

Profiles



Department of Soil Science
UNIVERSITY OF WISCONSIN-MADISON

DEC 2020 VOL. 12 NO.1

MESSAGE FROM THE DEPARTMENT CHAIR

A year comes to a close, and it has not been an easy one. The pandemic has tested our resilience on many levels, from the way we teach and conduct our research, to how we meet and talk to each other. Concurrently, we work on becoming a university and department in which diversity, inclusion, and equity are the norm, and in which systemic racism has no home. We sometimes have to react, but mostly we aim to be proactive, and it establishes that our department and community are well-embedded in the wider world. Soil science is not in an ivory tower.



Being a soil scientist under these circumstances has advantages. Most of us are system thinkers and do not shy away from bigger pictures. Deep down we are broadly rooted, connected to the elements; we embrace flexibility and creativity. We realize we will get through the turbulent times, but we do not know how yet. Sorrowfully, the department is suffering substantial budget cuts due to reduced income and increased costs for the university. The financial cuts are deeper than we ever had before, and do affect our teaching, research, and service. For once, I kindly ask you for your financial support. All amounts are welcome.

We also have lots of good news as the various contributions in this newsletter shows. At the beginning of the summer we welcomed our newest faculty member, Dr. Zac Freedman, who will foster our teaching and research in soil microbiology. We are very pleased to have him in our department, and if you wish to welcome him, his address is zfreedman@wisc.edu

I hope you and your family, friends, and colleagues are staying healthy and well. I wish you Happy Holidays, and thank you for all your support and trust in our department and community.

Alfred Hartemink
Chair

RESEARCH CORNER: ZAC FREEDMAN

Eminent biologist E. O. Wilson concluded in his 1994 autobiography "If I could do it all over again, and relive my vision in the twenty-first century, I would be a microbial ecologist...Into [the microbial] world I would go with the aid of modern microscopy and molecular analysis." Luckily, this is exactly what we get to do in my lab every day! Research in the Freedman Lab explores the ecological, environmental and evolutionary forces that shape soil microbial communities and the ecosystem functions that microbes mediate (such as carbon and nitrogen cycling). Current research activities in the lab target soil microbes in agricultural land and forests as well as microbes that inhabit carnivorous pitcher plants. In one project, we're testing different methods of manipulating the soil microbial community (such as soil amendments and microbial inoculations) to boost soil and crop health in bioenergy cropping systems on degraded agricultural land. In another, we're investigating the influence of historically high rates of atmospheric nitrogen deposition on microbial processes that affect the production and fate of soil organic matter across eastern US forests. In a third project, we are exploring the interactions between microbes and larger organisms that reside within the pitchers of the northern pitcher plant, a model system in community ecology. The overarching goal of the lab is to develop a newfound appreciation of the massive ecological and environmental impact of these tiny microbes and generate fresh ideas about how we may harness the power of soil microbes to help us solve our world's most pressing environmental challenges.



Zac Freedman in a stand of *Miscanthus X giganteus* (a plant highly suitable for bioenergy production) on previously mined land in SE Ohio.

ANTIGO SILT LOAM

Staff Profile Corner.....	2
Student Profile.....	2
Graduates.....	2
Welcome.....	2
Department News.....	3
Alumni Updates	3
Our Supporters.....	4

STAFF PROFILE: LAURA WARD GOOD AND THE SNAPPLUS GROUP

Until last March, a thriving software development group could be found working in the Department's basement. This team is responsible for the SnapPlus nutrient management planning program and related software that fulfills the Wisconsin idea. It serves agricultural producers from just north of the Illinois border to Bayfield by helping them make science-based decisions about their fertilizer and manure applications and managing their land to protect water quality.

Sarah Sebrosky is the team's newest member and is currently focusing on making the software user-friendly and intuitive. The team is happy to get an occasional peak at her young son Alden during remote meetings. Jim Beaudoin is the talent behind the SnapMaps geographic information system. He has by far the most basketball knowledge of the group. Rick Wayne keeps the team's software development systems going and shares his amazing astral photography to boot. Joe Wolter knows the code inside and out and is a master at fixing users' problem databases. Joe is also a terrific cook. Laura Ward Good, who leads the team, is a soil scientist (hurray!) She started as a postdoc with the project in 2003 when it was just an idea for bundling soil fertility recommendations, erosion calculations, and runoff phosphorus risk estimations into one software package.



Not only does this team build the software, they cooperate to provide full-time user support. "Best software support ever" says one crop consultant. The team agrees that having a direct relationship with the people using their software is both enlightening and gratifying.

STUDENT PROFILE: SUMANTA CHATTERJEE



Raised in a farming family in a village in West Bengal, India, Sumanta Chatterjee had an innate inclination towards farming and soils in particular. Fascinated by his dreams to become an agricultural scientist, Sumanta went to Bidhan Chandra Krishi Viswavidyalaya, West Bengal, India, and completed his undergrad and received a B.Sc. (Agriculture Honors) degree. Later he earned his master's degree in Agricultural Physics from ICAR-Indian Agricultural Research Institute, New Delhi, India. His dream came true when he was inducted into Agricultural Research Service by the Government of India as an agricultural meteorologist and posted in ICAR-National Rice Research Institute, Cuttack, India, where he worked for three years on paddy ecosystem. Intrigued by the concept of soil-plant-atmospheric continuum, he decided to further his career by specializing in soil science, which took him to the University of Wisconsin-Madison. Mr. Chatterjee, a PhD student in Soil Science with Dr. Jingyi Huang, is investigating soil water dynamics, digital soil mapping, and monitoring of agricultural and meteorological drought to better understand how soil water is varying in space and time, how soil properties can be predicted and mapped at field scale using proximal and remote sensing technologies and machine learning algorithms, and how drought is propagated across the conterminous USA, and to build a drought forewarning model for the farmers. His work on soil water retrieval using microwave backscatter from Sentinel-1 got the attention of soil scientists and hydrologists and published in Remote Sensing recently. Sumanta is inspired daily by his parents and his wife. In his free time, Sumanta likes to hike, trek, read novels, and watch Netflix!

RECENT GRADUATES

Francis, Hannah R. - MS, 2020

Soil Science and Agroecology (Ruark)
Nitrogen benefits when interseeding red clover into corn.

Kruse, Jacob I. - MS, 2020

Soil Science (Barak)
Pilot scale electro dialysis for ammonium recovery from municipal wastewater.

McAdow, Kristin M. - MS, 2020

Soil Science (Soldat)
Aided phytostabilization of soil-Pb in urban and rural Wisconsin.

Sikora, Miranda C. - MS, 2020

Soil Science and Agroecology (Ruark)
Inherent soil properties, farm management, and biological soil health in organic grain systems.

Braus, Michael J. - PhD, 2020

Soil Science (Whitman)
The acidity and proticity of microhabitats.

Ozlu, Ekrem - PhD, 2020

Soil Science (Arriaga)
Dynamics of soil aggregate formation in different ecosystems.

WELCOME

Dr. Sultan Kiymaz

(Visiting Scholar, Bleam)

Monica Schauer

(Research Assistant, Ruark)

Chee Thao

(Research Assistant, Arriaga)

James Winkelman

(Research Assistant, Balster)

New babies in the department:

Wylla, daughter of Jaimie

Samira (Simi), daughter of Zac

Lucas, son of Kathryn

DEPARTMENT NEWS

World Soil Day is always a fun day in the department and this year was no different! A photo contest among faculty, staff, and students provided a wide array of soil snapshots to enjoy. A hand-texturing activity provided fun during the remote social gathering, and all enjoyed watching and judging the movie, *Kiss the Ground*. Many thanks to Mattie Urrutia, Carrie Laboski, and Alfred Hartemink for planning this enjoyable day.

The International Union of Soil Sciences (IUSS) elected **Alfred Hartemink** an Honorary Member. The honor is in recognition of his soil science excellence and outstanding service to global soil science. Alfred is only the second IUSS Honorary Member from the Department of Soil Science at the UW-Madison following Emil Truog (1954).

Dr. Hartemink has also been elected chair of the U.S. National Committee for Soil Sciences. The committee is part of The National Academy of Sciences and is responsible for representing the US to the International Union for Soil Sciences.

Carrie Laboski, et al. paper, "Strength and Limitations of Nitrogen Rate Recommendations for Corn and Opportunities for Improvement," has won the 2020 Agronomy Journal Outstanding Paper Award. This collaborative effort is being recognized for its knowledge in the profession, the effectiveness of communication, originality, and impact.



Above: "Mottling" by M. Urrutia, co-winner of the World Soil Day Photo Contest



Research Associate, **Yakun Zhang**, received the 2020 Truog Soil Science Outstanding Dissertation Award from the Soil Science Society of America (SSSA). This award recognizes recent PhD degree recipients who made an outstanding contribution to soil science as evidenced by their PhD dissertation.

The Soil Health Institute (SHI) has named **Francisco Arriaga** to its newly established Scientific Advisory Committee, which will review, provide recommendations, and engage in helpful problem solving with SHI in its mission to safeguard and enhance the vitality and productivity of soils through scientific research and advancement.

Left: Yakun Zhang taking soil samples at a pitted outwash field at the O'Brien farm.

ALUMNI UPDATES

James L. Anderson (MS, 1972; PhD, 1976) retired from the University of Minnesota as Emeritus in the Department of Soil, Water, and Climate and co-Director of the Water Resources Center in 2008. He remains professionally active working with the National Association of Wastewater Technicians on education programs and writing monthly columns in two trade magazines about on-site sewage treatment.

Frederick W. Madison (MS, 1963; PhD, 1972; Emeritus Professor) was selected as a 2020 recipient of the NCR-SARE Hero Recognition Award posthumously. This recognition acknowledges and pays tribute to those who have helped shape sustainable agriculture and SARE in the North Central region through their leadership and vision.

William L. Pan (BS, 1976) will retire at the end of this month after serving 36 years on faculty in the Department of Crop and Soil Sciences at Washington State University. He also served as President of the Soil Science Society of America (2019).

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

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

Card Number: _____

Expiration Date: _____

Cardholder's Name (please print): _____

Cardholder's Signature: _____

Date: _____

Name: _____

Home Phone: _____

Work Phone: _____

Address: _____

City: _____

State: _____

Zip: _____

If paying by check, please make your check payable to the UW Foundation-Department of Soil Science and mail to:
University of Wisconsin Foundation • US Bank Lockbox • P.O. Box 78807 • Milwaukee, WI 53278-0807

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

Printing/mailing paid for with
UW Foundation/WALSAA/
Department funds.

Nonprofit Org.
US POSTAGE
PAID
Madison, WI
Permit No. 658

OUR SUPPORTERS

5/01/2020 to 11/30/2020

Alliance for Low Input Sustainable
Turf

Professor and Ms. Anderson

Mr. Brill

Mr. and Ms. Brooks

Professor and Dr. Brown

Dr. and Ms. Cates

Dr. and Ms. Checkai

Ms. Collins

Mr. Cornelius

Corteva Agriscience

Mr. and Ms. Davies

Mr. and Mrs. Duffy

Electronic Arts

Professor Hartemink

Mr. Hess

Mr. Hole

Ingersoll Rand Company

Mr. Jennrich and Ms. Rasmussen

Mr. and Ms. Juech

Professor Kirkham

Mr. and Ms. Krueger

Mr. Mulcahy

National Turfgrass Evaluation Prog.

Nufarm Americas Inc

Mr. and Mrs. Owens

Dr. Pan

Professor and Ms. Peterson

Dr. Randall

Mr. Shehadeh and Ms. Elsharef

Professor Soldat

Mr. and Mrs. Stellato

Ms. Tanner

Mr. Timmons

U.S. Golf Association

Mr. and Ms. Van Herwynen

Dean Emeritus Walsh

Ms. Wiedenbeck

Wis. Agri-Business Association

Wis. Potato and Vegetable Growers Association

Thank you
FOR YOUR SUPPORT

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:

Return to:

Profiles

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