New Faculty Highlight: Katie L. Lewis

Dr. Katie L. Lewis joined the Plant and Soil Science faculty September 1st. Dr. Lewis will be jointly-appointed with Texas A&M AgriLife and serve the department as an assistant professor of soil chemistry and fertility, with a 75% appointment with AgriLife and 25% appointment with Texas Tech.

Prior to her start with Texas Tech, Dr. Lewis served as a Tom Slick Senior Graduate Fellow, teaching assistant, and graduate research assistant with Texas A&M’s Soil and Crop Science Department. Her bachelor’s degree is in chemistry from Sam Houston State University and her master’s and doctorate degree in soil science from Texas A&M.

Dr. Lewis provided the following comments about her future here at Texas Tech and research goals in the department.

“As an aspiring agricultural and environmental soil scientist, I am continually striving to enhance my understanding of the critical challenges currently facing agriculture and society. The knowledge I have acquired thus far in my academic experience has enhanced my desire to pursue a career in scientific research focused on finding solutions to those challenges. My undergraduate degree program as a chemistry major with a minor in crop sciences at Sam Houston State University provided me with the technical foundation to support a career as a soil scientist.

My enthusiasm for agricultural sciences was sparked long before my college career began. As the daughter of a South Texas farmer, I was introduced at a young age to the challenges of sustainable agriculture and how they affect society. My desire to investigate and develop solutions to these challenges motivated me to continue my education at Texas A&M University in the Department of Soil and Crop Sciences, where I obtained a Master’s of Science (2010) and Doctor of Philosophy (2014) in Soil Science with an emphasis in Soil Chemistry and Fertility.

My goal is to merge my background in chemistry with my passion for agriculture in a career focused on practical soil fertilization and management strategies that will maintain or enhance the value and quality of soils and improve production efficiency. I consider soil to be one of our most valuable natural resources, with the ability to produce food, feed and fiber, recycle wastes, filter and break down contaminants, and sequester carbon. My position as an Assistant Professor in Soil Chemistry and Fertility will provide me the opportunity through research to enhance the agricultural sustainability of a region that is vitally important to both Texas and the nation, while helping educate future scientists, producers, and policy-makers.”
Grants & Research Update

In the last quarter, the Department of Plant and Soil Science faculty members have been awarded over $2.06 million in external grant funding. Here are three grant highlights from all of these awards.

Dr. Jyotsna Sharma will lead a collaborative project titled ‘Testing a Microbial-Association-Distribution hypothesis to Explain Spatial Distribution and Species Co-Existence in a Community of Epiphytic Plants’ that was awarded $1,135,463 from the National Science Foundation. Texas Tech University’s portion of the award is $593,341.

A majority of plants depend on mycorrhizal fungi or other microbial symbionts, but ecological impacts of the distributions of their partner microbes are essentially unstudied. Utilizing principles of ecology and evolutionary biology, the project will test the overarching hypothesis that the distribution of mycorrhizal fungi together with the specificity of association influences the distribution of individual plant species, the structure of plant communities and partitioning of environmental niche space. This work will provide a novel picture of plant-fungal co-distributions and a first test of the proposed hypothesis, which could lead to identification of a previously unrecognized determinant of plant distributions and a new dimension for niche differentiation and competitive co-existence in plant communities. Results will also help improve models to predict plant community composition over space and time.

Dr. Dean Ethridge was awarded $448,935.80 from The Walmart Foundation for a project titled Foam Indigo Dyeing of Cotton Yarns: Machine Design and Process Control. Using foam application, this project is aimed at reducing the water, contaminants, time, labor, floor space, and expense of applying indigo dye to denim yarns, thereby making more efficient one of the largest cost components of denim fabric manufacture. Success should enable a three-fold increase in throughput in the dyeing stage, reduce the water required by more than 90%, and result in commensurate savings in energy costs. This project fits perfectly within the current focus on manufacturing sustainability. Denim is being challenged partly because of its enormous volume and partly because of its dyeing method. “Success in this project would reduce the water used to indigo dye denim by more than 90%. It would introduce a new paradigm for indigo dyeing that would enable drastic reductions in costs and drastic improvements in environmental impacts,” Ethridge said.

Drs. Mark Burrow and Venugopal Mendu were awarded $301,408 from the USAID at Michigan State University as part of the USAID’s Borlaug Higher Education for Agricultural Research and Development (BHEARD) Program. This award includes funding to host a Doctoral student, Theophilus Tengey, from Ghana. Texas Tech was the only non-land grant university selected under the BHEARD program. This program is funded through USAID and administered by Michigan State University. Qualifications for the award include national competitiveness of the Ph.D. degree program and experience and expertise of the faculty advisors. The doctoral student will be trained on map based cloning and molecular marker technology. The project will focus on use of DNA marker technology in breeding. Part of the project will be use of markers for breeding for resistance to leaf spot diseases in Texas and Ghana. Leaf spots can cause significant yield losses, or require expensive fungicide applications. Release of disease-resistant varieties will improve farmer profitability and improve yields.
Faculty News

Dr. Eric Hequet officially stepped into his new role as department chair September 1st.

Dr. Eric Hequet recently completed a three month fellowship with CSIRO in Australia focusing on managing and reducing cotton fiber damage and the impact of that damage on spinning performance.

Dr. Venugopal Mendu will be hosting a Borlaug Fellow from Malaysia for the next three months to gain training as part of a recently awarded USDA-FAS grant.

Drs. Glenn Ritchie and Chuck West were interviewed and filmed at the New Deal research field station by the Texas Tech Office of Communications and Marketing about agricultural water use in Texas High Plains on September 2. The film footage will be part of a series of water-related documentaries produced by Texas public television stations to be aired across the state. Dr. Ritchie explained how new cultivars of corn, sorghum, and cotton can produce high yields with less water. Dr. West demonstrated research on low-water-use forages used for grazing beef cattle.

Dr. Noureddine Abidi has been named the Associate Director of the Fiber and Biopolymer Research Institute as well as the new department Graduate Programs Leader.

Dr. Cynthia McKenney received the TTU College of Agricultural Sciences and Natural Resources Faculty Service and Outreach Award for her service to the college and the department.

The following presentations and publications were made:


Student News

The TTU Soils Judging Team Competed at the Region IV Contest hosted by Texas A&M University-Kingsville. Team members include: David Brockman, Emily Keeling, Trey Roach, Morgan Hector, Trent Smith, and Jennifer Romero. The team placed first in team judging, had the 1st (Jennifer Romero), 2nd (David Brockman) and 5th (Trey Roach) place individuals, and placed first overall in the contest. The team will be advancing to the national competition in the spring. The Soils Team is coached by Dr. David Weindorf with special help from graduate student Corey Bryant.

Big congratulations to all of our August 2014 graduates! Commencement ceremonies were held on Saturday, August 9th. Among the 1,300 graduates, students that graduated from our department include: Cameron Oliver (MS in Plant and Soil Science), Staci Parks (MS in Horticulture), Jennifer Williams (MS in Horticulture), Travis Witt (MS in Plant and Soil Science and will continue with a PhD in PSS), Victoria Xiong (MS in Plant and Soil Science and will continue with a PhD), Sarah Glenn (BS in Horticulture and Turfgrass Science), Matthew Johnston (BS in Horticulture and Turfgrass Science), and Spencer McCasin (BS in Horticulture and Turfgrass Science).

Cassandra Plank, PSS graduate student, was asked to submit an article for the “Coffee Shop” segment on The Wines of Lodi California Commission website. Cassandra’s article focused on her research on the Effect of Light Environment on Methoxypyrazine Content of Cabernet Sauvignon. Here is a link to the article: http://bit.ly/1plCCAq
Staff & PSS News

J.D. Booker has recently been reclassified as a Research Scientist in the Plant and Soil Science Department.

Dr. Yang Hug, a new Post Doc Research Associate has started at FBRI in the Biopolymer Research Laboratory.

Lori Walraven, the PSS Unit Supervisor, received the TTU College of Agricultural Science and Natural Resources Staff Award for her service and support to the college and the department.

With advisement from Dr. Scott Longing, the Entomology Club at Texas Tech is back up and running in full-swing. Their membership has grown and they have completed different activities, including an insect motel at the Quaker Research Farm.

U.S. Senator Conaway visited the FBRI on September 13, 2014. He was hosted on a tour through the labs by FBRI faculty and staff.

Industry Partnership

As glyphosate-resistant Palmer amaranth continues to spread across the Texas High Plains, growers are anticipating new cotton technologies to assist in their weed management strategies. Monsanto Corporation, Dow AgroSciences, and Bayer Crop Science are all looking into new herbicide tolerant cotton technologies.

Monsanto’s technology, Bollgard II® Xtendflex™ cotton, will add dicamba tolerance to the existing tolerance to glyphosate (Roundup) and glufosinate (Liberty) whereas Dow’s Enlist™ cotton will provide tolerance to 2,4-D choline, glyphosate, and glufosinate.

This summer, both Monsanto and Dow AgroSciences invited many sectors of the agricultural industry to attend technology centers that highlighted their new weed control systems. The Weed Science Program at Texas Tech University, led by Dr. Peter Dotray, partnered with Dow AgroSciences to create a technology center at the Texas Tech Research farm near New Deal. Dotray and his group (Research Assistant – Shay Morris, Graduate Students – Misha Manuchehri and Rand Merchant, Student Workers – Clayton Ferguson and Amber Krause) worked with Enlist™ Trainee Sarah Daily to create demonstration plots on nearly 5 acres to highlight the innovative technology of the Enlist™ Weed Control System. Plots within the technology center focused on current/future crop varieties, herbicide-tolerant traits, weed management, how to mitigate off target movement, and proper tank-cleanup procedures.

Dr. Jonathan Siebert, Enlist™ field specialist, led tour attendees through the center for a two week period in mid-September. For most attendees this was their first time seeing this new technology. Tour attendees included growers, chemical companies, extension county agents, the Texas Department of Agriculture, Plains Cotton Growers, and many more. The site was also used as an internal training for several Dow AgroSciences employees.

The event was extremely successful and tour attendees seemed to be impressed with all of the demonstration components. Monsanto’s Bollgard II® Xtendflex™ cotton will likely be available in limited quantities as early as 2015, and pending regulatory approval, Dow AgroSciences expects to launch Enlist™ cotton in 2016.