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Florida Association of Environmental Soil Scientists

HydroMentia, Inc.

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PLAN TO ATTEND

10th Annual Soil & Water Science Research Forum

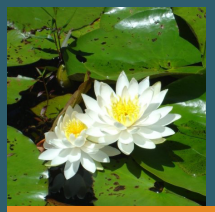
September 11th 2009
J. W. Reitz Union
University of Florida - IFAS
Gainesville, Florida

http://soils.ifas.ufl.edu

UF UNIVERSITY of FLORIDA IFAS

9th Annual Research Forum

REITZ UNION AUDITORIUM • 09.12.2008






Soil & Water SCIENCE

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

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NOTES

INTRODUCTION

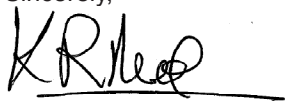
Welcome to the 9th Annual Soil and Water Science Research Forum sponsored by the Soil and Water Science Department (SWSD), IFAS, University of Florida. The Forum is designed to bring together representatives from state and federal agencies as well as private industry, faculty, graduate students, and 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, Remediation of Contaminated Soils, Waters, and Aquifers, Soil Quality/Ecosystem Services, Soil/Landscape Analysis, and Wetlands and Aquatic Systems.

Research conducted by graduate students and post-doctoral fellows is the core of the SWSD research programs. At present 128 graduate students (including 55 in the distance education program) and 13 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 34 poster papers. 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 (Lena Ma, Committee Chair). Special thanks to Alex Cheesman, Hollie Hall, Shiny Mathews, and Rhiannon Pollard for their hard 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. We thank our collaborators from various state agencies and the industry for their support of our programs. Special thanks to this year's sponsors: Florida Association of Environmental Soil Scientists, DB Environmental Lab, Inc, and HydroMentia, Inc.

Sincerely,



K. R. Reddy, Graduate Research Professor and Chair
krr@ufl.edu

PROGRAM

September 12, 2008 · Reitz Union Auditorium

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 - 9.00 **Scott M. Franz**
Guest Speaker
President
Florida Association of Environmental Soil Scientists

9.00 - 10.00 **Dr. Don Sparks**
Shining Light on Biogeochemical Processes in the Earth's Critical Zone!
S. Hallock du Pont Chair
Chair, Department of Plant and Soil Sciences
Director, Center for Critical Zone Research
University of Delaware

10.00 - 10.15 Break

10.15 - 12PM **Faculty Presentations**
Presiding: Dr. Lena Ma
Soil and Water Science Research Programs
Dr. Carl Fitz
Dr. Patrick Inglett
Dr. Kelly Morgan
Dr. Max Teplitski
Dr. Gurpal Toor
Dr. Alan Wright

12PM - 1.30 Lunch (on your own)

NOTES

THE FORUM · A ZERO-WASTE EVENT

To reduce waste from this year's Forum and aid the University of Florida's goal of producing Zero Waste by 2015, the Soil and Water Science Department has taken the following waste-minimizing actions:

- Utilizing email or newspaper advertisements to disperse information rather than producing printed flyers
- Utilizing recycled paper for printing needs
- Utilizing double-sided printing for all Forum handouts
- Re-using plastic name tags from previous years
- Utilizing re-usable chinaware rather than disposable dishware for Forum catering
- Providing the opportunity for recycling of plastic, cans, and paper products
- Collecting food and napkin waste for conversion to energy via anaerobic biodigesters run through Dr. Ann Wilkie's Environmental Microbiology Lab.

As an attendee of the SWSD Research Forum, you have the opportunity to assist the University of Florida in reaching its goal of producing Zero Waste! The following is a list of actions you can take to reduce the amount of waste produced during the Forum:

- Use both sides of the pages provided in the Program book for notes on presentations
- Try a reusable mug, cup, or bottle for your favorite drink instead of using disposable plastic cups
- Recycle your bottles, cans, and paper at recycling stations placed throughout the event
- Deposit your food and napkin waste in the biodigester collection bin to allow for conversion to energy!

For more information on anaerobic biodigestion, biogas, or the Zero Waste intitiative at UF, visit the following resources:

- http://www.sustainable.ufl.edu/greenteam
- http://biogas.ifas.ufl.edu
- http://www.youtube.com/user/BioEnergySustTechUF

ORAL PRESENTATIONS

Presiding: Alexander Cheesman

1.30 - 1.45 ***Phosphorus Retention by Deep Impacted Wetland Soils in the Lake Okeechobee Drainage Basin***
Jehangir Bhadha, PhD Student, Advisor: James Jawitz

1.45 - 2.00 ***Simulation and Modeling of Phosphorus Dynamics in Flow Calorimetry***
Michael Miyittah, PhD Student, Advisor: John Rechcigl

2.00 - 2.15 ***Estimation of Soil Organic Carbon in the State of Florida Using Visible/Near-Infrared Spectroscopy***
Gustavo Vasques, PhD Student, Advisor: Sabine Grunwald

2.15 - 2.30 ***Challenges to Efficient Water Management in Seepage Irrigated Crop Fields in the Tri-County Agricultural Area, Northeast Florida***
Subodh Acharya, PhD Student, Advisor: Rao Mylavarapu

2.30 - 2.45 ***Assessing the Impact of Native Disturbance Regimes in Forests Managed to Control the Invasion of an Exotic Tree***
Melissa Martin, PhD Student, Advisor: K. R. Reddy

2.45 - 3.00 ***Biogeochemical Cycling in Drained Subtropical Peatlands***
Rongzhong Ye, PhD Student, Advisor: Alan Wright

POSTER VIEWING & RECEPTION

East & West Galleries · Reitz Union 2nd Floor

3.15 - 4.15 Presentation Session I
Even-Numbered Posters

4.15 - 5.15 Presentation Session II
Odd-Numbered Posters

6.00PM Adjourn

KEYNOTE SPEAKER

Dr. Don Sparks

S. Hallock du Pont Chair
Chair, Department of Plant and Soil Sciences
Director, Center for Critical Zone Research
University of Delaware

Title of Presentation: *Shining Light on Biogeochemical Processes in the Earth's Critical Zone!*

Dr. Sparks is internationally recognized for his research contributions in the areas of: kinetics of soils chemical processes, surface chemistry of soils and soil components using in-situ spectroscopic and microscopic techniques. Dr. Sparks Environmental Soil Chemistry Laboratory focuses on how toxic metals such as arsenic (As), nickel (Ni), and zinc (Zn) and plant nutrients such as phosphorus (P) and sulfur (S) are bound (sorbed) on soils. His laboratory conducts these studies under different environmental and experimental conditions (pH, time, temperature, hydration state, presence of microbes) to best represent the natural environment. His research uses bright light sources generated at syncrotron facilities (associated with National Laboratories) to determine the forms (species) of the metals and nutrients in the soil at the molecular scale. This information is necessary to make accurate predictions about how easily the contaminant will leach into the water supplies, and determine its toxicity and bioavailability to plants, animals, and humans. His research also conducts speciation research on metal contaminated soils and on plants that accumulate large quantities of metals (hyper-accumulators). The results of these studies are useful in developing effective strategies for soil remediation.

Additional details of Dr. Sparks' research and teaching programs can be found at: *http://ag.udel.edu/plsc/faculty/sparks.htm*

POSTERS · NON-JUDGED ENTRIES

30 · Development of a Strategic Spatial Sampling Design for Measuring Soil Carbon Storage and Turnover in Florida
D. Sarkhot, S. Grunwald, N.Comerford, W. Harris, and G. Bruland

31 · Ontology-Based Simulation of Daily Water Table Fluctuations on Histosols in the Everglades Agricultural Area
H.Kwon, S.Grunwald, H. W. Beck, Y. Jung, S. Daroub, T. Lang and K. Morgan

32 · Biochar Derived from Dairy Manure Effectively Sorbs Both Heavy Metals and Organic Contaminants
X. Cao, L. Ma, B. Gao, and W. Harris

33 · Multi-Sensor Estimation of Claypan Soil Profile Properties
D. Myers, S. Grunwald, N. Kitchen, K. Sudduth, E. Sadler, and R. Miles

34 · Current Research at the MacArthur Agro-Ecology Research Center
P. Bohlen

35 · Comparisons of Different Univariate Geospatial Methods of Soil Phosphorus in Santa Fe River Ranch Beef Unit
J. Hong, S. Grunwald, and N. Comerford

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

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

POSTERS · JUDGED ENTRIES CONT'D

22 · The Influence of N Source Fertilization and Application Frequency on St. Augustinegrass Response and N Leaching
N. Young, Advisor: G. Snyder

23 · Tools to Improve Row Crop Nutrient and Water Management in the Lower Suwannee River Basin
R. Shahar, Advisor: T. Obreza

24 · Relationships Between Nitrification Activity and the Diversity of Archaeal Ammonia Oxidizers in Sediments of Santa Fe River Tributaries
H. Kim, Advisor: A. Ogram

25 · Application of a Distributed Parameter Reactive Transport Model to a Large Constructed Wetland in South Florida
R. Paudel, Advisor: J. Jawitz

26 · Prescribed Fire Effect on Phosphorus Cycling and Ensuing Plant Repopulation in *Cladium jamaicense* and *Typha latifolia* Stands of the Florida Everglades
R. Compitello, Advisor: T. Osborne

27 · Phenotypic Characterization of a Coral White Pox Pathogen, *Serratia marcescens*
C. Krediet, Advisor: M. Teplitski

28 · Bioenergy and Biofertilizer From Food Waste
R. Graunke, A. Wilkie

29 · Algal Biofuel and Nutrient Management
J. Alldridge, A. Wilkie

INVITED SPEAKERS · DETAILS

Guest Speaker

Scott M. Franz, President
Florida Association of Environmental Soil Scientists

Soil and Water Science Faculty Presentations

Dr. Carl Fitz, Assistant Professor, Ecological Modeling
Integrated Ecological Landscape Modeling

Dr. Patrick Inglett, Assistant Professor, Biogeochemistry of Wetlands and Aquatic Systems
Aquatic Biogeochemistry

Dr. Kelly Morgan, Assistant Professor, Soil Fertility and Water Management
Crop Nutrition BMPs in South Florida: Grower Demonstrations and Modeling

Dr. Max Teplitski, Assistant Professor, Microbial Ecology and Molecular Biology
We Listen When Microbes Talk!

Dr. Gurpal Toor, Assistant Professor, Soil Chemistry and Nutrient Management
Emerging Contaminants in the Urban Landscapes

Dr. Alan Wright, Assistant Professor, Soil and Water Quality
Proper Management of Natural Resources in the Everglades Agricultural Area (EAA) and Everglades Wetlands

POSTERS · JUDGED ENTRIES

1 · A Screen for GacS/GacA Antagonists That May Disrupt Gene Expression in Pathogens
C. Cox, Advisor: M. Teplitski

2 · Stable Isotope Compositions of Macroalgae, Sediment and Nitrate in Florida Springs
A. Albertin, Advisor: M. Clark

3 · Characterizing As-Resistant Bacterial Communities in the Rhizosphere of *Pteris vittata L.* from As Contaminated Sites
A. Huang, Advisor: L. Ma

4 · Tilling of Biomass in Treatment Wetlands: Influence on Treatment Efficiency and Soil Phosphorus Dynamics
C. Catts, Advisor: K. R. Reddy

5 · Optimization of Anoxic Biodegradation of DDT, DDD, and DDE in Soils
H. Gohil, Advisor: A. Ogram

6 · Phosphorus Release from Fertilizer-Impacted Spodic Horizons of Spodosols in South Florida
D. Chakraborty, Advisor: V. Nair

7 · Nitrogen Fixation at Lake George
M. Doron, Advisor: P. Inglett

8 · Phosphorus Characterization in the Everglades Agricultural Area Canal Sediments
J. Das, Advisor: S. Daroub

9 · Documentation of Environmental Services: Assessing Wetland Vegetation Communities Using a Random Point Count Program
J. Neumann, Advisor: M. Clark

10 · Vertical Distribution and Fractionation of Copper in Representative Soils under Citrus Production in the Indian River Area
J. Fan, Advisors: Z. He, L. Ma

11 · Social Science Considerations in Managing the Lake Alice Watershed
J. Linhoss, Advisor: M. Clark

POSTERS · JUDGED ENTRIES CONT'D

12 · Green Roofs as an Urban Stormwater BMP for Water Quantity and Quality in Florida and Virginia
S. Lang, Advisor: M. Clark

13 · Effects of Soil and Foliar Silicon Fertilization on Asian Soybean Rust (*Phakopsora pachyrhizi*) Development in Organic Production Systems
E. Lemes, Advisor: C. Mackowiak

14 · Nitrogen and phosphorus nutrition characterization of submerged aquatic plants: Hydrilla (*Hydrilla verticillata*) and coontail (*Ceratophyllum demersum*)
Q. Lu, Advisors: Z. He, D. Graetz

15 · Effects of Tillage and Organic Matter on Soils and Nutrient Losses in a Residential Landscape
S. Loper, Advisor: A. Shober

16 · Evaluating Ionophore Supplementation Effects on Nitrogen Release in Two Ryegrass Grazing Systems
M. Maddox, Advisor: C. Mackowiak

17 · Spatial and Temporal Changes in the Chemical Characteristics and Distribution of Lake Okeechobee Sediments
W. Vogel, Advisor: T. Osborne

18 · Phosphorus Composition of Wetlands Within an Agricultural Landscape
A. Cheesman, Advisors: K. R. Reddy, B. Turner

19 · Roles of Plants and Microbes in Arsenic Oxidation-Reduction in the Growth Media and Biomass of Arsenic Hyperaccumulator *Pteris vittata*
S. Mathews, Advisor: L. Ma

20 · Assessing Carbon and Nitrogen Mineralization Rates of Different Winter Forage Residues Using Small Incubation Containers
P. Roy, Advisor: C. Mackowiak

21 · Ridge Senescence of *Cladium jamaicense* in the Florida Everglades
T. Oh, Advisor: M. Clark