

# Profiles



DEPARTMENT OF  
SOIL SCIENCE  
University of Wisconsin-Madison

JULY 2010

## Message from the Department Chair



Bill Bland

*Friends of Soil Science at UW-Madison:*  
Our instructional program had a terrific Spring 2010 semester: Nick Balster's *Soil: Ecosystem and Resource* (SoilSci 230) was, as always, at capacity with 92 students, and two upper level courses – Birl Lowery's *Physical Principles of Soil and Water Management* (SoilSci 322) and Phil Barak's *Plant Nutrition Management* (SoilSci 326) – had student numbers in the mid-20s, the highest in over a decade. Our broad service courses, *Introduction to the Environment* (SoilSci 101) and *Earth's Water: Natural Science and Human Use* (SoilSci 132), once again exposed hundreds of students from all majors to environmental science generally, with a solid dose of soil science.

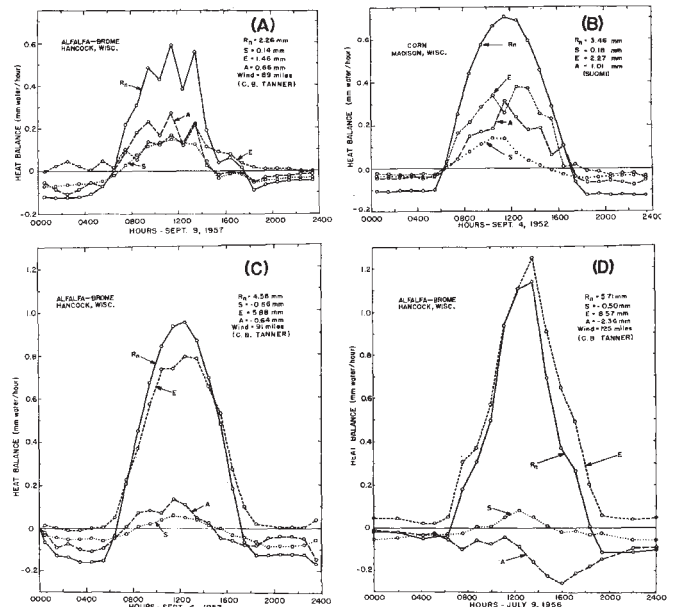
The flurry of graduate student research seminars in the coming weeks is testimony to the diversity of our community of faculty members and graduate students. On my calendar at this point: *Fertilizer-grade calcium phosphate from wastewater treatment plants*, by Prof. Barak's student Amanda Boyce, *Field and laboratory investigations of potassium dynamics in Wisconsin soils* by Prof. Carrie Laboski's student Lauren Vitko, *Evaluation of oxygen-18 labeled phosphate (OLP) as an environmental tracer and biological marker* by Prof. Doug Soldat's student Eric Melby, and *Land cover conversion from coniferous forest plantations to irrigated agriculture and changing evapotranspiration in the Wisconsin Central Sand Plain* by Mack Naber, a student working with Prof. Birl Lowery. We'll also look to Africa with *Agroecology of *Faidherbia albida* on the Tonga Plateau of Southern Zambia*, by Carl Wahl, a student working with me for the past 20 months. The quality and diversity of our graduate research are constant reminders of how much soil science has to offer to contemporary environmental and global food challenges.

Prof. Joel Pedersen continues to lead research on the environmental fates of prions, the biotic agents

## Great Graphs!! by Bill Bland

The graph is perhaps the quintessential scientific communication. Numbers – from observations or calculations—are placed in spatial relationship with one another, and a story emerges. During the annual meeting of the Soil Science Society of America last fall, I happened on two elegant examples of the power of graphs published by department faculty members in the 1960s and 70s. Both are remarkable for being among the very first of their kinds published, and the enduring significance of the stories they told for present-day environmental challenges.

TANNER: ENERGY BALANCE APPROACH TO EVAPOTRANSPIRATION FROM CROPS



The figure above is from a 1960 publication by Champ Tanner<sup>1</sup>, in which the radiant energy incident on Earth's surface is shown to be partitioned among evaporation, warming of air, and warming of soil. His concern at the time was understanding the rate of evaporation from vegetation. However, this fundamental question of the fates of radiant energy from sun and sky lies at the heart of the global change questions surrounding climate warming and shifts in the hydroclimate toward more intense rainfalls (with implications for soil erosion!).

The figure on p. 2 is among the first published graphs to illustrate the mobility of  $\text{NO}_3^-$  in soil profiles, from a 1970 paper by Olsen, Hensler, Attoe, and Peterson<sup>2</sup>. The figure shows the remarkable rate of downward movement of  $\text{NO}_3^-$  in Plainfield sand, for three levels of fertilizer application. The mobility of  $\text{NO}_3^-$  in the environment and the great

ANTIGO SILT LOAM

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## Awards, Honors and News



Dr. **Nick Balster** was promoted to Associate Professor, with tenure, effective July 1. Nick has emerged as one of our department's most talented and inspired teachers, so we are delighted that he is now a permanent member of the faculty. Nick also conducts research on the interactions of plants and soils, particularly in urban settings and in ecological restorations. Finally, he continues to provide soil and plant nutrition advice to Wisconsin DNR tree nurseries, carrying on this service previously provided Professor Emeritus Jaya Iyer. Congratulations to Nick!

### *Message from the Department Chair* continued from page 1

of "mad cow," "chronic wasting disease," and scrapies, in particular how to safely dispose of infected animals and tissues, and the role of soil as a reservoir of prions. His laboratory's latest work (Jacobsen et al. 2010, Transport of Pathogenic Prion Protein Through Soils, J. Environ. Quality 39; on-line only as of mid-June) demonstrates retention of prions by soil, suggesting the leaching risk should be small. Contaminated soil at the surface poses a risk as a reservoir for contamination of animals and could be carried away in erosion. Also, the potential for macropore flow remains.

On the Extension front, Dr. Mauricio Avila has joined us as manager of the Soil and Plant Analysis Laboratory in Madison. Mauricio is a native of Costa Rica and a 1999 MS and 2004 PhD graduate of our department. Careful management of plant nutrients is as vital a subject as ever, with both increasing attention to their roles in water quality and recent fluctuations in fertilizer costs. We look forward to Mauricio's leadership in this important facet of our outreach mission.

Any idea how many hours you lodged in the wooden chairs in rooms 270 and 357? Well, those in 357 will be but a bad memory in the coming months. The room is being refloored and the old seating replaced with movable table and chairs. Not only will this be a big plus for many a sitter, but this will accommodate the small group work that is increasingly part of our teaching strategies. The blackboards are also being replaced by whiteboards. A whole new feel to this venerable classroom!

Speaking of venerable: F.H. King was highlighted in Garrison Keillor's Writers Almanac (a daily public radio show and website, <http://writersalmanac.publicradio.org/>) on the anniversary of King's birthday (June 8). The Chronicle of Higher Education subsequently picked-up the story (<http://chronicle.com/blogPost/Happy-Birthday-FH-King-/24605/>). The stories featured King's famous book, *Farmers for Forty Centuries*, and his design of the round silo.

Please keep in touch, so we can keep in touch with you as we nurture the great history and promise of Soil Science at the University of Wisconsin-Madison.

**Bill Bland**, Chair

Professor **Phil Barak** was appointed Interim Director of CALS Information Technology. The position is half-time for 1 year. Phil will continue his teaching and research programs.

### **Kemp Station Celebrates**

You're invited to attend the 50th anniversary celebration of **Kemp Natural Resources Station** in Woodruff, WI on August 20-21, 2010. Tours, nature walks, golfing, a reunion social and an open house are just some of the activities planned for the weekend. Go to [www.kemp.wisc.edu](http://www.kemp.wisc.edu) for registration and details.

### **Badger Huddle**

Mark your calendars!! We'll be teaming up with the UW Agronomy Department again this year for the "Badger Huddle" - alumni reception held during the ASA-CSSA-SSSA International Annual meetings. The 2010 meetings are in Long Beach, CA, Oct. 31- Nov. 3, 2010. The Huddle is scheduled for Tuesday, Nov. 2, 2010, from 5:00 to 7:00pm, at the Hilton Long Beach.

## Alumni Updates

**Ryan Heiderman** (BS 09) began a Master's degree program (Forestry) at North Carolina State University in Spring 2010. He'll be working on a project involving intercropping miscanthus (potential bioenergy grass) with loblolly pine plantations, focusing on nutrient use/removal rates and productivity of the trees and grasses with and without intercropping. [RRHeider@ncsu.edu](mailto:RRHeider@ncsu.edu)

**Jason Kauffeld** (BS 94) reports that after graduating, he joined the Peace Corps and put his soils degree to good use in Nepal and also earned a Master's degree in Natural Resources from UW-Stevens Point, 1995-1998. He has worked, travelled and studied in more than 50 countries and spent almost ten years overseas. He has been happily settled back in Wisconsin (UWEX & Green Lake Co. Community, Natural Resources, and Economic Development Educator) since 2008 with his Trinidadian wife and their one-year old daughter. 601 Metomen St., Ripon WI 54971; 608-698-5843; [jasonkauffeld@hotmail.com](mailto:jasonkauffeld@hotmail.com)

**Linda Rinelli** (BS 82) says she is still using her soil science background - she's a volunteer/program coordinator at The Senior Hub, Inc., a non-profit senior services center. She organizes volunteers to help landscape, garden and clean up yards. 665 S. Clinton St., #63, Denver CO 80247-1552; 303-366-9730; [Irinelli@juno.com](mailto:Irinelli@juno.com)

**Samantha Langley-Turnbaugh** (PhD 95) is Associate Vice President of Academic Affairs for Research, Scholarship, and Creative Activity at the Univ. of Southern Maine, Portland.

**Gary Hart** (MS 92; PhD 96) sent an email from Jalalabad, Afghanistan where he is currently on loan from USDA-Animal and Plant Health Inspection Service - Veterinary Services to USDA-Foreign Agricultural Service for 12 months. He is part of a small group who were deployed on January 1 to Iraq and Afghanistan to serve as agricultural advisors. Prior to deployment, Gary was the area epidemiologist in New Mexico. [gary.l.hart@ugov.gov](mailto:gary.l.hart@ugov.gov)

**Ernest G. Link** (MS '54) has a new address: 585 Peterson Dr., Apt. 3, Phillips WI 54555-1444.

**Paul Koch** (BS '05) won the Golf Course Superintendents Association of America 2009 Watson Fellowship Program. The award goes to post-grad students (Paul earned an MS in Plant Pathology in 2007 and is currently a doctoral student in that department) who show promise as future teachers and researchers in golf course management.

*continued on page 4*

## Thank You to Our Supporters

(12/1/2009 thru 6/23/2010)

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 Professor Jack L. Stroehlein  
 Professor James B. Swan  
 Dr. Tsuneo Tamura  
 Ms. Kathryn A. Trudell  
 Professor Stephen J. Ventura

## Recent Graduates

**Griffith, Shane E. – BS, 2009,**  
 Agricultural Sciences–Production

**Metscher, Anna C. – BS, 2009,**  
 Agriculture and Natural Science

**Gottwald, Anne C. – BS, 2010,**  
 Agricultural and Natural Science

**Atkinson, Brian M. – BS, 2010,**  
 Agricultural Sciences–Production

**Hoffman, Andrew T. –BS, 2010,**  
 Agricultural Sciences–Business

**Cervantes De Blois, Chelsea L. – BS, 2010,**  
 International Agriculture and Natural Resources

**Eldred, Samuel M. – BS, 2010,**  
 Agriculture and Natural Resources

**Peich, Wendy M. – BS, 2010,**  
 Agriculture and Natural Resources

**Rowntree, Scott C. – BS, 2010,**  
 Agricultural Sciences–Production

**Schwerbel, Brinton W. – BS, 2010,**  
 Agriculture and Natural Resources

**Wallner, Amy M. – BS, 2010,**  
 Agriculture and Natural Resources

**Boyce, Amanda L. – MS, 2010,**  
 Fertilizer grade calcium phosphate from wastewater treatment plants. (Barak)

**Vitko, Lauren F. – MS, 2010,** Field and laboratory investigations of potassium dynamics in Wisconsin soils. (Laboski)

**Melby, Eric S. – MS, 2010,** Evaluation of oxygen-18 labeled phosphate (OLP) as an environmental tracer and biological marker. (Soldat)

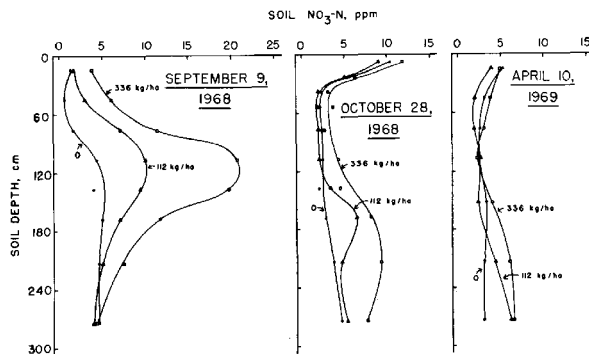
**Debels, Brad T. – MS, 2010,** Evaluation of water harvesting and subsurface drip irrigation for turfgrass irrigation in the Midwest. (Soldat)

### Great Graphs

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quantities that we manufacture has had monumental impacts on Earth and remains a prominent area of research. Our interventions into the N cycle both allows Earth to sustain far more people than it might otherwise, yet cause damage to ecosystems adapted to low ambient levels of nitrogen.

These graphs are wonderful reminders of the legacy of one of the great collections of soil scientists ever, anywhere – a tradition at the University of Wisconsin-Madison that we strive to continue.



1. Tanner, C.B. 1960. Energy balance approach to evapo- transpiration from crops. SSSA Proc. 24:1-9.
2. Olsen, R.J., R.F. Hensler, O.J. Attoe, S.A. Witzel, and L.A. Peterson. 1970. Fertilizer nitrogen and crop rotation in relation to movement of nitrate nitrogen through soil profiles. SSSA Proc. 34:448-452.

## 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

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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

**Henry Fribourg** (BS 49) notified us that he was senior editor of Agronomy monograph 53 – *Tall Fescue for the Twenty-First Century*. The monograph is available in print form and also online (*Tall Fescue Online Monograph*, <http://forages.oregonstate.edu/tallfescuemonograph/>) Henry is emeritus professor of crop ecology at the Univ. Tennessee. 7421 Somerset Rd., Knoxville TN 37909; 865-560-1247; fribourg@tennessee.edu

**Michael Aide** (BS 74) was recently elected chair of the Department of Agriculture at Southeast Missouri State University. He also reports that he was involved in the development of SEMO's Row-Crop Research Center and the Horticulture Research Station. 1 University Plaza, Cape Girardeau MO 63701; mtaide@semo.edu

**Jason Vogel** (BS 94) recently accepted an assistant professor position in the Dept. of Ecosystem Science and Management at Texas A&M University. His research interest focuses on soil carbon dynamics in high latitude ecosystems. Jason earned an MS (77) in Forestry here at the UW and a PhD at the University of Alaska, Fairbanks. Jason\_vogel@neo.tamu.edu

**Robert Sasman** (BS 47) sent a nice letter letting us know that he's retired for good now (he spent his first retirement in the consulting business)! After a couple of positions early on in his career, he was asked to establish a northeastern regional office (Chicago) as part of the Illinois State Water Survey. He enjoyed 31 years there. After serving in the Philippines for a year during WWII, he joined the Army Reserve and retired at the rank of Colonel. 2508 Kaneville Rd., #327, Geneva IL 60134-2574

## Alumni Update

**We'd love to hear from you!** Please complete and return this form or send your updates via email to: [slspeth@wisc.edu](mailto:slspeth@wisc.edu)

Name: \_\_\_\_\_

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

Home Address: \_\_\_\_\_

Email: \_\_\_\_\_

Phone No.: \_\_\_\_\_

Position: \_\_\_\_\_

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News to share: \_\_\_\_\_  
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