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SOIL AND WATER FACULTY PROGRAMS

Biogeochemistry of Trace Metals Program

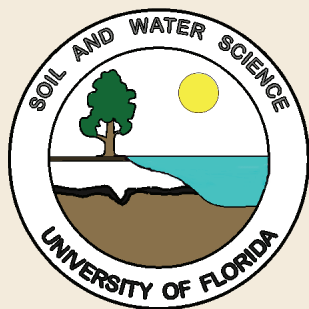
GIS-Pedometrics Research Laboratory

Organic Contaminants Laboratory

Microbial Ecology Laboratory

Wetland Biogeochemistry Laboratory

Soil Fertility and Plant Nutrition Program



PLAN TO ATTEND

12th Annual Soil & Water Science Research Forum

September 9, 2011
J. W. Reitz Union
University of Florida - IFAS
Gainesville, Florida

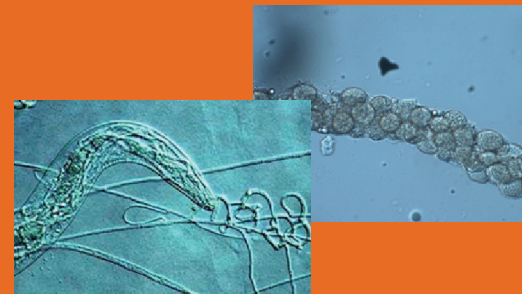
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Soil & Water Science

11th Annual Research Forum

J. WAYNE REITZ UNION • September 10, 2010



Soil, Water, and Public Health



making a difference in quality of life ... for everyone

INTRODUCTION

Welcome to the 11th Annual Soil and Water Science Research Forum sponsored by the Soil and Water Science Department (SWSD), IFAS, University of Florida. The Forum is designed to bring together representatives from state and federal agencies as well as private industry, faculty, graduate students, and prospective students. The Forum provides an opportunity for all those interested in soil and water science to interact with our students, faculty, and administrators on campus.

The SWSD faculty are located both on the main campus in Gainesville and at several off-campus Research and Education Centers. The mission of the department is to conduct basic and applied research on soil and water-related problems associated with sustaining agriculture and protecting natural resources. Thus, our faculty and students conduct research and education in a wide range of ecosystems including: agricultural lands, urban lands, rangelands, forested lands, and wetlands and aquatic ecosystems, with emphasis on productivity, water quality, carbon sequestration, and greenhouse gas emissions. Research efforts are organized into the following thrust areas: Management of Nutrients, Pesticides, and Wastes, Soil, Water, and Aquifer Remediation, Carbon Dynamics and Ecosystem Services, Landscape Analysis and Modeling, and Wetlands and Aquatic Systems. This year's Forum will focus on Soil, Water, and Public Health, with invited presentations from Dr. Glen Morris and Dr. Ian Pepper.

Research conducted by graduate students and post-doctoral fellows is the core of the SWSD research programs. At present 154 graduate students (including 66 on-campus, 10 SNRE, and 2 PMCB, and 76 distance education), 39 undergraduates (22 SWS and 17 EMANR) and 10 post-doctoral associates support current research activities in the department. For this year's Forum we offer you select examples of the research conducted by these young scientists. Presentations include 6 oral papers and 32 poster presentations. For those of you interested in our programs, please contact me or any one of our faculty members.

Thanks to the Faculty Research Forum Committee (Dr. James Jawitz, Committee Chair) for coordinating activities related to the Forum. Thanks to Dr. George O'Connor for organizing the special oral presentation session on soil and water contamination linkages to public health and for hosting a reception in the honor of our keynote speaker Dr. Ian Pepper. Special thanks to Lisa Gardner, Susan Curry, and Michael Sisk for their excellent work in making arrangements for the Forum. Finally, I want to express my appreciation to all students, post-doctoral fellows, staff, and faculty for their active participation in the Forum. Assistance of judges in selecting best oral/poster presentations is greatly appreciated. We thank our collaborators from various state agencies and the industry for their support of our programs.

Sincerely,



K. R. Reddy, Graduate Research Professor and Chair

krr@ufl.edu

SOIL & WATER SCIENCE LOCATIONS

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P.O. Box 110510
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(352) 392.1951

Citrus Research & Education Center
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Lake Alfred, FL 33850-2299
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<http://www.crec.ifas.ufl.edu/>

Everglades Research & Education Center
3200 E. Palm Beach Road
Belle Glade, FL 33430-8003
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<http://erec.ifas.ufl.edu/>

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<http://flrec.ifas.ufl.edu/>

Gulf Coast Research & Education Center
14625 County Road 672
Wimauma, FL 33598
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<http://gcrec.ifas.ufl.edu/>

Indian River Research & Education Center
2199 South Rock Road
Fort Pierce, FL 34945-3138
(772) 468.3922
<http://irrec.ifas.ufl.edu/>

North Florida Research & Education Center
155 Research Road
Quincy, FL 32351-5677
(850) 875.7100
<http://nfrec.ifas.ufl.edu/>

Range Cattle Research & Education Center
3401 Experiment Station Road
Ona, FL 33865-9706
(863) 735.1314
<http://rcrec-ona.ifas.ufl.edu/>

Southwest Florida Research & Education Center
2686 State Road 29 North
Immokalee, FL 34142
(239) 658.3400
<http://www.imok.ufl.edu/>

Tropical Research & Education Center
18905 SW 280th Street
Homestead, FL 33031-3314
(305) 246.7000
<http://trec.ifas.ufl.edu/>

POSTERS · JUDGED ENTRIES SESSION II CONT'D

28 · Soil Aggregation and Recalcitrant Carbon pools in a Florida Silvopasture System.

julia Showalter, PhD Student, Advisor: Vimala Nair and Ramachandr Nair

29 · Soil Pedogenesis and Landscape Relationships in the Santa Catalina Mountains.

Ashlyn Smith-Sawka, B.S. Student, Advisor: Larry "Rex" Ellis

30 · Effects of Fertilization on Soil Carbon Stocks and Sorghum/Pigeon Pea Productivity in a Vertisol in Semi-Arid Tropical India.

Kiara Winans, PhD Student, Advisor: Ramesh Reddy

31 · Modeling of Soil Organic Carbon in Dependence of Ancillary Environmental Factors.

Xiong Xiong, PhD Student, Advisor: Sabine Grunwald

32 · Kaolinite-Facilitated Mercury Transport in Saturated Porous Media.

Yingjia Zhu, PhD Student, Advisor: Lena Ma and Willie Harris

Abstracts for all poster submissions and oral presentations are available online at:

<http://soils.ifas.ufl.edu/forum/>

INVITED SPEAKER

Dr. J. Glenn Morris Jr., MD

Director
Emerging Pathogens Institute
University of Florida
Gainesville, FL



Title of Presentation:
Soil, Water, and Emerging Pathogens

Dr. Morris is Director of the newly established Emerging Pathogens Institute (EPI) at the University of Florida, Gainesville. From 2000-2007 he served as Chairman of the Department of Epidemiology and Preventive Medicine at the University of Maryland School of Medicine, Baltimore (UMB), and from 2005-2007 was interim dean of the UMB School of Public Health.

Dr. Morris received his MD degree and a master's degree in public health and tropical medicine from Tulane University, New Orleans. He served as an Epidemic Intelligence Service Officer in the Division of Enteric Diseases at the Centers for Disease Control in Atlanta from 1979-81. He is board-certified in both internal medicine and infectious diseases. Dr. Morris has authored over 60 textbook chapters and symposium proceedings and over 180 articles in peer-reviewed journals. He has had continuous federal grant funding since 1984; his scholarly contributions were recognized by election to the American Society for Clinical Investigation in 1996. He has served on four National Academy of Sciences expert committees dealing with food safety, and currently serves on the Institute of Medicine's Food and Nutrition Board. Dr. Morris maintains an active research program in the area of emerging pathogens and enteric diseases, including ongoing work in India and Bangladesh. He also has extensive experience in work with antimicrobial resistance, including major papers on risk factors for infection with resistant microorganisms and on therapeutic approaches to control of such infections.

KEYNOTE SPEAKER

Dr. Ian L. Pepper, Ph.D.

Professor and Environmental Microbiologist
Soil, Water and Environmental
Science Department
University of Arizona



Title of Presentation:
The Soil Health and Human Health Nexus

Dr. Ian Pepper is a Professor and Environmental Microbiologist in the Department of Soil, Water and Environmental Science at The University of Arizona. He earned his B.Sc. Degree at the University of Birmingham in England, and his M.S. and Ph.D. degrees from the Ohio State University.

Dr. Pepper's program focuses mainly on potable water quality and the fate of pathogens in soil, water and municipal wastes. He has also evaluated the sustainability of long term land application of municipal biosolids. Dr. Pepper has been the Director of a National Science Foundation Center on Water Quality since 1999. State-of-the-art research at the Center has included real-time detection of pathogens and the fate of emerging pathogens in potable water.

His expertise has been recognized by membership on three National Academy of Science Committees and former memberships on an EPA FIFRA Science and Advisory Panel. Dr. Pepper is a Fellow of the American Association for the Advancement of Science, American Academy of Microbiology, the Soil Science Society of America, and the American Society of Agronomy. He is the recipient of the 2010 American Society of Agronomy Environmental Quality Research Award.

Dr. Pepper has authored or co-authored 7 textbooks and 200 book chapters and peer reviewed journal articles. He has graduated 19 Ph.D. students and 22 M.S. students.

POSTERS • JUDGED ENTRIES SESSION II

18 • Multi-scale Modeling of Soil Series using Remote Sensing.

Jongsung Kim, PhD Student, Advisor: Sabine Grunwald

19 • Long-Term Arsenic Hyperaccumulation by *Pteris vittata* from Contaminated Soils and the Effect of Phosphate Rock and Increased Plant Density.

Jay Lessl, PhD Student, Advisor: Lena Ma

20 • Nutrient Limitation in Restored and Natural Reference Wetlands of the Florida Everglades.

Xiaolin Liao, PhD Student, Advisor: Patrick Inglett

21 • Pulsing of Seawater into Freshwater Wetlands: Effects on Soil Carbon Cycling.

Lisa Gardner, PhD Student, Advisor: Ramesh Reddy

22 • Effect of Topsoil Created from Spodic Materials on Turfgrass.

Drew Mclean, MS Student, Advisor: Larry "Rex" Ellis and Amy Shober

23 • Effects of Hydrology on Carbon Cycling in a Restored Subtropical Wetland.

Cassandra Medvedeff, PhD Student, Advisor: Patrick Inglett

24 • Characterization of a Variety of Laboratory-Produced Biochars and Importance toward Soil Fertility.

Atanu Mukherjee, PHD Student, Advisor: Andrew Zimmerman

25 • Okeechobee Isolated Wetlands: Influences of Hydroperiod on Plant Community Composition and Forage.

Jason Neumann, MS Student, Advisor: Mark Clark

26 • Modeling Soil Organic Carbon within the St. Johns River Basin.

Christopher Wade Ross, MS Student, Advisor: Dr. Sabine Grunwald

27 • The Effects of Soil Fertilization and Plant Disturbance on Wiregrass Performance.

Lisa Shaw, MS Student, Advisor: Dr. Cheryl Mackowiak

POSTERS • JUDGED ENTRIES SESSION I CONT'D

10 • Characteristic and Mechanism of Hexavalent Chromium Removal by Sugar Beet Tailing Derived Biochar.

Xiaoling Dong, PhD Student, Advisors: Lena Ma and Yuncong Li

11 • Algal Biofuel Production through Landfill Leachate Remediation.

Scott Edmundson, MS Student, Advisor: Ann Wilkie

12 • Evaluation of Equine Owner and Manager Awareness of Nutrient Management and Conservation Techniques on Small Farms.

Jennifer Marriott, MS Student, Advisor: Amy Shober

13 • Fluorescent Arsenic-Resistant Bacteria Enhanced Arsenic Solubilization in the Rhizosphere and Promoted Growth of Arsenic Hyperaccumulator *Pteris vittata* L.

Piyasa Ghosh, PhD Student, Advisor: Lena Ma and Bala Rathinasabapathi

14 • Energy and Nutrient Resources from Organic Wastes for Small Farms.

Ryan Graunke, MS Student, Advisor: Ann Wilkie

15 • Effect of Hydroperiod on Phosphorus Availability in a Restored Calcareous Subtropical Wetland.

Benjamin Hogue, MS Student, Advisor: Patrick Inglett

16 • Effect of Rainy Season, Irrigation Method and Fertigation Frequency on Citrus Root Length Density, P and K Distribution on a Florida Spodosol.

Davie Kadyampakeni, PhD Student, Advisors: Kelly Morgan and Peter Nkedi-Kizza

17 • The Relationships among Biogeochemical Properties, Nitrification, and Associated Microbial Assemblage Composition of Santa Fe River Tributary Sediments.

Ha Ryun Kim, PhD Student, Advisors: Andrew Ogram and Ramesh Reddy

PROGRAM

September 10, 2010 • Room 282 J. Wayne Reitz Union

8:00AM Registration & Refreshments

8:30 - 8:40 **Dr. K. Ramesh Reddy**

Opening Remarks

Graduate Research Professor and Chair
Soil and Water Science Department

8:40 - 9:10

Dr. J. Glenn Morris

Soil, Water, and Emerging Pathogens

Director and Professor - Emerging Pathogens Institute
University of Florida

9:10 - 10:00

Dr. Ian Pepper

The Soil Health and Human Health Nexus

Director, National Science Foundation-
Water and Environmental Technology Center
Director, Environmental Research Laboratory
University of Arizona

10:00 - 10:30 BREAK

10:30 – 12:00

Invited Session - Soil and Water Contamination and Public Health

Presiding: George O'Connor

Dr. George O'Connor: *The SWSD and Public Health.*

Dr. James Jawitz: *Assessment and Remediation of Organic Contaminant Impacts to Hydrologic Ecosystems.*

Dr. Lena Ma: *Environmental Impacts and Remediation of Metal-Contaminated Soils.*

Dr. Andrew Ogram: *Fate of Organic Contaminants from the Recent Gulf of Mexico Oil Spill.*

Dr. Max Teplitski: *Microbial Ecology, Ecosystem Health, and Food Safety.*

12:00 – 1:10 LUNCH (on your own)

ORAL PRESENTATIONS

Presiding: Lisa Gardner

1:15 - 1:30 **Rapid Assessment and Modeling of Soil Carbon Storage in Florida.**
Dr. Brent Myers , Post-Doc Fellow Presentation

Student Session

1:30 - 1:45 **Fate and Transport of Biosolids-Borne Triclosan (TCS).**
Manmeet Waria, PhD Student, Advisor: George O'Connor and Gurpal Toor

1:45 - 2:00 **Uptake and Translocation of Arsenite and Arsenate by *Pteris vittata* L.: Effects of Glycerol, Antimonite and Silver.** Shiny Mathews, PhD Student, Advisor: Lena Ma

2:00 - 2:15 **Urban Water Availability and Sustainability in the United States.**
Julie Padowski, PhD Student, Advisor: James Jawitz

2:15 - 2:30 **Evaluation of a Denitrification Wall: Putting Microbes to Work to Fulfill Numeric Nutrient Criteria.**
Casey Schmidt, PhD Student, Advisor: Mark Clark

2:30 - 2:45 **Development of Map Unit Interpretations for Subaqueous Soils.**
Luke Gommerman, MS Student, Advisor: Larry "Rex" Ellis

POSTER VIEWING & RECEPTION

East & West Galleries • Reitz Union 2nd Floor

3:00 - 5:00 Faculty/Staff Presentations
Posters 1 & 2

3:00 - 4:00 Student Presentation Session I
Posters 3 through 17

4:00 - 5:00 Student Presentation Session II
Posters 18 through 32

3:00 - 5:00 Reception

5:00 PM Adjourn

POSTERS • FACULTY AND STAFF

1 • The Terrestrial Carbon (TerraC) Information System Vers. 1.0
Brandon Hoover, Gustavo M. Vasques, Biao Zhong, Sabine Grunwald, Timothy A. Martin, David L. JR. Depatie

2 • Mash-ups Embedded in Online Learning Material to Stimulate Learning.
D.L. DePatie JR., B. Hoover, and S. Grunwald

33 • Bioenergy for Small Farm Syrup Production
Camilo Cornejo and Ann C. Wilkie

POSTERS • JUDGED ENTRIES SESSION I

3 • Simulation of Water Table Drawdown Due to Subsurface Drainage in a Seepage Irrigated Field.
Subodh Acharya, PhD Student, Advisor: Rao Mylavarapu

4 • Biodigestion, Sanitation, and Public Health in Rural Cambodia
Jonathan Alldridge, ME Student, Advisor: Ann Wilkie

5 • Long-term Storage Soil Nutrients in the Stormwater Treatment Areas of the Everglades Basin.
Rupesh Bhomia, PhD Student, Advisor: Ramesh Reddy

6 • A Conceptual Ecosystem Services Framework Applied to Emerging Biofuel Production Systems.
Pasicha Chaikaew, PhD Student, Advisor: Sabine Grunwald

7 • Phosphorus Retention and Release from Bh and Bt Horizons of Manure Impacted Soils in Florida.
Debolina Chakraborty, PhD Student, Advisor: Vimala Nair

8 • Effects of pH and Ionic Strength on Sulfamethoxazole and Ciprofloxacin Transport in Saturated Porous Media.
Hao Chen, PhD Student, Advisors: Lena Ma and Bin Gao

9 • Evaluation of Equilibrium Phosphorus Concentrations of Everglades Agricultural Area Canal Sediments using Adsorption Isotherms and Incubation of Intact Sediment Cores.
Jaya Das, PhD Student, Advisors: Samira Daroub and George O'Connor