

PLSC Productivity

NEWS FROM THE DEPARTMENT OF
PLANT & SOIL SCIENCES



UNIVERSITY OF DELAWARE
**AGRICULTURE &
NATURAL RESOURCES**

Chair's Corner

One year ago classes were suspended and we were busy at transitioning all of our classes to online delivery so as to protect all from the oncoming pandemic. Here we are in our third semester under COVID-19 safety guidelines: we have about 25% of our classes in person and 3900 out of 7000 dormitory beds occupied. Our faculty and staff have adjusted teaching methods and work schedules to accommodate remote learning and productivity, and our students have persisted in patience and efforts to have a fulfilling college experience.



A big thanks to those alumni who have recently gifted funds to the department. We will use these funds to reinvigorate the activities of student clubs and to support the return of students to campus this summer for undergraduate research projects and internships. For example, the Horticulture and Landscape Architecture clubs are hard at work preparing an educational display for the first-ever **outdoor** Philadelphia Flower Show at FDR Park on June 5 and 6. Our inaugural Soil Judging team qualified in 2019 for nationals, but that was canceled due to COVID. Gift funds will be used to subsidize participation in fall 2021 regionals, if possible. A new club on the horizon may be one based on controlled environment horticulture, utilizing our high tunnels and burgeoning hydroponic systems.

Summer internships on campus have been authorized, with five UD Botanic Gardens interns already hired and five or more UD Fresh to You organic vegetable gardening interns also coming on board. Fresh to You is in an exciting transition with a new approach and new staff for 2021. Recent PLSC master's graduate Nicole Holland is our new Farm Manager, with current master's student Caroline May serving as internship coordinator. They will assist students in growing produce for summer farmer's market tables at the UDairy Creamery and STAR campus, while also donating produce to local food banks. From September through May (22 weeks total) they will be distributing organic vegetables to UD CSA shareholders.



As always, our world-class faculty continue to be hard at work landing research grants, training graduate students, and producing high-impact science to feed the world and keep sustaining our environment. For example, Dr. Angelia Seyfferth, associate professor of biogeochemistry and plant-soil interactions, had research on how some food contamination starts in the soil featured in an article by the Soil Science Society of America. Media outlets such as those at the National Science Foundation (NSF) and American Association for the Advancement of Science (AAAS) picked up the story and in one month, the promotion of the research reached more than 150 million people globally! Her research group's work has searched for a way to prevent plants from taking up arsenic and cadmium from the soil. This is often done by adding materials to the soil, called amendments. An amendment helps change the soil environment. By changing the soil environment, researchers can help control the chemical forms and plant uptake of contaminants in the soil. "Contaminants taken up by crop plants are routes of dietary exposure that are understudied," Seyfferth says. "But we can help decrease human exposure to toxins by applying our knowledge of soil chemistry."

Extension faculty have also charged on through the pandemic, giving many well-attended virtual trainings and conferences, while also proctoring certification tests in parking lots around the state!

That's all for now. Enjoy family time at home, planting your garden, smelling the spring flowers, and putting that first cut on your lawn for the season!

Honorifics

Rodrigo Vargas, associate professor of ecosystem ecology and environmental change, has been named a 2021 Fellow of the Earth Leadership Program, just the second UD faculty member to be named as such in the 20-year existence of this award. This program is a network of more than 200 environmental leaders who are committed to interdisciplinary learning, global leadership training, and collaborative research that strives to solve sustainability challenges through solutions-focused scholarly pursuit. Dr. Vargas is a top-10 worldwide carbon cycle scientist who believes that his science should inform climate change and environmental sustainability policy. This fellowship will give him the leadership skills to help catalyze scientifically-informed policy decisions and make him an even greater asset to UD.



Faculty Highlights

Editors note: So much good news about our faculty and their groups has come out in our UD press, space does not allow for a lengthy description. If you are interested to read more about these headlines, please search www.udel.edu/udaily or email mpautler@udel.edu for the UDaily links.

October 2020:

Dr. Angelia Seyfferth is a co-PI on this NSF-funded grant “Salinization of the Coastal Critical Zone: Drivers and Feedbacks that Transform Landscapes and Fluxes between Land and Sea” - Saltwater Intrusion - UD’s Holly Michael (Geological Sciences) leads multi-institutional research to understand the impact on critical coastal zones

December 2020:

Drs. Angelia Seyfferth’s and Rodrigo Vargas’ Labs: Methane in Tidal Marshes - UD’s Seyfferth and Vargas show how flowing waters affect release of greenhouse gases

Dr. Kyle Davis’ Group: Secure Food Supply Chain - UD’s Kyle Davis investigates how to make the global food supply more resilient

January 2021:

Drs. Don Sparks’ and Yan Jin’s Labs: The Ground Underfoot - UD researchers study climate change impacts on soils at military installations

The following grants were awarded this winter to our talented PLSC faculty and professionals.

<u>Principal Investigator(s)</u>	<u>Title/Topic</u>	<u>Sponsor</u>
Dr. Amy Shober	Delaware Nutrient Management Program	Delaware Nutrient Management Commission
Dr. Randall Wisser	Genetic and Cellular Dissection of Mutualistic Plant-Microbe Symbioses in <i>Medicago truncatula</i>	National Science Foundation
Dr. Susan Barton and Valann Budischak	Establishment of Desirable Vegetation on Medians and Road-sides	Delaware Department of Transportation

Faculty Spotlight

In a nod to Women’s History Month, let’s hear from 25-year PLSC faculty member Dr. Yan Jin.

Dr. Yan Jin, Edward and Elizabeth Rosenberg Professor of Soil Physics and Environmental Toxicology

When did you first come to UD and why?

I became an assistant professor in PLSC at UD on September 1, 1995, after I completed my Ph.D. and a year of postdoc training at the University of California, Riverside (UC Riverside). I initially came to the U.S. for graduate education after getting my college degree in soil science in China. My journey began at New Mexico State University where I studied under the advisement of Dr. George A. O’Connor about the behavior of a volatile chemical contaminant (toluene) in sludge-amended soil. I earned my M.S. degree in soil chemistry then, with the desire to get a degree that did not have the word “soil” in the title, I moved to UC-Riverside and started my Ph.D. in the interdisciplinary program called Environmental Toxicology. But when it was time to choose a research direction, I discovered that I liked playing with soil much better than experimenting with mice. I was very lucky to join the research group of Dr. William A. Jury, a world renowned soil physicist, to continue my research on volatile organic contaminants but to place more focus on the physical aspects of their fate and transport behavior in soil. This allowed me to be trained as a soil physicist while at the same time getting my Ph.D. in environmental toxicology, fulfilling my wish to have one of my degrees that did not have “soil” in the name. I interviewed for the PLSC position for a soil physicist in May of 1995 and was offered the job. Dr. Jury had to go through the trouble of explaining that I got as much soil physics training as his other students although I did not get my degree in soil physics. In fact, during the same trip for the UD interview, I was interviewed and offered a position at DuPont’s Stine-Haskell Lab. It made me feel that Newark was my destiny; it is where I have remained for the last 25 years.



How did you progress in your work over all of these years?

My work at UD have been challenging, interesting, stressful, and rewarding all at the same time. I enjoy teaching soil physics, which has been my main teaching responsibility. Training and interacting with graduate students through doing research is more fun than doing it alone, in my opinion. Being very curious about things, I have worked on an array of interesting research projects, sponsored by agencies including USDA, NSF, EPA, DOE, and DOD among others. Within the general interest in “the measurement, modeling, and interpretation of mass transport and transformation in soil,” my group and I have worked on projects such as the fate and transport of particles (viruses and other microorganisms, colloids, nanoparticles) in porous media, and colloid-facilitated transport of radionuclides and other contaminants in soil. More recently, my group has been working on coupled physical and biogeochemical processes involving colloids and organic carbon in soil, and coupled physical and biological processes in the rhizosphere. The newest project, sponsored by DOD, is a collaboration with Dr. Don Sparks of PLSC to study the effects of flooding and sea level rise on various soil properties and processes and how the changes may impact military operations. Another attempt I made to escape from being defined as someone who only works with soils, I changed my title from “soil physicist” to “soil and environmental physicist,” which, at least in my own mind, made it “legitimate” to work on other environmental systems besides soil. An outcome of this change was applying and receiving USDA funding to study interactions of bacteria with fresh produce, using our knowledge from studying viruses/colloids in soil, that have direct implications to produce safety. As a result, one of my graduate students, who is now a postdoctoral researcher in the group, is developing a novel technology to clean fresh produce using nanobubbles.

My career at UD has been very rewarding for several reasons. As a teacher and researcher, the most rewarding is the people I get to meet along the way - students and fellow scientists who have amazing intellectual capabilities and colorful personalities. Another is the opportunity to travel to many different places around the world, not just as a tourist but to work there to potentially help people to solve problems. Being a nerdy scientist, academia remains a place where I have had the freedom to work on things that not only are satisfying for my own intellectual curiosity but also to solve a few problems that could benefit society and contribute to training new generations of scientists.

Undergraduate Student Highlights

Undergraduates enrolled in Dr. Susan Barton’s Landscape Horticulture Internship class in PLSC gain work experience and then share details by giving a presentation. Below are the most recent interns and where they worked.

Employer	Undergraduate(s)	Employer	Undergraduate(s)
Arborvine Landscaping	Peter Regas	Helena Chemicals	Dylan Young
Bella Terra Landscaping	Austin Dill	Living Laboratory Research	Cierra McNeill Monique McDougal
Bellvue State Park	Amy Matusheski	North Creek Nurseries	Christopher Fettke von Koeckritz
Coastal Resiliency Project	DJ Bromley Christopher Fettke von Koeckritz Leigh Muldrow	Nutrien Ag Solutions	Sylvia Bachinsky
Cotswold Gardens	Toby Lauer	Second Chances Farm	Nicole Gomez
Delaware Center for Horticulture / Gibraltar	Conner Graybeal	Superior Yardworks	Brandon Moore



The UDBG has been given the green light to host five summer interns. They will join the UDBG team the first week of June. Their summer experience will include learning garden installation and maintenance skills, gaining experience in many aspects of public horticulture, and the importance of record keeping.

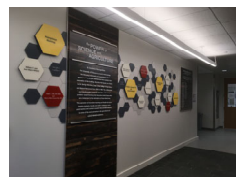
Events and Outreach

UDBG News: The UDBG has pivoted and moved its spring plant sale online with greatly enhanced and expanded features new to this year. In 2021 the online store will provide full info on their entire plant offerings. Shopping dates have been changed from those in the catalog. Access to the online store will be phased, beginning with Patrons on April 1, followed by UDBG Members on April 8, then by the General Public on April 30. Shoppers in each group will receive an email link providing access to the online store on their respective date and time. For more information and to browse the online catalog, visit <https://canr.udel.edu/udbg/>

PLSC DEI News: The PLSC Diversity Caucus is continuing to meet monthly and organize events and challenges for the department. The Caucus is in the process of creating subcommittees and a spring book club is in the works. Future plans include formalizing the Caucus to a committee, finding sustainable funding, and planning social gatherings (either virtual or in-person and following CDC recommendations). *Email mpautler@udel.edu if you are interested in the work of the PLSC Diversity Caucus.*

Ready – Set – Grow!

The move back into Worrlow Hall has happened (with no snow delays)!! “Fine-tuning” is being done but generally, research labs are up and running and in-person lab classes are being held in the 1st-floor classrooms (where the hallway now boasts a large window facing South College Avenue!). Donor recognition signs are being hung - again, thank you to all who made this renovation possible!



Let's see what has grown for an alum! **Rene (Rowe) Monaghan** writes: I graduated from UD in 1976 with a B.S. in Plant Science with a concentration in Ornamental Horticulture. During my years at UD I also worked weekends at Babikow Greenhouses in White Marsh, MD where I had been working part-time since my high school years. Upon graduating, I was made the Production Manager/ Grower overseeing all plant production as well as taking care of 14,000 sq. ft. of greenhouse crops. I worked in that position until 1985. At this time, I left to go to manage a horticultural program for adults with mental and physical disabilities. I then took three years off when my first two children were born. I then went back to Babikow part-time. In 2001, I took a grower position at a small retail nursery closer to my home. In 2010, I decided to go out on my own and now have a landscaping company, Garden Time Designs.



We encourage alumni to send us news to keep us informed! A new job, a promotion, a personal or professional award... they're all accomplishments we want to know! Email a note or a press release, including your graduation year, to mpautler@udel.edu

We are seeking to showcase alumni stories on a bulletin board in the PLSC corridor of Townsend Hall. We would like to highlight the career paths of our former students to current and prospective students and their families. If you are interested in providing a 250-words or less description of your career path from your PLSC education to your current job, along with a photo showing you at said job, please email mpautler@udel.edu for more details.

Back Porch Business

Make a gift to the Plant & Soil Sciences Department (www.udel.edu/makeagift/plsc) to support student success. Gifts to the department provide funding for student travel to research and professional development events as well as stipends for undergraduate summer research and Extension Scholars. You may also give to the College of Agriculture and Natural Resources or another PLSC program by selecting “Other” and searching for the fund you wish to support. Contact Dan Sarkissian, Sr. Director of Development, College of Agriculture and Natural Resources at 302-831-4595 or djs@udel.edu with any questions or concerns.

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