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Department of Botany
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Academic highlights

High School (1983)	:	UP Board, Allahabad
Intermediate (1985)	:	UP Board, Allahabad
B.Sc. (1987)	:	Gorakhpur University, Gorakhpur
M.Sc. Botany (1989)	:	Purvanchal University, Jaunpur
Ph.D. Botany (1997)	:	Banaras Hindu University, Varanasi

Brief write up on area of specialization

- Phenotypic to genotypic characterisation of different species of *Azolla-Anabaena* symbiotic association and their responses towards different types of stresses
- Diver
- sity analysis among nitrogen fixing *Frankia* and heterocystous cyanobacteria strains
- Potent
- tiality of the different symbiotic systems as a biofertiliser under different extreme conditions

Awards

- Young Scientist (DST- Fast Track Scheme) awarded by DST, New Delhi, 2008
- Research Associateship awarded by CSIR, New Delhi, India, 2004
- Senior Research Fellowship (UGC), 1995
- Junior Research Fellowship (UGC), 1993
- Graduate Aptitude Test in Engineering (GATE-1992)

Membership

- member-Asian PGPR Society For Sustainable Agriculture, Hyderabad

List of publications

- Arun Kumar Mishra, Ekta Shukla and **Satya Shila Singh (2013)** Phylogenetic comparison among the heterocystous cyanobacteria based on a polyphasic approach. *Protoplasma* **250**: 77-94.
- Ekta Shukla, **Satya S. Singh**, and Arun K.Mishra (2013) Fingerprinting and phylogeny of some heterocystous cyanobacteria using short tandemly repeated repetitive and highly iterated palindrome sequences. *Microbiology* (Accepted).
- Ekta Shukla, **Satya Shila Singh**, Prashant Singh and Arun Kumar Mishra (2012) Chemotaxonomy of heterocystous cyanobacteria using FAME profiling as species markers *Protoplasma* 249:651-661.
- Prashant Singh, **S.S.Singh**, Josef Elster and A. K. Mishra (2012) Molecular Phylogeny, population genetics and evolution of heterocystous cyanobacteria using nif H gene sequences. *Protoplasma* (Published on line 23rd October, 2012 DOI 10.1007/s00709-012-0460-0)
- Amrita Srivastava, **Satya Shila Singh** and Arun Kumar Mishra (2012) Sodium transport and mechanism(s) of sodium tolerance in *Frankia* strains. *Journal of Basic Microbiology*(Published on line 26th June 2012 DOI 10.1002/jobm.201100586)
- Prashant Singh, Arun Kumar Mishra, **Satya Shila Singh** and Anumeha Singh (2011) Structural, functional and molecular basis of Cyanophage-cyanobacterial Interactions and its significance. *African Journal of Biotechnology* 11(11):2591-2608
- **Satya Shila Singh**, Arun Kumar Mishra, Ram Sanmukh Upadhyay (2010) Potentiality of *Azolla* as a suitable P- biofertilizer under salinity through acid phosphatase activity. *Ecological Engineering*, 36: 1076–1082.
- **Satya Shila Singh**, Anju Singh, Amrita Srivastava, Prashant Singh, Anumeha Singh, Arun Kumar Mishra (2010) Characterization of *Frankia* strains based on physiological, SDS-PAGE of whole cell proteins and RAPD-PCR analyses. *World Journal of Microbiology and Biotechnology*, 26: 985-992.
- Arun Kumar Mishra, Anju Singh and **Satya Shila Singh (2010)** Diversity of *Frankia* strains nodulating *Hippophae salicifolia* D. Don using FAME profiling as Chemotaxonomic markers. *Journal of Basic Microbiology*, 50: 318–324.
- Arun Kumar Mishra and **Satya Shila Singh (2010)** Responses and Tolerance of *Azolla- Anabaena* system against salinity stress. *In: Ecotoxicology Around the Globe*, Nova Publisher, USA 53-86.
- Arun Kumar Mishra, Prashant Singh, **Satya Shila Singh**, Ekta Shukla, Amrita Srivastava, Anumeha Singh (2010) Role of Blue Green Algae in Rural Development. In: Proceedings of the National Seminar on “Transformation in Rural Economy of North East Hills Region in India: Status, Determinant and Prospects” held on 7-8th May, 2010, National Institute of Rural Development, North Eastern Regional Centre, Khanapara, Guwahati, Assam.

- Singh A, Singh SS, Pandey PC, Mishra AK (2009) Attenuation of metal toxicity by frankial siderophores. *Toxicology and Environmental Chemistry*, 92: 1339–1346.
- Arun Kumar Mishra, Prashant Singh, Anumeha Singh, Amrita Srivastava, **Satya Shila Singh** (2009) Role of *Frankia* in Agroforestry. In: Proceedings of the National Seminar on “Agroforestry for Socioeconomic Development of North Eastern Region” held on 11-12th December, 2009, NERIST, Nirjuli, Arunachal Pradesh.
- Amrita Srivastava, Prashant Singh, Anumeha Singh, **Satya Shila Singh** and Arun Kumar Mishra (2009) **Cyanobacteria: Phenotypic to the Genotypic Diversity**. In: Microbial Biotechnology & Ecology (eds) Pandey et al., Daya Publications, Darya Ganj, New Delhi (accepted).
- Amrita Srivastava, Anju Singh, **Satya Shila Singh** and Arun Kumar Mishra (2009) *Frankia*-Actinorhizal Symbiosis: An Overview. In: **Soil Microflora** (eds) Gupta et al., Daya Publishing House, Trinagar, Delhi, 86-101.
- **Satya Shila Singh**, Ram Sanmukh Upadhyay and Arun Kumar Mishra (2008) Physiological interactions in *Azolla-Anabaena* system adapting to the salt stress. *Journal of Plant Interactions*, 3: 145-155.
- **Satya S. Singh**, Santosh K. Singh, Arun K. Mishra (2008) Na⁺ regulation by combined nitrogen in *Azolla pinnata*-*Anabaena azollae* symbiotic association during salt toxicity. *Ecotoxicology and Environmental Safety*, 69: 32-38.
- Anju Singh, Arun Kumar Mishra, **Satya Shila Singh**, Hridip Kumar Sarma and Ekta Shukla (2008) Influence of iron and chelator on siderophore production in *Frankia* strains nodulating *Hippophae salicifolia* D. Don. *Journal of Basic Microbiology*, 48:104–111.
- K. K. Choudhary, **S. S. Singh** and A. K. Mishra (2007) Nitrogen fixing cyanobacteria and their potential application. In: *Advances in Applied Phycology* (eds) Gupta & Pandey, Daya Publishing House, Trinagar, Delhi, 142-154.
- Arun K. Mishra and **Satya S. Singh** (2006) Protection against salt toxicity in *Azolla pinnata*- *Anabaena azollae* symbiotic association by using combined-N sources. *Acta Biologica Hungarica*, 57(3):355-365.
- S. K. Singh, **S.S. Singh**, V.D. Pandey and A.K. Mishra (2006) Factors modulating alkaline phosphatase activity in the diazotrophic rice-field cyanobacterium, *Anabaena oryzae*. *World Journal of Microbiology and Biotechnology*, 22:927–935.
- Hridip Kumar Sarma, Bipin Kumar Sharma, **Satya Shila Singh**, S. C. Tiwari and Arun Kumar Mishra (2006) Polymorphic distribution and phenotypic diversity of *Frankia* strains in nodule lobes of *Hippophae salicifolia* D. Don. *Current Science*, 90(11):1516-1521.
- A.K. Mishra, S.K. Singh, **S.S. Singh** and V.D. Pandey (2005) Regulation of Heterocyst and Nitrogen Metabolism. In: *The Glimses of Cyanobacteria* (eds) Gupta et al., Daya Publishing House, trinagar, Delhi, 26-47.
- S.P. Singh, S. Rai, A.K. Rai, S.P. Tiwari, **S.S. Singh**, Samarketu and J. Abraham (1994) Athermal physiological effects of microwaves on a cyanobacterium *Nostoc muscorum* : evidence for EM- memory bits in water. *Med. & Bio. Eng. & Comput*, 32: 175-180.
- **S.S. Singh**, S.P. Tiwari, J. Abraham, S. Rai and Ashwani K. Rai (1994) Magnetobiological effects on a cyanobacterium, *Anabaena doliolum*. *Electro & Magnetobiology (Now Electromagnetic Biology and Medicine)* 13(3): 223-235.

Project completed/ On- going/sanctioned – 04

- Assessment of Nitrogenase Gene Diversity and Phylogenetic Relationship Among The Heterocystous Cyanobacteria and *Frankia* Strains (**completed project**- Supported by **DST, New Delhi** under FAST TRACK SHCEME).
- Assessment of salt responsive physiological and biochemical modifications in *Frankia* strains (**ongoing project**- Supported by **University Grants Commission, New Delhi**)
- Identification and Characterization of Cyanobacteria inhabiting paddy fields of Chhattisgarh (**ongoing project**- Supported by Start-Up grant, **University Grants Commission, New Delhi**).
- Diversity analysis and documentation of unexplored diazotrophic cyanobacteria of Chhattisgarh (**ongoing project**-supported by **CSIR, New Delhi**)