

Myakka



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Spring 2006

UNDERGRADUATE AND YOUTH PROGRAMS

FROM THE CHAIR



FFA and 4-H participants, coaches, and contest officials at the 2004 State Land Judging Contest held at the Florida Sheriffs Boys Ranch, Live Oak, FL. (Photo by Suwannee County Conservation District)

Soil and Water Science Department (SWSD) is involved in several ongoing undergraduate and youth programs. The Department offers a major in Soil and Water Science and an interdisciplinary undergraduate program in Environmental Management in Agriculture and Natural Resources. This program is offered both in Gainesville and at the Indian River Research and Education Center (IRREC). We actively participate in several youth programs including Florida Land Judging, Florida Envirothon, and 4-H. Examples are presented in this newsletter. In addition, our undergraduate students are active participants in the Agronomy-Soils Club.

Here are few highlights since the last newsletter:

Amy Shober accepted a faculty position at the Gulf Coast REC, Balm, Florida. Amy's research and extension activities will include landscape nutrient management and water quality.

Julie Podowski (James Jawitz - Advisor) and Melisa Martin (James Sickman - Advisor) were selected to receive IGERT fellowships (funded by the National Science Foundation) to pursue their Ph.D programs in soil and water science. Congratulations to both of you for receiving this fellowship.

Bill Pothier, Senior Chemist, retired after 40 years of dedicated service with the department. Bill maintained the isotope ratio mass spectrometer laboratory and assisted several IFAS researchers. The Department will miss Bill's skills and service. Bill, thank you for your service to the department.

George O'Connor was selected as a UF Research Foundation Professor. George will hold this appointment for a period of three years (2006-08). Since the inception of this award program, eight SWSD faculty members were selected as UF Research Foundation Professors. P.K. Nair, Affiliate Distinguished Professor in SWSD was selected to receive one of the five 2005-2006 Graduate Mentor/Advisor Awards. Our alumnus, Patrick Hunt, a USDA soil scientist based in Florence, S.C., has been named the Agriculture Research Service Distinguished Senior Research Scientist of 2005. Congratulations to all of you and thank you for bringing recognition to our Department.

Under the leadership of Randy Brown, the SWSD has been very active in several youth programs including the Land Judging Program. With Randy's retirement, this leaves a major void in the Department. The next high priority position for the Department is in the area of urban land use and management, which also includes youth programs.

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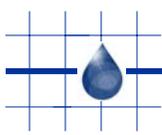


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Soil and Water Science Undergraduate Programs



Aja Stoppe performing phosphorus analysis in the Forest Soils Lab.



Don Graetz answers questions at the Agronomy-Soils Club field trip to the Suwannee River Basin.

Combined BS/MS Degree Program

Students may be interested in the combined degree program offered by the SWSD. This program was created by the university to provide academically talented students an opportunity to complete a bachelor's and a master's degree in a shorter period of time. This program allows students to double-count graduate courses for both degrees, thus reducing the time it would normally take by a semester or more. Most combined degree programs produce a savings of up to 12 semester hours.

Employment Opportunities:

Academic Institutions, USDA-NRCS; USEPA; USGS; NOAA, Agricultural Industry, Forest Industry, State Agencies, and Consulting Companies. Typical annual salary range for undergraduates is in the range of \$30,000 to \$40,000.

Soil and Water Science - Undergraduate Major

The SWSD offers a flexible basic and applied undergraduate program to train students in managing our soil and water resources in a wide range of ecosystems including agricultural, forested, range, urban and wetlands, as related to soil and water quality, and sustainable productivity. Specializations within the program include soil, water and land use (with emphasis on natural resources and the environment); environmental soil and water management (with emphasis on agricultural and other applied aspects of soil and water science). All specializations are designed to give the student a strong background in soil and water science with a *core* of required courses during their junior and senior years. Beyond the core courses, students can select from groups of electives to provide flexibility in their program (<http://soils.ifas.ufl.edu/academics/undergraduate.html>).

Electives are chosen with the student's adviser. The student is encouraged to take electives from a range of courses that include but not limited to: biology, botany, building construction, business, chemistry, earth science, economics, environmental science, geology, geography, hydrology, mathematics, physics, plant science, policy, production systems, geographic information systems, urban and regional planning, and statistics.

Areas of specialization in the soil and water science major are not restricted to the general areas mentioned above; other specializations can be developed.

Soil and Water Science - Undergraduate Minor

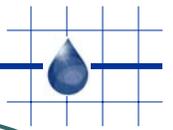
A student may elect to minor in soil and water science. This 15-hour minor must include SOS 3022 *Introduction to Soils in the Environment* and the laboratory course SOS 3022L. Additional courses in the minor must be approved in writing at least two semesters before graduation by the academic adviser and the undergraduate coordinator in the SWSD. At present 15 undergraduates are enrolled in this minor.

Environmental Science Degree: Soil and Water Science Option

The Environmental Science degree with soil and water science option is intended to give the student an opportunity to take a number of courses dealing with management of natural resources and the development of policy for the management of natural resources. This degree program is offered by the School of Natural Resources and Environment (<http://snre.ufl.edu/undergraduate/>)



Mark Clark (extreme left) explains the Stormwater Ecological Enhancement Project (SEEP) at the Natural Area Teaching Lab to undergraduate SWSD students.



Our Outstanding Undergraduate Students

The word “outstanding” is an over used word, but not when you are describing the six undergraduate students majoring in Soil and Water Science. All of them are truly OUTSTANDING. Their average GPA is 3.5!!! One has a perfect 4.0!!! We would like to introduce them to you so that you can also appreciate the accomplishments and contributions they have made.

Julie Driscoll is from Ft. Pierce and is the daughter of Michael and Connie Driscoll. Presently, Julie is the President of the Agronomy-Soils Club. She has won numerous awards and scholarships including Gamma Sigma Delta Undergraduate Award, ASA Outstanding Senior, Frederick Buren Smith Undergraduate Award, Rural Rehabilitation Scholarship, and Agronomy Soils Club Scholarship, as well as 2005 Outstanding Undergraduate Student awarded by the Florida Association of Environmental Soil Scientists. Julie has been on the President’s Honor role. She has applied for graduate studies in the SWSD.



*From left to right: Victoria Gardner, Leanna Woods, Rotem Shahar, and Aja Stoppe.
Not pictured are Debbie Duda and Julie Driscoll.*

Aja Stoppe is the daughter of Jackie Valentine and Pete Stoppe. Aja was born in Miami but the family moved to Colorado where she spent most of her life before returning to Florida. Aja began at University of Florida as a Landscape Architecture major, before transferring to the SWSD. She has received several awards and scholarships from the college and department. Aja was also selected as 2005 Outstanding Undergraduate Student awarded by the Florida Association of Environmental Soil Scientists. She works full-time in Forest Soils Laboratory as well as working to finish her degree this summer. She also plans to apply for admission to graduate school at UF.

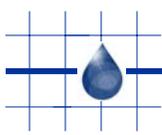
Victoria Gardner was born in Houston, the daughter of Richard and Valorie Nelson. Her father is a Professor of Mass Communication and Public Affairs at Louisiana State University. Her mother is an IRS agent. Victoria is married to Jared Gardner, a UF Law student. She is a National Merit Scholar. She was awarded the 2004 Outstanding Undergraduate Soil and Water Science Student, presented by the Florida Association of Environmental Soil Scientists, Outstanding Undergraduate Award, presented in 2004 by the Soil and Water Science Department, and the President’s Honor Roll. Victoria was the first student accepted into the department’s 3/2 program. This semester Victoria is a Student Assistant for SOS 3022. After she graduates in May, she will be studying for her MS degree in the SWSD.

Leanna Woods is the daughter of Ted and Judy Woods. Her family lives in Palm City. She is on Bright Futures and has been awarded the UF Anderson Award, member of the National Collegiate Society, Brannan Family Scholarship; 2004 Outstanding Undergraduate Soil and Water Science Student, presented by the Florida Association of Environmental Soil Scientists, and Outstanding Undergraduate Award, presented in 2004 by the Soil and Water Science Department. She is in the CALS Honors Program. Leanna is receiving a minor in Agricultural and Natural Resource Law. During her undergraduate years she was a Student Teaching Assistant for SOS 3022 and lab. In her spare time she enjoys painting and caving. Starting in August, Leanna will be attending graduate school at the Colorado School of Mines.

Debbie Duda is from Sanford, Florida. She won the Frederick Buren Smith Scholarship which is awarded to outstanding, capable, and worthy undergraduate students in the SWSD. During her tenure at UF she has been working for several engineering and environmental firms in the Orlando area. Even though Debbie is also in the 3/2 program, she has decided to go to graduate school at the University of Central Florida after she graduates in May.

Rotem Shahar is the newest undergraduate major in the department. She joined us this Spring semester transferring from Chemistry. She was born in Tel-Aviv, Israel and moved to Florida when she was 2 yrs old. She spends much of her time at Hillel where she is involved in the programs and has a quiet place to study or just to hang out. Rotem loves science fiction, 80’s music and 80’s cartoons. She would like to go to graduate school studying tropical meteorology. Her parents are Asher and the late Bracha Shahar.

If you meet one of our undergraduate students, please tell them how special they are. For additional information, contact our Undergraduate Coordinator, Mary Collins at: mec@ifas.ufl.edu.



Environmental Management in Agriculture and Natural Resources



EMANR graduate Mike Dinardo is employed by a Florida consulting firm. Here he is working on a mitigation site at Big Pine Key.



EMANR graduate T.J. Rew is in graduate school at UF working on a MS degree in Soil and Water Science. His research project uses rainfall simulation to test ways of reducing phosphorus loss to rivers and lakes.

The Environmental Management in Agriculture and Natural Resources (EMANR) major is an interdisciplinary approach to provide the scientific and technical foundation needed to integrate and communicate the diverse environmental issues associated with urban, agricultural, and natural ecosystems (<http://ema.ifas.ufl.edu/>). The program is advised through the SWSD on the Gainesville campus and also at the IRREC at Fort Pierce.

The curriculum has been newly-revised to provide emphasis to land and water management issues. Courses are taken from several disciplines to provide a science-based perspective of issues dealing with the management and protection of our natural resources. Our mission is to promote the best use of our natural resources for their social and economic benefits while protecting associated resource values, property rights and the environment.

Lower division courses are selected to create a strong background in physical and biological sciences, communications, and mathematics. A core set of upper division courses dealing with land, water, natural resource policy, and environmental law provides the student with a solid background in environmental management. A suite of electives is available to allow students to create either a broad selection of courses or to develop a concentration of courses to provide expertise in areas such as business management, water resources, soils and land-use, or agricultural production systems.

Employment opportunities are widespread and include positions with environmental consulting companies, governmental agencies such as the Water Management Districts and the U.S. Department of Agriculture, utility companies, agribusiness operations including banks and sales companies and the legal profession. Students often continue their education in graduate school.

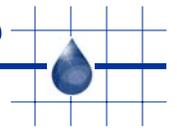
IRREC mainly has non-traditional students with full time jobs. Consequently, classes usually run from 5.30 to 8.30 pm during the week. Most of these classes are also offered via Distance Education to other IFAS sites in the state so that our live classes are shared with students throughout Florida. Gainesville online classes are also available here.

The EMANR degree is particularly appropriate for the Treasure/Research Coast, which has one of the fastest growing populations in the nation. This dramatic growth conflicts with the famous Indian River citrus and other traditional agricultural enterprises as 25 people daily move into the area. Land development, wildlife and water access are major concerns in this area. For additional information, contact Don Graetz at: dag@ifas.ufl.edu

Mark your calendars..

Annual Soil and Water Science Research Forum

The Seventh Annual Soil and Water Science Research Forum (<http://soils.ifas.ufl.edu/forum/>) is scheduled for **September 15, 2006**, in Gainesville, Florida. The forum is designed to bring together representatives from state and federal agencies, and private industry, faculty and graduate students, and prospective students interested in soil and water science. The forum will provide an opportunity for all interested in soil and water science to interact with our students, faculty and administrators on campus. We look forward to your participation in the forum. If you are planning to attend, please register at: <http://soils.ifas.ufl.edu/forum/>. For additional information, contact Lena Ma at: lqma@ufl.edu.



PRE-PROFESSIONAL STUDENTS

Pre-professional students often conduct special research projects in our Department and obtain a minor in soil and water science. Some of the students who worked with our faculty and minored in soil and water science are now in law school, veterinary school, and medical school. An example of a research project conducted by pre-medical students is described below.

Learning from Slimy Behavior?

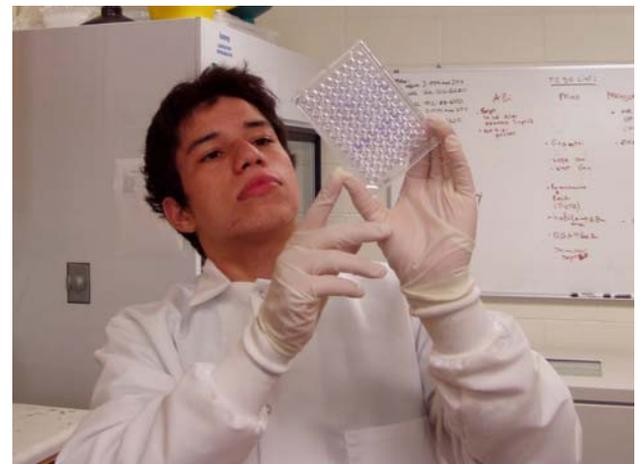
We all have seen that slimy film on a kitchen sponge or on the inside of a sink. What you see, however, is not just “slime”, it is a highly structured microbial community, called “biofilm”. When scientists look at biofilms under the microscope, they see microbial cities comprised of tiny columns and pillars with water channels between these multicellular structures. Biofilms are cosmopolitan communities: they are often made up of hundreds of different species of bacteria, fungi and algae. Biofilms contaminate surgical implants, biofoul and damage fishing nets and boats; aquatic biofilms are important to nutrient cycling and removal of environmental toxins. Aquatic biofilms may also serve as reservoirs of pathogens: under some conditions, microbes detach from communities and become waterborne, and thus contaminate drinking and recreational waters. Most curious, however, is the observation that the behavior of microbes within biofilms is clearly distinct from their behavior in Petri dishes or in laboratory shake cultures.

Because microbial biofilms contribute to water quality and exhibit an unusual multicellular behavior, they are a valuable teaching and learning tool. Ali Al Agely, Kiran Joglekar, and Kush Borhania - all freshmen in the pre-med program - worked with Max Teplitski, Mengsheng Gao, Kim Ritchie and Matt Cohen to identify genes and conditions that regulate biofilm formation and bacterial multicellular behavior. Ali Al Agely found that formation of a bacterial biofilm is a complex process, controlled by several global gene regulators and by the availability of magnesium and amino acids in the environment. This year Ali presented his findings at meetings of the American Society for Microbiology (ASM Southeastern and Florida branches). Ali was selected for a prestigious University Scholars program to carry out research on the identification of the ways to prevent biofilms from forming. Kiran Joglekar discovered that compounds from plants can disrupt expression genes involved in bacterial multicellular behaviors. Her presentation at this year’s ASM (Florida Branch) meeting was voted the Best Undergraduate Oral Presentation. Kush’s characterization of bacteria from coral-associated biofilms was named the Best Poster at the ASM (Florida Branch) meeting this April. The results of their studies may well have applications in both industry and medicine.

Mr. Glenn Compton and his colleagues at Venice High School collaborate with Max Teplitski to develop portable teaching tools for studying biofilms as a part of high school science curriculum. Eighty Venice students, led by Compton, harvest biofilms from several local creeks and then carry out assays to identify enzymes that are induced in biofilms formed in polluted waters. Because their research will contribute to our understanding of water quality components, it was recognized and supported by a SPLASH! Mini-grant from the Southwest Florida Water Management District. For additional information, contact Max Teplitski at: maxtep@ufl.edu



Students at Venice High School with a styrofoam model of a biofilm.



Ali Al Agely looking at biofilms formed on a 96-well plate by different bacterial mutants.

SWS Alumni

In our newsletter, we would like to include news from our alumni and their success stories and accomplishments.

Please provide highlights of your current activities, so we can include them in future SWSD newsletters.

Please e-mail information and a photograph to Susan Curry at: scurry@ufl.edu.



Randy Brown (SWSD Professor Emeritus) discussing the official answers at one of the sites following the State Land Judging Contest at Boy Scout Camp Ocklawaha, Sebastian, FL. (Photo by Indian River Soil and Water Conservation District)

SWSD Faculty and Students Working with Local Schools

The SWSD is reaching out to assist local school to promote the importance of soil and water science in protecting the environment. Mary Collins's (mec@ifas.ufl.edu) graduate students, Rex Ellis and Kelly Fishler taught Hidden Oak Middle School students on the importance of soils in the biosphere. The Department served as host for seminars given by regional science project winners from local middle and high schools. The purpose was to assist students and prepare them to compete at the state level competition. Peter Kizza (kizza@ifas.ufl.edu) organized this seminar series. The topics were in areas of environmental science, earth sciences, and microbiology. Regional science project winners are: Kyle Dorsey, Jennifer Kizza, and Ajit Vakharia, Lincoln Middle School, Catherine Turner, Howard Bishop Middle School, Gene Rodrick, Oak Hall High School. All of them made excellent presentations on their science projects. Congratulations to all these winners and to their science teachers.



Kelly Fischler (extreme left) teaching middle school students about soils.

Land Judging and Homesite Evaluation in Florida

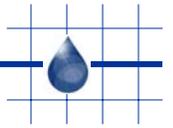
The UF/IFAS SWSD has a significant role in the Land Judging Program in Florida. We maintain Circular 242 ("Land Judging and Homesite Evaluation in Florida") and the Florida Land Judging Contest website (<http://landjudging.ifas.ufl.edu/>), which contains (1) links to training materials; (2) results of recent State Contests; (3) the Policy Statement for Florida's Program; and (4) listings of the Program's many sponsors and supporters.

The Department works shoulder-to-shoulder with the Soil and Water Conservation District serving as host for the State Contest in any given year; the USDA-Natural Resources Conservation Service; the Florida Association of Environmental Soil Scientists; the Florida Department of Agriculture and Consumers Services (DACS)-Office of Agricultural Water Policy; the Florida FFA Association; the UF/IFAS Family, Youth and Community Sciences Department; the Florida Chapter of the Soil and Water Conservation Society; the Florida 4-H Foundation; the Florida FFA Foundation; and many other organizations and individuals too numerous to list here (but shown on the website identified above).

While Land Judging and Homesite Evaluation Contests are competitive events, their original and primary purpose is *educational*. We want the participants to enter adulthood with an understanding of the soil resource and the evaluation of that resource for agricultural and nonagricultural purposes. For many if not most participants, this program is the only rigorous exposure to soil science that they ever will receive! For additional information, contact Randy Brown at: brown@ifas.ufl.edu



The first place team High-School-Age 4-H Team and their coach, from Indian River County, at the 2006 State Land Judging Contest on the ranch of Mr. Tommy Harper, Levy County, FL (Photo courtesy of Mr. Kevin Sullivan)



The Florida Envirothon Experience

The Envirothon is an extracurricular natural resource education program for high school students. This is a field event in which student teams use critical-thinking, problem-solving and communication skills to answer written questions or conduct hands-on investigations about environmental issues.

At regional Envirothon events, which are held throughout the state, teams earn points for their solutions to environmental problems in five areas: 1) Aquatics - water ecology, water chemistry, water quality and aquatic life; 2) Forestry - tree identification, tree ecology, insects and cruising timber; 3) Soils - classification, formation, soil properties, profiles and site suitability; 4) Wildlife - habitat, identification, food, disease and management; 5) Current environmental issues - annually selected topics, such as wetland management, fire ecology, non-point source pollution or other current issues.



Participants having lunch while they wait for the results of the 2005 Florida Envirothon held at Hillsborough River State Park.



A team taking an oral quiz administered by Art Hornsby (SWSD Professor Emeritus) at one of the soils stations at the 2004 Florida Envirothon at Myakka River State Park.

The top-scoring team for each county is eligible to participate in the Florida Envirothon, the statewide event. The team winning the Florida Envirothon goes on to the national Canon Envirothon. In 2004 the Florida winning team was also the Canon Envirothon winning team.

Since 1993, the Florida Envirothon has involved more than 32,500 students and 6,045 volunteers. The Florida Envirothon is coordinated by a Board of Directors representing the DACS Office of Agricultural Water Policy, Soil and Water Conservation, the Florida Association of Conservation Districts, the Florida Division of Forestry, the Florida State parks, Florida water management districts, UF-SWSD and some at-large members. The Board supplies study material for the students, conducts the state Envirothon event, and raises money to cover the cost of doing the above activities.

Art Hornsby is a board member. Randy Brown is a former board member. Others from the SWSD who have assisted in conducting the Florida Envirothon are: Wade Hurt, Ron Kiehl, and Mary Collins. For further information, contact Art Hornsby at hornsbya@bellsouth.net or Randy Brown at: brown@ifas.ufl.edu

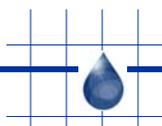
Agronomy-Soils Club

The Agronomy-Soils club is affiliated with the Agronomy and Soil and Water Science departments. Julie Driscoll, soil and water science major, was selected as an outstanding undergraduate student by the 2006 National Student Recognition Program sponsored by the American Society of Agronomy (ASA), Crop Science Society of America (CSSA), and Soil Science Society of America (SSSA). She is one of the 40 outstanding seniors enrolled in agronomy, crop, soil, or environmental science departments nationally selected for this recognition.



The Agronomy/Soils Club received a grant from the UF Center for Organic Agriculture via the Southern Education and Research Alliance (\$1000) for the development of a display highlighting sustainable agriculture. The display is designed to provide information relative to the roles of agronomy, soil and environmental sciences in promoting sustainable agriculture and protection of natural resources. The intended audiences are high school and college students, particularly those interested in agriculture and natural resources as a course of study or a career.

The Agronomy-Soils Club maintains the Ag Gardens located on the University of Florida campus near Lake Alice. Club members have assumed the responsibility to manage and maintain the Ag Gardens as a public service project for the College of Agricultural
(Continued on page 8)



New Graduate Students Spring 2006

PhD

Chunhao Xu, Advisor, J. Sickman

Yadav Bidhyananda, Advisor, S. Grunwald

Holly Chamberlain, Advisor, T. Obreza

MS

Alexander Cheeseman, Advisor, K. Reddy

Cory Catts, Advisor, K. Reddy

Hollie Hall, Advisor, Y. Li

Ashley Wyndroski-Barrentine, Advisor, M. Clark

Kenton Sampfillippo, Advisor, K. Reddy

Jessica McKay, Advisor, S. Grunwald

Sarah Corbett, Advisor, A. Schumann

Natalie Showers, Advisor, W. Harris

Jessica Taft, Advisor, A. Wright

Agronomy-Soils Club *(Continued from page 7)*

and Life Sciences Student Council. The Ag Gardens, 49 garden plots located north of Lake Alice and immediately adjacent to the Bat House in the southwest area of campus, are tilled, marked and rented on a contractual basis to members of the campus community. Proceeds from rental of the plots provide funding for College of Agricultural and Life Sciences Student Council activities (from ASC website). For additional information, contact James Bonczek at: bonczek@ifas.ufl.edu.



Agronomy-Soils Club members working in the Ag Gardens

Randy Brown



Randall B. "Randy" Brown retired from the University of Florida on January 1, 2003 following 22 years of service with the UF Soil and Water Science Department and the Florida Cooperative Extension Service. After retirement he worked half-time for the following three years and finally retired in December 2005.

Randy grew up in Cooperstown, New York where his father was an Otsego County agricultural agent. He attended Cornell University, graduating with an agronomy major in 1968. He was active in the Cornell Agronomy Club and the Soil Judging Team. Randy then spent three-and-a-third years in the U.S. Navy, acquiring his sea legs on the USS Blue and the USS San Bernardino in the Pacific Fleet. Upon his discharge from the Navy in 1972, Randy entered graduate school at Oregon State University and obtained his M.S. in soil science in 1974. Randy then returned to New York and spent two years as a soil scientist with the Erie County Soil Survey. Returning to Oregon State in 1976, Randy married Pia A. Tollö. He obtained his PhD in 1980.

Randy began his Florida career at the UF SWSD in August of 1980. He served as an extension specialist in soils and land use, with emphasis in soil survey interpretations; onsite wastewater disposal; 4-H/FFA land judging; and related areas. He served as the UF *liaison* with Florida's soil and water conservation districts. He taught undergraduate and graduate courses in soil, water and land use and in soil and water conservation. For five-and-a-half years in the late 90s, Randy served as chair of the SWSD. Randy received several awards and recognitions over the years, including the E.L. Greenstein Award from the Florida Onsite Wastewater Association and the Honorary Florida State FFA Degree. He is a Fellow of the SSSA and the ASA.

Randy's professional service to this Department will be greatly missed by all of us. Randy, we thank you for everything you have done for our Department and wish you and your family all the best during the retirement years.