

# PLSC Productivity

NEWS FROM THE DEPARTMENT OF  
PLANT & SOIL SCIENCES



UNIVERSITY OF DELAWARE  
AGRICULTURE &  
NATURAL RESOURCES

## Chair's Corner

Welcome to the Fall 2020 *PLSC Productivity* newsletter. We are in the middle of an interesting and challenging semester. We welcomed our biggest freshman (16) + transfer (5) student class in years this Fall, with everyone staying enrolled. In my June message I detailed how the University was planning on a hybrid approach to Fall classes, with all classes over 50 students online, and many smaller classes in-person. With the pandemic not lessening through the summer, UD had to pivot to a mostly-online (90%) class experience. However, they did allow many hands-on labs to be offered in-person, so our faculty and graduate teaching assistants are hard at work offering face-to-face labs and studios in botany, soil science, vegetables, herbaceous perennials, field sketching, surveying, and the built environment. The students and faculty have been very creative and resilient, offering world-class instruction while keeping everyone safe. I applaud them all!



CANR has held strong with a Fall20 enrollment equivalent to our record-setting Fall19; students have enrolled in almost as many credit hours as in Fall19 (just 1% less). Overall University enrollment is down 10%, less than many of our peers, but with only 1,300 (out of 7,000) residence hall beds occupied, the financial strain is becoming enormous. UD is using some of its unrestricted endowment funds to cover a portion of our large budget deficit, but the hiring freeze will continue, along with upcoming voluntary and involuntary employee separations. CANR's reduction in workforce will be very small thanks to Dean Rieger's strong leadership. PLSC will weather the storm well, with a sustained focus on high quality hands-on education and outreach, and continuation of our world-class, discovery-focused research. Worrlow Hall will open late in 2020 giving our faculty and students the premier classroom and laboratory space on campus! PLSC-related programs such as the UDBG, Fischer Greenhouse, Soil Testing Lab, Master Gardeners, and Fresh-to-You CSA will charge on with minor budget cuts and no reductions in staff. In 2021, look for the rollout of numerous calendar-themed plant sales, in conjunction with our student clubs.



I would like to note two personnel transitions. On September 1, Dr. Amy Shober, professor and extension specialist in nutrient management, took on - as an additional responsibility - the position of associate department chair. (Thanks go to Dr. Nicole Donofrio for previously working in this role.) Dr. Shober leads a strong research Cooperative Extension program in nutrient management and environmental quality, is a PLSC and LEAD21 alumna, and will help guide my leadership of PLSC for the next year.

Dr. Donofrio, PLSC professor of plant pathology, has started a one-year leave of absence this September to become a "rotator" with the National Science Foundation (NSF). This excellent opportunity gives both the rotator and the NSF division the opportunity to learn from each other and contribute to promoting and fostering scientific excellence in a collegial environment. She is thrilled to be given the chance to work in the Directorate for Biological Sciences, specifically the Division of Integrative Organismal Systems (IOS). Since coming to UD 14 years ago, Dr. Donofrio has been very active in the panel review process both for USDA and NSF, and now she has the exciting chance to push the needle even further in the field of plant-microbe interactions. Specifically, she will share responsibilities for the Plant-Biotic Interactions program within IOS, which is co-funded and managed by USDA and NSF. She says that it will be a pleasure and honor to be able to work closely with her highly-respected colleagues, Michael Mishkind at NSF and Ann Lichens-Park at USDA, and she looks forward to a time when she might get to work with them in person, on the "amazing 12th floor of the NSF building in Alexandria, VA!" For now, Dr. Donofrio will remain in Newark, working mostly from home, and keeping things moving along at UD within her roles as research advisor, and co-director of the Graduate Microbiology Program.



Have a great autumn season and don't forget to wear your mask on Halloween!



## Honorifics

The National Science Foundation (NSF) Graduate Research Fellowship Program (GRFP) has awarded one of its prestigious fellowships to PLSC graduate student Elizabeth Smith. She is advised by Dr. Rodrigo Vargas, PLSC associate professor of ecosystem ecology and environmental change. The program supports outstanding graduate students in NSF-supported science, technology, engineering, and mathematics disciplines who are pursuing research-based master's and doctoral degrees at accredited U.S. institutions. Along with an annual stipend and allowance for tuition and fees, fellows benefit from international research and professional development opportunities as well as freedom to conduct their own research at any accredited U.S. institution of graduate education they choose.



A developing research scientist, Ms. Smith is proud to say she wants to be a “dirt doctor.” Her research focuses on quantifying soil characteristics using digital soil mapping principles and machine-learning techniques. Specifically, she is quantifying the spatial distribution of soil nitrogen across the contiguous United States and providing associated uncertainties of the model. “I wish to learn the current best practices for accessing and utilizing big data from domestic and international ecological networks specific to biogeochemical cycling, storage and transport of nutrients,” she said. “With such knowledge, it is my endeavor to develop and promote best practices in the coming decades by understanding emergent patterns in biogeochemical cycles and their relationships with ecosystems through predictive modeling.”

Ms. Smith's career plans include pursuing research that advances the knowledge base of ecological sciences and process-based modeling while also serving as a mentor to young scientists. She hopes to realize these goals as a leading researcher and subject matter expert in a national laboratory or with a federal agency. “Ultimately, I want to help bridge the gap between science and policy by using data mining to synthesize large datasets into readable findings for use in policy making consistent with a sustainable environment promoting health equity and social justice.”



PLSC graduate student Jamie Taraila, advised by Dr. Jarrod Miller, PLSC assistant professor and extension specialist in agronomy, wrote a proposal to the Northeast Sustainable Education and Research (SARE) program's 2020 Graduate Student Research Grant Program. Her project, “**Using Drones to Measure Cover Crop Biomass as a Predictor of Soil Nitrogen and Corn Emergence Issues,**” is one of 21 proposals (out of 58 submitted) that were approved for funding by Northeast SARE's Administrative Council. She will be using a consumer drone to map cover crop biomass and predict available nitrogen (N) and corn stand reductions due to interactions between cover crop residues and planters. The implementation of drones can provide quick observations of vegetation conditions and stand densities to provide insight on potential N availability and identify conditions that might deter seedling establishment in the cash crop. Results from this study can provide quick assessments of cover crop stands and densities to determine the best termination timing. The goal is to integrate consumer drone technology into cover crop scouting to improve productivity while maximizing cover crop effects on soil health.

Director of the UD Soil Testing Program Karen Gartley and PLSC Research Associate Maria Pautler were recognized this summer during weekly meetings hosted by Dean Mark Rieger for CANR staff. Ms. Gartley has a strong commitment to the UD value of SERVICE: “As an engaged University, we create and capitalize on innovative partnerships with government, industry and the community for economic and civic development. These connections enrich our scholarship, research and creative activity, enhance the curriculum and ultimately contribute to the public good.” Ms. Pautler supports the UD value of ACADEMIC FREEDOM, where “we each have the responsibility to foster an atmosphere that promotes the free exchange of ideas and opinions; everyone has the right to benefit from this atmosphere.”



Dr. John Frett was recently awarded emeritus status by Provost Robin Morgan. Dr. Frett has spent 30+ years in the “green industry,” and taught PLSC botany, horticulture, plant collections management, and taxonomy courses before retiring in the spring of 2019. To quote a previous UDaily article: “‘Under John's leadership, the UDBG has grown to include more than 3,000 species and cultivars of perennials, shrubs and trees...’; Plants have always been a passion for Dr. Frett as he wanted to study either plants or animals as an undergraduate at the University of Illinois, ultimately deciding to study plants and earning his bachelor of science degree in ornamental horticulture, his master's degree in plant science from the University of Maine and a doctorate in horticulture from the University of Georgia... ‘I've always had a tremendous interest in living things... Everything boils down to plants. Nothing would exist without plants,’... [and commenting on a recent award] ‘It's not the award itself, but the fact that people deem what you're doing is important enough to go through the effort involved with nominating someone. That to me is actually more important than the award itself.’” PLSC thanks Dr. Frett for his many years of teaching and leadership of the UDBG, and looks forward to future interactions with this emeritus expert!

## 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](http://www.udel.edu/udaily) or email [mpautler@udel.edu](mailto:mpautler@udel.edu) for the UDaily links.*

### June 2020:

**Dr. Harsh Bais' Lab in conjunction with Animal and Food Sciences' Dr. Kali Kniel's Lab:** Leaping *Listeria* - UD researchers examine how some bacteria find ways around plant immune defenses

### July 2020:

**Dr. Tara Trammell's Lab:** Understanding City Forests - New research finds forest age, not urbanization, corresponds to invasive species prominence

**Dr. Don Sparks:** Charting the Earth's Course - Don Sparks, nation's leading researchers pinpoint investment areas for earth sciences research

The following grants were awarded this spring/summer to our talented PLSC faculty and their UD colleagues.

<u>Principal Investigator(s)</u>	<u>Title/Topic</u>	<u>Sponsor</u>
Dr. Shreeram Inamdar	Back from the Past: Recovery of Nutrient Processes and Microbial Communities in Relict, Hydric Soils following Restoration  Biological Nitrogen Removal in Sediment Plumes of Watershed Models	USDA
Dr. Tara Trammell	Forests among Managed Ecosystems: Monitoring, Remediation, and Restoration	USDA
Dr. Jeffrey Caplan	Enzyme-Free Detection of SARS-CoV2 Using a PAINT-Based Single-Molecule Microscopy Assay	National Science Foundation
Dr. Jules Bruck Ms. Marcia Scott Dr. Nina David	Living Laboratory: On-Call Support for Community Outreach and Development of Pop-up Projects for Local Plan Development and Evaluation of Innovative Non-motorized Infrastructure	Delaware Department of Transportation
Dr. Gordon Johnson	Delaware Produce Safety Training	Department of Health and Human Services

## Faculty Spotlight

Several PLSC faculty and staff reached UD employment milestones in 2020. Let's hear from one of the longest-tenured, serving 35 years!

### ***Dr. Susan Barton, Professor and Extension Specialist, Ornamental Horticulture***

#### **When did you first come to UD and why?**

I came to UD in 1985, starting in July. I graduated from NC State with my master's degree in horticulture and started working at Fayetteville Technical Institute in Fayetteville, NC. In October of 1984, I interviewed for the extension specialist position in ornamentals. I got the job, but told UD I could not leave Fayetteville Tech. mid-year.



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

I received my Ph.D. from UD in 2005. When CT [Continuing Track] became an option at UD, I was converted to a faculty position. I started as an instructor and moved my way up through the promotion levels to professor a few years ago. I have taught many different classes and worked on many different projects, so even though I have basically held the same position for 35 years, it has never been the same from year to year.

## Events and Outreach

**UDBG News:** The UDBG team recently launched their online Fall sale. Thanks go to many of PLSC's faculty and staff for their support by giving the plants a happy home in their landscapes. Preparation is well underway for the Spring 2021 benefit plant sale. Next on the horizon is an October 7 Zoom lecture, **"Integrating Bulbs into the Garden,"** featuring Chanticleer's Lisa Roper. For more information, visit the events section of UDBG's website.

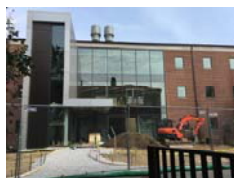
**PLSC DEI News:** PLSC is taking the lead in CANR to improve conversations and outcomes regarding some of the topics at the forefront of society today. The PLSC Diversity Caucus was established in the summer of 2020 in recognition of the work that needs to be done to challenge the inequities and barriers that limit diversity in STEM. This is an informal committee of undergraduate students, graduate students, faculty, and staff who are committed to advocating for meaningful change to promote diversity, equity, and inclusion within our Department, College, and University. The Caucus has several speakers lined up for this semester. Dr. Adam Foley, UD's director of diversity education, assessment, and outreach, recently spoke on the differences between diversity, equity, and inclusion. In October, the University of Missouri's Dr. Terrell Morton will present **"Enhancing the STEM Experiences of Radicalized and Minoritized Students through Transformative Work."** The Caucus is currently sponsoring a two-week Social Justice Challenge with the goal of building effective social justice habits. Participants are asked to do one thing per day that furthers their understanding of social justice: Read, Listen, Watch, Notice, Connect, Engage, or Act. A list of suggested activities is provided to guide engagement.

Email [mpautler@udel.edu](mailto:mpautler@udel.edu) if you are interested in the work of the PLSC Diversity Caucus.

## Ready – Set – Grow!



We are very fortunate that the Worrielow Hall renovation is almost complete! How about the mural that will greet all who enter through the main entrance? In August, the plant diagnostics lab, soil testing lab, and soils-botany classroom, all on the 1st floor, were shaping up. September has brought grading/grass-seeding. This building project is first-rate, inside and out!



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](mailto: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](mailto:mpautler@udel.edu) for more details.

## Back Porch Business

[Make a gift to the Plant & Soil Sciences Department](http://www.udel.edu/makegift/plsc) ([www.udel.edu/makegift/plsc](http://www.udel.edu/makegift/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](mailto:djs@udel.edu) with any questions or concerns.

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