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Spring seems to be flying by. We are well into planting season and while the crops are in the ground in some locations, others are still hampered by unfavorable weather.

We held our annual Undergraduate Awards Banquet last week, where we had the privilege to provide $86,550 in scholarships to our undergraduate students. Congratulations to each of the students who have earned one of those awards. The scholarships are made possible by the generous contributions of former students, retired faculty, and friends of the department. A big thank you goes out to all of those donors. Thanks also to Taylor Atkinson and LeAnn Hague for organizing and conducting the banquet (see photos page 3).

Thanks to all for participating in departmental ice cream social! We had a great selection of ice cream and toppings. Kudos to the planning committee.

Dr. Ben Wherley and his team were among those recognized at a patent award banquet April 18th. The team was awarded a patent on their LIRMS® landscape irrigation run-off mitigation system which is designed to help homeowners minimize water waste and irrigate their lawns more effectively. Congrats!

A delegation from the Hunan Province of China visited recently and Dr. Hongmei Miao presented her research into genomic prediction in sesame. Part of the purpose of the visit is to discuss possible collaborations and to learn more about our plant breeding distance education program.

We held another successful Ranch Management University this month, with landowners taking home a wealth of useful knowledge to help them better manage their land. Our Extension personnel have also been busy conducting water well and watershed management programs, the annual Geronimo-Alligator Creek watershed cleanup, and a Healthy Lawns Healthy Waters workshop. There have also been numerous small grain field days held throughout the state, with more scheduled for next month.

Several of our staff members and graduate students were involved with the Process Engineering Research and Development Center’s 23rd annual Practical Short Course. This year the short course focused on snack foods processing. Dr. Audrey Girard and food science students from Dr. Joseph Awika’s lab conducted several demonstrations (see photos page 12).

We will be saying goodbye to several faculty and staff members this month. A farewell reception for Cristine and Gaylon Morgan was held at the University Club in Rudder Tower April 23. A retirement reception for Linda Francis will be April 30, 2:00 p.m. in Heep 440. Thanks to all of them for their many years of service.

Earlier this month we said goodbye to Drew Gholson, Extension Program Specialist and coordinator of the Texas Well Owner Network. We wish him the best of luck as he begins his new position at Mississippi State University. His position has been filled by a new-old member of the department. We welcome back Joel Pigg, who has returned to the department to work on the TWON program under Dr. Boellstorff (see story page 5).

I have been busy traveling throughout the state and the nation. I have been to many of the AgriLife centers to meet with faculty and most recently attended the CAST board of director’s meeting in Washington D.C. I will be back in D.C. in early May for the Council of Scientific Society Presidents.

We are looking forward to graduation, the summer field days, and sunny days.

You can support Soil and Crop Sciences research, teaching and extension outreach with your tax-deductible donations.

More Information can be found at: http://soilcrop.tamu.edu/giving/
SCSC Awards Banquet 2019

Congratulations to all the scholarship and awards recipients recognized at the awards banquet held April 11 at the Hildebrand Equine Center. While officially an undergraduate banquet, many graduate students received recognition and awards that night as well.

Dr. Kim Dooley, College of Agriculture and Life Sciences Associate Dean for Academic Operations, delivered the keynote address. She outlined what she thinks it means to be an Aggie.

Being an Aggie means being Authentic, being Grateful, setting Goals, having Integrity and having Enthusiasm, Dooley said.

Attendees also heard from student leaders about the array of extracurricular learning activities available, including the Agronomy Society, Turf Club, Soil and Water Conservation Society, and the Soil Crop Graduate Student Organization.

Awards and Recognitions

The primary purpose of the banquet is to recognize the efforts of students through the presentation of travel awards and scholarships. This year the department presented over $86,500 in scholarships and awards. Graduate students who had received other fellowships and awards were also recognized.

Outstanding Plant and Environmental Soil Science (PSSC) and Turfgrass Science (TGSC) were recognized. They are:

**Outstanding Juniors -**

- Nickolas Frisbee (PSSC)
- Ryan Earp (TGSC)

**Outstanding Seniors -**

- Caitlin Lakey (PSSC)
- Kaitlin Tanner (TGSC)

Outstanding Freshmen -

- Eduardo De La Garza (PSSC)
- Ty Riley (TGSC)

Outstanding Sophomores -

- Gabriel Janish (PSSC)
- Bailey Simmons (TGSC)

Most of the recipients of scholarships from the Department of Soil and Crop Sciences were in attendance at the banquet. A total of $86,550 was awarded.

A complete list of the undergraduate scholarship recipients, donors, and other awards earned by the students, faculty and staff can be found on the department’s website:

Many of the department’s graduate students have earned awards from within and outside the department. At the Annual Undergraduate Award Banquet many of those were recognized for their outstanding efforts and achievements. Congratulations to them all!

Numerous fellowships, endowed scholarships and assistantships were awarded to graduate students for the upcoming year. A complete list can be found on the Soil and Crop Sciences website: [http://soilcrop.tamu.edu/academics_files/2019UGAwardsBanquet.pdf](http://soilcrop.tamu.edu/academics_files/2019UGAwardsBanquet.pdf)

**Travel Awards**

Several awards are presented to support students who will be enhancing their research and/or education through new experiences, either nationally or internationally.

Julia Brantsen and Kaitlyn Duke received the **Lloyd and Maxine Rooney Fellowship Endowment**. This award provides support for Food Science graduate students to attend professional conferences.

Brantsen, a Ph.D. student under Dr. Joseph Awika, and Duke, a Master’s student under Awika, will both use the scholarship to attend the Cereals & Grains ‘19 in Denver Colorado in November. The conference is hosted by American Association of Cereal Chemists International (AACC). Each of the young ladies will present a poster on her research.

Anil Adhikari and Bishwa Sapkota each received a **Gladys and Larry Wilding Travel Scholarship**. This scholarship provides support for international study experiences.

Adhikari, a Ph.D. student under Dr. Amir Ibrahim, will be traveling to Saskatoon, Canada, to present his research on hybrid wheat at the 1st International Wheat Congress in July.

Sapkota, a Ph.D. student under Dr. Muthu Bagavathiannan, will be traveling to Guatemala to learn more about the contemporary agricultural techniques embraced by farmers there and to get a perspective of the willingness of those farmers to adopt more modern techniques such as unmanned aerial systems and precision farming.

Henrique Da Ros Carvalho, Seth Abugho and Aniruddha Maity each received a **Dudley Smith Family Travel Scholarship**. These scholarships support graduate students to enhance their research program, expand technology skills, or undertake a new learning experience.

Da Ros Carvalho, a Ph.D. student under Drs. James Heilman and Kevin McInnes, will be attending the Flux Course at the University of Colorado Mountain Research Station in July. This is a two-week course in flux measurements and advanced modeling.

Abugho, a Ph.D student under Dr. Bagavathiannan, will be traveling to the Spray Technology Laboratory at Purdue University where he will work under the supervision of Dr. Bryan Young to better understand the importance of reducing off-target movement of herbicides and herbicide symptomology.

Maity, a Ph.D. student under Bagavathiannan, will be traveling to the Weed Ecology Laboratory at Cornell University to work under the supervision of Dr. Antonio DiTommaso on seed biology/ecology research and to conduct a short experiment related to his Ph.D research. He will focus on the dynamic interrelationship among seed, agricultural practices and abiotic factors.

Catherine Danmaigona Clement received the **Dr. Anthony S.R. Juo Memorial Endowment**, which is given to support graduate students engaged in research activities relevant to developing countries.

Danmaigona, a Ph.D. student under Dr. Steve Hague and Dr. Jane Dever, traveled to the Benin Republic in west Africa in early April as an invited lecturer at the Molecular Biology Laboratory Workshop sponsored by the JR Biotek Foundation and Cambridge University. The workshop is part of a “Reach & Teach Science in Africa” project designed to strengthen research and innovation in sub-Saharan Africa.

Catherine Danmaigona lectured on statistical analysis for plant breeding to the 100 researchers attending the JR Biotek Molecular Biology workshop.
David Joel Pigg is combining his Texas A&M AgriLife Extension Service and water conservation district experiences in his new position as the Texas Well Owner Network, or TWON, coordinator.

Pigg began his new position April 15, and is located in the Texas A&M University soil and crop sciences department at College Station.

The TWON program, http://twon.tamu.edu/, provides private water well screenings and wellhead protection educational trainings to private water well managers.

“I’m very excited to be back in the soil and crop sciences department after spending the last 12 years in Real County,” Pigg said. “I look forward to working with our AgriLife Extension agents, groundwater district personnel and private water well owners across the state to help them learn about water quality and help them protect this valuable resource.”

Pigg, a native of Brownfield, earned his bachelor’s degree from Southwestern University and a master’s degree from Texas Tech University in Lubbock. He worked for eight years as an AgriLife Extension associate in the soil and crop sciences department before spending almost four years as an AgriLife Extension county agent in Real County.

He has spent the past eight years as the general manager of the Real-Edwards Conservation and Reclamation District in Camp Wood, vice chair of the Plateau Regional Water Planning Group and coordinator and presiding officer for Groundwater Management Area No. 7.

“With Joel’s experience as an AgriLife Extension agent and associate, he well understands the agency and our role in the state and delivering educational programming,” said Dr. Diane Boellstorff, AgriLife Extension water resources specialist in the department of soil and crop sciences.

“His past work experiences have required that he work with the public and organizational representatives at county, regional and state levels to accomplish water management goals,” she said. “He is uniquely prepared to quickly assume full TWON coordinator responsibilities, allowing us to continue efficiently fulfilling deliverables for this key project.”

Funding for TWON is through a Clean Water Act nonpoint source grant provided by the Texas State Soil and Water Conservation Board and the U.S. Environmental Protection Agency. The project is managed by the Texas Water Resources Institute, part of Texas A&M AgriLife Research, AgriLife Extension and the Texas A&M College of Agriculture and Life Sciences.

2019 SCSC Ice Cream Social
Students, faculty and staff enjoyed a few hours of fun, including corn hole, karaoke and lots of BlueBell ice cream!
Weeds

More than an individual landowner issue

By: Kay Ledbetter

Weed species continue to spread and management costs continue to mount, in spite of best management practices and efforts by research and extension personnel who promote them to land managers, said Dr. Muthu Bagavathiannan, Texas A&M AgriLife Research weed scientist in the Texas A&M soil and crop sciences department, College Station.

The issue is weeds aren’t just a problem for the landowner where they grow, Bagavathiannan said. They are collectively everyone’s problem because they don’t recognize property lines, and that is how they must be managed.

Jointly with Dr. Sonia Graham, a social scientist at the University of New South Wales, Australia, doing a research fellowship at the Autonomous University of Barcelona, Spain, Bagavathiannan led a team of 15 researchers representing entities around the world in a study that looks at weed control through a cross-boundary lens.

The team recently published their findings, Considering Weed Management as a Social Dilemma Bridges Individual and Collective Interests, in the journal Nature Plants. The article can be found at https://rdcu.be/bvoa7.

The paper, they say, is a call to action for scholars and practitioners to broaden their conceptualization and approaches to weed management problems, beginning with evaluating the “public good” characteristics of specific weed management challenges and applying context-specific design principles to realize successful and sustainable weed management.

“The public-goods lens highlights the broader social vision required for successful weed management,” Graham said. “Public goods like weed management are best achieved with the help of many people living and working across landscapes. We need to make the most of the diverse interests, knowledge and skill sets of those involved in managing weeds.”

Agricultural and natural landscapes worldwide are affected by weeds, but management techniques have primarily been developed for individual landowners. The practices rarely look at how control from a collective perspective would improve overall weed management outcomes.

“We suggest that a major limitation of current best management practices is an underappreciation for the complex, multi-scale and collective nature of the weed problem,” she said. “We believe practices will be more effective if they are complemented by landscape-scale design principles that encourage cross-boundary coordination and cooperation.”

The team framed the landscape-scale weed management issue as a social dilemma, where trade-offs occur between individual and collective interests. Combining perspectives from biologists and social scientists, the team applied a transdisciplinary systems approach to four pressing landscape-scale weed management challenges:

- **Plant biosecurity** – The protection of plant resources from alien pests is a key policy and regulatory tool governments use to limit intentional or accidental spread of weeds, locally and globally. Plant biosecurity includes quarantine, inspection of freight at ports and certified treatment schemes such as bulk fumigation of certain types of cargo. Some governments fail to make these necessary investments to protect global biodiversity.
- **Weed seed contamination** – Weeds, especially those closely related to crops, are common contaminants of crop seeds and can spread through equipment sharing. For example, weedy rice is a noxious weed that threatens global rice production. Due to its propensity for seed shattering and long seed dormancy, weedy rice is an efficient invader that can cause up to 80 percent yield loss in rice and substantially reduce marketable grain quality.
- **Herbicide susceptibility** – Herbicide-resistant weeds are proliferating exponentially, threatening farm productivity and profitability. At least 60 countries have reported herbicide-resistant weeds, including about 500 species-herbicide group combinations. Treating herbicide-resistant weeds costs around $4 billion annually in the U.S. alone.
- **Weed biological control** – Classic weed biological control employs host-specific arthropods or pathogens from a weed’s native environment to reduce weed populations in invaded systems. These strategies can have high benefit-to-cost ratios due to long-lasting, low-input costs, and provide management options where other tools are unavailable or impractical.

Bagavathiannan said that across these challenges, the public goods nature of weeds requires active contributions and development of shared goals. Approaches must respect the unique perspectives and diverse capacities of contributors.

“Achieving such an agreement requires good working relationships, or at least shared values, where contributors are willing to transparently demonstrate their efforts and contribute shared resources to help those who are least able to contribute,” he said.

Describing their findings, Graham outlined four new principles for landscape-scale weed management: clearly articulate shared goals and secure commitments from contributors; establish good working relationships and shared values among contributors; make individual contributions transparent; and generate pooled resources to support weakest-link problems or address asymmetries in the public good.
Rice crops can stress under too much water or water at the wrong time. Developing tolerance to these flooding stresses and improving rice cultivars is the life passion for Dr. Endang “Septi” Septiningsih, a Texas A&M AgriLife Research scientist.

Rice growers around the world have had two choices: plant poor-yielding traditional varieties that are moderately tolerant to long periods of submersion in water to withstand the flash floods of the monsoon season, or plant high-yielding submergence-intolerant varieties that tend to suffer severe losses during the monsoons.

Septiningsih, AgriLife Research genetist in the Texas A&M University soil and crop sciences department in College Station, has spent her entire career concentrating on finding a genetic answer for abiotic stress tolerance in rice.

“Rice plants love water during most of their life,” she said. “However, if it is too deep or prolonged, water can kill plants completely submerged and unable to access oxygen. The most critical times are when the seed is germinating or when the plants are trying to grow.”

She said extreme weather due to climate change has made flooding an increasing problem for U.S. and international agriculture. Complete submergence can happen for several weeks during flash floods when the fields cannot be drained fast enough.

As a result, Septiningsih said estimates indicate flooding stress is a critical problem affecting more than about 49.5 million acres of rice worldwide.

“Since rice naturally grows in areas with plenty of water, these areas also tend to be more prone to extreme flash-flood events that can wipe out the crop,” she said. “The most feasible approach to address these types of severe floods is the development of rice cultivars tolerant to submergence that maintain agronomic, yield and quality traits acceptable to farmers.”

Working both at Texas A&M and previously at the International Rice Research Institute, or IRRI, in the Philippines, Septiningsih led the identification and cloning of a gene, the AG1 gene, which provides enhanced tolerance of prolonged submergence during germination, also known as anaerobic germination.

At IRRI, she investigated various types of flooding stresses in rice, including flooding during germination, complete submergence during the vegetative growth stage or flash flooding, and flooding up to harvest or stagnant flooding.

While there, Septiningsih’s research included characterizing and using the SUB1 gene. This gene greatly enhances survival of rice plants under two weeks of complete submergence.

She explained the SUB1 gene confers tolerance to complete submergence via a “quiescence” strategy. This essentially causes the plant to become dormant while completely under water. As a result, it saves the carbohydrate reserves and uses them upon de-submergence to recover fully.

“Most rice will try to keep growing to reach the water surface and will die after using up all of its energy,” she said.

Septiningsih helped employ marker-assisted backcrossing to develop SUB1 rice cultivars that could withstand complete flooding for up to two weeks. SUB1 cultivars have been released in multiple countries and additional ones have been developed by a number of national partner institutes, she said.

“My ultimate goal is to enhance the tolerance the current SUB1 rice varieties provide to allow the crop to face more extreme weather events, especially flooding,” she said. “This is increasingly problematic in the U.S. and globally.”

In 2017, Septiningsih was awarded a grant from the U.S. Department of Agriculture-National Institute of Food and Agriculture as the lead researcher to investigate the mechanisms of a novel quantitative trait locus, or QTL, for submergence-tolerant rice.

In addition to SUB1 cultivars, Septiningsih also developed a number of genetic stocks and flood-tolerant lines that have been impactful for both breeding and genetic studies at national and international research institutions around the world.

“Understanding the mechanisms for how additional genes further enhance submergence tolerance in conjunction with SUB1 is very important,” Septiningsih said. “It will help us develop superior submergence tolerance varieties that thrive and have good yield under prolonged submergence stress.”

Also, she said, knowledge gained may help in the translation of submergence survival strategies to other flood-sensitive crops such as corn and soybeans.

“This work will further help crop yield stability and food security among subsistence farmers around the world,” Septiningsih said.
Two new wheat varieties have been announced by Texas A&M AgriLife Research and the TAM Wheat Improvement Program, according to Dr. Jackie Rudd, AgriLife Research wheat breeder at Amarillo.

“We are excited to release these two new varieties that will complement the TAM lineup already being grown throughout much of Texas and the Southern High Plains of the U.S.,” Rudd said.

Rudd said both varieties are being grown in the Foundation seed increase this year and are performing well in the field. The Foundation and Registered classes of seed are the ones used to produce the Certified class, which is most typically used by the commercial producer.

“This step is designed to assure seed purity and quality, and genetic integrity during the commercial life of the variety,” he said. “We will start the licensing process as soon as we get seed in the bin.”

Rudd said some Certified seed will be available this fall, while most of the Foundation seed will be used for Registered and Certified seed for 2020. The licensee will decide how much to sell as Certified and how much to save for increase for next year.

TAM 115 is a hard, red winter wheat developed from a cross with TAM 112, Rudd said. The second release, TAM 205, was developed from the cross of RonL and a TAM experimental breeding line.

TAM 115 has good yield under dryland and irrigated conditions and has an excellent protection package for the High Plains, with resistance to leaf rust, stripe rust, stem rust, greenbug and wheat curl mite, he said.

“It is a few days later in flowering than the most popular cultivars in Texas, but compensates well with its rapid grain-fill characteristics,” Rudd said. “With large seeds, high test weight and strong dough properties, it received above-average milling and baking scores in the 2018 Wheat Quality Council evaluations.”

He said TAM 115 has drought tolerance, water-use efficiency, greenbug resistance and wheat curl mite resistance from the popular drought tolerant cultivar TAM 112, and leaf and stripe rust resistance from a Texas experimental line.

This new variety has performed well across the High Plains, Rolling Plains and Blacklands in Texas, as well as other southern Great Plains areas like western Kansas and eastern Colorado.

TAM 205 is resistant to leaf rust, stripe rust, stem rust, wheat streak mosaic virus, soil-borne wheat mosaic virus, spindle streak mosaic virus and fusarium head blight or scab, Rudd said.

“With large seeds, high test weight and strong dough properties, it also received very good milling and baking scores in this year’s Wheat Quality Council evaluation,” he said. “The bread-making characteristics of TAM 205 make it an excellent choice for whole-wheat products as well as traditional pan bread.”

TAM 205 has performed well across the nation’s southern winter wheat-growing regions and the Texas High Plains, Rolling Plains and the Blacklands.

“Both of these new varieties cover the ground quickly in the fall for good forage production,” Rudd said. “Both have performed well in traditional and organic production systems for grain only and for heavy grazing plus grain.”

Grain and forage yield data are available at http://varietytesting.tamu.edu/wheat/#varietytrials.
Best Management Practices (BMPs) for peanut production include effective season-long weed management. Below are four weed management principles in peanut production.

1. Start clean
2. Use residual herbicides
3. Timely postemergence applications
4. Know your weeds

Early season weed management is most important, which means weed control later in the season should be easier. Yield losses are minimized when peanuts are free of weed competition for the first 4-6 weeks after planting.

There are five critical herbicide application timings in peanut production: preplant burndown (PP), preplant incorporated (PPI), preemergence (PRE), early postemergence (EPOST) 10-20 days after planting, and postemergence (POST) 30-45 days after planting.

The use of PP, PPI, and PRE herbicides are critically important for minimizing weed competition during the early season. April is a good time for planning/applying PP and PPI herbicides in your peanut fields while PRE herbicide applications are made at-planting.

**Preplant burndown**

Early emerging weeds such as Russian-thistle and kochia can be controlled by tillage or use of burndown herbicides. One of the strengths of paraquat (Gramoxone) is Russian-thistle, and glyphosate (Roundup PowerMax and other generics) is effective on a broadspectrum of annual and perennial grass and broadleaf weeds.

**Preplant incorporated**

Preplant incorporated herbicides labeled for peanut include ethalfluralin (e.g., Sonalan 3EC and generics), pendimethalin (e.g., Prowl H2O and generics), and trifluralin (e.g., Trefflan and generics). These dinitroaniline herbicides (also known as yellow herbicides) are effective on annual grasses and small-seeded broadleaf weeds such as Palmer amaranth (carelessweed or pigweed), Russian thistle (tumble weed), and kochia (iron weed). They are ineffective at controlling large-seeded broadleaf weeds such as cocklebur, sunflowers, and sedges (yellow and purple). Use of a PRE herbicide will enhance control of some of these weeds. Please read the label carefully for recommendations regarding effective incorporation methods for these PPI herbicides. If the incorporation is too deep, and peanuts are planted shallow, peanut roots from planted seed have to go through treated soil which can result in stunting.

**Preemergent herbicides**

The use of a PRE herbicide can be effective at controlling annual broadleaf and sedge weeds. There are several options for PRE herbicides in peanut including flumioxazin (e.g., Valor, Panther, Rowel, and other generics), S-metolachlor (e.g., Dual Magnum and generics), dimethenamid (e.g., Outlook and generics), acetochlor (Warrant), and imazethapyr (e.g., Pursuit and generics).

PRE must be applied and activated before weed emergence and some must be applied prior to peanut emergence to avoid crop injury. Please read labels carefully for incorporation methods (irrigation, mechanical, etc.), application rates, application timing, and grazing or feeding restrictions.

Flumioxazin should be applied prior to planting and up to 2 days after planting and before peanut emergence. It provides 4-6 weeks of residual activity for controlling Palmar amaranth, golden crownbeard, morningglory species and other weeds. Crop injury can occur if flumioxazin is applied 3 days after planting. Severe stunting can occur with flumioxazin if applied alone or in combination with S-metolachlor under cold, wet soils or water logged conditions and peanuts may never recover during the growing season. Acetochlor and dimethenamid provide good residual control of grass weeds and small-seeded broadleaf weeds, and can control ALS-resistant Palmer amaranth.

It is important to read the label carefully, especially on application rates based on your soil types, feeding restrictions, rain-free periods, rotation restrictions, herbicide groups, and other issues.
The Texas A&M AgriLife Extension Service’s Healthy Lawns and Healthy Waters Program will host a residential rainwater harvesting and turf management training May 7 in Boerne.

The free program will be from 1-5 p.m. at the City of Boerne Library, 451 N. Main St., Building 100.

The training is offered in collaboration with the Upper Cibolo Creek Watershed Partnership.

Seating is limited to 75. Attendees are requested to RSVP online at http://bit.ly/2HsE6Ul or by contacting John Smith, AgriLife Extension program specialist in College Station, at 979-845-2761 or johnwsmith@tamu.edu.

The Healthy Lawns and Healthy Waters Program aims to improve and protect surface water quality by enhancing awareness and knowledge of best management practices for residential landscapes, Smith said.

Dr. Becky Grubbs, AgriLife Extension turfgrass specialist, College Station, said attendees will learn about the design and installation of residential rainwater harvesting systems as well as appropriate turf and landscape species selection based on local conditions and other practices.

“Management practices such as using irrigation delivery equipment, interpreting soil test results and understanding nutrient applications can help reduce runoff and make efficient use of applied landscape irrigation water,” Grubbs said.

Dr. Diane Boellstorff, AgriLife Extension water resource specialist in the soil and crop sciences department, College Station, said proper fertilizer application and efficient water irrigation can protect and improve water quality in area creeks.

“And collecting rainwater for lawn and landscape needs reduces stormwater runoff,” she added.

Participants can have their soil tested as part of the training. The soil sample bag and analysis are free to Healthy Lawns and Healthy Waters Program participants.

Residents can pick up a soil sample bag with sampling instructions at the AgriLife Extension offices in:

- Kendall County, 210 E. San Antonio, Suite 9 in Boerne.
- Kerr County, 3775 TX Highway 27, in Kerrville.
- Gillespie County, 95 Frederick Road in Fredericksburg.

Bags containing soil samples may be brought to the training. Samples will be delivered to the AgriLife Extension Soil, Water and Forage Testing Lab in College Station for routine analysis, including pH, conductivity, nitrate-nitrogen and other parameters.

The training will include information on how to understand soil test results and nutrient recommendations so residents can interpret results once the analysis is mailed to them.

For more information about the Upper Cibolo Creek Watershed Protection Plan, go to https://bit.ly/2TZ4dDZ.

Funding for the Healthy Lawns and Healthy Waters Program is provided in part through Clean Water Act grants from the Texas Commission on Environmental Quality through the U.S. Environmental Protection Agency. The project is managed by the Texas Water Resources Institute, part of Texas A&M AgriLife Research, AgriLife Extension and the College of Agriculture and Life Sciences at Texas A&M University.
The 7th Annual Geronimo and Alligator Creeks Clean Up event was held Saturday, April 6th in New Braunfels.

Considering the weather, the event was a great success, according to organizers.

Ninety-nine volunteers of all ages cleaned 11 miles of roadways and creek banks. By the end of the day they had removed 3,640 pounds of trash and debris from roadside areas that drain to area creeks. This included 242 bags of trash, 14 tires, several wooden pallets and other debris.

“The clean-up is done by adults, teenagers, and children, who donated their Saturday morning to make a difference in the way their community looks, as well as, in how good they feel about it”, said Ward Ling, Watershed Coordinator with the Department of Soil and Crop Sciences and Texas A&M AgriLife Extension.

The event was coordinated by the Geronimo and Alligator Creeks Partnership, Texas AgriLife Extension and the Guadalupe-Blanco River Authority, as part of implementation efforts for the area’s watershed protection plan.

“Despite the rainy weather, people came out to clean up! Local businesses, church groups, major corporations, landowners, homeowners, and school groups—all gave of their time and resources to make this year’s event a real success,” said Ling.

For the past seven years, local groups have come together to support the event through their financial donations and time, and to form volunteer teams.

“We got rained on—but not rained out!” Ling said. “The spirit of the community really shone through their enthusiasm and determination to make a difference! Everyone had a great time!”

Waste Connections and the City of New Braunfels donated disposal and recycling services for trash collected during the event.

Sponsors for the event included: Alamo Group, Becker’s Feed & Fertilizer, the City of New Braunfels, Continental Corporation, Crossroads Veterinary Hospital, Commissioner Drew Engelke, Ehlers’ Tree Farm, Guadalupe-Blanco River Authority, Guadalupe County Groundwater Conservation District, Irma Lewis Seguin Outdoor Learning Center, KWED, Niagara, Spirit of Joy Lutheran Church, Thrivent Financial, and Waste Connections.

Geronimo Creek, and its tributary Alligator Creek, flows through Comal and Guadalupe counties. Both were identified for watershed protection plan development due to elevated levels of bacteria and concerns about high levels of nitrogen, as reported in the Texas Water Quality Inventory published by the Texas Commission on Environmental Quality.

For more information on the project, contact Ling at 979-845-6980 or wling@tamu.edu or go to http://www.geronimocreek.org/.

Funding for the effort provided through a federal Clean Water Act §319(h) Nonpoint Source Grant administered by the Texas State Soil and Water Conservation Board from the U.S. Environmental Protection Agency.
The 23rd annual Snack Foods Processing Short Course brought 42 participants from 9 different countries to Rudder Tower on the Texas A&M University campus in College Station for a five-day workshop focused on extruded snacks and tortilla chips.

The short course is conducted by the Cereal Quality Laboratory and the Extrusion Technologies program within the Texas Engineering Extension Service Process Engineering Research and Development Center.

Dr. Audrey Girard, Associate Research Scientist in the Department of Soil and Crop Sciences and several graduate students under Dr. Joseph Awika had the opportunity to demonstrate corn quality evaluation methods and several processes used in the production of tortillas and tortilla chips.

Girard lectured on “Starch and Protein Functionality During Processing” and later led demonstrations in the newly renovated tortilla lab on the first floor of the Heep Center with several of Dr. Awika’s graduate students.

Julia Brantsen, a Ph.D. student under Awika, lectured on “Corn Quality for Alkaline Cooking” and later helped lead demonstrations on corn quality evaluation in the third floor lab in the Heep Center.

Other graduate students who assisted with the demonstrations were Ph.D. students Tadessa Teferra, Suleiman Althawab, Shreeya Ravisankar and Fariha Irshad; and Master’s student Kaitlyn Duke.
Texas wheat fields look good, but the next two months will determine yield outcomes, according to Texas A&M AgriLife Extension Service experts.

“Wheat growers around the state faced difficulty with fall planting due to incessant rain or had to wait for rain. But most fields appear to be in and performing relatively well,” said Dr. Clark Neely, AgriLife Extension small grains specialist, College Station.

Neely said Texas’ wheat acreage is steady at 4.5 million acres despite difficulty getting some fields planted. About 30 percent of wheat fields in the Blacklands region as a whole were not planted due to inaccessible conditions, and unplanted acres northeast of Dallas were likely higher.

While the Rolling Plains and High Plains (the two largest wheat growing regions in Texas that account for roughly 85 percent of acres), saw very little prevented acres, there were widespread planting delays until close to Thanksgiving.

As wheat enters into critical growth stages, producers will be keeping an eye on the potential for dry conditions, warmer temperatures, and diseases around the state.

“In general, I would expect a slightly above average year on a bushel-per-acre basis,” Neely said. “It will depend on rain. Fields in West Central Texas could go either way. If there is no rain and it gets hot, yields will be down. But if it stays cool and they get periodic rains, it could be good. At least this year most of the state has decent subsoil moisture from good fall and early winter rains, so we aren’t likely to see crop failures anywhere. As always, it depends on the weather.”

**STAGES AND CONDITIONS**

Most wheat in South Texas has filled grain and is entering into soft or hard dough stage, Neely said.

Maturity in the High Plains wheat was mostly delayed, but is wide ranging from mid-jointing to early heading. Rolling plains wheat ranges from boot stage to flowering. Fields planted in the Blacklands are flowering or beginning to fill grain, but are about 10 days later than typical.

Disease and pest issues have been relatively limited up to this point in the growing season, Neely said. Stripe rust was reported in Texas A&M AgriLife Research fields in McGregor, but most of the state reported low stripe or leaf rust and powdery mildew.

Research trials at Uvalde and Castroville were the exception, with heavy leaf rust pressure at those locations.

Uvalde reported the heaviest oat crown rust with some moderate amounts at Castroville and College Station, as well as some oat stem rust in those locations.

There were reports of heavy stripe rust in Louisiana and Arkansas, and Texas growers were expected to monitor their fields closely going forward. In some parts of the state we are now past the application window for most fungicide products, which cannot be applied past flowering.

“There might be some hesitation among some growers to spray because they want to limit input costs, but then you have others who will spray proactively,” Neely said. “The same goes for pests.”

Neely said reports of aphids in the Blacklands earlier on were not big a concern, though some producers did spray for them. At this point, populations of ladybird beetles and other beneficial insects are expected to keep them in check.

There were some reports of aphids and rice stinkbugs along the Gulf Coast, but damage has been limited.

Dr. Jourdan Bell, AgriLife Extension agronomist, Amarillo, said wheat growers in the High Plains made a mixed bag of decisions regarding going to grain, grazing or forage production. Some acres are being taken to grain, while some wheat was contracted in the fall when prices were more favorable.

Bell said she spoke to a few producers who were offered good prices for wheatlage, so they have opted to chop their wheat for silage. And many wheat acres are being grazed out.
Texas corn producers will have hybrids better suited to the state’s longer growing season and multiple stresses in the future after a Texas A&M AgriLife team from across the state released five new lines bred specifically for that purpose.

“These are the first lines tested, selected and released for commercial corn hybrid production in central and south Texas in over 20 years,” said Dr. Seth Murray, Eugene Butler Endowed Chair at Texas A&M University and Texas A&M AgriLife Research corn breeder in College Station.

“They will be foundational to our future inbred and hybrid production and breeding efforts.”

AgriLife Research approved the release of these lines in 2017, which means they have been introduced in commercial hybrids and are looking for commercial partners to make them available at scale to producers.


Other current team members are Dr. Wenwei Xu, AgriLife Research corn breeder, Lubbock; Dr. Tom Isakeit, AgriLife Extension Service plant pathologist, College Station; and Dr. Gary Odvody, AgriLife Research plant pathologist, Corpus Christi.

Also a part of this ongoing research project over the past 10 years in the Texas A&M department of soil and crop sciences, College Station, were Dr. Javier Betran, former AgriLife Research corn breeder; and Kerry Mayfield and Jacob Pekar, both research associates.

Helping with the photoperiod-sensitive trials were Dr. Patrick Brown in the department of crop and soil sciences, University of Illinois, and Dr. Aaron Lorenz in the department of agronomy, University of Minnesota.

“These new Texas lines broaden the genetic diversity of U.S. corn,” he said. “They can immediately be used in commercial hybrids and certainly should be useful in breeding new corn lines and hybrids adapted to southern U.S. environment.”

The Texas A&M lines are competitive for yield across the southern U.S. and were selected within Texas stress environments from mostly tropical germplasm previously selected for aflatoxin resistance and have outstanding grain quality.

“We also measured benefits including reduced southern rust, reduced incidence of southern corn leaf blight and lower susceptibility to Lepidopteran insects compared with commercial material currently available,” Murray said.

The lines produce yields comparable to the best commercially available hybrids, he said. The AgriLife Research breeding program crossed with a variety of these commercial testers, and the resulting hybrids were grown at multiple locations over several years.

“Several hybrids from each line produced yields that met or exceeded those of current commercial hybrids,” Murray said. “These lines and their hybrids had additional beneficial traits, including high test weight and reduced susceptibility to diseases such as southern rust and aflatoxin.”

He said using the unique tropical germplasm allowed these inbred lines to be subjected to high day and night temperatures that often cause heat and water stress, and only the best were selected for how they handled those stresses.

However, for these lines to be most useful for seed production, they need to flower early enough in commercial midwestern U.S. seed production areas, Murray said.

Photoperiod sensitivity is one of the major limitations to bringing tropical material into temperate climates, he said. The resulting delay in flowering can cause a number of issues, from seed production to appropriate phenotyping.

“It is quite challenging to separate late-flowering hybrids, which need higher growing degree days, from true photoperiod sensitivity,” he said. “We have almost no ability to select for lines with reduced photoperiod sensitivity in College Station because plants flower before the summer solstice, making this one of the few environments to do so in the U.S.”

To attempt to quantify this occurrence, the team grew a larger set of lines in Nebraska and Illinois to identify correspondence in flowering times. Of the lines from the breeding program that had been growing in all three environments – Texas, Nebraska and Illinois – only two had flowering times near what is needed.

Although these lines have some unique shortcomings, notably delayed flowering in Midwestern seed production environments and large seed, which could be expensive to produce as female seed parents, these lines will be foundational to future inbred and hybrid production and breeding efforts.

“The Texas Corn Producers Board and U.S. Department of Agriculture’s National Institute of Food and Agriculture have been key supporters of Texas A&M AgriLife to develop these lines and to continue to address the numerous issues Texas corn farmers face,” Murray said.

Seed for Tx741, Tx777, Tx779, Tx780 and Tx782 will be maintained by the Quantitative Genetics and Maize Breeding Program of AgriLife Research at College Station. Seed is available with a Materials Transfer Agreement from the Office of Technology Commercialization, Texas A&M University System, 1700 Research Parkway, Suite 250, College Station, TX.
Our sympathy goes out to:

Dr. Michael Foster and his family as they mourn the loss of his wife, Sharon “Kay” Foster, who passed away April 10. Mike was a research scientist at Pecos at the time of his retirement. Kay was also an AgriLife retiree. She was the office manager for District 6/Ft. Stockton until 2004.

Mrs. Gladys Beasley and her family as they mourn the loss of her husband Larry, who passed away April 11. Gladys was a long-time employee of the Department of Soil and Crop Sciences.

Please keep these members of our Soil & Crop Sciences family in your thoughts and prayers.

Recognized for 2018 patents

David Lunt, Associate Director, Texas A&M AgriLife Research, presented Patent Awards to Dr. Ben Wherley, Associate Professor, Soil and Crop Sciences; Dr. Fouad Jaber, Associate Professor and Extension Specialist, Department of Biological and Agricultural Engineering; and Dr. Jorge Alvarado, Professor, Department of Engineering Technology for their May 2018 patent for the Landscape Irrigation Runoff Mitigation System (LIRMS).

Other members of the team who were unable to be present were Jim Thomas, retired Soil and Crop Sciences Research Scientist; and Dr. Richard White, retired Professor, Soil and Crop Sciences.

David Lunt, Associate Director, Texas A&M AgriLife Research (center), presented Patent Awards to Mayra Molina and Marco Molina for their October 2018 patent for a method of altering cold, drought and salt tolerance in plants.

The award was presented posthumously to two other members of their team, Dr. Martin Dickman and Dr. Erik Mirkov.

Marco Molina is a Texas A&M AgriLife Research Specialist in the Institute for Plant Genomics and Biotechnology and a Ph.D. student in Molecular and Environmental Plant Sciences under Dr. Michael Thomson.
Calendar

**April**
- 23 - Sustainable Agriculture Field Day - Arlington, TX  contact: John Smith - jwsmith@tamu.edu
- 23 - Farewell reception for Gaylon and Cristine Morgan, The University Club - Rudder Tower
- 25 - Texas Watershed Stewards - Houston TX  contact Michael Kuitu - mkuitu@tamu.edu
- 25-26 - Bennett Trust Resource Stewardship Conference, Kerrville
- April - Mid-term dossiers to committee

**May**
- 1 - Small Grain Field Days - multiple dates - check http://varietytesting.tamu.edu for a location near you!
- 2 - midterm dossiers due to Judy Young
- 7 - Healthy Lawns Healthy Waters - Boerne  contact: John Smith - jwsmith@tamu.edu
- 10 - Graduation, 9:00 a.m. Reed Arena
- 13 - Water Well Screening - Victoria, TX  contact: http://twon.tamu.edu/well-informed/
- 14 - Water Well Screening - Refugio, TX  contact: http://twon.tamu.edu/well-informed/
- 15 - Midterm P&T Meeting
- 20 - Full P&T dossiers due to mentor committee
- 21 - Texas Watershed Stewards - Jasper, TX  contact Michael Kuitu - mkuitu@tamu.edu
- 22 - Texas Watershed Stewards - Lufkin, TX  contact: Michael Kuitu - mkuitu@tamu.edu

**June**
- TBD - Stiles Farm Field Day

**Save the Date**
- July 14-16 - Texas Turfgrass Association Summer Conference, College Station
- July 23-24 - Cotton Breeders Tour
- July 23-25 - Southern Region Water Conference
- Aug. 19-20 - Soils Critique, Scotts Turfgrass Facility, College Station
- August 28-29 - Small Grain Workers Meeting, College Station
- Oct. 9 - TAMU Turfgrass Field Day, College Station