

21st Soil, Water, and Ecosystem Sciences Research Forum Program

February 10, 2025

Rion Ballroom - J. Wayne Reitz Union

- 8:15 am – 9:00 am Registration
- 9:10 am – 9:20 am [Welcome](#)
[P. Chris Wilson](#)
Interim Department Chair and Professor
Department of Soil, Water, and Ecosystem Sciences
University of Florida
- 9:20 am – 9:30 am [Opening Remarks](#)
[Scott Angle](#)
Senior VP Agriculture and Natural Resources
Institute of Food and Agricultural Sciences
University of Florida
- 9:30 am – 10:30 am [Advancing Foundational AI Research and](#)
[Applications through Transdisciplinary](#)
[Collaboration](#)
[Alina Zare](#)
Professor, Electrical and Computer Engineering Department
Director of the Artificial Intelligence and Informatics Institute
Herbert Wertheim College of Engineering
University of Florida
[Google Scholar Profile](#)
[Publications](#)
- 10:30 am – 10:50 am BREAK**
- SESSION I – Featured Faculty Oral Presentations**
Rion Ballroom - J. Wayne Reitz Union
- 10:50 am – 11:50 am Featured Faculty Oral Presentations
- Session Chair: Patrick Inglett**

10:50 am – 11:10 am

Use of Artificial Intelligence in Soil Nutrient Management and Potato Harvesting

Lakesh Sharma, Assistant Professor

Soil Fertility and Sustainable Nutrient Management
Department of Soil, Water, and Ecosystem Sciences
University of Florida

11:10 am – 11:30 am

Leveraging AI for Quantifying Soil Hydrology: Applications in Agriculture and Climate Change Mitigation

Ebrahim Babaeian, Assistant Professor

Soil Physics
Department of Soil, Water, and Ecosystem Sciences
University of Florida

11:30 am – 11:50 am

Bridging the Gaps: Foundation Models and Conversational AI for Scalable Agro-Environmental Monitoring

Nikolaos Tziolas, Assistant Professor

Soil Science Artificial Intelligence
Southwest Florida Research and Education Center
Department of Soil, Water, and Ecosystem Sciences
University of Florida

11:50 pm – 1:00 pm

LUNCH ON OWN

**SESSION II – Ph.D. Graduate Student Oral Presentations
Rion Ballroom - J. Wayne Reitz Union**

1:00 pm – 2:15 pm – Ph.D. Graduate Student Oral Presentations

Session Chairs: Ryan Champiny, Yaslin Gonzalez, Suraj Melkani, Taryn Chaya, Jenna Reimer, Kendall Mackin, Perse Mungofa, Karun Katoch, & Justina Dacey

Student Presentation (1:00 pm – 1:15 pm):

Effect of Reclaimed Water on Blueberry Seedling Growth and Root Morphology

Authors: *Yasmeen Saleem, Shinsuke Agehara, and Davie Kadyampakeni*

Student Presentation (1:15 pm – 1:30 pm):

Evaluating Cover Crop Effects in Tree Crop Systems Using Traditional and Novel Soil Health Indicators

Authors: *Yaslin Gonzalez, Sarah Strauss, Marcio Nunes, Zane Grabau, Allan Bacon, and Gabriel Maltais-Landry*

Student Presentation (1:30 pm – 1:45 pm):

Effects of Shifting Salinity on Nitrogen Transformations in An Urbanizing Estuary

Authors: *Jenna Reimer, AJ Reisinger, and Ashley Smyth*

Student Presentation (1:45 pm – 2:00 pm):

Sugarcane and Flooded Rice Crop Rotation to Address Soil Loss and Environmental Quality in the Everglades Agricultural Area

Authors: *Xue Bai, Donghyeon Kim, Young Gu Her, Samuel J. Smidt, Yuncong Li, Donald Meals, and Jehangir Bhadha*

Student Presentation (2:00 pm – 2:15 pm):

Is Nectar a Sweet Poison? A Tale about Pesticide Management, Nectar and Pollinators

Authors: *Vanesa Rostan, Mia Cabrera, Sandra Wilson, and P. Chris Wilson*

SESSION III - Student Poster Viewing and Reception

Rion Ballroom, J. Wayne Reitz Union

3:00 – 4:00 pm **Poster Session I**

a. Judging of Even Numbered Posters – Will Occur During This Period

4:00 – 5:00 pm **Poster Session II**

a. Judging of Odd Numbered Posters – Will Occur During This Period

Judged Poster Titles & Authors:

1. Assessing the Effects of Varying Rates of Irrigation and Potassium Fertilization on the Growth of *Dendrocalamus asper bamboo* in Florida
Labake Agunbiade, Marcio R. Nunes, and Davie M. Kadyampakeni

2. Sustainable Intensification with Winter Crops Improves Nitrogen Cycling but Not Yields in Southeastern US Corn Systems
Julia Barra Netto-Ferreira, Chris H Wilson, and Gabriel Maltais-Landry
3. Evaluating the Impact of Biostimulants on Young Sweet Orange Trees Grafted onto Different Rootstocks
Noor UI Basar, Muhammad Adnan Shahid, and Davie M. Kadyampakeni
4. Evaluating Best Management Practices for Nitrate Reduction in the Floridan Surficial Aquifer
Seyed Mostafa Biazar, Golmar Golmohammadi, and Amartya Saha
5. The Use of Phosphorus Starter Fertilizer in Field Corn Production
Jay Capasso, Kelly Morgan, Vimala Nair, Jehangir Bhadha, Vivek Sharma, Lilit Vardanyan, and Kevin Athrearn
6. Carbon Accounting and Cation Transport for Enhanced Weathering of Olivine and Recycled Concrete Fines
Ryan E. Champiny, Ebrahim Babaeian, and Yang Lin
7. Analyzing the Heavy Metal Accumulation Potential of *Sagittaria lancifolia* from a Constructed Wetland
Zaed Christie and Masanori Fujimoto
8. Long Term Nutrient Accretion Rates in the Everglades Storm Water Treatment Areas (STAs)
Ankita Datta, Praveen Subedi, and Patrick Inglett
9. Short- and Long-term Effects of Humic Acid Amendments on the Citrus Rhizosphere Microbiome
Emma Dawson, Ute Albrecht, and Sarah L. Strauss
10. AI – Driven Downscaling of SMAP Soil Moisture Data Using Google Earth Engine: A Pre- and Post-Hurricane Milton Assessment
Nikhil Raj Deep and Ebrahim Babaeian
11. Federated Learning: Decentralizing Soil Modeling for Global Collaboration and Enhanced Data Privacy
G. Gallios, N. Tsakiridis, and N. Tziolas
12. Variable Rate Fertilization of Phosphorus in young *Dendrocalamus asper* bamboo in Florida
Cyrus J. Januarie, Lakesh Sharma, Joao Vendramini, and Davie M. Kadyampakeni
13. Optimizing Molybdenum Fertilization for Young HLB-Affected Citrus Trees

Kondwani Kamsikiri and Davie Kadyampakeni

14. Soil Science Education: A Framework for Managing and Utilizing Soil Pits in Instruction
Katya Kasprzak and Ann C. Wilkie
15. GaiaBot: Simplifying Access to Soil Data
Anastasia Kritharoula & Nikolaos Tziolas
16. The Effect of Mixed Microplastic on Freshwater Microalgae Growth and Survival
Xiaozheng (Harry) Liu and Masanori "Masa" Fujimoto
17. Optimizing a Soil Enzyme Activity Assay as a Biological Soil Health Indicator for Sandy Florida Soils
Kendall Mackin and Gabriel Maltais-Landry
18. Aligning Farmers' Perceptions of Soil Productivity with Soil Health Test Results in Florida Pastures
Swarnali Mahmood, Jose Dubeux, and Yang Lin
19. Decoding the Speciation of Legacy Phosphorus in Acidic, Organic, and Calcareous Soils Using Hedley Fractionation, Total Soil Phosphorus Storage Capacity, Solution 31P Nuclear Magnetic Resonance, and X-ray Absorption Near Edge Spectrometry
MD Anik Mahmud, Caroline Buchanan Fisher, Xue Bai, Abul Rabbany, Shin-Ah Lee, Rebecca Muenich, Luke Gatiboni, Owen Duckworth, Juan Claudio Nino, Andy Ogram, Jonathan Judy, and Jehangir Bhadha
20. Examining Carbon Farming Practices to Address Soil Sustainability in the Everglades Agricultural Area, South Florida
Noel Manirakiza, Suraj Melkani, Xue Bai, Yang Lin, Abul Rabbany, Allan Bacon, Michael Andreu, and Jehangir H. Bhadha
21. Investigating Patterns and Drivers of Soil Organic Carbon Stability in Cultivated Histosols of South Florida Using Data-Driven Machine Learning and Simulation Modeling
Suraj Melkani, Noel Manirakiza, Abul Rabbany, Sabine Grunwald, Aditya Singh, Ziwen Yu, and Jehangir H. Bhadha
22. Deep Learning and Generative Artificial Intelligence Techniques for Image-based Analysis of Soil Properties in the Surface and Subsurface Horizons
Perseveranca Mungofa, Sabine Grunwald, Stephan Mantel, Giulio Genova, Laura Waldo, and Arnold Schumann
23. Advanced Deep Learning Models for Predicting Surface Water Discharge and Groundwater Levels in Florida

Rohith Reddy Nedhunuri, Golmar Golmohammadi, Seyed Mostafa Biazar

24. Effect of Slow-Release Nitrogen Fertilizer and Biochar on Soil Properties and Maize (*Zea Mays L*), Agronomic Performance, and Nutrient Use Efficiency
O.J. Olubisi, L.O. Udemba, A.C.O. Uthman, K.S. Are, and A.O. Ojo
25. Optimizing Nitrogen and Phosphorus Management for HLB-Affected Sweet Orange
Monika Peddapuli, Alisheikh Atta and Davie Kadyampakeni
26. Relationships Between Land Management Practices and Soil Health on Eleven Dairy Farms
Audrey Plauche, Swarnali Mahmood, and Yang Lin
27. Exploring the Potential of Silicon Nanoparticles to Mitigate Water Stress in Citrus
Jose Prieto and Davie M. Kadyampakeni
28. High-Resolution Soil Moisture Mapping in Florida: A Hybrid CNN – LSTM Fusion of SMAP, Soil Physical and Remote Sensing Data
Saman Rabiei, Ebrahim Babaeian, and Sabine Grunwald
29. Changes in Soil Microbial Diversity and Community Composition Across a Pine Invasion Gradient
Benjamin Reimer, Kaile Zhang, Ko-Hsuan Chen, Corinne Vietorisz, Jennifer Bhatnagar, Rytas Vilgalys, Jason Hoeksema, Jonathan Plett, Ian Anderson, Jeff Powell, Alejandro Rojas, and Hui-ling Liao
30. The Influence of Soil pH on Citrus Root Morphology and Nutrient Uptake Efficiency
Duplicate Sambani, Tripti Vashisth, Diane B. Bright, and Davie M. Kadyampakeni
31. Integrated Hydrological and Water Quality Modeling of the Peace River Watershed Using SWAT+
Saba Shaghghi and Golmar Golmohammadi
32. Trends of Phosphorus Storage in Well- Vs Under-Performing Everglades Stormwater Treatment Wetlands
Zoe Spielman, Patrick W. Inglett, and Praveen Subedi
33. Impacts of Nutrient Ratios of Calcium and Zinc on Citrus Growth and Root Development
Therese Thompson and Davie Kadyampakeni
34. Solubilization of Soil Legacy Phosphorus using Metal Chelating Agents

Md Shakil Uddin, MD Anik Mahmud, Abul Rabbany, Julien Beuzelin, Jonathan Judy, and Jehangir H. Bhadha

35. *Pest Control in Full Bloom: Marigolds in Mulch*
Rebecca Walters and Ann Wilkie
36. *Treatment Technologies for Phosphorus Mitigation: A Conceptual Framework*
Berson J. Valcin, Yicheng Yang, Suraj Melkani, and Jehangir Bhadha

Non-Judged Poster Titles & Authors:

37. *Soil Phosphorus Storage Capacity and Soil Test Parameters for Sustainable Fertilizer Management*
Priyanka Chandra, Lilit Vardanyan, and Vimala D. Nair
38. *Poultry Litter Biochar as an Environment-Friendly Alternative to Inorganic Phosphorus Fertilizer*
Andressa M. Freitas, Vimala D. Nair, Lynn E. Sollenberger, Willie G. Harris, and Amanda N. Rodriguez
39. *Phosphorus Immobilization Technologies for Remediating Biosolids-Impacted Soils in the St. Johns River Basin*
Andressa M. Freitas, Vimala D. Nair, Lilit Vardanyan, and Todd Z. Osborne
40. *Soil Microbial Responses to Cover Cropping across Tropical Agroecosystems*
Tanjila Jesmin, Noel Manirakiza, Jay Capasso, Kevin Korus, Hardeep Singh, Zachary Brym, and Jehangir H. Bhadha
41. *Site-specific Plant Phosphorus Bioavailability in a Mehlich 3-P Extract*
Amanda N. Rodriguez, Vimala D. Nair, Andressa M. Freitas, Gabriel Maltais-Landry, and Lynn E. Sollenberger
42. *The Impact of Using Organo-Mineral Fertilizers on Soil Health Indicators and Agricultural Productivity*
Dieini Melissa Teles dos Santos, Julia Barra Neto Ferreira, Ana Karina dos Santos Oliveira, Angelique Bochnak, Kendall Mackin, Allison Schmidt, Luane Lima Souza, Everaldo Zonta and Gabriel Maltais-Landry
43. *Improving Phosphorus Use Efficiency with Biofertilizers*
Flávia Santos, Md Shakil Uddin, Tanjila Jesmin, Md Anik Mahmud, Christiane Paiva, Luke Gatiboni, Jonathan Judy, Marcio Nunes, Julien Beuzelin, Glauco Teixeira, Lesley Schumacher, Abul Rabbany, Leonardus Vergutz, Hudson Carvalho, and Jehangir Bhadha

44. Changes in Soil Phosphorus Over Fifteen Years in Taylor Slough, Everglades National Park
Tracey Schafer, Paul Julian, Donatto Surratt, and Todd Z. Osborne
45. Phosphorus Sorption and Retention in Florida Soils: Insights for Improved Fertilizer Management
Lilit Vardanyan, Vimala D. Nair, and Andressa M. Freitas
46. Inorganic Nitrogen and Organic Matter Jointly Regulate Ectomycorrhizal Fungi-Mediated Iron Acquisition
Haihua Wang, Kaile Zhang, and Hui-Ling Liao
47. Responsible Design, Development and Deployment of Phosphorus Treatment Technologies
Yicheng Yang, Berson Valcin, Olga Borquez, Alison Deviney, Khara Grieger, Matthew Scholz, Elise Morrison, Jacob Jones and Jehangir Bhadha
48. Impact of Soil Moisture Levels on Redox Potential and Microbial Organic Carbon Degradation in a Tropical Peat Soil
Nina C. Infantado, Sarah Strauss, and Willm Martens-Habbena