

Soil and Water Science and UF Land Grant Mission and Goals

“The Nation that destroys its soil destroys itself” – Franklin D. Roosevelt

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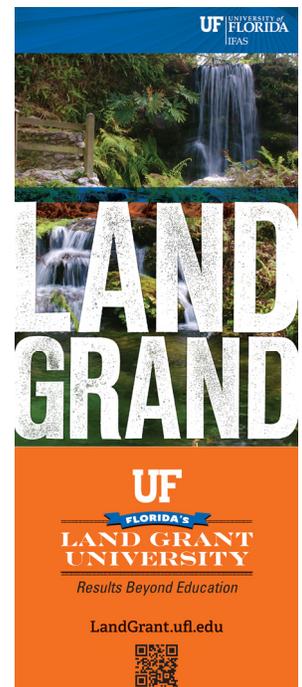
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From the Chair...

President Abraham Lincoln signed the Morrill Act in July 1862 and provided public lands to states to establish educational institutions. These institutions provided thousands of Americans greater access to higher education in agriculture and engineering. The year 2012 marks 150 years since signing of the Morrill Act that resulted in education revolution in the United States of America. As a result of this Act, 74 land grant universities were established; the University of Florida (UF) is one of the leading land grant universities in the US. The UF along with other land grant universities is celebrating the 150th anniversary of the Morrill Act (<http://landgrant.ufl.edu/>).

Soil and Water Science (SWS) - related research, teaching, and extension programs played an important role in accomplishing the UF's Land Grant mission and goals. Today the Soil and Water Science Department's (SWSD) research and education programs are well situated to address critical soil and water resource issues in a wide range of ecosystems, as related to sustainable crop productivity, water quality, and climate change. To meet the needs of state-wide clientele and as a part of Land Grant mission, SWS research, teaching, and extension programs are offered not only at main campus in Gainesville, but also at nine *Research and Education Centers* established in strategic locations in the State of Florida (http://soils.ifas.ufl.edu/departments/newsletters/Summer_2011_MYAKKA_Newsletter.pdf). In this newsletter, we provide a brief overview of a hundred years of history on SWS-related research and education and select examples of program accomplishments during 1888-2012.

For more than 100 years, a number of SWS faculty, staff and students have made significant contributions to meet goals of UF's Land Grant mission. Research and educational programs offered by our Department aided significantly to improving the productivity of Florida's agriculture and contributed to advancement of soil and water sciences at national and international levels. The SWSD ranks among the largest and most prestigious Departments in the nation. With a distinguished record of accomplishments in teaching, research, and extension, the Department has made a remarkable impact on the soil and water science discipline. The Department has been the leader in graduate education with innovative programs that reach a wide range of students. The Department has an outstanding record of meeting the needs of clientele through teaching, research, extension and outreach programs. Overall, accomplishments of faculty, staff, and students have continued to elevate the Department's stature at national and international levels. Our mission as a part of Land Grant University is to provide scientific leadership of the highest level in research, teaching, and extension for soil, water, and environmental sciences. By discovering new scientific knowledge and imparting that knowledge to fellow scientists, students, and citizens, the Department intends to assist in the resolution of soil and water issues related to agriculture and natural resources in Florida, the nation, and the world. As we move forward in the 21st century, we hope to continue our Land Grant mission by using new approaches to education revolution to meet the needs of current and future clientele.



History of the Soil and Water Science Department – Ed Hanlon and George Hochmuth

1888-1920

Soils-related research in Florida was first published in 1888 by the newly established Experiment Station of the State Agricultural College of Lake City, Florida. Early soil survey maps developed in 1904 included soils of Alachua, Levy, and Marion counties and showed Alachua Lake (Paynes Prairie) filled with water. In 1907, the Experiment Station was moved from Lake City to Gainesville and housed in Newell Hall. A.W. Blair (1899-1910), chemist, probably should be considered as a pioneer in Florida soils' research. His experiments included the use of lysimeters to study nutrient leaching. The first Research and Education Center (REC) to work on citrus was established at Lake Alfred in 1917. S.E. Collison (1910-1920) conducted detailed studies on nutrient leaching in Florida's sandy soils.

1920-1930

Soil science research reached new levels of sophistication in 1925, when R.M. Barnette was hired as soil chemist. By the end of the 1920s, several sub-disciplines of soil science were recognized, including physics, chemistry, mineralogy, and microbiology. *The first MS degree in soils was awarded in 1925.* Two examples of M.S. theses are: (1) An attempt at the isolation of an organic toxicant in an Everglade soil (1925, J.B. Hazard), and (2) The factors affecting the formation of the organic hardpan in the Florida flatwood soils (1929, L.A. Richardson). Scientists in the early part of the 20th Century recognized the importance of two major soil types in Florida, organic soils (Histosols) and flatwood soils (Spodosols).

In 1925, The Everglades Research and Education Center (EREC) was established at Belle Glade. The first soil scientist at the EREC, Dr. Allison, established that poor sugarcane production on the organic soils in what was to become the Everglades Agricultural Area was due to a copper deficiency, the finding of micronutrient needs on the soils was a major contribution by SWS. Subsequent work has led to the use of a number of waste products such as power plant slag, silicon, and sugar mill co-products (so-called mill mud) to further improve sugarcane production on both organic and mineral soils

1930-1950

In 1933, the **Department of Chemistry and Soil** was established, with R.W. Ruprecht (1920-37) as head of the department. In 1937, the department was re-organized with R.V. Allison (1937-1944) as the new head. In 1939, the name was changed to the **Soils Department**. Faculty included C.E. Bell, H.W. Winsor, F.B. Smith, J.R. Henderson, L.K. Rogers, and R.A. Carrigan. Dr. Allison was instrumental in the establishment of the Soil Science Society of Florida and the Society's high level publication has proven to be of inestimable value for state-wide distribution of technical information. A major publication that year was Bulletin 334, The Soils of Florida by J.R. Henderson.

The Department expanded with several post-war appointments in 1946. F.B. Smith became head (1945-65) with new faculty added: G.M. Volk (1939-75), Soil Chemist; J.R. Neller (1944-62), Soil Chemist; G.T. Sims (1944-46), Chemist; G.D. Thorton (1944-56), Soil Microbiologist; R.E. Caldwell (1941-82), Pedologist; O.C. Olson (1941-46), Soil Surveyor, and L.E. Ensinger (1942-44) Soil Chemist. The passing of legislation for the State Soil Survey in 1941 opened a new era of land classification and evaluation.

1950-1970

During the 1950s a series of studies showed the significance of various soil physicochemical properties on soil fertility and plant nutrition. Some significant contributions included: rhizobium usage in Florida's agriculture, boron nutrition, and nitrogen and phosphorus requirements of several crops. Nutrient losses through leaching were measured in many cropping systems. Emphasis on research was slowly shifting from traditional soil fertility to environmentally sound practices. *The first PhD degree in soils was awarded in 1955.*

During the 1960s some of the active research programs included: phosphorus chemistry, biological nitrogen fixation, and forest soil fertility. F.B. Smith retired in 1965, followed by the appointment of C.F. Eno as department head in 1966. The expansion of citrus to the interior flatwoods created several new problems in soils management. The SWAP (Soil Water Atmosphere Plant) project established in 1968 at the Ft. Pierce Agricultural Research and Education Center gained high scientific visibility as a comprehensive, multi-disciplinary approach to the problem of water control and citrus growth.

1970-1990

The name of the department was changed to **Soil Science** in 1971. During the 1970s the Department's research emphasis focused on the fate and transport of nutrients, pesticides, and waste constituents. Much of the work during this period laid a strong foundation for environmental research in the later part of the century. In the 1970s, soil researchers at the main campus identified sulfur as a problem in flatwoods soils for forage production, the development of the so-called double buffer soil test for lime recommendations, and

(Continued on page 3)

Goodbye to Newell Hall!



For the past several decades the Soil and Water Science Department (SWSD) was housed in two different buildings: McCarty Hall A and Newell Hall. Approximately, one-third of the campus faculty and administrative offices were located in Newell, while the remaining faculty were housed in McCarty Hall A.



Newell Hall has a rich history with the building listed in the National Register of Historic Places. In 1909, the Florida Agricultural Experiment Station was relocated from Lake City to Gainesville and housed in this building. The land surrounding this building was landscaped in order to provide practical and hands-on field research experience for students. Renovations to this building occurred in 1943, and the building named in honor of Dr. Wilmon E. Newell, a prominent entomologist. Current UF plans are to convert this building into a new library and study area for students.

After over 100 years of stay in Newell Hall, the programs and main departmental office housed in this building were moved into McCarty Hall A during Fall 2012. The third Floor of McCarty Hall A was completely renovated with modern laboratory facilities. Current IFAS administration plans include finding resources to renovate all floors in McCarty Hall A to modern and safe working facilities during the next few years.



All our campus programs are now in one building. We invite all our friends to visit us in McCarty Hall the next time you are on campus. Our main office is located in **2181 McCarty Hall A**.

To commemorate the 150th Anniversary of the Morrill Act: T.L. Yuan

Many soils in Florida are deep sands with an underlying horizon where carbon and associated metals, mostly aluminum, accumulate. The fertility of these soils is very low. The remainder includes peat, mucks, and marls. Under sub-tropical weather, crops were frequently infested with pests and diseases. They were treated with pesticides, leaving abundant residues and heavy metals in the soil. The Soil Science Department was charged with the mission to improve those soils for better crop production. Over the years, the Department was very successful and helped making the State of Florida a major area of agricultural production, not only in the US but around the world. The Department also attracted students and scholars from many subtropical nations, such as Jamaica, El Salvador, Honduras of Central America; Venezuela, Colombia, Brazil of South America; the Philippines, Thailand, China, India, Iran of Asia; Malawi, Cameroon of Africa as well as Australia, to name just a few. These students and scholars, domestic and international, later became the leaders in agriculture in their respective countries.



The Department's success in education and research has fulfilled the mission and role given by the Morrill Act. Meeting the challenge of time, we need to address issues of climatic change, environmental concerns, energy shortage, urban expansion, high cost for education, etc.

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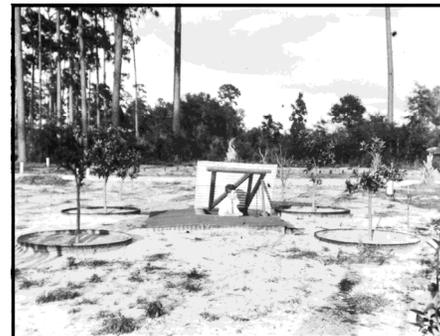
development of the Extension Soil Testing Laboratory, serving all of Florida. Eno retired in 1983 and Brian McNeal became the department chairman. McNeal remained in this position until 1989, followed by Jerry Kidder as interim chair.

1990-Current

In 1990, George O'Connor was appointed as the department chairman. To reflect its many new programs, in 1992 the Department was renamed **Soil and Water Science**; under this new name the departmental programs were organized into six thrust areas. After O'Connor retired from this position, Randy Brown (1994-2000) served as department chair. K. Ramesh Reddy was appointed as the department chair in 2000 and continues to serve in that position till today.

Our Vision to Improve Future Land Grant Mission and Goals in Teaching, Research, and Extension: Willie Harris

July 2, 2012 marked the 150th anniversary of the Morrill Act establishing what has come to be known as the Land Grant university system. The initial grant amounted to an allocation of large public land holdings within each state to establish endowments for “colleges of agriculture and mechanical arts.” Subsequently, the Hatch Act of 1887 established agricultural experiment stations, and the Smith-Lever Act, the Cooperative Extension Service. Hence Land Grant universities became centers of teaching, research, and extension. The UF College of Agriculture became part of the U.S. Land Grant system in 1906.



The history of the UF Soil and Water Science Department is summarized on the Department website: <http://soils.ifas.ufl.edu/department/history.htm>

The Department has a legacy of research addressing basic soil processes as well as issues pertaining to agriculture, forestry, wetlands, soil survey, and environmental stewardship. The name “Soil and Water Science” is well chosen, for - in Florida of all places - it is between “soil” and “water” that a sustainable balance between agricultural, urban, and environmental interests must be attained. The Department is poised to continue in pursuit of that balance. Progress to that end will likely rest on the 3 solid legs of the Land Grant mission: effective teaching, research, and extension. Additional key ingredients are

collegiality, collaboration, coordination, dedication, inspiration, and perseverance - because the challenges ahead are formidable.

Contributions of the SWSD to Accomplishing the Land Grant Mission: Nick Comerford

I was asked to provide a viewpoint on the above title, presumably because in my 33rd year as a faculty member of the SWSD I am close to being one of its oldest, long-term members. Longevity seems to have its hazards. So how have we contributed? It can best be done with keywords. Unique: Compared to other disciplines we have been a major contributor to virtually all crops and ecosystems in the state of Florida. Diverse: Our early motivation was enhancing agricultural production because “Soils Sustain Life”. Into the 90s an environmental focus became prevalent, resulting in two worlds. Divided: Environmental became the focus on campus and Production Ag (nutrient management) became the main interest at Centers. That continues to today with some nuances. Timely: Fortunately, now is the best time to be associated with both of these interrelated areas. The cost of food, food as a national security issue, soils for ecosystem and human health, and soils and ecosystem services are all areas where we continue to meet our Land Grant Mission. Our challenges in the Future are (1) to find the resources needed to continue our passion for the Land Grant Mission. In reality, that basic mission has not changed. Ag production faces significant challenges in adapting to climate change. The mission has only been broadened. Agriculture and Natural Resources are still the mainstay of the Florida economy and will continue to be in the future. The environment has to be able to support a growing population and support the population’s continued desire to develop its resources. This will be a team effort working with other disciplines and concentrating on transformative issues that support the state’s natural resources. (2) Training our students so that they are prepared not for today’s world but for tomorrow’s technology and jobs that have yet to be created. They will need credentials that are recognized by employers as being superbly adapted to work in a changing market place. The SWSD has a rich history of meeting UF’s land grant mission. There is no reason to believe that it won’t meet the future needs as Thomas Jefferson said: “While the farmer holds the title to the land, actually it belongs to all the people because civilization itself rests upon the soil.”



Women Soil Scientists and the Land Grant Mission: Mary Collins

Soil science has been around as long as the Land Grant system. The early soil scientists were mainly geologists or chemists, and all men. Women soil scientists did not appear until the 1970s. My career in soil science started about then when I went to college and majored in Agronomy-Soils. After my freshman year I was hired by the USDA as a soil scientist student trainee. At that time the federal government wanted to increase the number of women in non-secretarial positions. I continued my career with USDA until I received my PhD. I had a lot of “firsts” in my life. Some of them included being the first female to receive a MS and PhD in Soil Science at Iowa State University; first female to be hired (and the only tenured-tracked woman faculty member for 13 years) in the in the Soil and Water Science Department at the University of Florida; and the first and only female president of the Soil Science Society of America. At many meetings I would be the only woman present. I have been very fortunate in that I had many male mentors who helped me in my career. I would not have been as successful in my vocation without their inspiration, support, and guidance. The number of female soil science faculty members at Land Grant Universities has increased substantially in the past 40 years. I have tried to be a role model to them. I hope today’s and future women soil scientists remember those who “plowed the field” for them.



Mary E. Collins, Adjunct and Emeritus Professor, Soil and Water Science Department, University of Florida. For additional information contact Mary Collins at: mec@ufl.edu

Reflections of a “Visionary”: Randy Brown



You could say that I was always a visionary. Unfortunately, that vision was directed exclusively at the rearview mirror. Given my lifelong “aptitude” for seeing where my fellow scientists and I have been (as opposed to where we’re going), I’ve been keenly aware since my undergraduate days of the land grant idea and the Morrill (instruction), Hatch (research), and Smith-Lever (extension) Acts. Throughout my academic career I made a point of extolling the land grant system and mission in my on-campus classes and my off-campus extension programs. I thought - and still think - that the land grant colleges have had a hugely positive impact not just on higher education but on the very history and culture of the United States.

But the typical land grant institution now is quite different from that of a century and a half ago. For that matter it’s different from that of fifty years ago and, heck, even five years ago. Times change. Situations change. Technologies change. Institutional structures and associated constraints and opportunities change. The breadth and focus of soil and water science change. Funding sources go away. Other funding sources appear (with an appropriately strong competitive component), along with a hundred kinds of intra- and interdisciplinary collaboration.

But some things don’t change. Soil and water science remains an empirical enterprise and depends upon the observation/measurement of properties and processes in actual soil, water, landscapes, and atmosphere. Not only must we deal with *real* entities but we must *take our findings back to those same entities* to test the hypotheses that result from our investigations and analyses. The *ideal* soil may be fun to contemplate, but *real* soil, *real* water, and *real* resources, however uncooperative (i.e., non-ideal) they may be, are the entities with which scientists and society must wrestle. Soil and water are critical components of natural, agricultural, and urban systems. Studies of ecosystems, sustainability, biodiversity, landscape processes, behavior of fertilizers/pesticides/contaminants in the environment, cycling/sequestration of P and C, and the amelioration of degraded natural resources cannot yield valid results without input from soil and water science. The future continues to arrive, and the department needs to grab hold of it aggressively and with unwavering excellence.

So look ahead, not back. Leave it to *me* to contemplate the past. It’s one thing I’m good at. As someone once said, “Brownie, you’re doin’ a heckuva job.”

Nutrient Management: Don Graetz

In the early years of the department, much of the research was geared toward the understanding of providing the right quantities and mix of nutrients that would allow our infertile sandy soils to produce reasonably good crop yields. This research was very successful



and agriculture became one of the main industries in Florida. Over a period of many years, it also became apparent that we had to manage our crop fertilization programs not only to produce good crop yields but to minimize potential losses of nutrients from our soils. When fertilizers are applied to soils in amounts in excess of crop needs, nutrients can move from the land and adversely affect both ground and surface waters. In recent years, we have successfully developed what have become known as “Best Management Practices” (BMPs) which both optimize crop yields and minimize losses of nutrients from agricultural fields. We must continue to fine-tune these management practices and encourage their acceptance in the agricultural community so that we can maintain the quality of our environment while providing adequate food for our expanding population.

Welcome Incoming Students Spring 2013!

PhD

Jason Frank (Cisar)
Stephen Jennewein (Wright)
Avo Oymayan (P. Inglett)
Jun Wu (Wilson)

MS

Odiney Alvarez-Campos (Daroub)
Miurel Bermudez-Herrera (Morgan)
Clarence Bodrey (Daroub)
Rosemary Collins (Mylavarapu)
Marcos Frateschi de Lima (Schumann)
Jennifer Shirley (Mackowiak)
Tracey Wasylik (Cisar)

BS

Brett Birch - SLS-SS (Bonczek)
Martha Risedorf - SLS-WS (Bonczek)
Jennifer Brown - IS-EMD (Curry)
Abigail Dianne - IS-EMN (Curry)

Online Education and the Land Grant Mission: David Silvia

The land grant mission includes the extension of educational resources to a wide range of citizens. From the earliest days, land grant universities began offering correspondence courses, and now it is logical that they are on the forefront of online, distance education. The Department of Soil and Water Science at the University of Florida was an early adopter of this approach, offering its first online course in 1999. This has now expanded to a comprehensive MS in Soil and Water Science with a track in Environmental Science and BS in Interdisciplinary Studies - Environmental Management in Agriculture and Natural Resources. These programs are supported by 17 undergraduate courses and 25 graduate courses offerings and total enrollments in these courses during 2012 is at 630. For additional information visit: <http://soils.ifas.ufl.edu/distance/index.html>.



I had the good fortune of being on the ground floor of this endeavor. By the mid 1990's I had taught soil microbiology for a decade and realized it was time to radically update my course materials. As I began to use PowerPoint I came across “File, Save as HTML.” At first, I didn't know what that meant, but soon discovered it allowed me to post my course content to the web and make it accessible to a much wider audience. Since those early days the approaches to online learning, as well as student accessibility to broadband, have greatly expanded. The future is bright for online education and the Department should continue to build on its excellent foundation of offering quality course material to non-traditional students.

David M. Sylvia, Professor and Director of Academic Affairs for Graduate Programs, Penn State Online, The World Campus, University Park, PA 16802-7012. For additional information contact David Sylvia at: dmsylvia@psu.edu

Contribution from UF/IFAS International Programs: Walter T. Bowen

Many of the problems being faced by the world today—food insecurity, poverty, disease, climate change, financial instability—know no borders and represent global challenges that require greater international cooperation. In an effort to better support poorer nations as they confront these challenges, many donor countries, multilateral organizations, international finance institutions, and foundations are increasingly working together to improve the coordination and effectiveness of development assistance. U.S. Land-grant universities like the University of Florida (UF) have a prominent leadership role in addressing these problems through long-term scientific training to strengthen human and institutional capacity, and through promotion of needed innovation in research, extension, and education. UF has a long history of international engagement, having established innovative research and teaching excellence in technical areas that are critical for development, including agriculture, emerging pathogens, engineering, climate change, and ecology, and it holds a reputation for a strong culture of interdisciplinary research and training across colleges. Many such programs are presently active at UF, with UF/IFAS leading major research and human and institutional capacity development projects in Haiti, Honduras, Malawi, Mozambique, and Tanzania. Programs like these help UF to be more collaborative, more open, and more creative in its learning, discovery, and engagement missions around the world.



A happy group of researchers and students from UF/IFAS, Embrapa (Brazil), and Mozambique after jointly setting up field experiments in Mozambique.

Urbanization: Jim Jawitz



Globally, urban populations have increased from 30% in 1950 to over 50% today. The United States is heavily urbanized compared to the global average, with more than 80% of the US population now living in urban areas, compared to 64% in 1950.

But Florida's population is even more skewed to urban areas: 95% of Floridians live in cities. Florida's population is projected to increase to more than 26 million by 2030 with the major metropolitan areas of Florida all projected to see significant increases. Cities are where the people are, and cities are thus increasingly centers of resource consumption and concentrated impacts on natural systems. Freshwater resources provide an example, with demand for urban water supplies projected by the Florida Legislature to increase by 50% over the next 20 years. During that same interval, water demand for agriculture is projected to increase by only 6%. This transition in water demand from agricultural to public supply is being driven by the rapid conversion of agricultural land to urban uses. Thus, the mission of the land grant university will place increasing emphasis on urban residents, urban ecosystems, and the impacts on natural systems of consumption patterns by urban dwellers.

Interdisciplinary Projects: Sabine Grunwald

Local/regional soil and water problems are embedded in global biophysical, economic, information, and socio-cultural systems that are severely threatened by climate, land use, and other human-induced changes at an accelerated rate. This has led to soil, water, and food gaps that are projected to intensify in the future. Land Grant Universities can make a major contribution to raise awareness and address issues related to *'the land and water'* - how to assess it, use it, create benefit to people and future generations, preserve it, and more! The challenges we face in the future are tremendous, considering that soils and water are finite resources and their degradation is at risk.

The Soil and Water Science Department (SWSD) has made major contributions to advance science in specific thrust areas and provide training and education. In the future, deep integration of core SWSD programs with other disciplines fostering inter- and transdisciplinary projects, programs, and initiatives will be critical. Currently, traditional thinking with focus in chemistry, biogeochemistry, and nutrient management has made the Department somewhat one-sided creating an imbalance reflected in research thrust areas, extension, and curricula. The Department has the potential to develop a new vision and explore possibilities grounded in integral thinking and broader system-based ecological approaches contributing to soil, water, and food security in the future.

Alumni: We want to include you in our newsletters! Please provide highlights of your current activities with a photograph to Michael Sisk at mjsisk@ufl.edu.

Printed on Finch Fine Color Copy paper graciously donated by Finch Paper.

Faculty, Staff, and Students

Congratulations to our Faculty and Students

Best oral and poster presentations at the 13th Annual SWSD Research Forum. Each winner received \$500 to be used in their research program.

Best Oral Presentation

Jorge Leiva (Nkedi-Kizza/Morgan)

Best Poster Presentations

Rajendra Gautam (Hochmuth)

Ben Coppenger (Thomas)

Harmanpreet Sidhu (O'Connor/Wilson)

Julius Adewopo (Silveira/Gerber)

Rishi Prasad (Hochmuth/Martinez)

SWS Department Awards

Bill Reve Superior Accomplishment Award: Terrace James

Quantitative Environmental Soil Science/Pedometrics: Jongsung Kim (Grunwald)

Sam Polston Fellowship: Xiong Xiong (Grunwald)

William K. Robertson Fellowship: Rishi Prasad and Christine Van Zomeren (Reddy)

V.W. Carlisle Fellowship: Daniel Irick (Li/P. Inglett)

Ben Skulnick Fellowship: Jason Seltz (Clark)

Donald A. Graetz Education Award: Brooke Giuliano (Curry)

Fredrick Smith Award: Joseph Kibiwott (Bonczek)

Outstanding Undergraduate Award: Stephanie Schwartz (Bonczek)

Julius Adewopo was recognized by UFIC/CALS as the Outstanding International Graduate Student.

Carlos Lopez (Wilkie) was awarded 1st place in the Undergraduate Poster category at the 2012 Florida Air & Waste Management Association Annual Conference.



Reginald Toussaint (Wilkie) was awarded the Best Poster prize at the 2012 Energy Solutions for the Southeast Conference.

At the ASA-CSSA-SSSA Meetings...

Joseph Kibiwott (Bonczek) won 1st place in the Speech contest in the *Students of Agronomy, Soils, and Environmental Sciences* competition.

Daniel Irick won 1st place in the *S10 Wetland Soils Division Graduate Student Oral Presentation Contest*.

Christine VanZomeren won 3rd place in the same contest.

Piyasa Ghosh (Ma) received "Honorable Mention" for oral presentation in *S2 Soil Chemistry Division Graduate Student Oral Presentation* contest.

Club Poster Contest: UF Agronomy-Soils Club received 2nd place

Quiz Bowl: The Agronomy-Soils Club team made it to the semi-finals

National Research Symposium Contest (Oral): Blaire Colvin (Agronomy Student) received 1st place

The Florida Stormwater Association Educational Foundation awarded Rupesh Bhomia (Reddy) its 2012 Stormwater Scholarship.

Rupesh Bhomia received the Best Student Poster Presentation at the 2012 INTCOL/Society of Wetland Scientists Meeting in Orlando. Rupesh Bhomia was also the recipient of the 2012 *Outstanding Graduate Student Award in Soils* awarded by the Association of Agricultural Scientists of Indian Origin (AASIO).

Congratulations! Fall 2012 Graduates

PhD

Hao Chen (Ma)

Piyasa Ghosh (Ma & Rathinasabapathi)

Daniel Irick (Li & P. Inglett)

Jongsung Kim (Grunwald)

Lucy Ngatia (Reddy & Turner)

Ramona Smith (Wilson & Daroub)

MS

Cheryl Dunne (He)

Wen Gu (He & Ma)

Jane Hart (P. Inglett)

James Lindsay (He)

Marti Occhipinti (Toor)

Donald Rainey (Shober)

Matthew Wilson (Hanlon)

BS

Jack Anderson - IS-EMANR

Andrea Byars - SLS-SS

Kathryn Conner - SLS-WS

Kayla Thomason - IS-EMANR