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Excessive rain in some areas and an inadequate amount in others continue to be the story as spring officially begins in Texas. While weather conditions have not been ideal, our producer’s needs for information on dealing with the many variations is high. Crop trials have begun in several areas of the state, with more locations in the works. We are in the last month of spring classes and the push to get our field research moving is underway.

Severe weather took its toll on more than just crops as storms wreaked havoc in many parts of Texas. Here in College Station we saw hail damage crops and cause extensive damage to our greenhouses. Every one of the greenhouses used by our researchers suffered some level of damage from hail in mid-March. Repairs and rebuilding are underway. We appreciate the rapid response of the system to alleviate these issues.

In the panhandle, AgriLife researchers are taking advantage of serious drought conditions to assess drought tolerance in different wheat cultivars (see story page 7), while recovery from Hurricane Harvey continues in the southern part of the state. Those recovery efforts are part of the reason Dr. Diane Boellstorff and her Texas Well Owner Network team received a prestigious award from the TCEQ (see story page 5).

We are happy to announce that we have added a turfgrass specialist to the faculty. Dr. Becky Grubbs joined the faculty in College Station on April 1 and immediately went to work for Texas residents. Her article with timely lawn care tips is included in this issue. We have also initiated a search for an agronomist at San Angelo and a cotton specialist at Lubbock. We wish Dr. Seth Byrd the best as he transitions to a new role at Oklahoma State.

I have been travelling throughout the state for spring faculty evaluations. It is a good reminder of the quality of our faculty statewide. We have dedicated professionals involved with research and extension efforts for nearly every crop grown in Texas. Their work helps to improve crop production locally as well as throughout the global agriculture landscape.

Several Extension programs are coming up over the next few months. The fifth Land Stewardship conference sponsored by AgriLife and the Bennett Trust will take place in Kerrville at the end of the month, with the first such conference to be held in San Angelo the first week of May. There are multiple small grain field days coming up. Dates and times for those can be found on the variety testing website at: http://varietytesting.tamu.edu/wheat/#FieldTours.

We have recently completed another successful Ranch Management University. This five-day workshop includes information on soil, forages, wildlife, pond management and much more to help landowners find best management practices for their land (see story and photos page 12).

Our soil judging team has just returned from national competition. After outstanding performance at regional completion, they had the opportunity to travel to Martin Tennessee to compete at the 2018 National Collegiate Soils Contest.

We celebrated the successes of our undergraduate students and presented scholarships during the annual Awards and Recognition Banquet last week. We cannot thank our donors enough for their generous support of our students. (story and photos pages 8-11)

As the teaching semester winds to an end, we are looking forward to May’s graduation ceremony and look forward to seeing another crop of soil and crop students stepping forth into positions where they will have the opportunity to make a positive impact on agriculture.

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/
Dr. Becky Grubbs expects to spend the next chapter in her life growing the Texas turfgrass industry through collaborative and interdisciplinary actions as the new Texas A&M AgriLife Extension Service statewide turfgrass specialist in College Station.

Grubbs said her philosophy in approaching her new job, which she began April 1, will be to establish strong, credible relationships with producers and industry stakeholders through regular site visits and a steady person-to-person dialogue.

“My research will be designed to meet client needs in a way that promotes sustainability and facilitates industry progress,” Grubbs said.

A native of Lewisville, she earned her bachelor’s and master’s degrees at Texas Tech University in horticulture and then finished with a doctorate from the University of Georgia in crop and soil science. Her doctoral dissertation was titled “Evaluation of Home Lawn Management Behaviors and Sustainable Fertility Practices in Various Turfgrass Systems.”

“I wanted to take a very interdisciplinary approach to my research, because I knew long-term I wanted to go into Extension and wanted to be able to cast a wide net when I did,” Grubbs said.

She said she intends to establish multiple platforms to communicate her AgriLife Extension work and her research across a broad client base, knowing that client needs will be ever-changing and she must be too.

“I believe my research initiatives should respond to client needs in a way that promotes progress, fills gaps and facilitates economic and environmental efficiency,” Grubbs said.

She said she will be reaching out to individual homeowners, golf course superintendents, sports turf managers, sod farmers, county agents and faculty peers to determine trends, concerns and needs of the turfgrass industry.

“Texas is a big state and I won’t be able to get all the information from one place,” Grubbs said. “I look forward to interacting with clients across the state and getting to know how I can best serve them.”

Some of the primary research needs, she said, will address water, pest management, sustainability, abiotic and biotic stresses and physiology as well as integration of tools such as sensor technology, systems modeling and qualitative research to collect data and improve outreach.

Grubbs said she intends to use an applied interdisciplinary approach that will combine general turfgrass management – stressors, pest management and nutrient management – with a robust outreach and education program through homeowners associations, turf management organizations and county agents.

The third part to her approach will be precision turfgrass management, which will include irrigation audits, precision irrigation, precision salt leaching, variable rate fertility, precision cultivation, preemptive pest management and delineation of sampling zones.

“There are just a lot of really neat pathways for moving forward with sustainable, productive turfgrass in the state,” Grubbs said.

For more on the AgriLife turf program, visit https://aggieturf.tamu.edu.
Prabhu Govindasamy has received the Gerald O. Mott Meritorious Graduate Student Award in Crop Science from the Crop Science Society of America (CSSA).

Prabhu is working on his Ph.D. in Agronomy, under the supervision of Dr. Muthu Bagavathiannan, and expects to graduate this August. He is studying the impact of long-term tillage management practices on soil physico-chemical properties and weed population dynamics in grain sorghum.

“In India, conservation tillage practices are only practiced in the rice-wheat cropping systems. I am looking into the possibilities of using them for other crops,” Prabhu said. “There is a lot of dryland sorghum, yet none of it is currently under conservation tillage and I hope to change that.”

After completing his degree program in August, Prabhu will return to India and resume his job as a Research Scientist with the Indian Council for Agriculture Research, that country’s equivalent of the USDA-ARS.

Prabhu is also creating low-cost technologies he hopes will be beneficial to farmers in his homeland, and around the world. He has designed a mini rhizotron (used to study roots) and a CO_2 chamber, which can be home-built at greatly reduced cost.

“A commercial rhizotron costs about $17,000”, said Prabhu. “The one we made cost only $333 to build. This could make a big difference in the advancement of root studies.”

This award is named in honor of Dr. Gerald O. Mott, the first president of the CSSA and formerly a professor at Purdue University and the University of Florida. It is awarded annually to “top notch graduate students” pursuing advanced degrees in crop science disciplines.

According to the CSSA website, students are selected on the basis of academic achievements, research and teaching contributions, service activities and personal qualifications.

Nicole Shigley, a junior Plant and Environmental Soil Science student, was selected to receive the Professional Soil Science Association of Texas (PSSAT) scholarship for the 2018-19 school year.

Nicole has been a member of the Texas A&M University Soil Judging Team for two years. At the Region 4 collegiate soil judging competition in San Marcos last fall, she helped lead the Aggie team to victory by finishing as the high point individual for the contest.

After earning her Bachelor of Science degree next May, Nicole would like to go to work for the NRCS to gain experience to earn her soil license and then pursue a higher degree.

“I would love to end up finding a job educating the public about soil and the environment,” Shigley said. “Working as a teaching assistant has really inspired my passion for teaching about soil. Working with the Agronomy Society Corn Maze has showed me how important it is to connect youth to the environment, and to show them where the things they use on a daily basis come from.”
The Texas Well Owner Network has earned a Texas Commission on Environmental Quality 2018 Texas Environmental Excellence award in the category of education.

The Texas Well Owner Network, developed by the Texas A&M AgriLife Extension Service and Texas A&M University’s Texas Water Resources Institute, helps private well owners learn to protect water resources and properly maintain wells to ensure safe water supplies.

According to the TCEQ, the Texas Environmental Excellence Award is the state’s highest environmental honor and acknowledges achievements in environmental preservation and protection in diverse categories. Award winners will be celebrated at the commission’s Environmental Trade Fair and Conference May 15-16 at the Austin Convention Center.

“The network was designed to deliver a science-based, community-responsive education curriculum for Texas residents who depend on household wells for their water,” said Dr. Diane Boellstorff, AgriLife Extension water resource specialist in the department of soil and crop sciences, College Station. “It focuses on protecting groundwater quality and aquifer integrity.”

Dr. Drew Gholson, Texas Well Owner Network program coordinator and AgriLife Extension program specialist in soil and crop sciences, College Station, said with more than a million private water wells in the state, education and training are essential for ensuring public health and safety.

“This is especially true since private well owners are responsible for monitoring and maintaining their wells and are at a greater risk for exposure to compromised water quality,” Gholson said.

He said the Texas State Soil and Water Conservation Board and other partner agencies and organizations collaborate in the network to help provide screenings, trainings and other educational outreach.

“The TWON team is honored to receive this award as we know there are many great environmental educational programs in Texas and that TCEQ looks over the applications very closely,” Boellstorff said. “We are fortunate to have an excellent team that spans the Texas A&M University departments of soil and crop sciences, biological and agricultural engineering, agricultural leadership, education and communications, and the Texas Water Resources Institute.”

Primary funding for the program is provided through a Clean Water Act nonpoint source grant from the Texas State Soil and Water Conservation Board and the U.S. Environmental Protection Agency.

“A main goal of the program is to help private well owners learn about managing their wells and protecting water quality through ‘Well Informed’ screenings, ‘Well Educated’ workshops and other events across the state,” said John Smith, AgriLife Extension program specialist, College Station.

He said these events focus on protecting groundwater and aquifers, well and septic system maintenance and construction, and how to improve water treatment and quality.

“These educational opportunities allow participants a better understanding of the relationship between practices in or near wells and the quality of water available for drinking and irrigation,” Smith noted. Boellstorff said since TWON’s inception in 2011, more than 7,800 private well owners have benefited from the program’s well screenings and educational events.

“Program participants can bring in water well samples to have them screened for pollutants,” she said. “We can then identify the possible source of contaminants and give recommendations on how to remediate that contamination,” she said.

He said these efforts were well-received by those in the affected communities. The network plans to continue providing hurricane-related free water testing, educational information and well disinfection events as needed.

Boellstorff said the program does more than teach private well owners how to be good stewards of the environment by using best management practices to reduce their impact on the state’s water supply and to prevent contamination.

“The program is more than just an environmental education program—it represents the importance of fostering environmental stewardship in a community to protect public health and our natural resources,” she said.
Texas A&M AgriLife researchers push drones to ‘read the weeds’

By: Kay Ledbetter

Even barely poking through the ground, weeds are distinctive. Determining the right tools for early identification and control are the goals of an ongoing Texas A&M AgriLife Research project.

Dr. Muthu Bagavathiannan, AgriLife Research weed scientist in College Station, is using unmanned aerial vehicles, or UAVs, to “read the weeds.”

“Our goal is to use advanced sensor technology to detect weeds from above the ground and implement precision weed management,” Bagavathiannan said.

The current practice is to have field scouts walk the large fields to look for weed issues, he explained. This is a tedious, time-consuming task that can be inaccurate, and bad weather conditions can prevent timely assessments of weed problems.

“But the UAV technology would provide the ability to fly over large fields and collect reliable information in a short time period that can be directly relayed into actionable information,” Bagavathiannan said. “We need this technology to make that identification sooner than the naked eye can.”

“The ultimate goal is to identify the weed species, the areas of the field they appear and in what densities so precision herbicide applications can be made or a herbicide program developed that better suits what is in the field,” said Dr. Vijay Singh, AgriLife Research assistant research scientist working with Bagavathiannan in College Station. “Geotagged maps would allow coordinates to be fed to a ground vehicle or an aerial applicator to treat specific areas.”

Members of the Texas A&M team that Bagavathiannan works with in College Station, includes Dr. Nithya Rajan, AgriLife Research crop physiologist; Drs. Michael Bishop and Anthony Philippi at the Center for Geospatial Sciences, Applications and Technology, or GEOSAT; and Dr. Dale Cope, associate professor in the department of mechanical engineering and others.

The GEOSAT scientists are creating algorithms and indices that can one day be used by crop consultants to help producers identify weeds earlier, achieve greater control and use less chemical overall, thus be more economical and environmentally friendly.

“Putting this information into the hands of a consultant will be more cost-effective, as they can fly multiple fields in a short time,” Bagavathiannan said.

The project is not without its challenges, though, Bagavathiannan said.

“We have to be able to detect weeds when they are very small and treatable, and that is only achievable by flying very low or using very high resolution cameras,” Singh said. “We have found the rotary wing aircraft to be more useful than fixed wing, because they can hover at lower altitudes and perform agile maneuvering, which makes them well suited for field inspections.”

Singh said a simple RGB image analysis was sufficient to differentiate some weeds, such as morning glories, devil’s claw and cocklebur, which can be done based on color, shape and textural features. They are also using multispectral and hyperspectral imagery, both useful in distinguishing several species.

They are currently developing a spectral library for different weeds using the high-end hyperspectral spectroradiometer available with Rajan.

“It can be difficult for the untrained eye to tell the difference between the pigweed species Palmer amaranth and waterhemp, but using hyperspectral, we can look at the spectral waves for differences; a wide band in the water region may indicate one over another,” Bagavathiannan said.

“The challenge will be in a stress situation such as drought, because that can influence the results you get,” Rajan said. “That’s why we need more intensive research to understand the influence of all these interacting factors.”

It is also possible to use multi-temporal remote sensing and thermal cameras to create a temperature map to identify different weed species as they may have different thermal signatures, Bagavathiannan added.

“Each weed species has a specific structure and infestations have specific spatial features, which could be used to create algorithms for weed detection in the field,” said Bishop. “Also, certain weeds occur only at certain times of the year and that information can be integrated into the models.”

Bagavathiannan said weed detection is complex and there is no one-size-fits-all type solution.

“We may have to use more than one tool or employ all the tools together to achieve our goal,” he said. “At this point we are generating a database of critical fundamental information about weed species characteristics. Ultimately we will be able to develop cost-effective technology.”
Thread-like roots developed last fall from the wheat seed have reached deep into the soil profile to tap moisture stored after abundant summer and fall rains, according to a Texas A&M AgriLife Research crop stress physiologist in Amarillo.

The root function of wheat plants is very important under dryland conditions, said Dr. Qingwu Xue. Those fall-developed roots are keeping plants alive as they await seasonal rainfall, even under extended drought conditions.

“This season has provided us a very good opportunity to evaluate the drought tolerance among wheat cultivars and dryland wheat management,” Xue said. “If you look at the dryland wheat around Bushland, you will see the plants are still alive, in spite of the fact we have not had any significant rainfall for about six months.”

He said while some plants are showing water stress, many are still looking strong above ground.

https://www.youtube.com/watch?v=vR4doiyok&feature=youtu.be

“But if you pull the plant up, you will not find many crown roots,” Xue said. “So you might ask, ‘How are these plants surviving with no visible roots?’ Seminal roots that developed from the seeds last fall, that’s pretty much what has kept the dryland wheat plants alive.”

He said the seminal roots can go down 3 to 4 feet deep to tap the soil water reservoir.

A little rain a few weeks ago provided enough of a boost for some cultivars to show growth of the crown roots once again, and that is also being reflected in the aboveground growth.

“These plants will have a better survival chance and will probably have a better yield under dryland conditions than those on which the crown roots have almost disappeared,” he said.

Xue said one of the AgriLife Research dryland wheat fields received less than an inch of irrigation a week ago and has demonstrated rapid development of crown roots, as well as aboveground growth.

“This just demonstrates the importance of the roots for wheat production under water-limited conditions. They help it survive until the seasonal rains come,” he said. “In the coming weeks, if we get a little bit of rain, it will help the dryland wheat to remain productive.”

Xue said he also noted a planting-date difference on wheat performance under this year’s drought conditions. Fields planted in September used up the stored soil water faster and thus are shorter and not as strong as those planted in November, which are still thriving on stored moisture in the deep profile.

“The difference in this year and previous years,” he said, “is while we have had a very long period of dry conditions on the top soil, we still have plenty of water in the deeper soil profile and this is helping the plants survive.

“If you have a very good soil-water profile to start with, you have a better chance of developing the root system critical to surviving an extended period with no seasonal rains,” Xue said.
Students, staff faculty and donors gathered at the Hildebrand Equine Center April 12 to recognize outstanding students and award scholarships for the 2018-19 year.

Each year the department recognizes outstanding students in each grade level. This year outstanding individuals were recognized for each undergraduate degree.

Outstanding PSSC Freshman Gabriel Janish and Outstanding TGSC Sophomore Ryan Earp are not pictured as neither was able to attend the banquet due to conflicting obligations.
Scholarship Recipients

**Lisette Aeschlimann**
Kenneth & Marion Porter Endowed Scholarship

**Marissa Bazan**
A.W. & Barbara Crain Scholarship
Texas Turfgrass Association Scholarship

**Sonny Birdwell**
Texas Turfgrass Paul Drummet Scholarship
Texas Turfgrass William E. “Bill” McLaughlin Scholarship

**John Brien**
Billie B. & Gloria S. Turner Production Scholarship

**Caitlin Edsall**
Billy, Gloria, & Gerry Conrad Scholarship
Cecil & Ola Beasley Goodman Scholarship
Kenneth & Marion Porter Endowed Scholarship

**Makayla Faldyn**
Allen & Joan Wiese Endowed Scholarship

**Shelby Ferguson**
Kenneth Lindsey Memorial Scholarship
McAfee Memorial Scholarship
H. Jean Mills Memorial Scholarship
Pat & Ed Runge Future Leaders Endowed Scholarship

**John Brien**
Billie B. & Gloria S. Turner Production Scholarship

**Caroline Gavranovic**
Jack Hulgan Memorial Scholarship
Kenneth & Marion Porter Endowed Scholarship
Texas Turfgrass Association Scholarship
John Grunseich
Morris G. Merkle Endowed Scholarship
Sunoco Endowment Scholarship

Daniel Guerrero
James Foster Scholarship

Lauren Hayes
J. Charlie & Judy Blue Scholarship

Blake Janysek
Joe S. Campise Memorial Scholarship
Trotter Endowed Scholarship
J.F. Mills Endowed Scholarship

Sarah Marsh
Olin & Thelma Smith Endowed Scholarship
Billie B. & Gloria S. Turner Production Scholarship

Brett Martin
Sequor Foundation/Milberger Turfgrass Endowed Scholarship

Victoria Rivera
Billie B. & Gloria S. Production Scholarship

Nicole Shigley
Luther Jones Outstanding Junior Scholarship
Trotter Endowed Scholarship
Frances and Miles Hall’39 Endowed Scholarship

Chandler Simental
Sunoco Endowment Scholarship
Texas Turfgrass Association Scholarship
Several of the scholarship recipients were unable to attend the banquet due to a conflict with the Students of Agronomy, Soils, and Environmental Studies (SASES) meeting in Nebraska and other obligations. Those students and the scholarships they received include:

- **Keith Hanslik**
  H&H Ranch Freshman Scholarship

- **Caitlin Lakey**
  Dick Holland Endowed Scholarship
  H. Jean Mills Memorial Scholarship
  Kenneth & Marion Porter Endowed Scholarship

- **Savanna Shelnutt**
  Dr. Cleveland & Frances Gerard Scholarship
  J. Charlie & Judy Blue Scholarship
  Charles’63 and Lynann’66 Simpson Endowed Scholarship
  Texas Seed Trade Association Scholarship

- **Bailey Scogin**
  Church Scholarship
  Texas Seed Trade Association Scholarship

- **Dakota Thomas**
  Billy B. & Gloria S. Turner Production Scholarship

- **Payne Whatley**
  Pat & Ed Runge Future leaders Endowed Scholarship
  Billie B. & Gloria S. Turner Production Scholarship
  H&H Ranch Freshman Scholarship

- **Neil Meyers**
  James Foster Scholarship
  Charles A. Schneider’70 Memorial Scholarship

**Thank You!**

We appreciate all the donors who make these scholarships possible.
We could not do it without you.
The Dean's Honor Roll and Distinguished Student list recognize students maintained a superior grade point average and above average grades during a semester in which they have carried at least 15 hours.

To qualify for Distinguished Student status the student must have no grade lower than a C and must complete the semester with a GPA of 3.5 or higher.

To qualify for the Dean's Honor Roll, a student must achieve a grade point average of at least 3.75.

In 2017 we have had numerous students who have been named to these lists.

### Distinguished Students

**Spring 2017**

- John Grunseich
- Jon Kyle Huvar
- Kimberlyn Pace

**Fall 2017**

- John Grunseich
- Jon Kyle Huvar
- Jose Polanco

### Dean's Honor Roll

**Spring 2017**

- David Bryant
- Valentin Gomez
- Lauren Hayes
- Jonathan Hernandez
- Ryan Janda
- Matthew Joost
- Franklin Linam
- Brett Martin
- Omar Salem
- Mark Schoenike
- Hector Sebastian Martinez
- Nicole Shigley
- Rory Tucker
- Payne Whatley

**Fall 2017**

- John Brien
- Caitlin Edsall
- Keith Hanslik
- Michael Hiefner
- Ryan Janda
- Matthew Joost
- Franklin Linam
- Sarah Marsh
- Marina Rismiller
- Savanna Shelnutt
Ranch Management University educates landowners

There was a full house for Texas A&M AgriLife Extension’s spring Ranch Management University, held April 2-6 in College Station. The five-day workshop under the direction of Dr. Larry Redmon, Soil and Crop Sciences Associate Department Head for Extension, accepts only 50 participants and fills up quickly.

New Landowners, landowners looking for a refresher and at least one self-proclaimed “old school” cattleman gathered at the Animal Science complex near the Brazos River to hear Extension specialists discuss a wide variety of information. Presentations included land stewardship practices, wildlife management techniques, pond management strategies, horse and cattle management and much more.

“My wife, son and I had a wonderful experience at RMU and we all learned “a whole bunch”, said Richard Hurst, whose family came down from Irving, TX for the workshop. “The information was timely and thorough in all areas. I have never encountered folks who are so willing to share information and support new ranchers.”

RMU is held twice each year, once in the spring and once in the fall. Participants spend the majority of the time in the classroom, but there are also daily demonstrations and hands-on activities.

As he watched the cattle handling demonstration, one participant said, “I have been doing this a long time. My wife says I’m old school and that’s why she dragged me here.”

He examined the Ral-Gro® gun, something he had not used before, and asked several questions before he continued.

“They have a lot of good information, and I have learned several new things this week,” he said. Then he smiled and added, “It’s also been nice to see that I’ve been doing some things right.”

Extension Specialist Jake Mowrer demonstrates soil horizons and discusses many aspects of soil health during RMU.

Extension specialists demonstrate hay sampling and discuss hay quality during Ranch Management University.

Story and photos by Beth Ann Luedeker

Extension Beef Cattle Specialist Dr. Jason Cleere discussed growth aids and used a Ral-Gro® gun to demonstrate the proper way to position the implants in the ear of a calf.

During her session on horse production, Dr. Jennifer Zoller introduced participants to the Texas Horse Health App - a free app for mobile devices which became available in January.
Drones help researchers monitor dryland wheat
Panhandle’s moisture-deficient winter offers prime drought-tolerance measurements

By: Kay Ledbetter

The Texas A&M AgriLife Research dryland wheat variety nursery near Bushland is being monitored weekly by drone flights, offering wheat breeders a chance to see changes on a more real-time basis.

Dr. Jackie Rudd, AgriLife Research wheat breeder in Amarillo, said the dryland wheat variety nursery typically has varieties yielding an average of 30 bushels per acre, but that can fall to 8-10 bushels per acre due to drought and other environmental conditions.

“This year is undetermined,” Rudd said. “But it looks like it is out of moisture to survive on.”

He said the dryland nursery was planted Oct. 11 into good moisture and it came up and really looked good, but the rain shut off and “we haven’t had rain since then.”

The dryland variety nursery is mirrored across the state with locations in the Rolling Plains, South Plains and further south, all evaluating a large number of different genetic sets to determine how they will do throughout the Great Plains.

“We take advantage of what environments we have,” he said. “It’s been very dry this year, matching close to 2011 when we yielded 8-12 bushels per acre. Some varieties, however, yielded 18 bushels per acre that year. That’s what we are looking at, comparing the genetics here and throughout the state under multiple locations and different conditions.”

Rudd said they have been monitoring the situation to see the difference in color and growth rate, which has varied with how they started in the fall. Varieties with a good root system had a good stand establishment and survived through the winter quite well.

“They are surviving entirely on subsoil moisture at this time,” he said. “But the more we dig down and check, there’s not much moisture under it at all. A week of this hot, windy weather, and it won’t be a pretty sight.”

“Jointing and stem elongation started last week, and things were looking pretty good,” Rudd said. “But when I was walking the field taking notes last week, I kicked some plants and they literally fell over.”

“I’ve never seen anything quite like this – a decent looking plant with almost no crown roots,” Rudd said. “An observation by our crop physiologist, Dr. Qingwu Xue, is that the plant is surviving on the seedling roots and it was just too dry to form crown roots.”

Some varieties, however, appear to be doing better than others, Rudd said.

“We need to evaluate these 5,000 plots one at a time,” he said. “Our normal process is to walk around here and go plot by plot and write in the book what we are getting. This year we’ve had 16 flights over the plots using UAVs.”

He said they are using the flights to visually measure how fast the stand established in the fall, how well it did when the cold temperatures hit – some lost a lot of leaf area while others kept right on growing — and the spring green-up.

“Some varieties started greening two weeks ago and some started last week and some are really just now starting to green up,” Rudd said.

“With drones flying over weekly, we can actually plot that through the year, the biomass or the leaf area collection, and measure the color differences with the camera and also spectral reflectance and what the greenness pattern really is,” he said. “We are measuring by ground and by air, and that’s very important information we can get in a short amount of time by drone.”

To walk this dryland field, it would take three to four hours of walking and writing notes in the notebook, Rudd said. With the drone, it takes 10-15 minutes.

“It’s a big change from having to walk the field, although we are still doing that now to ground-truth and make sure everything the drones are recording is correct,” he said. “But I’m gaining more confidence in the drone information, and I think it’s going to give us efficiency and a lot more data to make our selections. We can see plant development through the year and adjust what groups of material we are going to focus on at harvest.”

Rudd said the same breeding lines growing in the dryland nursery are also in the irrigated nursery, which is on track for yields over 100 bushels per acre.

“Comparing yields and drone data from the dryland plots with those collected from irrigated plots will provide an outstanding look at drought resistance,” he said. “Once harvest comes, we will know for sure how valuable the data we have been collecting really is, and most importantly this year, to visualize drought tolerance in each individual breeding line and variety.”
Gophers can be a nuisance to hay and livestock producers, and springtime is a good time to address them, said a Texas A&M AgriLife Extension Service expert.

Gopher burrowing can cause damage to equipment and livestock injuries, said Dr. Vanessa Corriher-Olson, AgriLife Extension forage specialist, Overton. The rodents also can damage crops by covering available forage and by consuming plant roots and vegetation.

“We see more gophers in the sandy soils of East Texas,” she said. “The soil is easier to burrow and build mounds and tunnel systems. Gophers can cause significant issues in a pasture if they’re not controlled. Their mounds can be rough on equipment.”

Gophers spend mostly solitary lives below ground. A single gopher can burrow a tunnel system that extends as long as 800 feet, covers an acre and ranges in depth from a few inches to several feet, according to AgriLife Extension.

Corriher-Olson said most producers view them as pests and choose eradication measures to control them. Control operations should be conducted during the spring and fall when gophers are most active near the surface, according to AgriLife Extension.

The strategies to address gophers in hay pastures differs slightly to control methods around a home because of the size and scale of the area to cover, Corriher-Olson said.

Homeowners can deploy a variety of methods including trapping and pesticide. Pesticide is the most effective method when it comes to treating pastures effectively, she said.

“Most producers will use a Diphacinone-based product,” she said. “Products are usually treated grain or sorghum.”

There are various methods to apply the pesticide, Corriher-Olson said. No Texas Department of Agriculture pesticide applicator license is required to utilize products used on gophers, but users should be mindful to keep the product away from other wildlife and grazing livestock.

“The product needs to be placed in the tunnel system for effectiveness and to prevent birds, pets and other animals from consuming the product,” she said.

Bait injection equipment, such as a burrow builder, can mechanically apply the product. Some pesticide retailers have equipment available to rent. Manual injection equipment can also place bait in tunnels.

Applicators should find the newest mound or series of mounds in the burrow, according to AgriLife Extension. Locate the main runway by probing the soil with a bluntly pointed probe, such as a piece of rebar or dowel rod, six to eight inches from the mound on the side where a horseshoe-like depression is found.

After locating the main runway, remove the probe and insert the recommended doses of bait. Close the opening with grass or paper and cover with dirt to keep out light and air, and to avoid covering the bait with soil. Place the bait near each end of the main runway and at one or more locations in the central part of the tunnel system.

Burrow builders create artificial burrows and dispense bait underground. It can be pulled back and forth across a field to make a series of parallel burrows. Gophers will explore the artificial burrow and find the bait. The soil must have adequate moisture for plowing and to effectively construct burrows.

“Dealing with gophers can be tricky,” Corriher-Olson said. “They rarely are seen, but mounds and tunnels are a good indication of their presence. They are a pest that could take some persistence and multiple applications in different locations to be controlled successfully.”
Turfgrass tips to make a lawn the envy of the neighborhood

By: Adam Russell

Springtime is a good time to prepare lawns for a healthy summer as warm-season grasses come out of dormancy and begin to green up, said a Texas A&M AgriLife Extension Service expert.

Dr. Becky Grubbs, AgriLife Extension turfgrass specialist, College Station, said lawn care is a multifaceted effort homeowners can tackle if they follow AgriLife Extension recommendations and invest the time to create healthy, thriving grasses.

“It’s impossible to make blanket recommendations for homeowners who want their lawn to perform to its potential,” she said. “But AgriLife Extension has an incredible amount of science-based information that can direct homeowners on most lawn care questions and concerns.”

AgriLife Extension has several online resources available to help homeowners establish and maintain turfgrass. Aggie Turf at https://aggieturf.tamu.edu/ has extensive information about caring for species including Bermudagrass, St. Augustine, buffalograss, seashore paspalum and others.

The site also provides information regarding identification and treatment of common weeds and insect pests and publications that address specific weed, disease and pest issues.

Grubbs recommends homeowners contact their county’s AgriLife Extension agents for recommendations that meet their lawn’s needs according to local conditions.

THATCH:

One thing all homeowners can check for is excess thatch – a layer of living and dead grass stems, roots, rhizomes and stolons, which are new plant growth that develops between the live green vegetation of a lawn and the soil surface. The thatch layer is composed of plant parts at various stages of decomposition, according to an AgriLife Extension publication.

Thatch can help provide a good growing environment for grasses, but excess thatch can prevent water and oxygen from reaching plant roots and create conditions for diseases, Grubbs said.

Core aerators or verticutters can be used to thin thatch, she said. Many professional landcapers can dethatch and aerate lawns, or machines can be rented at some lawn and garden retailers.

“Roots need oxygen and water to survive, and microbes need oxygen to be productive to create healthy soil,” she said.

FERTILIZER:

Once past the window of a last frost, Grubbs said homeowners should ramp up the grasses’ access to nitrogen via fertilizers. Most warm-season varieties should receive nitrogen fertilizer every four to six weeks, but the nitrogen requirements for grasses vary with species.

“Bermudagrass needs approximately 1 pound of nitrogen per 1,000 square feet every four to six weeks between May and August, whereas buffalograss, which is native to West Texas and typically low maintenance, needs less nitrogen over the growing season,” she said. “I would emphasize that homeowners need to strike a balance with their fertilizing, as too much fertilizer can be detrimental for the grass, the environment and their pocketbook.”

WATER:

“Making a recommendation on water is difficult because it varies so much with location, grass species and ever-changing environmental conditions and local evapotranspiration rates,” she said.

Evapotranspiration is the process by which water is lost into the atmosphere by evaporation from the soil/surfaces and by transpiration from plants.

AgriLife Extension has a resource at http://texaset.tamu.edu/ that provides...
evapotranspiration rates and watering needs based on current conditions for around 50 locations around the state. Grubbs does recommend that homeowners refrain from watering until grass shows initial signs of stress – such as reduced bounce-back.

“When you walk on your lawn and the leaves don’t immediately bounce back and your steps leave an indentation – it’s time to water,” she said.

Typically, watering one to two times a week for a total of 1-2” of water when conditions are dry is plenty, she said. Moisture- or rain-sensing technology is a good way to avoid overwatering. Grubbs recommends watering to reach a soil depth of 6 inches.

“That might take using a hand trowel to dig down and see how much time and water it takes,” she said. More information may be found on the AgriLife Extension website: https://wateruniversity.tamu.edu

Homeowners should also be aware of municipal water restrictions and recommendations, Grubbs said.

Grubbs said homeowners with sprinklers should also be mindful about their systems and check for leaks or faulty sprinkler heads and using water unnecessarily.

Water-wise individuals can learn how to test their sprinkler system from this AgriLife Extension video - https://www.youtube.com/watch?v=1nlwZ_imn9w.

WEEDS:

Grubbs said the best way to fight weeds is by promoting warm-season grasses. Creating ideal conditions for specific warm-season grass varieties includes fertilizing and watering appropriately.

“The time for pre-emergents has passed, but we can do other things to help create ideal conditions for turfgrasses,” she said. “Turfgrasses can more easily outcompete weeds for resources when we reach the goal of a healthy, dense turf.”

Grass health will also depend on other conditions such as whether it is a high- or low-traffic area, the amount of shade or sun it receives, and mowing height, she said. Post-emergent herbicides, such as 2,4-D, work well against broadleaf weeds such as dandelions without hurting most turfgrass varieties, but they aren’t effective against clover and grassy weeds.

“Weed identification is very important when it comes to determining what the treatment options are,” she said. “Again, I would reference Aggie Turf publications or contact a local AgriLife Extension agent when there is a question.”

Grass species, foot traffic, amount of sun and weather conditions will all determine the best mowing height. (Photo by Beth Ann Luedeker)

“Homeowners should never take more than one-third of the plant’s mature height throughout the season,” she said. “The amount of shade or sun will also factor into how high the grass should be cut. The height should be raised about 50 percent for areas that are shady most of the time.”

The amount of foot traffic will also direct mower height, Grubbs said.

An AgriLife Extension publication on mowing practices at https://bit.ly/2H2eNrx can direct homeowners on cutting height, mowing equipment and frequency for several grass species in lawns, athletic fields and golf courses.

“Once homeowners establish what they need to do to provide the right environment and conditions for their lawns to thrive, lawn care won’t seem like such a daunting task,” Grubbs said. “Most things will become a routine that will be repeated each year and growing season, and AgriLife Extension publications, resources and staff are available for things that pop up.”

Grass species, foot traffic, amount of sun and weather conditions will all determine the best mowing height. (Photo by Beth Ann Luedeker)
Hail storm wreaks havoc on greenhouses

In mid-March, spring storms brought hail and destruction to College Station. Hail as large as golf balls put holes in shed roofs and destroyed greenhouses, causing some damage to the plants housed therein.

While some were much worse than others, almost every greenhouse suffered some sort of damage.

In addition to exposing the plants to the weather and disrupting climate control, there was also a safety issue with broken pieces of glass dangling from the roof.

“We took matters into our own hands and responded very quickly to the situation,” said Dr. David Stelly, who had many plants involved. “Through significant efforts, lots of time working in and on the greenhouses, by my postdoc Dr. Robert Vaughn, myself and essentially all our students and staff, we put ourselves back into operation and avoided loss of plant materials, barring a hard freeze.”

Stelly said the event did cost him about three weeks of other kinds of research work.

Repairs on the greenhouses have begun and are expected to take several months.

Fortunately, there was no damage to the research plots in the Brazos River bottom, according to several researchers.

A Small Grains and Canola Field Day is set for April 25 at the Stiles Farm, 5700 Farm-to-Market Road 1063 near the intersection of US Highway 79, one mile east of Thrall.

The field day is hosted by the Texas A&M AgriLife Extension Service in Williamson and Milam counties. Sponsors include Williamson County Farm Bureau, Williamson County Demonstration Fund and Crops. Inc.

There is no cost to attend the field day, which will include lunch sponsored by Williamson County Farm Bureau. RSVP is requested for accurate meal count by calling the AgriLife Extension office in Milam County at 254-697-7045 or Williamson County at 512-943-3300.

Registration begins at 7:30 a.m. at the small grain and canola test plots on the east side of County Road 424, which is approximately a half-mile north of Thrall.

Dr. Clark Neely, Texas A&M AgriLife Extension Service statewide small grain and oilseed specialist, will discuss his research at those plots before the field day moves to the Fireman’s Hall in Thrall for the remainder of the presentations.

One general and one integrated pest management continuing education credits will be offered for Texas Department of Agriculture pesticide applicator license holders.

Small Grains and Canola Field Day to be held at Stiles Farm April 25

By: Blair Fannin
Three women driving agricultural and ecological research in North Texas seek new solutions for sustainable urban and suburban living in 2018.

“We look at agriculture and ecology in terms of how they can support urban human development such that it yields low or even positive impacts on our environments and ecosystems,” said Dr. Jeanmarie Verchot, director of the Texas A&M AgriLife Research and Extension Center at Dallas.

Verchot took the helm as Dallas center director in 2017, where she also serves as principal investigator in a study to understand the cellular mechanisms that allow the spread of potato virus x and y. These pathogenic viruses cause a number of symptoms in potato, ultimately leading to crop losses and associated societal problems across the globe, Verchot said.

“These viruses, particularly potato virus y, are devastating to staple potato crops,” she said. “We’re working to understand them for an eventual means of controlling those viruses.”

Meanwhile across campus in Dallas, Dr. Qingyi Yu, principal investigator in the center’s genomics research program, continues follow-up research on a 2017 discovery that changed human understanding about the circadian clock and how it regulates water efficiency in some plants.

Yu’s ongoing initiatives focus on a gene her team believes could be a circadian oscillator — one piece of a complex mechanism that regulates gene activity based on time of day and Earth’s movements through space.

“We know genes express at specific times of day, but an actual mechanism or ‘circadian clock’ that regulates this has only been hypothesized to exist so far,” Yu said. “Discovering evidence of the circadian clock would represent a major scientific leap.”

Her laboratory also studies the genetic properties allowing some varieties of turfgrass to take up salt in the soil and expel excesses of the mineral through a gland in the leaf.

“The salt glands in turfgrasses also exist in some food plants, but are inactive in those crops,” Yu said. “This salt excretion might be useful to plants and soils where conditions are especially saline. We’re studying the genetic mechanisms that activate this ability.”

Yu’s studies on turfgrass genetics overlap with variety development efforts led by Dr. Ambika Chandra, principal investigator of the Dallas center’s turfgrass breeding program. Chandra’s research aims to produce increasingly resource-efficient and stress-tolerant turfgrasses for homes, golf courses and sports fields, she said.

“Over the last few years we’ve put three superior varieties into national production: TamStar St. Augustine, Innovation zoysia and DALZ 1308 zoysia, whose brand name is in development,” she said.

Chandra continues to focus on breeding hybrid turf varieties among her growing collection of more than 800 unique research specimens. Her program is a pioneering user of embryo rescue technique in turf breeding, which assists plant embryos to survive and grow as they might not be capable in nature.

This year, she said, her efforts in embryo rescue combine with a stronger emphasis on turfgrass genetics and technologies for more efficient research, namely unmanned aerial vehicles or drones.

“Our new program initiatives include exploring the utility of high-throughput phenotyping using UAVs,” she said. “We’re also exploring genome editing for more targeted and efficient development of new turf varieties.”

Chandra also serves as an editor of scientific journals and represents Texas A&M AgriLife Research statewide on the Council of Principal Investigators at Texas A&M University, College Station.

Visit https://dallas.tamu.edu for more information on these programs and a comprehensive overview of AgriLife Research and AgriLife Extension programs in North Texas.
April
26-27 - Hill Country Land Stewardship Conference - Kerrville
27 - Central Texas Small Grain Field Day - TAMU AgriLife Research Center - McGregor

May
1 - Midterm P&T nominations packets due
1-2 - 2018 McFadden Symposium - Brookings, SD
3-4 - First San Angelo Bennett Trust Land Stewardship Conference
3 - McCulloch and Concho Counties Wheat Tour - Millersview
4 - Taylor, Callahan and Jones County Wheat Field Day - contact Clark Neely
11 - College of Agriculture and Life Sciences Graduation - 9:00 a.m.
16 - Midterm P&T committee meeting, 1:30

June
15 - The Gardens Grand Opening
19 - Stiles Farm Field Day
26 - Eagle Lake Rice Field Day

Save the Date
July 19 - USDA SCRI Turf Group summer meeting - Scotts facility, College Station
August 1-2 - Small Grain Workers Meeting - College Station
August 20 - Fall P&T packets due
Sept. 4 - P&T Committee meeting