

Profiles



DEPARTMENT OF
SOIL SCIENCE
University of Wisconsin-Madison

MAY 2017 VOL. 8 NO.2

Message from the Department Chair



Spring in Madison

Some days ago, we interviewed some undergraduate students for fieldwork positions in the summer. Spring has arrived (well, almost) and we are planning ahead for our projects. We explained the projects to the students and then discussed all the variables, like our new probe sampler, the sampling design, the new instruments that we are using this summer, and of course the weather. It appeared to one of the students that there is lots to be figured out and decisions to be made whilst conducting research - not everything can be planned. The student couldn't be more right as we are seeking for novelty, trying to explain and understand things a bit better, chasing ideas alongside, whilst keeping our goals and overall progress in close view.

Often, I think our department moves in a similar mode and manner; there are lots of things going on that may appear dispersed but the overall objectives of pushing the frontiers of soil science and doing some of the best teaching and extension is solidly anchored in the commotion of everyday life. We have the good fortune of being sup-

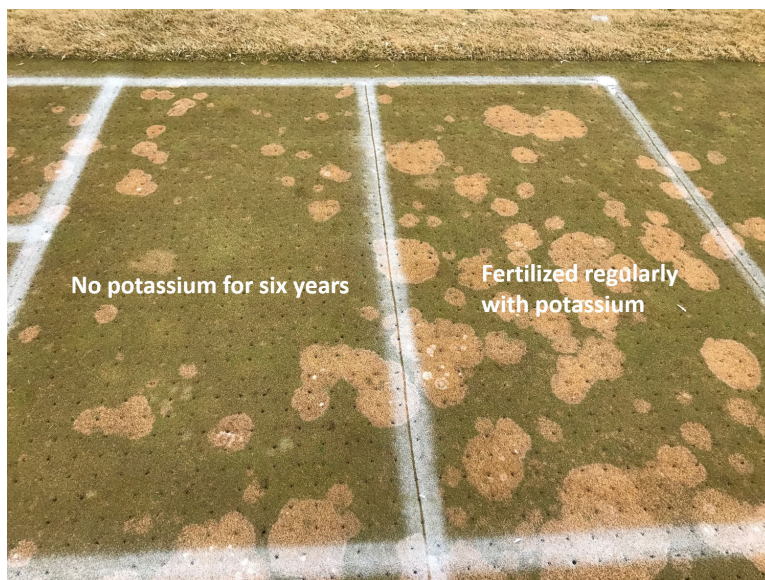
ported by a great staff, and an excellent college and university. We have keen undergraduate and graduate students, and a wonderful group of alumni and retired colleagues. The purpose of this newsletter is to keep you informed about departmental activities. And to tell you that spring is here in Madison. Almost.

Alfred Hartemink

Research Corner: Doug Soldat

Turfgrass comprises over 30 million acres in the US and is the dominant land cover in our ever-expanding urban and suburban areas. Wisconsin is home to a \$1 billion turfgrass industry. Continuing a Soil Science tradition going back to O.J. Noer in the 1920s, Dr. J.R. Love from the 1960s-1980s, and most recently by Dr. Wayne Kussow from the 1980s-2000s, the Soldat Lab investigates ways to enhance the function of turfgrass areas without increasing the economic or environmental costs of managing these areas. His lab currently consists of a number of undergraduate researchers, Research Specialist Nick Bero, and four graduate students: Pete Bier (MS, 2017), Ben Henke (MS, 2018), Shannon Plunkett (MS, 2017), and Qiyu Zhou (MS, 2017). Field research is conducted at the state-of-the-art O.J.

Noer Turfgrass Research and Education Facility in Verona, WI. One current research project is investigating the potassium requirements of golf course putting greens. The results to date show that potassium fertilization actually increases snow mold disease (above), and that the grass has the ability to mine the potassium feldspars in the sand fraction and may never require potassium fertilizer if feldspar-bearing topdressing sand is applied occasionally. In addition to the dozen or so research projects on turfgrass, members of the lab are also searching for better (and cheaper) ways to test the soil for bioavailable lead (Pb) – a major problem in city centers where children are often exposed to contaminated soil. If you ever have questions about your lawn, don't hesitate to reach out or stop by!



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Student Profile: Kalyn Diederich



Kalyn believes it is the culmination of her farm work, past U.S. and international research experiences, and her relentless curiosity for the life-sustaining medium beneath our feet that inspires her to attain a MS degree in Soil Science and Agroecology at UW-Madison. After graduating with a BS in Soil and Crop Sciences and Organ-

ic Agriculture from Colorado State University, Kalyn began her thesis research with advisors Matt Ruark and Erin Silva, titled, "Temporal and cropping system effects on labile soil carbon and nitrogen pools in agroecosystems" at the Wisconsin Integrated Cropping Systems Trial (WICST). Given that labile soil carbon (C) and nitrogen (N) dynamics are key variables in soil health assessments and are critical for soil ecosystem services, she is thrilled to be evaluating the impacts of WICST's long-term cropping systems on labile soil C and N pools using biological incubation and chemical extraction methods. She hopes her thesis work in the Ruark and Silva labs will help advance the scientific framework necessary to increase grower adoption of sustainable production methods that both synchronize crop demand and nutrient availability and improve soil health.

Alumni Updates

Mauricio Avila (MS, 1999; PhD, 2004) currently Technical Director and Ag Consultant with Nutrient Recovery and Upcycling LLC, has been appointed to CALS Board of Visitors, an outside advisory group to the Dean of the College..

Galen Bergquist (BS, 2015) has been accepted in the graduate school at the University of Minnesota with the Department of Land and Atmospheric Sciences. His project will focus on the potential for a perennial wheat grass to promote soil carbon sequestration and to improve other aspects of soil management while retaining economic value as a food crop.

Sarah Breuer (BS, 2003) is a Lifestyle Feed Specialist at Country Visions Cooperative.

Gerhardt Immega (BS, 1958) recently sold all but 100 acres of his Wisconsin land and continues to own 550 acres of land in Illinois.

Dale Peacock (BS, 1993) is the owner-operator of Red Hoof Farm: organic dairy, beef forage and livestock farm in Port Wing, WI.

Welcome

We wish to welcome our newest graduate students and staff:

Laura Bybee (MS, Barak)

Ekrem Ozlu (PhD, Arriaga)

Timothy Berry, Research Associate, Whitman Lab

Alex Bajcz, Research Associate, Balster Lab

Benno Ehrl Honorary Fellow, Pedersen Lab

Luis Henrique de Almeida, Honorary Fellow, Ruark Lab

Abigail Augarten, Honorary Fellow, Ruark Lab

Department News

Doug Soldat has been promoted from associate professor to professor, effective July 1, 2017. Since joining the department in 2006, Doug has demonstrated a strong commitment to the department, college, university, and extension through his research, teaching, committee work, and outreach programs.

J. Mark Powell plans to retire at the end of this month after 15 years as a devoted faculty member. We wish Mark all the best as he moves on from his illustrious career into new adventures!

UW News recently highlighted the **Barak Lab** and its spinoff company, **Nutrient Recovery and Upcycling LLC** for creating the process of extracting phosphorus from wastewater treatment plants and using it to create brushite, which can be used as dry fertilizer.

Congratulations to **Matt Ruark** on being selected for the Vilas Faculty Early Career Investigator Award. This award recognizes Matt's excellence in research.

The College of Agricultural and Life Sciences recently recognized twenty-two faculty and staff members at the annual CALS Awards Program, including four from our department: **Laura Ward Good** (Academic Staff Award for Excellence in Leadership), **Francisco Arriaga** (J.S. Donald Short Course Teaching Award), **Alfred Hartemink** (Douglas D. Sorenson and Vilas Distinguished Achievement Professor) and **Thea Whitman** (O.N. Allen Professor of Soil Microbiology).

Francisco Arriaga was elected by the department to receive the Rothermel Bascom Professorship in Soil Science. Francisco proposes to use the supporting funds to purchase new equipment such as a laser-light diffraction instrument, survey quality GPS system and portable 3D scanning system with software.

Joel Pedersen is the Co-Investigator on a UW2020 project that was recently funded. The proposal, "Acquisition of State-of-the-Art Solid-State NMR Instrumentation Enabling Characterization of Nanoparticles, Catalysts, Other Novel Materials, and Biochemical Systems" was developed with Ive Hermans (PI) and Katherine Henzler-Wildman (Co-PI).

Recent Graduates

UNDERGRADUATE DEGREES

Naquin, Durrell J. - BS, 2016 Soil Science

Thao, Chee - BS, 2016 Soil Science

Kazmierczak, Kyle A. - BS, 2017 Soil Science

Mohr, Logan W. - BS, 2017 Soil Science

GRADUATE DEGREES

Grauer-Gray, Jenna - MS, 2016 Soil Science
Digital soil morphometrics of three profiles from Wisconsin (Hartemink)

Bier, Peter V. - MS, 2017 Soil Science
Potassium fertilization affects microdochium patch severity on creeping bentgrass putting greens (Soldat)

Krishnan, Kavya - MS, 2017 Soil Science
Short-term benefits of cover crops on labile C and N pools in soil (Ruark)

Leo M. Walsh Distinguished Lecture in Soil Science



The 5th Leo M. Walsh Distinguished Lecture in Soil Science was presented on April 26, 2017 by Dr. Céline Pallud, Associate Professor in the Department of Environmental Science, Policy and Management at University of California-Berkeley. Her lecture was titled, "Biogeochemistry and transport of iron at the soil aggregate and horizon scale."

The Leo M. Walsh Distinguished Lecture is made possible by the generosity of Leo M. Walsh and the Leo M. Walsh Distinguished Lecture in Soil Science Fund.

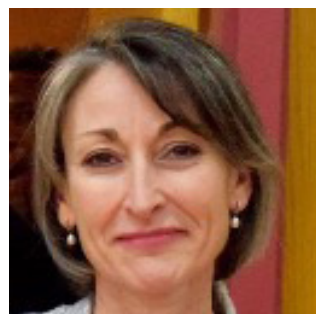
Jackson-Tanner Commons Grand Opening

After much anticipation, the Jackson-Tanner Commons project is complete. A celebratory, grand-opening event took place following the Leo M. Walsh Distinguished Lecture in Soil Science on April 26. Recognition of the hard-work and generous dona-



tions from many friends of the department were highlighted in opening remarks by Emeritus Professor Bill Bland and with a ribbon cutting and plaque unveiling. The department is honored to have such a beautiful space for students, faculty and staff to utilize for studying, congenial collaboration, and celebratory events.

Staff Profile: Mattie Urrutia



Mattie Urrutia, Faculty Associate, has been the Teaching Laboratories Manager since August 2005. She started college with the intent of becoming a microbiologist, but while taking a required Geology course, her enthusiastic Soil Science instructor opened her eyes to the beauty of soils. She graduated with a BS in Biology, minor of Soil Science and went on to obtain a PhD in Biology and Soil Science from the University of Santiago de Compostela in Spain. Her expertise was aluminum chemistry and soil acidity. Her work on soil acidification, from natural weathering to acid rain, eventually included acid mine soils and her re-encounter with microbiology. That brought her to North America, to postdoc with Professor Terry Beveridge at the University of Guelph in Canada, where she worked with microbe-metal interactions, learned transmission electron microscopy, and perfected her Canadian, eh? After a brief stint at Pacific Northwest Laboratories in Washington State, she continued work with Fe-reducing bacteria at the University of Alabama in Tuscaloosa (no - she never went to a football game). Transitioning to teaching, she developed and taught undergraduate courses in a variety of fields (Environmental Chemistry for Civil Engineers, Ecology, Ecology Laboratory, Limnology Laboratory) until her move to Madison in 2005 - back home in Soil Science.

Here Mattie has taught mostly laboratory courses including Soil Sci 301 and Soil Sci 326, and worked with Dr. Bill Bland in his Soil Sci 132 for seven years, a course that she is now teaching again. She helps also with any other courses where students require some laboratory work - Soils & Environmental Studies Capstone, Assessment of Environmental Impact, and Soil Physics. A self-proclaimed lab rat, she likes to work 'on the bench' and you will find her in rooms 370 or 371 - tinkering around. "Twelve years later, this is still my dream job."

Department of Soil Science at the University of Wisconsin-Madison

If 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

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If paying by check, please make your check payable to the UW Foundation-Department of Soil Science and mail to:
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Online donation is available on our website <http://soils.wisc.edu/alumni-friends/>

Profiles

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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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Profiles

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