Department of Soil and Crop Sciences Accomplishments 2014

As we have our annual departmental review this week I wanted to share the accomplishments that Wayne, Mark and I have compiled. You are to be congratulated on a great year as the Soil and Crop Sciences Department.

SCSC filled critical positions in Amarillo (agronomist Jourdan Bell), Corpus Christi (agronomist Josh McGinty), and Dallas (turf specialist Matt Elmore) with support from central administration. In addition, the Vernon agronomist is in review and the College Station state soil fertility specialist position is in-process. We also filled tenure track positions to meet our strategic plan for enhancing our capacity in spatial soil and water resources, and weed science, as well as a research position that is joint with Texas Tech in soil fertility. We also have made considerable progress toward completing the Butler, Beachell and Borlaug chairs. Dr. Nithya Rajan, Assistant Professor-Cropping Systems, has transferred from Vernon to College Station and will teach our capstone course for our crops emphasis area. It is important to note that all of the positions were part of our strategic planning process, and while they may be filling a position vacated by someone, they have been redesigned to keep the department competitive. These hires are critical to move all the missions of the department forward in the coming years.

We continue to be pleased with the contributions to the department through the development work. The Neelys, Smiths and others completed major gift agreements in 2014, but we have expectations that this could increase significantly going forward. Overall departmental management seems to be moving with limited issues, but increasing compliance efforts stress our staff and may require additional staff to keep our federal grants, corporate efforts, teaching and daily activities as efficient as possible. We think modifications to our Hub efforts made this past year will move us forward in a very positive manner.

It was an exciting year as we completed renovation of the Agronomy Field Lab and completed negotiations for moving our turf facility. Greenhouse and growth chamber/room plans for the future were initiated.

Teaching

The SCSC curriculum revision will be fully implemented with the teaching of our capstone crops course in spring 2015. All Plant and Environmental Soil Science majors and all Turfgrass Science majors entered in the FY13 catalog will complete a high impact learning experience (undergraduate research, internship, or study abroad).
We are experiencing excellent student numbers in many of our classes both departmentally required and electives. For example, enrollments for the latest semester were:


We have instituted Honors Sections in the following classes: SCSC 405 (Soil Microbiology), 302 (Recreational Turf), 201 (Great Plains Settlement & Farming), 301 (Soil Science), and 309 (Water & Soils in Plants). Twenty-one UG students participate in HIP 484 Internship, 10 participated in a 491 UG research experience, and 0 participated in a study abroad. Although the College has provided some funding for study abroad courses, we are challenged to create a culture in SCSC where a student is going to spend $2,000 to $5,000 dollars for this experience.

At the graduate level, our numbers are on the increase in our Plant Breeding, Soil Science, and other (MEPS, GENE, FSTC, WHSC IDP) majors. The Agronomy graduate numbers are trending down with the loss of faculty from the ’09 recession (buyout), the recent loss of both of our weed scientists, and the death of Dr. Tom Cothren. On the positive side for Agronomy, graduate student numbers are expected to grow in the coming years with recent hires and transfers mentioned above. Our Distance Plant Breeding Program continues to attract students in industry, and globally, with 17 currently enrolled (15 active and 2 accepted for Spring 2015). We have two in India, one in Missouri, two in California, one in Kansas, one in Illinois, one in Arkansas and the remaining are in Texas. We anticipate at least one additional student from Turkey this year and expect to admit one additional industry student for Spring 2015. We also offer continuing education courses in plant breeding and had 43 CE individual students participating in the program during 2014. Additionally, Dr. Tim Herrman, adloc'ed to SCSC, has 17 NDS distance students in his Regulatory Science courses.

Our clubs/teams, Agronomy Club, Turf Club, and Soil Judging, continue to be active and participatory in state and national venues. This led to our soil judging team leader coordinating the first international soil judging contest.

Extension

We continued to deliver a high volume of high quality programs including 814 face-to-face and 16 interactive electronic events impacting 47 thousand clientele through 54 thousand contact hours. Impacts also were achieved through development/delivery of 66 Extension publications, 187 popular press articles, and 148 television/radio programs with audiences in excess of 3.1MM. Web-based information and resource delivery via 19 websites expanded substantially with over 19.4MM page visits and 8.1MM original hosts. Example program impacts for 2014 include:

**Crop Testing:** Statewide specialist-led crop testing identified top-performing cultivars with average yield increases of 26 bu/acre for corn, 250 lbs lint/acre for cotton, 1400 lbs/acre for grain sorghum, and 2.5 bu/acre for wheat. Based on current acreages and prices, the conservative (25% adoption) potential annual economic impact of these programs exceeds $325MM.

**Cotton Industry:** Ginning and value-added impacts associated with enhanced cotton yields supported over 3,500 jobs and have an estimated annual impact of over $150MM.

**Emerging Pests:** Field research and education programs on optimum pesticide rate and timing for control of the sugar cane aphid have a potential economic impact of over $15MM annually.

**Nutrient Management:** Deep soil testing to credit carryover nitrogen demonstrated an estimated average cost savings of $23/acre for cotton and $31/acre for corn and grain sorghum, with potential increased net returns for producers exceeding $65MM annually and reduced environmental issues.

**SWFTL Service Laboratory:** The Soil, Water, and Forage Testing Laboratory continued to provide state-of-the-art testing services and a check/balance function through analysis of over 43,000 soil, water, forage, plant tissue, and bio-solid samples.

**Herbicide Resistance:** Focused educational programs to achieve effective management of herbicide resistant weeds, specifically common water hemp and Palmer amaranth, will limit increased control measure costs which could exceed $70MM annually in cotton production systems alone.
**Agricultural Water Conservation:** Forage sorghums were shown to be almost two times as productive as corn for silage production, and with 2.5 times greater WUE can reduce water consumption from the Ogallala aquifer by more than 7.5BB gallons/year.

**Texas Well Owner Network:** TWON trained 1,169 well owners to protect their wells from pollutants which could affect the health of their families and contaminate critical groundwater supplies, and was client-valued at over $860,000.

**Ranch Management University:** RMU, an intensive 5-day training program targeting novice landowners, is delivered by faculty from SCSC, AGEC, ANSC, WFSC, and RPTS. Six-month post-survey results placed average program value at $117/A, or approximately $13.8MM.

**Watershed Planning:** SCSC developed and now leads implementation of the Geronimo and Alligator Creeks Watershed Protection Plan through acquisition of over $1.3MM in funding for programs to foster local ownership and action. The April 2014 stream clean-up event engaged 230 local volunteer stakeholders representing cities, counties, businesses, and landowners and removed over 7,000 lbs of trash and 45 tires from 17 miles of these streams.

**Research**

Water remains a key priority of the department and we are excited to have many of the faculty members hired this year with an emphasis on water. It is important to move this to the next level where we break through to major grants in this significant area to Texas and the world. Graduate student numbers with a major portion of effort committed to water issues continues to climb.

The wheat team continues to perform at an outstanding level with ongoing support from Bayer allowing for purchases of equipment, graduate student funding and core research dollars that the research team continues to utilize to further establish us as a clear world leader in public wheat breeding, genetics, quality and management. Our research program has been highly successful in translating our new trait technology into improved cultivars with increased royalty and licensing revenue. Our sorghum bio-energy and wheat breeding programs have established industry partnerships that obviously are mutually beneficial. Our cotton breeding program followed suit with Bayer buying breeding rights to our extra-long staple upland material and providing an equipment gift to the program. Our corn program has several top performing lines and hybrids that are under evaluation. We continue to be the premier land-grant institution working with cotton. This year we had releases of TAM 114 and 204 wheat cultivars while in 2013 we released cultivars or enhanced germplasm of clover, corn, cotton, sorghum, St. Augustine turfgrass, and bluegrass turf. The A&M brand is very strong nationally and internationally in the plant breeding arena. Our TAM wheats continue to be the most widely grown in the nation. Research funding was down with reduction in corporate sponsorship for bioenergy, but federal competitive was up and opportunities in UAV and plant improvement bode well for the future.

We expect similar success in production agriculture related soils issues as we move into greater spatial capacity in the department in terms of understanding the underlying pedology and physics of soil variability and their application by farmers. We continue to grow in recognition as a leader in sustainable and reconstructed soils to complement our reclamation work, long term systems work and efforts in contaminated soils. Turf research continues to move forward with the relocation of the rest of our research area slated to occur this year as well as construction of a new research, teaching and extension facility on F&B Road. We have developed the capacity for exceptional turfgrass research for the future.

Soil and Crop Science faculty continue to provide well recognized leadership across a broad range of service including Editor for Journal of Crop Registration, Geoderma and several associate editor roles.

Dr. Seth Murray was recognized as the Young Crops Scientist by CSSA and Frank Hons received the Agronomic Resident Education Award. Ben Wherley received the ASHS Southern Region Extension Communication Award. Faculty chaired several national symposia across a broad range of topics. Bill Rooney chaired the Sorghum Improvement Conference and David Stelly chaired the International Cotton Genome Initiative.
Departmental Awards

Congratulations to our 2015 departmental award winners! Your dedication to the department and the field of agriculture is truly an inspiration.

Administrative Support Award: Sonnie Feagley

Collaborating County Agent Award: Brad Cowan
Extension Specialist Award:  
Dr. Vanessa Corriher-Olsen

Graduate Teaching Award:  
Greg Wilson

Research Collaboration Award:  
Dr. Carol Kelly (accepted by Mika Wyatt)
Research Support-Field Award:
Charles Fontanier

Special Service Award:
Larry Kalina, Kalina Farms

Teaching Award:
Dr. Ben Wherley
Technical Staff Support-Laboratory Award:
Allen Leonard

Undergraduate Student Support:
Ana Sofia Corona Gaxiola

Not Pictured:
BB Singh Award for Crop Science Research:
Dr. Bill Rooney
Research Collaboration Award:
Dr. Carol Kelly
Special Service Award:
Allan Hunt, Hunt Farms
Technical Staff Support-Field Award:
Dale Mott
Sympathy

Please keep Dr. Mike Chandler and family in your thoughts and prayers as they are mourning the loss of his wife, Bonnie Chandler. Mrs. Chandler passed away on January 14th in her sleep.

Funeral arrangements were Monday, January 19th @ 2:00 p.m. in Pauls Valley, Oklahoma at Stufflebean-Coffey Funeral Home, 500 N Willow St., Pauls Valley, OK 73075

Please keep John Smith and family in your thoughts and prayers. His mother, Mrs. Virginia Smith passed away on January 7th. John is an Extension Program Specialist in our department.

Please keep Monty Dozier and family in your thoughts and prayers. His father-in-law, Mr. Bob Bobbitt, passed away on December 31st.

Please keep Tami Hons in your prayers as we wish her a speedy recovery from shoulder surgery. Tami is the wife of Dr. Frank Hons.

In Memory of Former Students

Mr. Hugh L. Howard ‘51
Friendswood, Texas
Agronomy
USDA has begun its celebration of the International Year of Soils to highlight the importance of healthy soils for food security, ecosystem functions, and resilient farms and ranches.

“Healthy soil is the foundation that ensures working farms and ranches become more productive, resilient to climate change, and better prepared to meet the challenges of the 21st century,” Agriculture Secretary Tom Vilsack said during an event January 6 at USDA headquarters. “We join the world in celebrating this living and life-giving resource.”

With an increasing global population, a shrinking agricultural land base, climate change, and extreme weather events, the nations of the world are focusing their collective attention to the primary resource essential to food production – the soil. The United Nation’s (UN) Food and Agriculture Organization (FAO), working within the framework of the Global Soil Partnership, spearheaded the adoption of a resolution by the UN General Assembly designating 2015 as the International Year of Soils. The year of awareness aims to increase global understanding of the importance of soil for food security and essential ecosystem functions.

“Most people don’t realize that just beneath our feet lies a diverse, complex, life-giving ecosystem that sustains our entire existence,” said Jason Weller, chief of USDA’s Natural Resources Conservation Service (NRCS). “We are helping producers unlock the power of soil health as part of an important and very successful national campaign. Our campaign demonstrates our renewed commitment to soil conservation and soil health.”

NRCS is coordinating activities to mark USDA’s involvement in the International Year of Soils. Nearly 80 years ago, NRCS, formerly the Soil Conservation Service, was created to improve the health and sustainability of our nation’s soils. The agency’s original mission continues to this day – providing assistance to producers looking to improve the health of the soil on their land.

“International Year of Soils provides an opportunity for us to learn about the critical role soil conservation and improved soil health play in the economic and environmental sustainability of agriculture,” Weller said.

Working with the Soil Science Society of America (SSSA) and other partners, NRCS will be showcasing the importance of soil with monthly themes created by SSSA:

January: Soils Sustain Life
February: Soils Support Urban Life
March: Soils Support Agriculture
April: Soils Clean and Capture Water
May: Soils Support Buildings/Infrastructure
June: Soils Support Recreation
July: Soils Are Living
August: Soils Support Health
September: Soils Protect the Natural Environment
October: Soils and Products We Use
November: Soils and Climate
December: Soils, Culture and People
When it comes to land stewardship, education is essential to implementing best management practices (BMPs) on private lands. Educational programs not only foster awareness of conservation issues and provide landowners with the information necessary to adopt BMPs, but they also empower and inspire landowners to preserve natural resources.

The Texas A&M AgriLife Extension Service has long recognized the value of conservation education and has developed many programs accordingly. Many of the educational programs collect and consolidate information and make that information more accessible to landowners through conferences, trainings, and field days. Additionally, these programs connect landowners to scientists and policymakers, empowering them to actively engage in the conservation process.

Endowment leaves a stewardship legacy

The Bennett Trust Endowment originated from one landowner’s deep appreciation of the Edwards Plateau and desire to preserve it, along with AgriLife Extension’s wish to carry on those values. Eskel Bennett, a native Texan who retired in Dripping Springs, provided an endowment for AgriLife Extension to continue his tradition of conservation education and preservation of the Edwards Plateau. Bennett was an advocate for land stewardship and used this endowment to continue that advocacy even after his passing in 2006.

These programs connect landowners to scientists and policymakers, empowering them to actively engage in the conservation process.

“His desire was for us to have the ability to do land stewardship programs in the Edwards Plateau, because that’s where [the Bennetts] lived, and that’s a property they loved,” said Dr. Larry Redmon, Bennett Trust AgriLife Extension specialist.

The endowment is the first directly given to AgriLife Extension. “Mr. Bennett’s gift is an enduring legacy, and our ability to conduct stewardship programs out there will go on indefinitely,” Redmon said.

Funded by the endowment, the Bennett Land Stewardship program uses conferences tailored specifically for land management in the Edwards Plateau, covering issues such as brush control, prescribed burning, estate planning, water management and livestock stocking rates.
The “Protecting the Legacy of the Edwards Plateau” conference, held in Kerrville April 23-25, 2013, was the first funded by the endowment. It educated landowners and ranchers on land management practices and the value of land stewardship and included a keynote presentation from Wyman Meinzer, the official state photographer.

The response to the conference was overwhelmingly positive. “It was a great start to what is going to be a long, long series of programs in that part of the state,” Redmon said. A second conference is planned for April 22–24, 2015, at the Inn of the Hills Resort and Conference Center in Kerrville.

Learn more about the Bennett Trust at bennetttrust.tamu.edu.

Rookie ranchers learn from the best

For a new or novice landowner, taking on all the responsibilities associated with maintaining a ranch can be intimidating. To help ease this transition, Ranch Management University serves as an introductory course and one-stop shop for beginning ranchers. The workshop covers a wide range of topics associated with ranching and provides a support network to its participants.

Ranch Management University is a five-day event held each April and October in College Station and is paid for by participants. A number of subjects are covered, including livestock and wildlife management, pasture management, natural resource stewardship and water quality issues. Participants receive specific training on livestock management practices, such as administering vaccinations and dehorning, as well as land management practices, such as introduced and native forage management. Ranchers also learn about issues related to land stewardship, including stocking rates or the amount of livestock a particular piece of land can support.

“When they go home, they actually have the resources to go back and do what we discussed during the week,” said Redmon, program coordinator.

The workshop also provides a unique opportunity for participants to interact with experts, including Texas A&M University faculty and AgriLife Extension specialists. This mentorship does not end when the workshop ends; faculty and specialists make themselves available to participants if they need additional support.

“When they go home, they actually have the resources to go back and do what we discussed during the week.”

“We don’t expect them to be perfectly knowledgeable when they come out, but at least they know some questions to ask and some things to be aware of,” Redmon said. “And they know who they can contact, because we give them a list of all the faculty involved in the workshop, and they can contact those people at any time and ask them questions.”

Ranch Management University attracts various people from different walks of life, including people from outside of Texas, he said. Many participants develop connections while in the program that continue beyond the workshop, and some use the program’s Facebook group to continue discussions and share information.

“At the end of the first day, they’re all good friends even though they were strangers when they started,” Redmon said. “It’s amazing how these groups come together and really start to share.”

Over their years of running the workshop, Redmon and his colleagues noticed a need for a similar program designed specifically for women who have unexpectedly become landowners. They will be developing such a workshop in the future, he said.

Learn more about Ranch Management University at forages.tamu.edu/workshop.
Lone Star Healthy Streams educates, protects

Currently, there are 273 water bodies in Texas that are considered impaired by bacteria, affecting Texas’ ecosystem health and Texans alike. Lone Star Healthy Streams (LSHS) is combating bacterial contamination by educating farmers and ranchers on the impacts of bacterial runoff and how to reduce runoff caused by feral hogs, horses, beef cattle, dairy cattle and poultry. LSHS provides resources for rural landowners, such as presentations, manuals, an interactive website and an online course.

The program was developed in 2007 through a partnership between the Texas State Soil and Water Conservation Board (TSSWCB), the Texas Water Resources Institute (TWRI) and AgriLife Extension, with funding from the U.S. Environmental Protection Agency’s (EPA) Clean Water Act 319 program.

Since its inception, LSHS has sought to equip rural landowners with the tools necessary to manage land to support healthy waters. The educational materials provided by LSHS allow landowners to understand the risks of bacterial contamination and how to voluntarily implement BMPs, such as proper grazing, feral hog management and riparian area protection.

Livestock producers can more easily make wise choices for reducing pollution from their operations if they know the benefits of clean water to agricultural operations, current water quality laws and policies, ways bacteria can enter water and solutions available for reducing water quality problems, said Redmon, who also leads the LSHS program.

“A lot of those things are either zero-cost or very low-cost and easy to implement in many cases, so it’s basically a matter of making people aware of the issues and the solutions,” he said.

“This educational program is a tremendous tool that has been helping landowners throughout the state to reduce bacterial loading from livestock operations and feral hogs,” said Dr. Kevin Wagner, TWRI’s associate director. “It provides an assortment of resources for the livestock industry, stakeholders and natural resources agencies on bacterial water quality issues related to livestock, as well as measures that can be implemented to improve water quality.”

Each manual produced by LSHS has been endorsed by natural resource agencies and industry associations, including the Texas and Southwestern Cattle Raisers Association, U.S. Department of Agriculture-Natural Resources Conservation Service (USDA–NCRS) and Independent Cattlemen’s Association of Texas. These manuals are available online at lshs.tamu.edu/publications.

To learn more about LSHS, visit its website at lshs.tamu.edu.

Bringing together watershed stakeholders

A vital part of watershed protection and management includes the participation and education of the watershed’s stakeholders. The Texas Watershed Steward (TWS) program aims to do just that by hosting events and workshops that provide communities with the necessary know-how to actively engage in protecting and restoring their watersheds.
The program was developed through a partnership between AgriLife Extension and TSSWCB, and since its first workshop in December 2007, TWS has conducted 63 workshops throughout the state.

The critical need for proper education on watershed issues was the primary reason for TWS’ genesis, said Galen Roberts, TWS program coordinator. Community members are sometimes unaware of what is needed to protect their watershed or even why the watershed is impaired.

TWS targets areas that have either ongoing or upcoming watershed projects and coordinates with TMDL and WPP efforts, Roberts said. Workshops then coincide with efforts such as TMDLs or WPPs. Additionally, the events are open to anyone interested, from agricultural producers to homeowners, and continuing education credits are offered.

Workshops can be a full or half day and address both general water resource issues and those specific to the local watershed. The course begins by covering watershed basics and then discusses point and nonpoint sources of pollution, and water quality testing and management strategies, among other topics. Lastly, community members currently involved in local watershed protection and management speak about local watershed protection efforts.

The success of TWS is apparent. The program conducts pre- and post-assessments during the workshop, which have shown a 30-percent to 33-percent increase in knowledge related to watershed issues. Additionally, follow-up questionnaires conducted six months after the workshop indicate that participants began to implement some of the practices they learned including soil testing.

Roberts said this illustrates the practical significance of TWS and the impact it has had on watersheds it has reached. “Often times just a simple change in behavior can have a positive impact on water quality, so education is a crucial component of any water quality improvement or management strategy,” he said.

For more information on TWS, visit the program’s website at tws.tamu.edu.

In a time where future natural resource availability can seem uncertain, the reliability of educational opportunities from AgriLife Extension provides reassurance that Texas land and water can be sustained.

“These programs are tremendously important to helping the state address its water quality issues as well as meet future water needs,” Wagner said. “Each of these programs increases the awareness of water and other natural resource issues facing the state but then goes a step farther and shows landowners what they can do to help address these issues.”
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