

# Dr. SUDHA B.

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## Summary

My research interest is in integrated farming systems and crop residue recycling within IFS. I have worked at the Integrated Farming System Research Station, Karamana, KAU for six years. During this term, I undertook projects on crop residue recycling in IFS for the production of quality manures. With financial support from National Coir Research and Management Institute (NCRMI), Kerala, I undertook an externally aided project and developed coir pith based light weight and quality growing media which could benefit terrace farming in urban homesteads. I have published research, semi- scientific and popular articles on crop production, crop nutrition and integrated farming and has presented agricultural content in short videos which are available in KAU website. I have served as Nodal officer for the KAU - Department of Agricultural Development and Farmers welfare collaborative project on Block Level Agricultural Knowledge Centre, Parassala, Thiruvananthapuram for two years. I am especially interested in content development of farm literature and I have a PG Diploma in Journalism with farm journalism as thesis topic. I have received a patent for being the research team member in developing the filtration mechanism for an organic fertigation unit, during my term at ARS, Chalakudy. I was the team member of best research team KAU during 2020 and team member – Best AICRP IFS Network Centre, 2018. My Ph.D research programme was on crop residue management for organic carbon sequestration which was awarded the Senior Research Fellowship by CSIR, New Delhi.

## Research Highlights

Developed coir pith based light weight and quality growing media for terrace farming in urban homesteads

Standardised composting strategies for paddy straw and studied the effective utilisation of paddy straw compost as potting media component and organic manure.

Arrived at effective techniques for composting certain aquatic weeds associated with rice based cropping systems and the use of composts as organic manure for crop nutrition.

Evaluated different pepper based mixed cropping systems involving tuber crops and arrived at profitable crop combinations.

## Experience

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Joined Kerala Agricultural University as Assistant Professor (Agronomy) in the year 2009. Worked at Agronomic Research Station, Chalakudy, Coconut Research Station, Balaramapuram, Integrated Farming System Research Station, Karamana and Pepper

Research Station, Panniyur. Handled teaching at ACCER, Thrissur and College of Agriculture, Vellayani. Undertook guidance for PG and Ph.D students, College of Agriculture, Vellayani.

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## **Education**

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- Graduated in Agricultural Science from Dr. PDKV, Maharashtra (1997)
  - Post Graduation in Agronomy from CoA, Vellayani (2000)
  - Ph.D in Agronomy from CoA, Vellayani (2007)
  - PG Diploma in Journalism with thesis on Farm journalism (2003)
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## **Area of Specialization**

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Integrated Farming Systems and Crop residue management

## **Awards & Recognitions**

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- CSIR Senior Research Fellowship for Ph.D (Agri) programme
- PG Diploma in Journalism (Farm Journalism as thesis topic) with first rank from Bharatiya Vidya Bhavan, Thiruvananthapuram centre.
- Received a patent for the invention “System and Method for organic fertigation” with patent certificate No.381166 on 02-11-2021 by the Patent office, Government of India. (Was a member of the research team at ARS Chalakudy, KAU for the development of a filtration unit for organic fertigation)
- Was a Team member of AICRP on IFS which received the best centre award among ICAR network centres functioning under IIFSR, Meerut, U.P. (for the biennium 2016-18)
- Was a Team member of the best research team in KAU during 2020

## **Research Projects**

## **As Principal Investigator**

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1. Identifying coir pith based nutrient rich growing media suitable for vegetable cultivation in terraces funded by National Coir Research and Management Institute (NCRMI), Thiruvananthapuram (Outlay: Rs.6 lakhs)
  2. Black pepper based mixed cropping systems for sustainable productivity and food security - Project funded by AICRP on Spices at PRS Panniyur.
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## **Associated as Co - Investigator of projects of different projects**

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1. Development and validation of on-station integrated farming system models (4 models each of 0.2 ha) funded by ICAR-IIFSR, AICRP on IFS
  2. Rice based cropping sequences to augment integrated farming systems in lowlands ICAR-IIFSR, AICRP on IFS
  3. Yield gap analysis of major crops and impact analysis of Jaiva Griham (IFS) project in different agroecological units of Kerala funded by Kerala State Planning Board
  4. Training on Integrated farming and urban agriculture under Haritha Bhavanam project State Plan, DoE, KAU
  5. Establishment of a Plant Health Clinic at IFSRS, Karamana funded by State Horticulture Mission, Kerala
  6. Empowering rural women as master trainers for supporting vegetable cultivation and integrated Farming by IFSRS, Karamana in Thiruvananthapuram district funded by NABARD
  7. Micronutrient security through nutrition gardens in anganwadis funded by the Department of Women and Child development, Govt. of Kerala
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## **Research papers (Recent)**

1. Sudha,B. , John, J., Meera, A. V and Sajeena, A. 2020. INM in a rice based Integrated Farming System model for food security and enhanced productivity. Indian J. Ecology. 47(3): 630-633 (NAAS Rating 5.79)

2. Sudha, B., John, J., Meera, A, V., and Sajeena, A. 2020. Growth, nutrient uptake and yield of ginger as impacted by potting media, foliar nutrition and microbial inoculants. *J. of Spices and Aromatic Crops* Vol. 29 (2) : 113-121 (NAAS Rating 5.11)
3. B. Sudha, Jacob John, A.V. Meera, A. Sajeena, D. Jacob and J.S. Bindhu. 2021. Coconut based integrated farming: A climate-smart model for food security and economic prosperity. *J. of Plantation Crops*. 49(2). (NAAS Rating 4.66)
4. Bashma,E.K. and Sudha,B. 2020. Integration of soil and foliar nutrition in influencing the yield related characters, yield and economics of nendran banana (MUSA AAB group) and the soil nutrient status of cropped field. *Journal of Crop and Weed* 16 (1): 127-132. (NAAS Rating 5.46)
5. K.V. Athira, B. Sudha , Jacob John , Shalini Pillai P and R.V. Manju 2021 Generation of Paddy Straw Composts in Rice Based Integrated Farming System and Evaluating in Organic Production of Fodder Maize. *Indian J of Ecology* (2021) 48(6): 1772-1779 (NAAS Rating 5.79)
6. Amala Mary George, B. Sudha, Jacob John and A. Sajeena. 2021. Different composting methods in bio recycling paddy straw to nutrient rich manure: A comparative analysis. *J. of Tropical Agriculture* 59 (1): 95-101 (NAAS Rating 4.85)
- 7 E.K. Bashma, B. Sudha, T. Sajitharani and N. V. Radhakrishnan. 2018. Growth, nutrient uptake, yield and quality parameters of Nendran banana (*Musa sp.*) as influenced by combined application of soil and foliar nutrition. *Journal of Tropical Agriculture* 56(2):107-113 (NAAS Rating 4.85)
- 8 Meera, A.V., John, J., Sudha, B., Sajeena, A., Jacob, D., and Bindhu, J. S. 2019. Greenhouse gas emission from integrated farming system models: A comparative study. *Green Farming* 10(6): 696-701 (NAAS Rating 3.85)
9. Poornima, P.I., Manu, C.R.,Sudha, B., and Saparia, S. 2020. Influence of microbial inoculants on yield and disease incidence in yard long bean (*Vigna unguiculata*). *Journal of KrishiVigyan*. 8(2): 191-194 (NAAS Rating 4.55)
- 10 Sajeena, A., Karthika , S. R., John, J., Sudha, B., and Meera, A. V. 2019. Antifungal efficacy of phytoantifungal principles and management of rice sheath blight disease. *J Mycol Pl Pathol*, 49(3): 217-225 (NAAS Rating 5.79)
11. Sajeena, A., Deepthi S. N., Teja Sri Peteti, T. S., John, J., Sudha, B., and Meera, A.V. 2020. First report of basal stem rot and blight of yard long bean (*Vigna unguiculata* subsp. *sesquipedalis*) caused by *Athelia rolfsii* in India. *J. Pl. Path.* (NAAS Rating 7.73)

12. Raj, A. B., John, J., Pillai, P. S., Meera A.V., Manju, R. V. and Sudha, B., 2023. Alternative cropping systems to mitigate carbon dioxide emission in rice fields under different nutrient levels. *Int. J. Environ. Climate Change* 13 (9): 540-546

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### **Popular Articles (Recent)**

John, J., Sudha, B., Sajeena, A., Meera, A.V., 2018. Krishi Kandariyaam, pariseelikkam (Learn and Practice farming) *Kerala karshakan* 63(9): 22-23

John, J., Sudha, B., Meera, A.V., Sajeena, A., K.S. Hiroshkumar. 2018. Vazhayile samyojitha krishimurakalum samyojitha krishireethiyum. (Banana based integrated farming) *Krishiankanam* 1(1): 31-32

John, J., Sudha, B., Sajeena, A., Meera, A. V., and Hiroshkumar, K.S.2018. A successful model on Coconut based Integrated Farming System suited for lowlands (Thengadhishtitha samyojitha krishi sampradayam - oru mikacha mathruka) *Kalpadhenu* 38(1): 13-16

Sudha, B. 2018. Terracile Pachakkari vilakalkku ilakaliloode valam. *Krishiankanam* 31 (08) : 23-25

John,J., Sudha, B.,Sajeena, A., Meera, A.V., 2018. Niraputhari krishiyil vijayam rachichu Karamana gaveshana kendram. *Kalpadhenu* 38 (4) : 33- 34

Sudha, B. 2018. Terracilum purayidathilum inchi valarthumbol. *Spice India ( Malayalam)* 31 (08) : 23-25

Sudha, B. 2018. Growing ginger in homesteads and terraces. *Spice India (English )* 31(08) : 23-25.

John, J., Sudha.B., Meera, A.V. and Sajeena,A. 2019. Karshikakeralathinte punarnirmanam-samyojitha krishiyude sadhyathakal (Rebuilding agriculture in Kerala through integrated farming system approach) *Kalpadhenu* 39(2): 4-8

Sudha, B. and Krishnakumar, G. 2019. Venalkkalapachakarikal- nadeelum paripalanavum (Planting and after care of summer vegetables) *Janapadham*. 5(8): 14-15.

Sudha B., Jacob John, Sajeena A., and Meera A.V. 2019.Krishi samyojithamaakatte (Let agriculture be integrated) *Kerala Karshakan*, 64 (10): 24-27.

Jacob John, Sudha B., Sajeena A., and Meera A.V. 2018. IFSRS – sevana vivarangaal ( IFSRS : services offered) *Krishiankanam* 1(3) : 33-35

Sudha, B. and Krishnakumar, G. 2019. Agrotourism in Kerala : Idukki holds much prospects. *Krishiankanam* 2 (5) : 14-16

Sudha, B. and Krishnakumar, G. 2020. Agrotourisathinte anantha sadyathakal Agrotourism: Immense prospects. *Ianapadham* 6(6): 46-47

Sudha, B.2020. Bhakshyasurakshaykku purayidathottangaal (Homestead farming for food security) *VOICE*, (Official magazine, TOKAU, Kerala Agricultural University) 22-23

Sudha, B. and Sajitharani, T. 2020. Arogyasamrakshanathinu cherudhanyangal (Millets as healthy food). Krishiankanam: 3(2): 32-34

John, J., Sudha, B., Sajeena, A., and Meera, A. V. 2020. Covid kalathum karshikamunnettavumai gaveshanakendram (Agricultural activities in full swing at the research centre even during Covid period). Kerala Karshakan. 65 (11): 46-47

John, J., Sudha, B., Sajeena, A., and Meera, A.V.2020. Coconut based integrated farming system model –a success story. Indian Coconut Journal LXIII(3):5-9

John, J., Sudha, B., Sajeena, A., and Meera, A.V.2020. Karshika keralam subhikshamakaan samyojithakrishi - Towards a food secure Kerala through IFS. Kerala Karshakan 65(12) : 13-15

George, A. M. and Sudha, B.2020. VaykolumValamakkam (Biorecycling of rice straw as manure) Krishiyankanam, 3(3): 10-11

John, J., Sudha, B., Sajeena, A., and Meera, A.V.2020. Samyojithakrishiyiloode subhikshakeralathilekku (Agricultural prosperity through IFS). Karshakanadam: 37-39

Sudha B. 2020, Karshikakeralathinavasyam samyojitha Krishi. Krishiankanam 2 (6) : 6-9 (December to January issue)

John J, Sudha, B., Sajeena, A., Meera A.V, Hiroshkumar, K.S., and Krishnakumar, G. 2021. Manassundenkilidavumundavum (Farming options for small homesteads) Malayala Manorama daily - 14-01-2021

John J, Sudha, B., Sajeena, A., Meera A.V, Hiroshkumar, K.S., and Krishnakumar, G.2021. Samyojitha Karshakarkku Sahayamorukkan Sahakarana Sanghangal. Kerala Cooperative Journal (Kerala Sahakarana Journal), January, 2021: 32-33

Sudha, B., Gilshabai, E.B. and Sajitharani, T.2021. Jaladinathil Orkkendathu (A reminder on World Water Day). Krishiankanam 4 (1) : 5-7 Feb- Mar, 2021

Gilsha bai, E.B. and Sudha, B.2021. Jalsambharanavum samrakshanavum (Water harvesting and conservation) Krishiankanam 4 (1) : 20-23 (Feb- Mar, 2021)

Sajitharani, T., Sudha, B., and Jithoop, D.2021. Krishiyil kanthikasankethika vidya prayogam (Magnetic water treatment techniques in agriculture) Krishiankanam 4 (1) : 34-36 (Feb- Mar, 2021)

Sajitharani, T., Sudha, B., Jolly, G. E., and Jithoop, D.2021. Hydrogel - Jalakshamathinuorupariharam (Hydrogel to resolve water scarcity). Krishiankanam 4 (1) : 29-31 (Feb – March 2021)

Sudha, B. and Asha K.Raj. 2021. Samyojithakrishiyile theettasekharam: Fodder vrikshangal (Fodder trees in IFS) Krishiankanam 4 (2) : 44-46

Sudha B. 2019. Manninte aarogyathinu jeevanu valangal. Krishiankanam 2 (2) : 12-13

John J, Sudha, B., Sajeena, A., Meera A.V, Shanas, S., Hiroshkumar, K.S., and Krishnakumar, G.2021. Nutrient gardens for health benefits (Aarogya samrakshanathinu

poshakathottangal). Kerala Karshakan (FIB, Dept of Agril. Development and Farmers welfare, GoK)

Sudha B., Yamini Varma C.K. 2023. 2023 - “Cherudhanyangalude varsham”. Krishiankanam 5 (6) : 3- 4

Sudha, B. 2023.“Mambazham madhurikkum Kuttyattoor”. Krishiankanam 16 (2) : p.17-18 (April - May, 2023 issue)

Sudha B. and Yamini Varma C.K. 2023. “Kurumulaku Inangalile Panniyur Peruma” (Improved varieties of black pepper from Panniyur). Kalpadhenu 43 (2): 7-12 (April to June issue)

## **Books**

**Mattuppavu Krishi oru vazhikaatti** -2021.A guide to terrace gardening – Book Published by KAU with financial assistance from the Dept of Agril. Development and Farmers Welfare, Govt. of Kerala

**Kurumulaku krishiyile Wayanadan Vijayagadha.**2023. Success stories of pepper farmers at Wayanad. Book Published by KAU with financial assistance from the Dept of Agril. Development and Farmers Welfare, Govt. of Kerala

## **Chapters in Edited Book**

Sajeena, A., Dhanya, M. K., John, J., **Sudha, B.**, and Meera, A. V. 2019. Botanicals and indigeneous preparations for growth promotion and disease management. In: Compendium on Advance technologies for Biofertilizers and Biopesticides production for profitable and sustainable agriculture.pp 172-175.

Sajeena, A., John, J., **Sudha, B.**, Meera, A.V., and Karthika, S. R. 2019. Significance of botanicals for the management of plant diseases. Plant Health under Biotic Stress Vol I. Organic Strategies (eds) Rizwan Ali Ansari and IrshadMahmood, Springer Publications pp.231-243

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John, J., **Sudha, B.**, Sajeena, A., and Meera, A. V. 2020. Nagarakrishikkarkku lambakrishi mathrukakal (Vertical farming structures in support of urban farmers) - Chapter in Edited Book In: Adukkalathottam -Ariyendathellam - a book by Malayala Manorama publications

**Sudha,B.**, Jacob John, Meera A.V., Jacob, D., Bindhu J.S., Sajeena, A. and Shanas, S. 2023. A Homestead-based Integrated Farming System Model Supporting Eco-friendly Farming In : SUSTANAIBLE URBAN AGRICULTURE SYSTEMS : PRINCIPLES AND PRACTICES , Brillion Publishing, Delhi. p. 53-57 (ISBN: 978-93-92725-XX-X)

Bindhu, J. S., Jacob, D. John, J., **Sudha. B** and Meera, A.V. 2023. Diversification of Integrated Farming Systems under Marginal Households for Livelihood and Nutritional Security. In : SUSTANAIBLE URBAN AGRICULTURE SYSTEMS : PRINCIPLES AND PRACTICES, Brillion Publishing, Delhi, p

## **Manual**

John, J., Thamban, C., Subramanian, P., Sudha, B., Meera, A. V., and Sajeena, A. 2019. Training Manual on Integrated Farming Systems. Kerala Agricultural University p.91.

**Proceedings in symposia**

Sudha, B., John, J., Meera, A. V., and Sajeena, A. 2018. A model coconut based integrated farming system for low land tracts of Kerala. In: Proceedings of National Symposium on Integrated Farming Systems for 3Es (Ecological Sustainability, Enhanced Productivity and Economic Prosperity), 23rd – 24th December, 2018 at University of Agricultural Sciences, Gandhi Krishi Vignan Kendra, Bengaluru – 560 065, Karnataka, pp. 150.

Sajeena A., John, J., Deepthi S Nair, Sudha B., and Meera A. V. 2018. In: Proceedings of the International symposium on Fungal Biology: Advances, applications and conservation and 45th annual meet of Mycological society of India (MSI), 19-21st, November, 2018, Agharkar Research Institute, NFCCI, Pune, p. 94



Meera, A. V., John, J., Sudha, B., Sajeena, A., Jacob, D., and Bindhu, J. S. 2018. Comparative evaluation of greenhouse gas emission from rice and banana based IFS models in southern tracts of Kerala. In: Proceedings of National Symposium on Integrated Farming Systems for 3Es (Ecological Sustainability, Enhanced Productivity and Economic Prosperity), 23rd – 24th December, 2018 at University of Agricultural Sciences, Gandhi Krishi Vignan Kendra, Bengaluru – 560 065, Karnataka, pp. 163.

Jacob, D., Bindhu, J. S., Jacob John, Sudha, B., Meera, A. V., and Sajeena, A. 2018. Comparative evaluation of greenhouse gas emission from integrated farming systems in Southern Coastal Plain of Thiruvananthapuram. In: Proceedings of National Symposium on Integrated Farming Systems for 3Es (Ecological Sustainability, Enhanced Productivity and Economic Prosperity), 23rd - 24th December, 2018 at University of Agricultural Sciences, Gandhi Krishi Vignan Kendra, Bengaluru – 560 065, Karnataka, pp.186.

### **Videos on agricultural topics**

Presented content in the agricultural documentary “Panniyur inangalum krishi visheshangalum” (Pepper varieties and crop production practices) telecasted by Kissan krishideepam of Asianet TV channel on 08-04-2023 and presented different aspects of pepper farming. (This is available as youtube video on the link <https://youtube/WK3mxr0EplM>)

Presented agri content in the documentary on IFSRS Karamana (20 min duration) broadcasted by AIR, Trivandrum on 23 Oct 2018

Presented agri content in the documentary (25 min. duration) on ‘Activities of IFSRS, Karamana’ telecasted by Janam TV channel on 9 Sept 2018

Presented agri content in the documentary on ‘Activities of IFSRS, Karamana’ telecasted by DDK, Trivandrum on 12 Aug 2020

### **Presented agricultural topics in short videos of IFSRS, Karamana (Krishi arivukal series)**

“Foliar Nutrition” - [https://youtu.be/oQw\\_w2Ifnc4](https://youtu.be/oQw_w2Ifnc4) on 26.06.2020

“Green manure”: The IFS way for soil health" <https://youtu.be/gei8MbdYc2k> on 17.08.2020

"Tree fodders: The feed reserves in IFS". <https://youtu.be/UDUVCRV4Sfk> on 26.09.2020

"Maize - An ideal crop component for integrated farms"- <https://youtu.be/O5GAFj74ruU> on 8.11.2020

“Nutritional garden for integrated farms"- <https://youtu.be/wvTMzCHgMzY> on 17.04.2021

“Goat Rearing - A successful enterprise in IFS" <https://youtu.be/D1-6BUU3K18> on 17.12.2021

“Light weight media for vegetable cultivation”.<https://www.youtube.com/watch?v=UpC0bUd1KJs&t=142s>

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

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**M. Sc.**

Within KAU: Completed - 7 ; ongoing - 1

**Ph. D**

Within KAU: Ongoing : 3

**Other Institutional Responsibilities**

Have handled duties as Farm in charge, RTI officer in charge, chairperson ICC at research stations where I worked previously

**Membership in Professional Associations**

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1. Life membership in Indian Society of Agronomy
2. Life Membership in Indian Agricultural Association