

# PLSC Productivity

NEWS FROM THE DEPARTMENT OF  
PLANT & SOIL SCIENCES



UNIVERSITY OF DELAWARE  
AGRICULTURE &  
NATURAL RESOURCES

## Chair's Corner

**Happy Holidays everyone!** As we move out of Hanukkah and into Finals Week all is beginning to get quiet in Townsend Hall. It's time to grade finals and look forward to spending Christmas and New Year's with family and friends!



This month we welcomed a new Business Administrator, Tracy McMullen, to our team. Tracy joins us after nine years with the UD College of Engineering's Research Office. Tracy's role is essential for the smooth operation of our department and I'll rely on her to make sure my New Year's resolutions for departmental improvements are grounded in fiscal reality.



**Resolution 1:** Keep supporting our new major in Landscape Architecture. We filled all available studio space with a fall 2018 class of 15 freshmen and 5 transfer students. We have an in-progress search for a new tenure-track landscape architecture professor, with the plan for this new person to be ready to teach in fall 2019. Good enrollment and a new LA faculty member should be the last pieces of the puzzle towards program accreditation; our final accreditation visit will occur in early May 2019, three years past program inception.

**Resolution 2:** Grow undergraduate enrollment by offering a new major in Sustainable Food Systems where students will "learn by doing" on our "350-acre classroom": the new hydroponics range in Fischer Greenhouse; the UD Fresh to You organic vegetable production garden; the Petit Hop Field and associated nano-brewery; and the recently expanded UD Creamery and Food Innovation Lab in Worrlow Hall. We'll cover organic to conventional to in-between food production systems and encourage each student to forge individual career paths, from food entrepreneurs to vegetable farmers, environmental consultants, food access advocates and beyond. We should be able to enroll our first students in fall 2019.

**Resolution 3:** Support our award-winning faculty and their innovative research. In calendar year 2018 PLSC faculty have been awarded almost \$17 million in state, federal, industry, and non-profit grants aimed at sustainably producing food, and beautifying and protecting the environment. Among other things, these funds will go towards the support and training of 30 to 50 graduate students over the next three to six years!

**Resolution 4:** Keep extending our science-based solutions to stakeholders in the Mid-Atlantic and beyond. In November, I spoke to an audience of 240 on best management practices for lawns at the Delaware Nursery & Landscape Association's fall conference. What a great event organized by PLSC's Valann Budischak and Dr. Sue Barton! In December, I conducted turf nutrient management recertification training at a session organized by Delaware Cooperative Extension's (DCE) Ms. Sydney Riggi and Dr. Amy Shober. Come hear our DCE agricultural specialists speak on their latest research and management strategies during Delaware Agriculture Week (January 14-17, 2019) at the Delaware State Fairgrounds in Harrington.

Have a great Holiday Season and let's hope that Punxsutawney Phil doesn't see his shadow on February 2!!

## Honorifics

In a look back to earlier this year, the UD CANR held its third annual Research Symposium on April 30. This year's symposium included 76 poster presentations-up from 50 in 2017-from undergraduates, graduate students, post-doctoral researchers, and CANR staff members, and was divided into five areas of unique research strengths for the CANR:

- One Health—intersections among animal, plant, human and ecosystem health;
- Climate Change—impacts, mitigation and adaptation;
- Genetics and genomics for plant, animal and ecosystem improvement;
- Human Dimensions of food, agriculture and natural resources; and
- Sustainable food systems, landscapes and ecosystems.

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Dr. K. Eric Wommack, deputy and associate dean for research and graduate programs in the CANR, said that this year's symposium was a great success. "The breadth and impact of the work presented was impressive. It clearly demonstrates the global impact of the college's research enterprise and that we are succeeding in delivering on UD's land grant mission to serve the public good through scientific research."

Of the eleven awards handed out for excellent presentations, PLSC (one of four departments in the CANR) took five!

Of the two Ph.D. winners, one included Alma Vazquez-Lule, student of Dr. Rodrigo Vargas: "Carbon fluxes and phenology changes in a Delaware tidal salt marsh."

Of the two M.S. winners, one included Susan Gachara, student of Dr. Randy Wisser: "Synthetic biology for plant viral diagnostics: Application to Maize Lethal Necrosis disease."

The sole undergraduate winner was Dominique Lester, working in Dr. Nicole Donofrio's research group: "To bean or not to bean: Downy Mildew is the question."

The sole post-doc winner was Dr. Matt Limmer, working in Dr. Angelia Seyfferth's research group: "Quantitative synchrotron x-ray fluorescence for trace metal(loid) distribution in rice grains."

In the unique strength area of Climate Change, the winner was Branimir Trifunovic, M.S. student of Dr. Rodrigo Vargas: "Greenhouse gas dynamics in a salt marsh creek."



## Faculty Highlights

### *Two faculty have recently received funding from the National Science Foundation:*

Dr. Angelia Seyfferth, associate professor of biogeochemistry and plant-soil interactions, is a co-PI with Dr. Holly Michael of UD's Department of Geological Sciences on the project, "Connecting hydrology, biology, and geochemistry in a coastal wetland: Feedbacks between ecosystem processes toward predictive understanding."

Estuaries and marshes are globally important for carbon storage. As tides move in and out of these ecosystems, chemistry, biology, and hydrology interact and impact the reactions that dictate carbon cycling. It is critically important to understand how these ecosystems store carbon in order to predict how that may change with climate variability. This interdisciplinary project involves geochemical measurements to understand linkages between how carbon is stored, cycled, and exchanged between solid and solution phases in marsh sediments and hydrologic modeling to predict transport out of the ecosystem. The project is taking place at the St. Jones Reserve (component of the Delaware National Estuarine Research Reserve) near Dover, Delaware, and will advance our knowledge of hydrologic and biogeochemical factors that influence carbon dynamics and fluxes in a salt marsh and improve our ability to predict responses to change.

Dr. Tara Trammell, John Bartram assistant professor of urban forestry, is the PI on the project, "Multiple global change factors control forest nitrogen cycling - remote sensing and machine learning identify forest function across developed landscapes."

The global nitrogen (N) cycle has changed dramatically over the last century due to anthropogenic activities, increasing N pollution worldwide. Forests are vital for storing excess N. However, this storage ability is threatened by urbanization and non-native plant invasion. This newly-funded research project will utilize remote sensing and machine learning techniques to determine forest N status across urban landscapes. This research will enhance our capability to estimate the N source vs. sink potential of temperate deciduous forests and will improve our predictive ability on the fate of global reactive N in forests.

### *Two faculty will be busy with other new initiatives:*

Dr. Deb Jaisi, associate professor of environmental biogeochemistry, and his proposal team have been awarded one of just eight University-wide grants from the Unidel Foundation to develop a **Core Facility for Isotope Science**.

Dr. Donald Sparks, professor of soil chemistry (among other titles), has been appointed to the National Academies of Sciences, Engineering, and Medicine's **Committee on Catalyzing Opportunities for Research in the Earth Sciences (CORES): A Decadal Survey for NSF's Division of Earth Sciences**.

## Faculty Spotlight

*Alyssa Koehler—Assistant Professor and Extension Specialist, Plant Pathology  
New Professor Profile*

### Could you give a little background on yourself?

I grew up in rural North Carolina and from a young age enjoyed plants, participating in numerous FFA plant identification teams and working at a local plant nursery through high school. In college I discovered plant pathology by working in a nematology lab and quickly knew my career goal was to become a plant pathologist. I began my Master's in Plant Pathology at North Carolina State University working on soilborne fungal pathogens of tobacco and turfgrass. One year into my program, I also began characterizing diseases on a new specialty crop to the U.S. called stevia. Stevia leaves contain glycosides approximately 300 times sweeter than sucrose that can be extracted for use as no-calorie sweeteners. New pathogens continued to emerge and I remained at NCSU for my Ph.D., focusing on diseases of stevia.



### What are your plans at UD?

In my position I will bring my experiences with soilborne and foliar pathogens to work on diseases of corn, soybeans, and small grains. I am located at the Carvel Research and Education Center in Georgetown and will be developing lab space so that I am able to conduct applied field and greenhouse research, along with laboratory research, to understand pathogen biology, screen for fungicide efficacy, and develop integrated management recommendations that will be shared with Delaware farmers, extension agents, and allied industries through a variety of DCE programs.

## Program Highlights

*Graduate Program in Water Science and Policy*

Dr. Shreeram Inamdar, PLSC professor and director of the Water Science and Policy program describes this unique opportunity for UD graduate students: “The university-wide Water Science and Policy program is one of very few truly interdisciplinary, graduate programs at UD and nationwide. The program is comprised of faculty from four colleges at UD including the CANR, College of Earth, Ocean, and Environment, College of Engineering, and College of Arts and Sciences. While the program is spread across multiple departments, its administrative home is the Department of Plant & Soil Sciences. The program was initiated in 2012 through grass-roots efforts of a handful of water faculty with logistical support from the Delaware Environment Institute. The program intent was to foster science that can find solutions that are socially acceptable, environmentally sustainable, and economically viable. Since then, the program has grown by leaps and bounds, with current graduate enrollment of 24 students that includes 14 M.S. and 10 Ph.D. students. To date, the program has graduated 16 students (14 M.S. and 2 Ph.D.) with a 100% employment record. Students graduating from the program have gotten jobs with federal, state, private, and non-profit organizations including the U.S. EPA, U.S. Geological Survey, Delaware Department of Natural Resources and Environmental Control, Delaware Geological Survey, Delaware River Basin Commission, Skelly & Loy Inc., Prosser Consulting, and Maryland Environmental Service, to name a few. Alumni from the program have stayed in touch with the program students and faculty, sharing job opportunities and providing career guidance to existing students, and have also actively participated in the program’s annual water symposiums. Program students have excelled in a wide range of academic and extracurricular activities at UD and secured numerous prestigious awards and fellowships such as the Knauss Fellowship, which provides a unique educational experience for students interested in the national policy decisions that affect the ocean, coastal, and Great Lakes resources. Thanks to its talented students and dedicated faculty, the program continues its strong upward trajectory.



## PLSC Seminars - Spring 2019

**12:20 – 1:15 PM in 132 Townsend Hall – ALL ARE WELCOME**

Check <https://canr.udel.edu/plsc/plsc-seminar-calendar/>

for the up-to-date listing of seminar titles.

DATE/HOST(S)	SPEAKER(S)	DATE/HOST(S)	SPEAKER(S)
02/15/2019 Shree Inamdar	<b>Cindy Palinkas</b> University of Maryland Horn Point Laboratory	03/08/2019 Jeff Fuhrmann	<b>Shawn Polson</b> University of Delaware
02/22/2019 Erin Sparks	<b>Beronda Montgomery</b> Michigan State University	03/15/2019 Erin Sparks	<b>Malia Gehan</b> Donald Danforth Plant Science Center
03/01/2019 Amy Shoher	<b>Charles White</b> Penn State University	03/22/2019 Erik Ervin	<b>Jim Ippolito</b> Colorado State University

## Events and Outreach



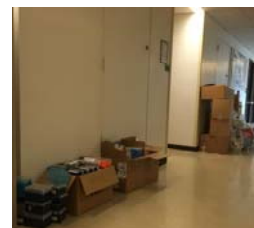
The year 2019 marks the 150th anniversary of the CANR! In 1869 UD implemented the Morrill Act and became a Land-Grant University so it is to this date that we trace our roots. The rich history of the college was captured by PLSC alumnus and former Delaware Secretary of Agriculture Ed Kee in “Cultivating a Legacy: A History of the College of Agriculture and Natural Resources,” published earlier this year. CANR Dean and PLSC faculty Dr. Mark Rieger shares, “We’ll... be using 2019 to reflect on how we will continue to be a relevant, impactful Land-Grant institution during the next 150 years. Your input is not only welcomed here, it is vital to our success. Please, feel free to drop me a line and let me know what we need to be doing in terms of teaching, research and Extension over the coming years. I’d love to hear from you. Email me at [mrieger@udel.edu](mailto:mrieger@udel.edu).”



December 5 annually is World Soil Day! Sponsored by the Food and Agriculture Organization of the United Nations, the 2018 theme is **Be the Solution to Soil Pollution**. Dr. Jeff Fuhrmann, professor of soil and environmental microbiology, just concluded teaching the class **Introduction to Soils**. He told his students, “As the semester concludes, we hope you’ve gained an appreciation and compassion of sorts for one of our most valuable (and sometimes underappreciated) resources, the Soil!” You can learn more by Googling “World Soil Day” and the film “Living Soil: A Documentary for All of Us.”

## Ready – Set – Grow!

WorriLOW Hall is steadily getting cleaned out in anticipation of move-out of personnel into temporary spaces in the first half of 2019. Architectural drawings have been reviewed and excitement builds for what the new lab spaces will look like!



“Spirit” is alive and well in PLSC as evidenced by Halloween and Holiday creativity!

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

Please consider making a DONATION to the PLSC department to support, for example: student travel to research meetings and professional development events or to fund stipends for undergraduate summer research and/or Extension scholars. One hundred percent of your gifts will impact the program you wish to support. You may make your gift to the University, the College of Agriculture and Natural Resources or another program by visiting [www.udel.edu/development/makeagift.htm](http://www.udel.edu/development/makeagift.htm) **However, designating the gift specifically to our department (PLSC) ensures that it will be used in direct support of PLSC students and faculty. Be sure to complete the “Other designation – indicate a specific purpose below” section and input “Dept. of Plant and Soil Sciences”.** If you have any questions or require assistance to complete any of these forms, please contact Dan Sarkissian, Director of Development, College of Agriculture and Natural Resources at 302-831-4595 or [djs@udel.edu](mailto:djs@udel.edu)

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