: 4.2
2. Chhandama, M.V.L., Satyan, K.B., Changmai, B., Vanlalveni, C., Rokhum, S.L. 2021. Microalgae as a feedstock for the production of biodiesel: A review. *Bioresource Technology Reports*, 15, 100771 – Cite score: 4.2
3. Chhandamma ML and Kumudini BS. 2021. Optimization of lipid accumulation in *Pleurastrum insigne* for biodiesel production. *Research Journal of Biotechnology* 16 (10): 144-155 – IF: 0.454
4. Jain JR, Manohar SH, Roy TK and Kumudini BS. 2021. Phenolic acid and flavonoid patterns in twelve *Secium edule* varieties. *Acta Scientific AGRICULTURE* 5(4) – IF: 1.014

5. Jayamohan NS, Patil SV and Kumudini BS. 2020. Seed priming with rhizosphere isolated *Pseudomonas putida* trigger innate resistance against fusarium wilt in tomato through activation of PR proteins and phenylpropanoid pathway. *Pedosphere* 30(5): 651–660 – IF: 5.514
6. Mahadik S and Kumudini BS. 2020. Enhancement of salinity stress tolerance and plant growth in finger millet using fluorescent pseudomonads. *Rhizosphere* 100226 – IF: 3.437
7. Patil SV, Kumudini BS, Pushpalatha HG, De Britto S, Ito S-ichi, Sudheer S, Singh DP, Gupta VK, Jogaiah S. 2020. Synchronised regulation of disease resistance in primed finger millet plants against the blast disease, *Biotechnology Reports* 27: e00484 – cite score: 8
8. Dhanya RV and Kumudini BS. 2020. Isolation and characterization of microalgae isolated from freshwater sources in Karnataka for biofuel production. *Research Journal of Biotechnology*, 15 (5): 42-49 – IF: 0.454
9. Govardhana M and Kumudini BS. 2020. In-silico analysis of cucumber (*Cucumis sativus* L.) Genome for WRKY transcription factors and cis-acting elements. *Computational Biology and Chemistry* 85: <https://doi.org/10.1016/j.compbiolchem.2020.107212> - IF: 3.737
10. Patil SV and Kumudini BS. 2019. Seed priming induced blast disease resistance in finger millet plants through phenylpropanoid metabolic pathway. *Physiological and Molecular Plant Pathology* 108: 101428, <https://doi.org/10.1016/j.pmpp.2019.101428> - IF: 2.747
11. Patil SV and Kumudini BS. 2019. Induction of blast disease resistance upon seed priming with *Pseudomonas* sp. in finger millet. *Plant Archives* 19(2): 3185-3190 – IF: 0.27
12. Thilagam D, Kumudini BS and Manohar SH. 2019. Regeneration of *Sechium edule* from nodal explants through synthetic seeds. *Plant Cell Biotechnology and Molecular Biology* 20(13&14): 577-586 – IF: 0.38
13. Bhavana GP, Kumudini BS and Aswath C. 2018. Micropropagation of *Anthurium* through suspension culture using in vitro shoots. *Journal of Applied Horticulture* – 20(3): 196-201 – IF: 0.163
14. Jayamohan NS, Patil SV and Kumudini BS. 2018. Reactive oxygen species (ROS) and antioxidative enzyme status in *Solanum lycopersicum* on priming with fluorescent *Pseudomonas* spp. against *Fusarium oxysporum*. *Biologia* DOI 10.2478/s11756-018-0125-3 -IF: 1.35
15. Jayamohan NS, Patil SV and Kumudini BS. 2018. Validation of molecular heterogeneity of fluorescent *Pseudomonas* spp. and correlation with their potential biocontrol traits against fusarium wilt disease. *Agriculture and Natural Resources* 52 – IS: 4.6

16. Deori M, Jayamohan NS and Kumudini BS. 2018. Production, characterization, and iron binding affinity of hydroxamate siderophores from rhizosphere associated fluorescent *Pseudomonas*. *Journal of Plant Protection Research* 58: 36-43 – IF: 0.966
17. Bhavana GP, Kumudini BS and Aswath C. 2018. A regenerative protocol and SEM study for in vitro propagation of *Anthurium* crossed lines via indirect somatic embryogenesis. *Bioscience Biotechnology Research Communications* 11: 31-40 - Indexed
18. Jain JR, Satyan BS and Manohar SH. 2017. A comparative assessment of morphological and molecular diversity among *Sechium edule* (Jacq.) Sw. accessions in India. *3 Biotech* DOI 10.1007/s13205-017-0726-5 - IF: 1.798
19. Govardhana M and Kumudini BS. 2016. Isolation and characterization of drought tolerant PGPR from rhizosphere of drought prone areas and enhancement of plant growth promotion in Cucumber. *Acta Biologica Indica* 5: 93-100 – IF: 0.517
20. Dhanya VR and Kumudini BS. 2016. Increased algal lipid production under nitrogen and salt stress in green algae *Chlorella pyrenoidosa* Chick. *Acta Biologica Indica* 5: 101-107 - IF: 0.517
21. Varsha T and Kumudini BS. 2016. Fluorescent *Pseudomonas* mediated alleviation of trivalent chromium toxicity in ragi through enhanced antioxidant activities. *Proceedings of National Academy Sciences, India Section B. Biological Sciences* DOI 10.1007/s40011-016-0816-x - IF: 0.96
22. Thilagam D, Kumudini BS and Manohar SH. 2016. Regeneration of *Sechium edule* (Jacq) SW. from sterile in vitro nodal explants and assessment of clonal fidelity using ISSR and RAPD markers. *International Journal of Agricultural Science and Research* 6: 285-292. IF: 0.58
23. Patil SV, Jayamohan NS and Kumudini BS. 2016. Strategic assessment of multiple plant growth promotion traits for shortlisting of fluorescent *Pseudomonas* spp. and seed priming against ragi blast disease. *Plant Growth Regulation* 80: 47-58 - IF: 3.412.
24. Jain JR, Satyan BS and Manohar SH. 2016. Standardization of DNA isolation and RAPD-PCR protocol from *Sechium edule*. *International Journal of Advanced Life Sciences* 8(3): 359-363 – Indexed
25. Jayamohan NS, Manohar SH and Kumudini BS. 2015. Genomic and outer membrane protein diversity fingerprints of siderophore producing fluorescent *Pseudomonas* spp. using RAPD, Rep-PCR and SDS-PAGE profiling. *Biologia* 70(9): 1150-1158 - IF: 1.35

26. Sethia B, Mustafa M, Manohar S, Patil SV, Jayamohan NS and Kumudini BS. 2015. Indole acetic acid production by fluorescent *Pseudomonas* spp. from the rhizosphere of *Plectranthus amboinicus* and their variation in extragenic repetitive DNA sequences. *Indian Journal of Experimental Biology* 53: 342-349 - IF: 0.818
27. Swain SK and Kumudini BS. 2014. Bioremediation of textile azo dye congo red using bacterial isolates from textile wastewater. *Journal of Advanced Microbiology - Indexed*
28. Hari Priyaa G and Kumudini BS. 2014. Green synthesis of silver nanoparticles using garlic (*Allium sativum*) extracts. *International Journal of Biological Research* 3(4):1-12 - Indexed
29. Hari Priyaa G and Kumudini BS. 2014. Biological synthesis of silver nanoparticles using ginger (*Zingiber officinale*) extract. *Journal of Environmental Nanotechnology* 3(4):32-40 - Indexed
30. Jayamohan Subramanian and Kumudini Satyan. 2014. Isolation and selection of fluorescent pseudomonads based on multiple plant growth promotion traits and siderotyping. *Chilean Journal of Agricultural Research*. 74(3): 319-325 - IF: 1.917
31. KS Nishma, B Adrisyanti, SH Anusha, P Rupali, K Sneha, NS Jayamohan and BS Kumudini. 2014. Induced growth promotion under in vitro salt stress tolerance on *Solanum lycopersicum* by fluorescent pseudomonads associated with rhizosphere. *International Journal of Applied Sciences and Engineering Research*. 3(2): 422-430 – IF: 1.41
32. Anitha G and Kumudini BS. 2014. Isolation and Characterization of Fluorescent Pseudomonads and their Effect on Plant Growth Promotion. *Journal of Environmental Biology*. 35(4):627-634 - IF: 0.719.
33. Shobha G and Kumudini BS. 2012. Antagonistic effect of the newly isolated PGPR *Bacillus* spp. on *Fusarium oxysporum*. *Int. Journal of Applied Sciences and Engineering Research*, 1 (3): 463-474 - IF: 1.41
34. Jayamohan NS and Kumudini BS. 2011. Host pathogen interaction at the plant cell wall. *International Research Journal of Pharmacy and Pharmacology* 1(10): 242-249 – Indexed
35. Varalakshmi KN, Kumudini BS, Nandini BN, Solomon J, Suhas R, Mahesh B. and Kavitha AP. 2009. Production and characterization of alpha-amylase from *Aspergillus niger* JGI24 isolated in Bangalore. *Polish Journal of Microbiology* 58(1):29-36 - IF: 1.28.
36. Varalakshmi KN, Kumudini BS, Nandini BN, Solomon JD, Mahesh B, Suhas, R and Kavitha AP. 2008. Characterization of Alpha Amylase from *Bacillus* sp.1 isolated from paddy seeds. *Journal of Applied Biosciences* 1(2): 46 – 53 – Indexed

37. Alva S, Anupama J, Savla J, Chiu YY, Vyshali P, Shruti M, Yogeetha BS, Bhavya D, Purvi J, Ruchi K, Kumudini BS and Varalakshmi KN. 2007. Production and characterization of fungal amylase enzyme isolated from *Aspergillus* sp. JGI 12 in solid state cultivation. *African Journal of Biotechnology* 6 (5) 576-581- IF: 0.573
38. Shailasree S, Ramachandra Kini K, Deepak S, Kumudini BS and Shetty HS. 2004. Accumulation of hydroxyproline-rich glycoproteins in pearl millet seedlings in response to *Sclerospora graminicola* Infection. *Plant Science* 167: 1227-1234 - IF: 4.729.
39. Kumudini BS and Shetty HS. 2002. Association of enhanced lignification and callose deposition with constitutive and induced systemic resistance of pearl millet *Sclerospora graminicola*. *Australasian Plant Pathology* 31: 157-164 - IF: 1.599.
40. Kumudini BS, Vasanthi NS and Shetty HS. 2001. Hypersensitive response, cell death and histochemical localization of hydrogen peroxide in the host and non-host seedlings infected with downy mildew pathogen *Sclerospora graminicola*. *Annals of Applied Biology* 139: 217-225 - IF: 2.75

#### Book Chapter

1. **Kumudini BS**, Michael VL Chhandama and Dhanya V Ranjit. 2022. Usage of microalgae: A sustainable approach to wastewater treatment. In: **Biotechnology for zero waste** Eds: Chaudhery Mustansar Hussain, Ravi Kumar Kadeppagari, WILEY-VCH. Doi: 10.1002/9783527832064.ch11
2. **Kumudini BS** and Patil SV. 2021. Antioxidant-mediated defense in triggering resistance against biotic stress in plants. In: **Biocontrol Agents and Secondary Metabolites**. Woodhead Publishing. Pp 383-393
3. **Kumudini BS** and Patil SV. 2020. Role of Plant Hormones in Improving Photosynthesis. In: Ahmad P, Ahanger MA, Alyemeni MN, Alam P (eds) '**Photosynthesis, Productivity and Environmental Stress**'. Wiley & Sons Ltd., pp 215-240. DO:10.1002/9781119501800.ch11.
4. **Kumudini BS**, Jayamohan NS, Patil SV and Govardhana M. 2018. Primary plant metabolism during plant-pathogen interactions and its role in defense. Elsevier book on *Plant Metabolites and Regulation under Environmental Stress* Academic Press, 215-222 (Invited)
5. **Kumudini BS** and Patil SV. 2018. Plant-microbe interactions belowground during stress. *Biotechnological Solutions for Sustainable Environmental Management* (Invited), Tumkur University, Tumakuru
6. **Kumudini BS**, Jayamohan NS. and Patil SV. 2017. Integrated mechanisms of plant disease containment by rhizospheric bacteria: Unraveling the signal cross talk between plant and fluorescent *Pseudomonas*. In: Meena V., Mishra P., Bisht J., Pattanayak A. (eds) *Agriculturally Important Microbes*

for Sustainable Agriculture. Springer, Singapore DOI:10.1007/978-981-10-5343-6\_9 (Invited)

#### **Achievements:**

- Awarded the **Smt. Guman Devi Verma Memorial Best Woman Scientist Award – 2019** by the **Indian Society of Mycology and Plant Pathology** at its 40th Annual Conference and National Symposium on “Microbial Based Strategies for Improvement of Soil and Plant Health” held from 24th to 26th 2019 at Karnatak University, Dharwad
- **Funded by Department of Science and Technology (DST), GoI** under the Scheme for Young Scientists & Technologist (SYST) scheme in December 2015
- **Resource Person** as **Subject Expert for Faculty Development Programme** (Pre-University Teachers) held on 12<sup>th</sup> May 2012
- **First prize** in essay competition in **National Science Day-2012** at Administrative Management College, Bangalore in association with KSTA on ‘**Clean Energy Options and Nuclear Safety**’ from 26<sup>th</sup>-28<sup>th</sup> Feb 2012
- Senior Research Fellow (CSIR, New Delhi, India) at the DOS in Applied Botany and Biotechnology, University of Mysore, Mysore from October 2002 – January 2005
- Junior Research Fellow (Danish International Developmental Assistance, Denmark) at the DOS in Applied Botany and Biotechnology, University of Mysore, Mysore from January 1999 – December 2001

#### **Research Projects:**

As Principal Investigator in a DST-SERB funded Seed Money for Young Investigators scheme on “Accumulation of host defense compounds during induction of resistance against ragi blast disease”, 2015 and was graded “Good”; Budget – Rs. 20.1L; Time period: 3 years