

Profiles



Department of Soil Science
UNIVERSITY OF WISCONSIN-MADISON

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MESSAGE FROM THE DEPARTMENT CHAIR

Soil Science is proud to be one of the founding departments of the College of Agricultural & Life Sciences (CALS). Several of our past and current faculty have had leading roles in CALS including the twelve-year Deanship of Leo Walsh. Now CALS has a new Dean, Glenda Gillaspay, and recently she came to visit our department to learn about our activities as well as discuss some of the priorities for the university and college. She anticipates that change is coming in the way funds are distributed to the colleges, which will affect departments, including ours.



Naturally, we are not afraid of change, and in the past few years, we have made quite a few changes. For example, we are revamping our Soil Science curriculum and have developed eight new courses while terminating older and low enrollment courses. Some of the new courses were developed especially for our new Master's program in Environmental Remediation and Management, whereas others were needed to teach our students modern soil science such as the course Using R for Soil and Environmental Data Management. Most Soil Science courses are at capacity. The graduate Soil Science program continues to grow and our Environmental Science Major has now well over 200 students. On the research front, several large grants have been secured, some great new equipment has been purchased, and labs have been renovated.

What prepared us most for the future are our new faculty hires; we have four new and excellent assistant professors who have enriched our research and teaching enterprise, culture, and shared ground for ideas. In October, we welcomed Dr. Inna Popova who studies soil environmental chemistry and organic contaminants in particular.

I am writing this while we experience the first few days of snow and frost, a bit early but soon we will be used to it - some things never change. On behalf of all us in Soil Science at UW- Madison, I wish you Happy Holidays and, as always, thank you for your continuous support to our department!

**Alfred Hartemink
Chair**

NEW FACULTY PROFILE: INNA POPOVA



Dr. Popova's primary research interest is to understand and mitigate the response of soil systems to the increased pressure of organic contaminants. Tons of biologically active chemicals such as pharmaceuticals, personal care products, and industrial chemicals are produced, used, and released in the environment every single day. Once introduced in the environment, these organic contaminants can have detrimental effects on animals, plants, and other organisms. One of the recent eye-opening examples of such an effect is the development of antibiotic resistance in bacteria due to the prevalence of antibiotic contamination in the environment. Still, our knowledge of organic contaminants' fate in soil ecosystems is limited by our ability to monitor processes in situ and in real time.

The goal of her research program is to assess the impact of organic chemicals' influx on natural and agricultural ecosystems. To what extent organic contaminants effect biological systems? Does our environment adapt to the growing anthropogenic pressure? What are the mechanisms of this resilience? To answer these and other questions, her research program will use a top-to-bottom approach to look at the bigger picture while developing and employing novel separation, sample preparation, and analyses.

Over the last several years, she also has been working on identifying and developing biopesticides for potential use in pest management. Biopesticides can provide a safer and more sustainable alternative to synthetic pesticide in various conventional and organic cropping systems. Biopesticides are easily decomposable in soil and their application generally result in reduced contaminant pressure, thus helping to preserve soil ecosystems.

ANTIGO SILT LOAM

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BOCKHEIM LECTURESHIP

The Department hosted its annual **James G. Bockheim Distinguished Lectureship** on 26th October. Dr. Keith Paustian, University Distinguished Professor, Soil and Crop Sciences, Colorado was this year's guest presenter. His presentation entitled, *Soil carbon and GHG accounting systems: Needs, challenges, and emerging opportunities* was well attended and enthusiastically received.

The lectureship is made possible by the generosity of Jim and Julie Bockheim to this Distinguished Lectureship in Soil Science Fund.



2022 guest presenter Dr. Keith Paustian, Emeritus Professor Jim Bockheim, and Julie Bockheim

DEPARTMENT NEWS

Congratulations to **Zac Freedman** and **Thea Whitman** for being one of the twelve projects chosen for funding through the second round of the UW-Madison's Research Core Revitalization Program (RCRP). Their project is "Replacement and Upgrade of Two Aging Instruments for Carbon and Nitrogen Quantification and Isotopic Analysis of Soil, Plant and Animal Materials" for the Environmental Gas Flux, Biogeochemistry, and Stable Isotope Analytical and Teaching Laboratory.

Congratulations to **Monica Schauer** (MS Research Assistant, Ruark) on receiving funding through the CIAS Mini-Grant Program. This program provides funding for graduate students to conduct research and outreach projects over the course of a single summer. Monica's project is entitled, "Influence of rye cover crop on microbial activity."

Congratulations to **Alfred Hartemink** on receiving the Presidential Award of the Soil Science Society of America. He was recognized at the November SSSA meeting in Baltimore, Maryland.

Congratulations to **Zac Freedman**, who recently received \$1.2 million in funding for a project titled "Leveraging spectroscopy and in situ soil sensing for the prediction of keystone soil microbial functions," from the NSF Signal in the Soils (SitS) program. SitS supports collaborative NSF-USDA research on dynamic soil processes and soil formation through advances in sensor systems and predictive, process-based and mechanistic modeling. Department Co-PIs are **Jingyi Huang** and **Alfred Hartemink**. Zac is also the main PI of a project titled "Enhancing the capacity for carbon and nitrogen isotopic analysis of soil, plant, and animal materials in the North-Central region, USA" that recently received \$248,000 in funding through NIFA's Equipment Grant Program. Department Co-PIs for this project include: **Harry Read**, **Tim Berry**, and **Thea Whitman**.

Congratulations to **Travis Miller** (MS Research Assistant, Soldat) for his 2nd place finish in the graduate student competition in the C5 Division at the SSSA/CSSA/ASA Annual Meetings in Baltimore! Travis's oral presentation title was "Developing a Standard Method for Testing Organic Matter in Sand Putting Greens."

SAVE THE DATE!

The **Leo M. Walsh Distinguished Lectureship in Soil Science** is scheduled for Wednesday, April 19, 2023. Our guest presenter is Yan Jin, a professor of Soil and Environmental Physics at University of Delaware in the Department of Plant and Soil Sciences.

STAFF PROFILE: KATHRYN JONES



Kathryn Jones (she/her) has been working in student services for over 10 years. After graduating from Michigan State University, she did two years of AmeriCorps with a program called City Year Detroit. She led a team of corps members in supporting high school students at an alternative high school in Detroit. Then she went on to work as an Undergraduate Coordinator in the Department of Physics at the University of Michigan. In 2014, she moved to Wisconsin and started working as a Student Services Coordinator for the Department of Horticulture (undergrad and grad) and the Department of Soil Science – Environmental Sciences Major. She loves helping students and enjoys working in higher education.

Outside of work, she enjoys spending time with her husband, two kids, and dog. She likes to explore new places, be outdoors, and craft (particularly cross stitching). She is also a huge fan of tacos and chocolate.

OUR SUPPORTERS

6/1/2022 to 11/15/2022

James and Christie Anderson	National Turfgrass Evaluation Program
James and Julie Bockheim	Donald Owens
Bruce and Margaret Brown	James Peterson
Ron and Anne Checkai	Robert Rand
William and Kathleen Davies	Douglas Soldat
Owen and Mary Demo	Lee Sommers
Lavon and Bruce Frazier	Donald Timmons
Roger Greiten	Wisconsin Agri-Business Association
Robin and Inge Harris	Wisconsin Turfgrass Association
Alfred Hartemink	
Larry Hendrickson	
Ben Hole	
Harriette Immega	
Dennis and Betty Keeney	
M B Kirkham	
Cynthia and Gary Krueger	
Kristine Lund	
James Mulcahy	

Thank you
FOR YOUR SUPPORT

BUCKY SOIL AUGER COMPETITION



On 21st October, the first annual "Bucky Soil Auger Competition" took place. Teams of three competed against other teams to see who can auger the fastest to the 1.20 m depth (the length of the auger). Each team competed three times for a composite score based on time and heat finish. The weather was beautiful and all had fun.

The winning teams:

1st - Midwestern Digs

Justin Gay, JR Nosal, Ashmita Rawal

2nd - Super Mario

Shuohao Cai, Jingyi Huang, Hendri Winanto

3rd - The Laugers

Harry Read, Doug Soldat, Thea Whitman



Winning Competitors (l-r)

2nd place: Hendri Winanto, Shuohao Cai, and Jingyi Huang

1st place: JR Nosal, Justin Gay and Ashmita Rawal

3rd place: Thea Whitman, Harry Read, and Doug Soldat

STUDENT PROFILE: HENDRI WINANTO



Before taking graduate study, Hendri worked as an Afdeling Assistant Manager in Oil Palm Plantations Industries that operating in Central Kalimantan and Aceh, Indonesia, during 2017-2019. He managed a division (afdeling) of 1000 ha Oil Palm Plantations, planning and supervising many agronomic tasks such as immature and mature upkeep of oil palm, maintaining or enhancing the productivity, and keeping a good relationship with the societies around the plantation. In 2020, he

did a soil survey for peatland inventory in Boven Digoel Regency, Papua, Indonesia, under the Ministry of Environment and Forestry.

Currently, Hendri Yuda Winanto, MS student in Soil Science with Dr. Jingyi Huang, is developing a low-cost low-power wireless sensor system to monitor soil CO₂ emissions in the field. This new platform potentially provides more accessible tools and larger data over fine spatial and temporal scales. For good quality sensor modules, he is still working on calibrating, indoor testing, and deploying sensor modules in the field. In the future, this sensor system can support cost-effective monitoring of soil CO₂ emissions for ecosystem modeling and evaluation of mitigation and adaptation strategies for climate change.

IN MEMORIAM



Former faculty member, **Joel Pedersen**, passed away on 29th June 2022. Joel came to the Department of Soil Science in 2001 and established an innovative international research program focused on environmental chemistry, and specifically the bioavailability of nanomaterials, and organic contaminants. He conducted groundbreaking research on prions in soils and chronic wasting disease which is a growing problem in Wisconsin. Last year Joel took a position at Johns Hopkins University and fell ill shortly after his arrival in Baltimore. Joel was a wonderful colleague, friend, and a superb researcher and mentor. The department is deeply saddened by his passing.

Department of Soil Science at the University of Wisconsin-Madison

I/we wish to join other students/alumni, industry, and friends in enhancing the teaching, research, and outreach programs in the Department of Soil Science by contributing as indicated below.

___\$50 ___\$100 ___\$250 ___\$500 ___\$1,000 ___Other

☐ Checks should be made payable to UW Foundation-Department of Soil Science

☐ Please charge my gift of \$_____ to my (please circle): Mastercard Visa American Express

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Online donation is available on our website <http://soils.wisc.edu/alumni-friends/>

Profiles

Department of Soil Science
Julie Garvin, Editor

University of Wisconsin
1525 Observatory Drive
Madison, WI 53706-1207

Web site: soils.wisc.edu
Email: jgarvin2@wisc.edu

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ALUMNI UPDATES

James Crawford (BS, 1982) retired from an Environmental and Civil Engineering career and now operates an 80-acre timber farm in Brown County with his engineer wife, Carol. It includes 15 acres of new prairie that replaces a field.

James O'Brien (MS, 1999) is the co-founder and CEO of Agrograph, Inc., the *Credit Score of Agriculture*TM. The company, started in 2016, develops data solutions for the agricultural banking and insurance industry, including solutions focused on regenerative/sustainable agriculture for those institutions. Agrograph's sustainability solutions are built upon a biophysical model for soil carbon potential and GHG emission modeling as part of their sustainability audit/reporting suite of products.

Donald Timmons (BS, 1953; MS, 1957) worked for the USDA-ARS - Soils and Water Division for 33 years. After his first couple of years there, he spent the next 20 years in NC Soil Conservation Research Lab (Morris, MN) and 11 more years at National Soil Tilth Lab and Iowa State University campus (Ames, IA).

WELCOME

Annalise Keaton
(Research Specialist, Freedman)

Isabella Muscettola
(MS Research Assistant, Whitman)

Shuohao Cai
(PhD Research Assistant, Huang)

Tyler Anderson
(PhD Research Assistant, Barak & Karthikeyan)

Shyanne Lee
(PhD Research Assistant, Arriaga)

Alumni Update

We'd love to hear from you! Please complete and return this form
or send your updates via email to: jgarvin2@wisc.edu

Name: _____

Degree(s) and Year(s): BS () MS () PhD ()

Home Address: _____

Email: _____ Phone No.: _____

Position: _____ Employer: _____

News to share: _____

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Department of Soil Science • University of Wisconsin-Madison
1525 Observatory Drive • Madison WI 53706-1207