

Profiles



Department of Soil and
Environmental Sciences
COLLEGE OF AGRICULTURAL & LIFE SCIENCES
UNIVERSITY OF WISCONSIN-MADISON

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SOIL JUDGING TEAM MAKES ITS RETURN



Top row (l-r) Julian Mayfield, Mac Munson, Ryan Kangas, Ethan Krull, Camory Repenshek. Bottom row (l-r) Zach Raymond, Eden Milan at 2024 Region 3 contest in Carbondale, IL.

Soil judging at UW-Madison is back! After a decade long hiatus, soil judging was rejuvenated in January of 2024, led by graduate students Clare Tallamy (MS student, Soil Science) and Hannah Anderson (PhD student, Soil Science) in an effort to restore department engagement with undergraduate students and build community. Since the team's debut in the spring, students have competed in two contests and have seen around 30 soil pits! Undergraduates Julian Mayfield, Mac Munson, Ryan Kangas and Zach Raymond spearheaded the team's inaugural contest in Twin Falls, ID at the 2024

NACTA Judging Conference in April. Camory Repenshek, Eden Milan and Ethan Krull joined the team at Regionals in Carbondale, IL in October. Soil judging helps students build critical skills in field-based soil description and is often cited as the number one job qualification sought after for soil science positions. In an ever-changing world, retaining an inclusive and accessible soil judging team at land-grant universities such as UW-Madison ensures that early career professionals are entering the fields of soil science and natural resources with well-established skillsets and sound capabilities. The ultimate goal of this current effort is to build a framework that supports the long-term sustainability of the team. The soil judging team is looking for some support to build our inventory of equipment! We are graciously asking for donations if you have any spare materials you are willing to part with. We are in particular need of Munsell color books, clinometers or Abney levels, soft measuring tapes (in cm) and soil picture tapes.

ABOUT OUR COACHES: HANNAH ANDERSON AND CLARE TALLAMY

Soils are hyper diverse, so naturally the study of them is as well. **Hannah** is a PhD student with Zac Freedman, most interested in finding unifying themes across disciplines of soil science and applying them to innovate systems that empower environmental, economic and community prosperity. She came to UW-Madison to rigorously concentrate her studies on soil, specifically within a department deeply devoted to the subject. She is integrating wet lab methods in soil microbial ecology and biogeochemistry with soil spectral data to better understand and monitor the trajectories of soils under perennial agriculture in Appalachia, as they recover from profound mining disturbance. This research will advance our understanding of anthropogenically-altered soils as we contemplate the role of soil reclamation in building sustainable agroecosystems and societies to rebound from the consequences of non-renewable energy production.

Growing up next to the Blue Ridge Mountains, **Clare** has always found a home in nature. As a college student at Virginia Tech this curiosity about the natural world led her to soil science- a discipline that gives the context to all other natural sciences. While at Virginia Tech, she participated in undergraduate research, CALS outreach and mentorship programs, and most importantly soil judging. After a successful undergraduate career, she was not yet satisfied with her understanding of soil, so she pursued a graduate program in soil science at UW Madison. Currently a MS student in the Freedman lab, Clare primarily studies rhizosphere ecology in carrot root systems. This project investigates the soil environment and its role in the production of a popular food crop grown here in Wisconsin. Soil science is not only what Clare studies, but it is what drives her life and her understanding of the world around her.



WELCOME

Research Assistants

Pete Bier (Soldat)
Aquila Chiang (Huang)
Clare Doss (Ruark)
Hannah Francis (Ruark)
Evan Freed (Arriaga)
Gideon Fynaardt (Sanford)
Jessica King (Sanford)
Alexa Kloske (Balster)
Oluwatoyin Ogayemi (Rayne)
Connor Schoelzel (Arriaga)
Michelle Solis (Rayne)
Mitch Wodrich (Zhu-Barker)
X. Atticus Zhang (Popova)

Research Associates

Larissa Correia (Ruark)
Minh Huy Do (Popova)
Piash Islam (Rayne/Ruark)
Wanru Li (Huang)
Jon Wells (Whitman)

Others

Greta Hippensteel, Rsrch Spec
Emily Kaufman, Lab Mngr & Tech
Grace Parrott, Rsrch Tech
Porter Reim, Rsrch Tech
Gregg Sanford, Asst Prof
Adam Von Haden, Scientist,
Mark Walsh, Agric Ops Mngr
Margaret Zimmer, Assoc Prof

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Larry Hendrickson
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Ben Hole
Douglas Karlen and Judith Beck
Pamm Kasper
Keith and Andrea Kelling

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ANTIGO SILT LOAM

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RESEARCH CORNER: ZIMMER AND SANFORD JOIN THE DEPARTMENT



Margaret Zimmer joined the department in August 2024 as an associate professor. Margaret completed her BA in Environmental Studies at Oberlin College, her MS in Earth Sciences at Syracuse University, and her PhD in Earth and Ocean Sciences at Duke University. After her PhD, she joined the faculty at University of California, Santa Cruz from 2018-2023 and moved to Madison to be closer to family in summer 2023. She worked for the US Geological Survey Upper Midwest Water Science Center for the past year before joining the department. Margaret is a watershed hydrologist who is broadly interested in understanding what drives streamflow and nutrient fate and transport. She is particularly interested in surface water-groundwater interactions, nitrogen cycling, and water movement in the shallow subsurface. She has previously worked in forests, grasslands, and coastal wetlands, and she is excited to expand her research program into agricultural landscapes. Margaret has served as a Board member for the Consortium of Universities for the Advancement of Hydrologic Sciences, Inc (CUAHSI). She is the recipient of the 2023 Kohout Hydrogeology Early Career Award from the Geological Society of America, the 2024 Hydrology Section Early Career Award from the American Geophysical Union, and a National Science Foundation CAREER Award. Margaret enjoys spending time with her family and friends, learning about and exploring Madison and the surrounding area, and spending time outdoors.



Gregg Sanford joined the department in August 2024 as an assistant professor partially funded through the Dairy Innovation Hub. As a self-proclaimed “army brat,” Gregg resided in Japan, western Europe, and the US, while spending many summers on his grandparents’ farm in Viola, WI. He earned his BA in field botany at New College of Florida in Sarasota and worked on numerous farms prior to earning his MS and PhD in the Department of Agronomy here at UW-Madison. From 2012 until accepting the faculty position in our department, he worked as a research scientist in Randy Jackson’s Grassland Ecology Lab. As an agroecologist and soil scientist, Gregg studies the impact of long-term management choices on ecosystems services such as yield and soil organic carbon as well as other critical metrics of system health and performance (soil health, GHGs, water, economics). He is the director of the 60-acre, 34-year-old Wisconsin Integrated Cropping Systems Trial (WICST), which serves as a land lab for community engagement, a classroom for undergraduate and graduate students, and an invaluable hub for national and international scholarship. For fun, Gregg enjoys spending time with family, sailing, running, hiking, and playing music with friends, whether that be with the guitar, mandolin, or fiddle.

IN MEMORIAM

Leo Walsh, an emeritus professor of soil science beginning in 1964 at the UW-Madison and whose distinguished career culminated in his role as CALS dean from 1979 until 1991, passed away on June 27, 2024. In addition to his many academic and administrative accomplishments, he will be remembered for his kindness and generosity. Our department is grateful to have the Walsh Distinguished Graduate Fellowship, the Walsh Distinguished Lectureship in Soil Science, and the Walsh Faculty Fellowship. He will be missed, but his legacy will carry on.

Philip Helmke, an emeritus professor of soil science from 1973 to 2007 passed away on February 20, 2024. He taught graduate courses in environmental chemistry while training and inspiring many graduate students from around the world to conduct research about the soil-water-plant system. Phil’s legacy lives on through his generosity in establishing the Phil Helmke Faculty Fellow and through his expert woodworking skills in building a custom island cabinet on display and continually used in our Jackson-Tanner Commons.

ALUMNI UPDATES

Sumanta Chatterjee (PhD 2022) accepted a position as a faculty assistant at the Department of Environmental Science and Technology, University of Maryland this past July.

Owen Demo (BS 1961) and his wife Mary were featured in *Pheasants Forever* as the first elite members to achieve Gold Patron Slam status in both *Pheasants Forever* and *Quail Forever*. Owen worked as a soil scientist for the USDA for 25 years and served as a farmland appraiser and county supervisor throughout southwestern Wisconsin. In retirement, Owen and Mary have transformed their 234-acre farm into a dedicated habitat for pheasants. Of those acres, 132 are designated as part of the Conservation Research Program (CRP), a voluntary program that encourages farmers and landowners to convert highly erodible and other environmentally sensitive acreage to vegetative cover.

Britta Welsch (MS 2024) has accepted a position as a soil conservationist with NRCS in Escondido, California.

OUR GRADUATES

ENVIRONMENTAL SCIENCE, BS

Aschoff, Eleanor
Bahr, Logan
Carlson, Elizabeth
Chung, Ethan
Davis, Ross
Dikeman, Olivia
Franks, Ann
Gorius, Ava
Hutka, Aaron
Johnson, Emma
Katzenmeyer, Logan
Macki, Emma
Millan, Paul
Miller, Alden
Murray, Genna

Nicks, Julia

Nielson, Matthew
Powell, Rosalie
Schedler, Kylie
Scheldrup, Caroline
Schneider, Carly
Shanahan, Mackenzie
Spoden, Jim
Stielow, Lauren
Tecuanhuehue, Luis
Treacy, Christina
Weber, Andrew
White, Lydia
Zhou, Tianyu
Zimmerman, Elisabeth

ENVIR. REMEDIATION & MANAGEMENT, MS

Alsharari, Khaled
Rayle, Maya

SOIL SCIENCE, MS

Stevens, Caleb (Huang)
Post-fire land surface emissivity in the northern Rocky Mountains, U.S.

SOIL SCIENCE, PhD

Hu, Jie (Huang)
Investigating the soil-plant-atmosphere interactions across NEON sites in the USA

Donors, continued from page 1

Mosaic Global Sales, LLC	Denise Ney	Robert Rand	Donald Timmons	Thomas and Susan Wright
James Mulcahy	Lavonne and Gerald Nielsen	Relena Ribbons	James and Kimberly Van Herwynen	
National Turfgrass Eval. Prog.	John and Celia Parsen	Doug Soldat	Hanna Boekhoff Walsh	
James Neumann	A James Pastene	Lee and Mary Kay Sommers	Joanne Westphal	

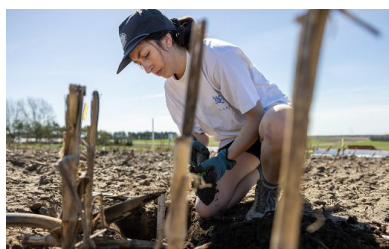
DEPARTMENT NEWS

PhD student, **Yanyu Deng**, was recently selected to receive two CALS scholarships: Henry Steenbock Scholarship and Albert J. & Adelaide E. Riker Scholarship.

The summer issue of *GROW* magazine featured an article entitled, "The secrets of cold weather soil unearthed." The article mentions **Francisco Arriaga** leading the "effort to compare the effects of different agricultural treatments on nutrient and water transport over a range of temperatures, precipitations, and ground cover."

Rick Wayne retired this past September after 30 years of service with the UW-Madison. Rick started at the University in 1994 with the Department of Horticulture and was officially hired in the Department of Soil Science in 1997. He had been with the SnapPlus team since 2015.

Geoff Siemerling and **Shyanne Lee** spent 2-weeks this summer participating in a USAID Farmer-to-Farmer (F2F) assignment in Namibia conducting soil health training for farmers and gardeners in the eastern Omaheke region. Their trip included discussions with the UN World Food Program and the US Embassy.



Shyanne Lee digs out snow gauges in preparation for spring planting at the Arlington station plots. Photo by Michael P. King



Shuohao Cai places a sensing rod with multifunctional sensing stickers enabling multi-depth measurements to test the team's tech. at Hancock ARS. Photo by Kuan-Yu Chen

The July 22 edition of eCALS included an article entitled, "Printed sensors in soil could help farmers improve crop yields and save money." It featured research being conducted at Hancock Ag Research Station which includes the development of low-cost sensors that allow for real-time, continuous monitoring of nitrate in soil types that are common in Wisconsin. This research was published in the March 2024 issue of the journal, *Advanced Material Technologies* by Kuan-Yu Chen, Aatresha Biswas, **Shuohao Cai**, **Jingyi Huang**, and Joseph Andrews.

Matt Ruark is the academic advisor for "Table to Garden: Reducing Food Waste & Greenhouse Gas Emissions in Madison," a Wisconsin Idea Fellowship with undergraduate students and community partner Brittingham Community Garden. The project's focus is to reduce food waste and greenhouse gas emissions, helping local gardeners, and educating the community about the benefits of composting.

Nick Balster received an Honored Instructor award for Spring 2024. Honored Instructors is a student-initiated program in University Housing that encourages students living on campus to recognize instructors that have made an impact on their learning.

Graduate students, **Mengmeng Luo** and **Yanyu Deng** earned awards at the Tri-societies annual meeting this year in San Antonio, TX. Mengmeng won first place in the oral competition for her presentation at the SSSA Forest, Range, and Wildland Soils Division and Yanyu won second place for his oral presentation at the ASA Nutrients and Environmental Quality community.

Doug Soldat and **Nick Bero** are participating in a campus organic landscape management pilot project taking place as part of an ongoing strategy to reduce pesticide use and increase native plantings on campus. This multi-organizational pilot program was initiated by a group of UW-Madison students who joined forces with Re:wild Your Campus (RYC), a national organization that helps colleges and universities reduce their chemical use. Over the next 3 years, transformations will be visible at the four prominent campus locations.

Dana Johnson was selected for the Department of Energy's Office of Science Graduate Student Research (SCGSR) program. She will travel to Oak Ridge National Laboratory this winter to collaborate with scientists at the national lab.

Graduate School Dean Karpus has appointed **Juma Bukomba** to serve on the Graduate School Dean's Advisory Board, which provides input and advocacy for graduate students.

Matt Ruark has been named the new faculty director of the UW Dairy Innovation Hub effective this past October.



Nick Bero and Doug Soldat participate in the campus organic landscape management pilot project.

USDA-NIFA awards: **Gregg Sanford's** project, *Ecological intensification for soil health, carbon sequestration, and GHG mitigation in cash-grain agroecosystems of the north central US*, was among 12 projects sharing the \$7.9 million in funding through the Soil Health program. **Xia Zhu-Barker's** project, *Developing guidelines for organic grain growers to manage soil health and mitigate climate change impacts*, was among 30 projects sharing the \$50.5 million investment.

Continued on page 4

Dept. of Soil & Environmental Sciences at the University of Wisconsin-Madison

The Dept. of Soil & Environmental Sciences is deeply grateful to its alumni and friends. Your generous support is appreciated, and we thank you! To join other students, alumni, industry, and friends in enhancing the teaching, research, and outreach programs in the department, please consider donating to one of our various funds. A complete list of funds available can be found on our website (<https://soilenvsci.wisc.edu/giving/>).

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Department News, continued from page 3

The Fall 2024 issue of *Grow* magazine featured an article on leveraging artificial intelligence to map soil moisture across the country. According to the article, **Jingyi Huang's** research is "a possible game changer for farmers and a boon for climate models and wildfire forecasts."

The American Geophysical Union (AGU) has selected **Margaret Zimmer** as this year's recipient of the Hydrologic Sciences Early Career Award. The award will be presented at the AGU Conference, December 9-13 in Washington DC.

JAMES BOCKHEIM LECTURESHIP



2024 Bockheim Lectureship guest
presenter Dr. Carle Pieters

The department hosted its annual **James G. Bockheim Distinguished Lecture-ship** on December 11. Carle Pieters, Professor of Earth, Environmental, and Planetary Sciences at Brown University gave her presentation titled, *Is Lunar Water a Renewable Resource?*, to the large crowd of graduate students, faculty, and staff. The lectureship is made possible by the generosity of Jim and Julie Bockheim to this Distinguished Lectureship in Soil Science Fund.



Department Logo Competition
Winning design by Mengmeng Luo
T-shirts available in Main Office

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: _____

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