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## Summary

My research interest in weed science and weed management aspects of agronomy started with my MSc programme at Tamil Nadu Agricultural University, Coimbatore where I worked on alleviating atrazine hercide residue using iron based nanoparticles. I confirmed weed science as my field of specialisation during my PhD programme at Indian Agricultural Research Institute, New Delhi, which is the pioneer institute in the indian agricultural education and research. In that study, I could effectively control the noxious and difficult to control perennial sedge weed *Cyperus rotundus* in maize-wheat cropping system through integrated weed management and conservation agriculture. My current research interest is in the development of nano bioformulations and nanoencapuslated herbicides for weed management. Another area of interest is the resource efficient crop intensification in cropping systems with special emphasis on weed management and conservation agriculture.

## Research Highlights

- Zero valent iron nanoparticles were chemically synthesized, characterised and used for alleviating atrazine herbicide residue.
- Devised an effective weed management strategy for *Cyperus rotundus* in maize – wheat cropping system in the Northwestern Indo-Gangetic Plains by studying the impacts of tillage and herbicide mixture.
- The above work was the first report of the use of herbicide imazethapyr in maize for selective weed control
- Developed a protocol for the biosynthesis of silver nanoparticles with leaf extract of *Parthenium hysterophorus which has* effectively controlled the noxious aquatic weed water hyacinth (*Eichhornia crassipes* (Mart.) Solms).

## Experience

Joined Kerala Agricultural University as Assistant Professor (Agronomy) in the year 2019

## Education

- Graduated in Agricultural Science from Kerala Agricultural University (2006)
- Post Graduation in Agronomy from Tamil Nadu Agricultural University, Coimbatore (2009)
- Ph.D in Agronomy from Indian Agricultural Research Institute, New Delhi (2013)

## Area of Specialization

Weed science, Nanotechnology, Weed management in cropping systems

## Awards & Recognitions

- ICAR Junior Research Fellowship for pursuing M. Sc in Agronomy
- ICAR Senior Research Fellowship for pursuing Ph. D in Agronomy
- Best poster award at the international conference on magnetic materials and their applications in 21st century (MMA-21) held at NPL, New Delhi in 2008.
- Ph.D Batch topper (2009 admission) at the Division of Agronomy, IARI, New Delhi

## Research Projects

### Ongoing

- Annual State Plan Project 2020-21- Survey and management of the weed *Pyrrosia piloselloides* in the periyar river basin for an outlay of Rs. 2.00 lakhs
- Annual State Plan 2021-22- New Project- "Network Project on Vulnerability mapping of Kerala State" at CCCES, Vellanikkara with sub centres

### Completed

1. Nabard project entitled "Establishment of Integrated Farming System Unit and Hi-Tech Nursery of fruits and vegetables at the District Jail, Kakkanad for an outlay of Rs 9.25 lakhs.
2. DoE - Annual Plan Project 2018-19 entitled "Training Programs by Research Stations in KAU as Course co-ordinator.
3. DOE - Annual Plan Projects 2021-22 at Agronomic Research Station, Chalakudy- Women entrepreneurship development in Agriculture.
4. Annual State Plan Project 2021-22 on ‘Station wise funding - Strengthening Research at RARS (SZ), Vellayani- Nano bio-formulations using allelopathy-based bio-synthesized nanoparticles for the management of aquatic weeds.
5. Annual State Plan Project 2022-23- Station wise funding "Strengthening Research at RARS(SZ), Vellayani - Nano biocariers for enhanced bio-efficacy of herbicides against noxious weeds.

## Publications

### Journal Articles

1. Susha V. S. and Chinnamuthu, C. R. (2012) Synthesis and characterization of iron-based nanoparticles for the degradation of herbicide atrazine. *Research Journal of Nanoscience and Nanotechnology*.

2. Susha, V. S., Chinnamuthu, C. R., Winnarasi J. S. and Pandian, K. (2011) Synthesis and characterisation of iron-based nanoparticles and their use in mitigating atrazine herbicide. *Pesticide Research Journal*. **23** (2): 200-206.

3. Susha, V. S., Das, T.K., Sharma, A. R and Nath, C.P. (2014) Carry-over effect of weed management practices of maize (*zea mays)* on weed dynamics and productivity of succeeding zero and conventional till wheat (T*riticum aestivum*). *Indian Journal of Agronomy* **59** (1): 41-47.

4. Susha, V. S., Das, T.K and Sharma, A. R. (2014) Weed management in maize (*Zea mays)* in western Indo-Gangetic Plains through tank-mix herbicide application. *Indian Journal of Agricultural Sciences* **84** (11): 1363–8.

5. Susha, V. S., Das, T.K., Nath, C. P., Pandey, R., Paul, S. and Ghosh, S. (2018) Impacts of tillage and herbicide mixture on weed interference, agronomic productivity, and profitability of a maize-Wheat system in the North Western Indo-Gangetic Plains. *Field Crops Research* **219**: 180–191.

6. Susha, V. S., Sagar, H. and Das, T.K. (2022) The possible role of nanotechnological interventions in weed management – An opinion. *Indian Journal of Weed Science* **54** (2): 116–123.

7. Thomas, S. S., Pillai, S. P., Susha. V. S., And Aparna. B. (2022) Effect of nano-nitrogen supplemented with potassium on the growth and yield attributes of rice (*Oryza sativa* L.). *Green Farming* **13 (**3&4): 370-374.

**Popular Articles**

1. Susha, V. S. Harirani ennum kaay choodi. Kerala Karshakan. 2015
2. Susha, V. S., Jaivakeedanashini gunanilavaram parishodikkam. Kerala Karshakan. 2016
3. Susha, V.S. Udyanavila krishikku unarvekan Kerala samsthana Horticulture mission Padhathikal. Krishikkaran. 2017.
4. Karippai, R. S and Susha. V. S. Green Cities Growing food. Kerala Karshakan e-journal. 2017.
5. Susha, V.S. Mannillenkilum Krishi Cheyyam. Kerala Karshakan. 2017
6. Susha. V. S, Abraham, M and Kurien, E. K. Chalakkudiyile Pullans jathi. Kerala Karshakan. 2019.
7. Susha, V.S. Venalinu Munnorukkam. Kerala Karshakan. 2019.
8. Susha. V. S, Abraham, M and Kurien, E. K. Nellinu Koottu Pachakkari. Kerala Karshakan. 2019.
9. Susha. V. S, Abraham, M and Kurien, E. K. Nellinu Koottayi Pachakkari. Kalpadhenu. 2019.
10. Susha. V. S and Kappen, L. J. Kalavastha vyathiyanam pazham pachakkari krishiyil. Krishianganam. 2023.

**Booklet**

1. Ameena M, Susha V.S, Bindhu J.S and Shalini Pillai P. Orukkam subhiksha sundragrihangal nagarangalil. 2022. Published by KAU

**Books/Chapters in Books**

1. Susha. V. S, Ameena. M, Shalini Pillai P and Harikrishasagar V. 2022. Biosynthesized nanoparticles in sustainable urban agriculture (Chapter 15). In. Sreedaya, G. S and Sethuraman Shivakumar, D. (eds), Sustainable Urban Agriculture Systems-Principles and Practices, Brillion Publishing.
2. Susha. V. S. 2023. Applications of nanotechnology in agriculture. In. Raj, S.K and Pillai, S.P. (eds), *Prospective Agronomic Interventions for Sustainability in Agricultur*e, Department of Agronomy, College of Agriculture, Vellayani, Thiruvananthapuram,pp:26-56.

**Student Guidance (Major Advisor/ Advisory Committee member)**

**M. Sc**.

Completed: 1

Ongoing: 2

**Ph. D**

Ongoing :

## Other Institutional Responsibilities

1. Currently acting as student Advisor/faculty mentor to 10 Undergraduate students.
2. Member of purchase committee at College of Agriculture, Vellayani campus.
3. Serve as Institutional mentor for the Young Innovators Programme

## Membership in Professional Associations

1. Life Member of Indian Society of Agronomy
2. Life Member of Indian Society of Weed Science