

Dr. Naveen Leno

**Assistant Professor,
Dept of Soil Science & Agrl. Chemistry
College of Agriculture, Vellayani**

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Summary

As an Assistant Professor at Kerala Agricultural University, I specialize in Soil Science and Agricultural Chemistry, focusing on improving soil fertility through the thermochemical processing of solid waste into organic fertilizers. My professional journey includes diverse roles such as a lecturer and agricultural officer, showcasing my broad expertise in the field. I am actively engaged in significant research projects, particularly in areas of nutrient management and soil fertility mapping, always advocating for sustainable agricultural practices. I take pride in mentoring several Ph.D. and postgraduate students and guiding them through their academic and research endeavors. My contributions to the field are also evident through my numerous research publications and books. My mission is to enhance agricultural productivity and environmental sustainability, driven by innovative and effective soil management strategies.

Research Highlights

- Physiological and biochemical mechanisms of thermosensitive genic male sterility in rice
- Abiotic stress physiology with pollen selection and selective fertilization for developing water stress tolerant coconut hybrids, black pepper, and small cardamom.

Experience

- Assistant Professor, Department of Soil Science and Agrl Chemistry College of Agriculture, Vellayani, Kerala Agricultural University (2016 onwards)
- Assistant Professor at the Rice Research Station, Moncompu, KAU (2011-2013)
- Agricultural Officer, Department of Agriculture, Government of Kerala (1996-2011)
- Directorate of Vocational Higher Secondary Education, Kerala Indian Institute of Horticulture (1995-1996)
- Lecturer in VHSE -Agriculture (1992-1993)

Education

- Graduated in Agricultural Science from Kerala Agricultural University (1992)
 - Post Graduation in Soil Science and Agricultural Chemistry from the Kerala Agricultural University (1995)
 - Ph. D. in Soil Science And Agricultural Chemistry from Kerala Agricultural University (2017)
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Area of Specialization

Soil fertility, thermochemical processing of degradable solid waste to organic fertilizer, soil carbon resilience, sequestration, soil rhizosphere dynamics, root phenomics, soil nutrient acquisition, and translocation

Awards & Recognitions

1. Commendation Certificate for Ph.D. thesis project presented at the 82nd Annual Convention of the Indian Society of Soil Science held at Amity University, Kolkata and the best in South India zonal contest (2017)
 2. Best doctoral thesis award at the National Conference on Technological Challenges in Social, Environmental, and Agricultural Reforms by Green Reap Welfare Society, Hyderabad (2017)
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Research Projects

Completed

1. RKVY project under Kuttanad Package 'Location specific nutrient management technologies for rice in the different agroecological zones of Kuttanad'.
2. Kerala State Planning Board 'Soil Based Plant Nutrient Management Plan for Agro-Ecosystems of Kerala : Soil Analysis Component'
3. Soil Fertility Mapping of Kuttanad soils
4. KAU- KVASU Collaborative Project on 'Hatchery waste disposal and its effective utilization'
5. Popularisation of Suchitha rapid waste conversion technology
6. Potential impact of climate change and flood on Kerala soils: AEU wise mitigation and adaptive strategies "- AEU 14 & 17
7. Network project on standardization of organic agriculture compliant reagents in thermochemical processing of biowaste for climate resilient agriculture
8. Showcasing of harnessed renewable energy for thermochemical conversion of biowaste to organic fertilizer for climate resilient agriculture
9. Revolving Fund Scheme on 'Solid Waste Management'

Publications

Articles

1. Leno N, Sudharmaidevi C R, Meera AV (2016). Fertility Evaluation and Manurial Effect of Organic Manure Produced from Degradable Solid Waste by Rapid Conversion Technology. *Advances in Life Sciences* 5(11): 4433-4437
2. Leno N, Sudharmaidevi C R, Mathew PB (2017). Nutrient Availability From An Organic Fertilizer Produced By Chemical Decomposition Of Solid Wastes In Relation To Dry Matter Production In Banana *Advances in Research* 12(5):1-9
3. Leno N, Raj SK, Leenakumary S (2017). Effect of a crop customized fertilizer mixture on yield and yield components of rice in the Kuttanad lowlands *Trends in Biosciences* 10(12):2188-2192
4. Leno N, Sudharmaidevi C R (2017). Biometric And Yield Response Of Banana To Organic Fertilizer Produced By Rapid Decomposition Of Solid Wastes *Trends in Biosciences* 10(45):9284 -9287
5. Leno N, Sudharmaidevi C R (2018). Micronutrient Dynamics on Addition of a Rapid Organic Fertilizer Produced From Degradable Waste in Banana *International Journal of Current Microbiology and*

Applied Sciences 7(1):1095-1102 <https://doi.org/10.20546/ijcmas.2018.701.132>

6. Leno N., Moossa P.P. (2019). Dynamics of potassium fractions under submergence in characteristic sandy clay and loamy sand rice soils of Kerala. *International Journal of Chemical Studies* 7(2): 1492-1496
7. Babu S.M. and Leno N (2020). Organic carbon status in flood affected high hills of Kerala. *International Journal of Chemical Studies* 8(4): 3033-3035. <https://doi.org/10.22271/chemi.2020.v8.i4ak.10111>
8. Leno N, Sudharmaidevi CR, Byju G, Thampatti KC, Krishnaprasad PU, Jacob G, Gopinath PP (2021). Thermochemical digestate fertilizer from solid waste: Characterization, labile carbon dynamics, dehydrogenase activity, water holding capacity and biomass allocation in banana. *Waste Management*. 15;123:1-4. <https://doi.org/10.1016/j.wasman.2021.01.002>
9. Leno, N. and Sudharmaidevi, C.R. (2021). Physicochemical and nutrient release characteristics of a thermochemical organic fertilizer produced from degradable solid waste and its effect on productivity of banana. *Communications in Soil Science and Plant Analysis*, 52(20): 2562-2577
10. Ramesha, G.K., Leno, N. and Radhika, N.S. (2021). Linking root phenomics, nutrient acquisition and utilisation in amaranthus with thermochemical organic fertilizer from biowaste. *Rhizosphere*, 20: 100426
11. Leno, N., Jacob, G., Jayakrishna, J., Kavya, S.R., Krishnapriya, M.K., Taki, L., Sreelakshmi, M.M., Rehana, M.R. and Vijay, A.B. (2021). Carbon fractions of fortified thermochemical organic fertilizers and their response on the yield of okra and tomato. *Journal of Environmental Biology*, 42 (6):1544-1553
12. Leno, N., Ajayan, A.S., Thampatti, K.C.M., Sudharmaidevi, C.R., Aparna, B., Gladis, R., Rani, T.S., Joseph, B., Meera, A.V. and Nagula, S., (2022). Humification evaluation and carbon recalcitrance of a rapid thermochemical digestate fertiliser from degradable solid waste for climate change mitigation in the tropics. *Science of The Total Environment*, 849, p.157752.
13. Abhiram, M., Leno, N., Rani, B., KS, A.K. and Rafeekher M. (2023). Physical, chemical, and biological properties of soils in Marayur Hills of Kerala, India. *The Pharma Innovation Journal* 12(3): 2887-2890.
14. Krishnapriya, M.K., Leno, N., Johnson, J.M., Rani, B., Joseph, B. and Ameena, M. (2023). The Beneficial Effect of Thermochemical Organic Fertilizer and Root Endophytic Fungi on the Growth of Tomato (*Solanum lycopersicum* L.). *International Journal of Plant & Soil Science*, 35(18): 824-832.
15. Krishnapriya, M.K., Patil, G.D., Leno, N. and Yadav, G.K., (2023). Spatial Variability of Infiltration Rate in Inceptisol and Entisol Soils of Sahyadri Foothills of Western India. *International Journal of Environment and Climate Change*, 13(9): 1570-1578.

Books, Book Chapters, and Other Publications

Books Published

1. Leno, N. (2020). *Soil Carbon Sequestration: Basis and Basics*. Book Publisher International, London & Tarakeswar, 41p
2. Leno N. and Sudharmaidevi C.R. (2021). Nutrient Release from a Rapid Organic Fertilizer and Growth and Yield Responses in Banana. In: Gan, Y. S. (eds.) *Current Research in Science and Technology Vol I*. Book Publisher International, London & Tarakeswar, pp.145-154.

Book Chapters Published

3. Leno N., Mathew, R., Leenakumari, S., Muralidharan P., Sajnanath, K., Indira M., Vilasini T.N., Savitha, K.S., Sreenish, S. and Sandhyadevi, C.D. (2013). Soil Fertility: Alappuzha District. In: Rajasekharan, P., Nair, K. M., Rajasree, G., Sureshkumar, P. and Narayanan Kutty, M. C. (eds) *Soil Fertility Assessment and Information Management for Enhancing Crop Productivity in Kerala*. Kerala State Planning Board, Trivandrum, pp. 169 – 185.
4. Leno N. and Sudharmaidevi C.R. (2019). Nutrient Release from a Rapid Organic Fertilizer and Growth and Yield Responses in Banana. In: (eds) *Current Research in Science and Technology Vol I*, Book Publisher International, pp. 145-154.

Research Papers Reviewed

1. Chemical Science International Journal Title: Enhancing variability in banana cultivar Nanjanagudu Rasabale through Chemical Mutagenesis (2018)
2. Journal of Experimental Agriculture International Title: Agronomic efficiency of bone meal under acidification in *Brachiaria ruziziensis* dry matter production in Western Amazon (2018)
3. Science of the Total Environment: Preparation and characterisation of animal bone powder impregnated fly ash catalyst for transesterification (2018)
4. Science of the Total Environment: Title: Biosolid recycling impact on biofilm extracellular enzyme activity and performance of hybrid rotating biological reactors (2019)
5. International Journal of Plant and Soil Science Title: Comparative effect of decomposed organic matter on seedling growth of *Pterocarpus erinaceus* (2019)

Technical Bulletins

1. Naveen Leno, Meera A. V., Saifudeen N., Annie Koruth, Indira M., Mini V., Bindhu K.S., Jayaraj P., Sailajakumari M.S., Suja Kurian, Premachandran P.N., Mercykutty Joseph, Srinivasan V., Sujatha M.P., Muralidharan P., Sajnanath K., Anina Susan Zachariah, Robert C.P., Sreekumar S. (2014). An overview of the soil testing services in Kerala. National Agricultural Research Project (Southern Region), College of Agriculture, Kerala Agricultural University, Vellayani, Thiruvananthapuram, Kerala. 11pp
2. Saifudeen, N, Sudharmaidevi, C.R., Naveen Leno and Meera, A.V. (2014). Glimpses of Soil Research in Kerala. National Agricultural Research Project (Southern Region), College of Agriculture, Kerala Agricultural University, Vellayani, Thiruvananthapuram, Kerala 13pp
3. KAU Suchitha waste to manure converter operation manual (2017)
4. KAU Suchitha waste to manure converter step wise procedure of operations (2017)
5. Handbook for the preparation of reagents and kits for 'Suchitha' waste to manure converter units by rapid thermochemical technology of KAU (2017)

Professional Training (International & National)

International Trainings/Workshops/Seminars

1. ARRW Golden Jubilee International Symposium, CRRI, Cuttack. Association of Rice Research Workers, Cuttack, India (2013)
2. International Conference on Solid Waste 2015: Knowledge Transfer for Sustainable Resource Management at Hong Kong Baptist University, Hong Kong SAR, P.R. China (2015)
3. Krishnapriya, M.K., Leno, N. and Joy, N., Synergistic interaction of thermochemical organic fertiliser and *Piriformospora indica* in growth promotion parameters of tomato. : FAO. 2023. Soils, where food begins – Proceedings of the Global Symposium on Soils for Nutrition, 26–29 July 2022. Rome. <https://doi.org/10.4060/cc6728en> (2022)
4. BioZion International Biotechnology Conclave at College of Agriculture, Trivandrum, Kerala Agricultural University (2023)

National Trainings/Workshops/Seminars

5. Twenty-fifth Kerala Science Congress, Technopark, Trivandrum (2013)
6. Organising secretary of the II Kerala Soil Scientists' Meet held on 24th May 2014 at the KVK, Thrissur (2014)
7. 82nd Annual Convention of the Indian Society of Soil Science held at Amity University, Kolkata (2017)
8. BSMA workshop on Restructuring of MSc and Ph.D. curriculum of ICAR conducted at PJTSAU, Rajendranagar, Hyderabad (2019)
9. Training-Interaction Meet on Soil-Site Suitability Criteria of Crops, National Bureau of Soil Survey and Land Use Planning, Bengaluru (2023)
10. Advanced Level Training In Soil Testing, Plant Analysis, and Water Quality Assessment at the Indian Agricultural Research Institute, New Delhi (21 days) (2012)
11. Orientation Programme of the UGC Human Resource Development Centre, University of Kerala, Trivandrum from (28 days) (2017)
12. "Analysis of Experimental Data using R" by ICAR-National Academy of Agricultural Research Management, Rajendranagar, Hyderabad (2020)
13. Integrated Nutrient Management and Nutrient Budgeting through Advanced Models to Improve Crop Productivity" by ICAR- Indian Institute of Soil and Water Conservation Research Centre, Udhamandalam, Nilgiris, Tamil Nadu (2021)
14. Refresher Course in Media Studies (Interdisciplinary) by UGC-Human Resource Development Centre, University of Calicut, Kerala (2022)

Teaching

Graduates

- Fundamentals of Soil Science
- Environmental Studies and Disaster Management
- Manures, Fertilizers, Soil Fertility Management

Post Graduates

- Soil Chemistry

Doctoral

- Soil Fertility and Fertility Use
- Masters Credit Seminar
- Biochemistry of Soil organic matter
- Soil Resource Management

Student Guidance (Major Advisor)

M. Sc. Within KAU: Completed: 4

Ph. D Within KAU: Completed: 4

Student Guidance (Member, Advisory Committee)

M. Sc. Within KAU: Completed: 5

Ph. D Within KAU: Completed: 1

Other Institutional Responsibilities

1. Secretary, Parent-Teacher Association, College of Agriculture, Vellayani
2. Custodian of Chemicals, Department of Soil Science & Agrl Chemistry
3. Member, Internal Complaints Committee

Membership in Professional Associations

1. Indian Society of Soil Science