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

Profiles

Department of Soil and Environmental Sciences
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Our Graduates

Environmental Science BS

Bates, Leah
Borkin, Ari
Flath, Ian
Gimbal, Parker
McKeehan, Macy
Munoz, Lucas
Scudder, Paul

Soil Science BS

Naatz, Jonah

Graduate Degrees

Anderson, Noah | Soil Science MS (Whitman)
The survival of wildfire-associated bacteria after drought and heating

Mirabella, Joshua | Soil Science MS (Zhu-Barker)
Evaluating the effects of solid manure products on soil nitrogen dynamics in a silage corn system

Tallamy, Clare | Soil Science MS (Freedman)
Rhizosphere microbiome assembly via root exudation in organic carrots across Wisconsin

Ambrowiak, Gloria | Soil Science PhD (Arriaga)
Influence of aggregation and phosphorus source on soil test values and eutrophic potential

Orjuela-Diaz, Daniela | Soil Science PhD (Arriaga)
Optimizing nitrogen management in corn production: Integrating soil chemical and biological indicators in Wisconsin

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 ( )
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JUL 2025 VOL 16 NO 2

Message from the Department Chair

As you are probably aware, higher education is currently facing unprecedented challenges due to recent and ongoing federal actions undermining its value and funding. Unfortunately, our department has been directly affected, as grant funding has been rescinded and job opportunities for our graduates have evaporated. We have been through tough times before, and we will survive this one as well. Nevertheless, it is certainly a discouraging time to be a scientist and a bleak time to be a recent graduate. In times like these, we could use a reminder of the importance of perseverance, and the enduring impact of good science. In early May, Emeritus Professor Steve Ventura delivered such a message during the commencement ceremony for the Soil Science and Environmental Sciences graduates.

Professor Ventura's address emphasized that soil and environmental sciences differ from basic sciences like physics and chemistry, because soil and environmental sciences have an ethical framework, concerned deeply with benefiting society and the planet. He encouraged graduates to uphold the Wisconsin Idea by using their high-quality education to actively challenge misinformation and advocate for sound environmental science and policies. He drew upon the legacy of influential figures from our department like F.H. King and Francis Hole, he urged our new graduates to "speak truth to power" and blend rigorous science with an appreciation of our natural world.

As higher education continues to face political adversity, the voices and actions of our faculty, staff, and alumni become increasingly important. To read Professor Ventura's inspiring commencement remarks in full, please visit our website at www.soilenvsci.wisc.edu.

Doug Soldat
Chair

Research Corner: Jingyi Huang

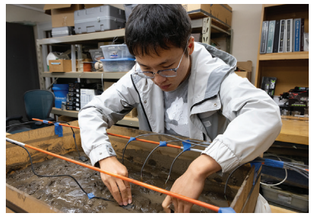
CALS 2025 Investiture Ceremony
l-r: Associate Dean White, Associate Professor and Marvin T. Beatty Professor Jingyi Huang, Emeritus Professor Marvin Beatty, Jenny Beatty, Dean Glenda Gillaspy

Dr. Jingyi Huang is an Associate Professor and Marvin T. Beatty Professor in Soil Science at the Department of Soil and Environmental Sciences. Dr. Huang leads the Soil Sensing and Monitoring Lab and is an affiliate of the Nelson Institute for Environmental Studies, Water@UW, and the UW Data Science Institute. Dr. Huang teaches Soil Physics, Environmental Monitoring and Soil Characterization, and Using R for Soil and Environmental Sciences to graduate and undergraduate students on campus. He also engages in public outreach events such as Wisconsin Ag Discovery Day and online K-12 education ("Seize the Memory of Soil", https://www.soilmemory.com/).

Dr. Huang's research program focuses on integrating the novel proximal and remote sensing technologies with process-based (e.g., land surface/Earth Systems models) and data-driven machine learning models to advance the fundamental understanding of terrestrial water, carbon, nutrient, and energy cycles and improve sustainable management of natural resources under climate change and human disturbance. With collaborators from the department and across the campus, Dr. Huang leads and co-leads several federal (USDA and NSF) and state (Dairy Innovation Hub, https://dairyinnovationhub.wisc.edu/) projects alongside projects generously supported by the Marvin T. Beatty Professorship, including nationwide soil moisture mapping in America's cropland using machine learning (https://grow.cals.wisc.edu/departments/features/how-wet-is-americas-soil-nobody-really-knows-but-ai-can-help), monitoring soil nitrate leaching and groundwater nitrate in Wisconsin with printed electrochemical sensors (https://engineering.wisc.edu/news/printed-sensors-in-soil-could-help-farmers-improve-crop-yields-and-save-money/), and monitoring changes in soil carbon stocks caused by land cover and land use change (https://dsi.wisc.edu/research-portfolio/soil-organic-carbon-assistant/). Dr. Huang currently advises one research scientist, one PhD student, two MS students, and one BS student (https://soilsensingmonitoring.soils.wisc.edu/lab-members/).

Department News

The May14 issue of eCALS highlighted the research of PhD student **Anna Stevenson**. Her publication, *Urbanization and sealing of fertile soils: A case study in Wisconsin 2001-2021* (Soil Security, Vol. 19, June 2025) focuses on the growing urban development taking place in Wisconsin and replacing agricultural land cover, particularly soils with high agricultural productivity.



Dr. Jingyi Huang, his team, and collaborators from the UW School of Engineering have devised inexpensive, in-ground sensors as a way to ramp up the number of soil moisture data points nationwide. These new technologies allow scientists, researchers, and farmers to gauge more accurately how quickly soil will dry out. (Photo right of Shuohao Cai)

PhD student **Hannah Francis** (photo left) placed 3rd in the poster competition at the Midwest Cover Crop Council Conference. She received the award from **Dr. Anna Cates**, who completed her PhD in our department under the academic mentorship of **Dr. Matt Ruark**, who also serves as Hannah's advisor and mentor.

The Department of Soil and Environmental Sciences and SnapPlus said a fond farewell to **Dr. Laura Ward Good** who retired in January. Laura had been the project lead scientist for SnapPlus since 2003 whre she directed a team of developers for SnapPlus nutrient management planning software and related software promoting agricultural water quiality protection and conservation.

Jonah Naatz, one of our newest Soil Science BS alumnus, was recognized in the CALS Winter '24 Graduates. Jonah's capstone project included designing a pollinator garden for Upham Woods Outdoor Learning Center in Wisconsin Dells. He also completed a prestigious internship at Augusta National Golf Course, where he was able to work the 2024 Master's Golf tournament. Jonah has accepted a golf course superintendent position at Westmoor Country Club in Brookfield, Wisconsin.

Dr. Zac Freedman (photo right) was interviewed by Channel 15 WMTV this past January to explain how snow acts as an insulator to soil during the winter months, and how a lack of snow can cause main water pipelines to burst during freezing temperatures.

CALS Global has recognized **Geoffrey Siemering**, Outreach Specialist in the department, with the Global Research and Outreach (GRO) Award for his proposal *Colombia climate smart dairy: Soil health.* The GRO Award supports research and outreach that advances sustainable agriculture and the life sciences, with a focus on food systems decarbonization, water sustainability, agronomic innovation, plant biology, gut microbiome and nutrition, and vector-borne disease.

Congratulations to **Drs. Zac Freedman** and **Margaret Zimmer** who have been promoted to associate professors with tenure.

Staff Profile: Hava Blair

Hava Blair joined the Department of Soil and Environmental Sciences in May 2023 as a Nutrient Management Specialist with the SnapPlus team. Her educational background includes a PhD in Land and Atmospheric Sciences at the University of Minnesota Twin Cities and a BA in Geology from Lawrence University. Hava enjoys working at the intersection of science, policy, and practice in her role with SnapPlus. Before earning her PhD, Hava worked with a group developing an urban farm and job training program at Riverview Gardens on the site of a former private golf course in Appleton, WI. Her work in agriculture continued in later roles at three market vegetable farms in central WI. After moving to Minneapolis, MN she enjoyed digging into the science and policy of remediation and redevelopment at Minnesota Brownfields, a non-profit devoted to working with public- and private-sector partners to promote the efficient cleanup and reuse of contaminated land. One of Hava's favorite things about working with the SnapPlus team is the opportunity to collaborate with many different partners during the process of building software tools for nutrient management planning.

Hava's signature hobby is making fruit preserves of all kinds. Her wintertime preserving passion was marmalade (she made 5 variations this winter with different citrus) and in the summer she looks forward to when currants and plums are in season.

Welcome

Research Assistants

Katelin Hermanson | MS (Sanford)
Chloe Kusser | MS (Huang)
Josh Mirabella | PhD (Zhu-Barker)

Research Associates

Ru-Yi Zhang (Whitman Lab)
Zhaozhe Frank Chen (Zimmer Lab)

Soil Technicians

Allison Richmond (Sanford Lab)
Michael Moul (Rayne Lab)

Facilities Manager

David Stark

Administrative Supervisor

Mindi Wilkinson

Dale Cole Lectureship

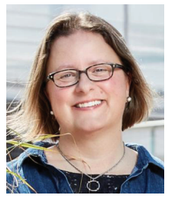


Photo left: 2025 Cole Lectureship guest presenter, Dr. Jennifer Pett-Ridge

The department hosted its inaugural **Dale Cole Distinguished Lectureship** on April 30. Dr. Jennifer Pett-Ridge, Senior Staff Scientist at Lawrence Livermore National Lab gave her presentation titled, *The music of soil: How microbial cophysiology shapes persistence of organic carbon in soil's many habitats,* to the large crowd of graduate students, faculty, and staff. The lectureship is made possible by the generosity of Dale Cole to this Distinguished Lectureship in Soil Science Fund.

In Memoriam

Richard 'Dick' Corey (PhD 1953), an emeritus professor in the department from 1954 to 1989 passed away on February 24, 2025. Dick consulted on various agricultural projects in Mexico, Brazil, Nigeria, Costa Rica, Nicaragua, and Indonesia, and mentored over 40 graduate students during his tenure at UW-Madison.

Robin F. Harris (PhD 1964), an emeritus professor in the department from 1965-2002 and former department chair (1991-1999) passed away on June 3, 2025. Robin continued to come into the office 4 mornings a week to work on research, give an occasional guest lecture, and write papers until a few weeks ago.

Student Profile: Tanner Judd

Tanner Judd's pathway into soil science began while pursuing his BS at West Virginia University. It was his first introductory soil science course where topical discussions on soil health, conservation, and nutrient management in agricultural systems spurred his interest to pursue a graduate education. Tanner completed his MS at Oklahoma State University in May 2022 and joined the Department of Soil and Environmental Sciences two weeks later, where he is now a third-year PhD candidate working with Dr. Matt Ruark and Dr. Zac Freedman. His primary research themes target soil health and nutrient management of integrated cropping systems. Integration of crop and livestock production in dairy systems are common practice across the State of Wisconsin and the North Central US; however, it remains a challenge to fully describe the impact of integration on carbon and nitrogen cycling. Tanner is addressing questions on how system integration alters microbial processes which affect soil carbon persistence, and how coordinating cover crops with fall manure applications retain nitrogen that may otherwise be leached from the soil into groundwater. He is particularly excited about the interdisciplinary work he has done with the Department of Animal and Dairy Sciences to isotopically enrich dairy manure with 15N to directly trace nitrogen from manure into the cover crops and soil profile, with the goal of promoting cover crop adoption throughout the region. He believes pursuing interdisciplinary research collaborations like this provide comprehensive "system-level" solutions that enhance environmental and economic outcomes for both producers and the surrounding communities.

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