Cottonseed to be planted in the 2017 trials is collected by Dr. Steven Hague in his College Station gin. See Story on page 4

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We are actively engaged in the interview process for the Borlaug Chair in International Crop Improvement and our Extension Weed Science position. We hope to have both complete by mid-April so we can be ready when the Governor’s hiring freeze comes to an end. This freeze has delayed the Soil Carbon position and all other faculty and staff searches.

Faculty reviews will be nearly 33% complete next week. These reviews continue to clarify the excellence of our faculty. If you are not yet scheduled for a review please schedule with Judy as soon as possible.

Dr. Steel contacted me this week about the potential for Dr. Redmon to serve as interim Associate Department Head for Fisheries and Wildlife Sciences. These additional responsibilities have now been added to Larry’s efforts and were announced to that department February 16.

We recognize that this will include some constraints on Dr. Redmon’s time, but anticipate that Texas A&M AgriLife Extension will benefit overall.

A special thanks to the many donors who have contributed to our Departmental Excellence Fund, provided endowed gifts for scholarships, research and extension. These gifts have become increasingly more critical for our success, as pressure on State and Federal budgets have increased. Thanks again! If you are interested in contributing please contact our Foundation representative (John Bernheim at jbernheim@txamfoundation.com) or myself dbaltensperger@tamu.edu.

Congratulations to our Plant Breeding Students on hosting the third Texas A&M Plant Breeding Symposium sponsored by DuPont and several others. See photos on page 16.

I recently had the opportunity to visit with CAST administrators, National Plant Science Initiative, Weed Science Executive Officers, and to attend the Phenome Conference. We have had the opportunity to review the future of the Beachell Borlaug Scholars Program with Monsanto and furthered discussion with several companies on our wheat and other breeding programs.

Make sure you have the Grand Opening of our Scotts Miracle Gro turf facility on May 4 on your calendar!
Dr. Brent Auvermann has been selected as the new center director at the Texas A&M AgriLife Research and Extension Center in Amarillo, following the retirement of longtime director Dr. John Sweeten.

Auvermann is a professor in Texas A&M University’s department of biological and agricultural engineering, with a dual-appointment in both the Texas A&M AgriLife Extension Service and Texas A&M AgriLife Research. He will begin his new duties Feb. 1.

“I’m thrilled about the next stage of my Aggie career,” Auvermann said. “I love the Panhandle, I love the people here and I love agricultural research. My wife, Jennifer, and I are so grateful for this opportunity.”

Auvermann earned his bachelor’s and master’s degrees from Texas A&M and his doctorate at Colorado State University in Fort Collins, Colorado. He joined the AgriLife faculty in Amarillo in 1995.

He is a nationally and internationally recognized expert in environmental systems engineering applied to concentrated animal feeding operations. He has published research on air pollution emissions and abatement, nutrient management, evaluating biofuel feedstocks, carcass disposal and agricultural water use.

Since 2002, a primary focus of his research has been continuous monitoring of cattle feedlot dust. He has collected one of the world’s largest data repositories from in-field continuous monitoring of dust from commercial cattle feedlots.

Auvermann has been requested to speak at conferences throughout North America and serves as a research partner with faculty/scientists in Texas, Kansas, Nebraska, Arkansas, Colorado, California, Minnesota, New Mexico and Alberta, Canada.

In 2012, he was named to an EPA Science Advisory Board expert panel to review the agency’s methodology for estimating air emissions from animal feeding operations.

Auvermann is an award-winning researcher. He was a member of the air quality team that won the 2009 Vice Chancellor’s Award in Excellence for Research. In 2010, as a team member, he received the Governor’s Texas Environmental Excellence Award—Agriculture from the Texas Commission on Environmental Quality.

He was a member of a team of engineers and scientists that won the National Excellence in Multistate Research Award from a USDA Experiment Station Committee on Organization and Policy, and he was recognized by the American Society of Agricultural and Biological Engineers as the G.B. Gunlogson Countryside Engineering Award winner for 2013.
Cotton is an integral part of our society. As a fiber crop it is used in a wide variety of products ranging from clothing, towels and sheets to furniture, medical supplies and book bindings. It is also a food crop used for human consumption (as cottonseed oil) and livestock. According to the National Cotton Council of America, cotton is America’s number one value-added crop - stimulating more than $120 billion in business revenue in the U.S. economy.

In the Texas A&M University Department of Soil and Crop Sciences, there are more researchers working to improve cotton than any other crop. One of these is Dr. Steve Hague, a cotton breeder working to develop high yielding varieties and germplasm lines with enhanced drought tolerance, high quality fiber and insect resistance.

Hague became involved with cotton when he took a job as a cotton insect scout as a 19-year-old college student pursuing a Bachelor’s degree in Agricultural Science at TAMU-Commerce. He began cotton research while pursuing his Master of Science in Agronomy at Texas Tech University, and stayed with the crop as he earned his Ph.D in Plant Breeding at Texas A&M.

“This is one of the reasons I encourage students in our department to get a job in one of our research or extension programs,” Hague stated. “It’s a great segue into graduate school and/or a career.”

Hague joined the TAMU faculty in 2006, after two years as a cotton and soybean research agronomist for LSU and four years as a cotton breeder for Bayer Crop Sciences.

Each year Hague and other researchers evaluate hundreds of cotton lines across the state, looking for the ones that show the best combination of yield potential, fiber quality, drought tolerance and insect resistance. The best lines are promoted within the program and are harvested for further testing.

As a line advances through the program it is planted in larger quantities and in more locations, which requires the collection of additional seeds each year. Newer seeds usually have a higher germination rate and result in seedlings with more vigor in comparison to seeds that have been in storage for a few years. Therefore an efficient seed increase system is vital to a cotton breeding program.

When a promising variety is found, the seed capture must be expanded in order to share the seeds with other breeders for their testing programs and with seed companies looking to evaluate the potential use of that variety in their programs.

“We normally produce less than 50 pounds of seed from each line, unless we have a request for more seed,” Hague explained. “Because a single seed will produce only a single plant which, in turn, might produce 200 seeds, it takes a few growing seasons before enough seed to plant thousands of acres can be generated.”

Cotton seeds are separated from the lint during the ginning process. As the cotton passes through the gin multiple saw blades separate the lint from the seeds. Hague is fortunate to have a gin that allows him to quickly process his cotton and collect the seeds for additional testing.

Story and Photos by Beth Ann Luedeker

Dr. Steve Hague is working to develop better cotton.

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Dr. Steve Hague is working to develop better cotton.

Savannah Shelnutt feeds cotton from the trial in Weslaco into the gin as Marshall Tolleson bags the seeds. Both are undergraduate student workers in Dr. Hague's program.

Linters remain attached to the seeds after ginning. The seeds must go through a delinting process in order to flow properly through planting equipment.
Gin continued

“A gin like this is imperative for a breeding program. Without a gin of this capacity we could not process seed nearly as fast, which would restrict the number of lines we could test,” Hague stated. “Plant breeding is a numbers game. We need to look at as many lines as possible.”

Hague uses the gin to process cotton from his trials grown across the state. The gin-stand is cleaned between each variety to prevent cross-contamination among lines. It is imperative that seeds from each plant remain separate in order to maintain the integrity of the trials.

After being ginned, seeds are de-linted (removal of any remaining linters still attached to the seed) and prepared for planting. Each seed is carefully catalogued to insure the seed matches its pedigree, and when and where it was grown.

Currently, the seeds are delinted manually using a sulfuric acid wash, which is quickly rinsed off and neutralized. The seeds then spend several hours in a dryer to remove any excess moisture.

While this is an effective system, it is labor intensive and the moisture can be detrimental to the seeds. Hague is hoping to equip his lab with mechanical delinters which have recently been developed by Cotton Incorporated.

With these delinters, the linters are removed by stiff brushes, without the need to soak the seeds. This not only saves the workers from handling sulfuric acid, but also eliminates the need for the seeds to spend time in the drier.

“Dr. Jane Dever, a cotton breeder at the Texas A&M AgriLife Research and Extension Center in Lubbock, has a prototype which she is currently evaluating. It seems to work very well,” Hague said. “Mechanizing that step would allow us to process a lot more seeds.

Through his years of research Hague has released several varieties of cotton which have been used by other cotton breeders and grown commercially, but the hunt continues to improve cotton quality and to breed varieties that will help insure the sustainability of the cotton industry.
The Wsm2 gene is located on chromosome 3BS in wheat and most recently eight tightly linked flanking markers have been identified and mapped. To most, that means very little. To Texas A&M AgriLife Research geneticists and breeders, it’s the key to battling one of the most important biotic stresses affecting wheat.


In both articles, Liu and his collaborators outlined how wheat streak mosaic virus, also known as WSMV, is a major threat to wheat production in the Great Plains, one of the largest wheat regions in the nation, Liu said. While the threat may not be as high as it is in the U.S., the virus has been found in all major wheat-growing regions of the world. There is no effective chemical treatment available for the disease, he said. Host resistance is the most cost-effective and environmentally safe approach for combating this disease.

“WSMV resistance is an important target trait for our wheat breeding program,” said Dr. Jackie Rudd, AgriLife Research wheat breeder in Amarillo. “We have evaluated many diverse sources of genetic resistance over the years, including a wheat breeding line from Colorado State University, CO960293-2, known to have good resistance.”

Rudd and the AgriLife Research wheat team began crossing with the Colorado line in 2005 and by 2011 had identified and mapped WSMV resistance on chromosome 3BS and named the gene Wsm2.

Liu said wheat breeding programs worldwide now rely on two primary sources of resistance, Wsm1 – identified in the early 1990s from a wheatgrass, and the Wsm2 from a bread wheat, for development of WSMV-resistant wheat cultivars. Effective molecular markers closely linked to the target genes are the key for the success of marker-assisted selection on traits such as WSMV resistance, he said. Among the available markers, single nucleotide polymorphisms or SNPs are routinely used in plant breeding programs to distinguish potentially superior genotypes with genetic merit for traits of interest.

His genetic team has identified eight SNPs flanking Wsm2, Liu said. This helps increase the efficiency in selection for the resistance needed to battle the virus.

“A single marker linked to target genes may not be sufficient to screen across diverse genetic backgrounds,” Liu said. “Therefore, a set of tightly linked markers on each side of the gene is the best predictor for Wsm2 with higher accuracy.”

These tightly linked SNPs will be useful for marker-assisted selection for WSMV resistance, he said. Dr. Chor Tee Tan, an associate research scientist in Amarillo, has been able to carry the AgriLife Research work one step further. Working in the wheat genetic program for almost four years, he led the effort to develop breeder-friendly Kompetitive Allele Specific Polymerase Chain Reaction or KASP assays for those SNPs tightly linked to Wsm2 and validated them in multiple breeding populations.

If a breeder is screening 1,000s of breeding lines, as is typical, the KASP acts as a flag to say the necessary sequence for wheat streak mosaic virus resistance exists in a particular line of wheat, Tan said.

Two clusters from the KASP assay shows wheat lines exhibiting resistance with Wsm2, blue, and susceptibility, red, to WSMV.
These KASP SNPs were tested on a panel of nine wheat breeding and mapping populations with diverse genetic backgrounds and were found to be very effective in differentiating resistant and susceptible genotypes for WSMV,” he said.

“We have many lines with Wsm2 in our breeding pipeline now and these new markers will help us get to the finish line,” Rudd said. “Marker technology has greatly improved, and these latest findings are easy to use and very predictable.”

Liu said the joint effort from breeders at AgriLife Research, Kansas State University-Hays and Colorado State University, has “made great progress to fight this disease that is not easy to screen by infection.”

Research for these studies was supported in part by the Texas Wheat Producer Board, Monsanto’s Beachell-Borlaug International Scholars, AgriLife Research and a U.S. Department of Agriculture National Institute of Food and Agriculture grant to the Triticeae-CAP project. Both journal articles can be accessed at http://bit.ly/2kSxobG.

Hill Country Land Stewardship Conference set April 20-21 in Kerrville

By: Kay Ledbetter

The fourth annual Hill Country Land Stewardship Conference hosted by the Texas A&M AgriLife Extension Service is scheduled for April 20-21 at the Y.O. Ranch Hotel in Kerrville.

“This conference provides a comprehensive update on many aspects of ranch management to those new to Hill Country ranching, as well as something for those who have been at it a long time,” said Dr. Larry Redmon, AgriLife Extension program leader and Texas A&M University soil and crop science associate department head, College Station.

Funded in part by the Ruth and Eskel Bennett Endowment, the cost of the two-day conference is $75 and includes all meals, break refreshments and tour transportation costs. Registration will be available online from Feb. 16-April 14 at https://agriliferegister.tamu.edu/BennettTrust or 979-845-2604.

The conference will open with registration at 7:30 a.m. April 20, and the program will begin at 8:30 a.m.

The following topics and speakers will fill the morning program:

— Getting to Know Your Resources, Dr. Megan Clayton, AgriLife Extension range specialist, Corpus Christi.
— Managing Deep-Rooted Invaders, Dr. Robert Lyons, AgriLife Extension range specialist, Uvalde.
— Top Laws Texas Landowners Need to Know, Tiffany Dowell Lashmet, AgriLife Extension agricultural law specialist, Amarillo.
— Master Naturalist Program, Michelle Haggerty, Texas Master Naturalist program coordinator, Kerrville.
— Landscaping for Wildlife, Dr. Maureen Frank, AgriLife Extension wildlife specialist, Uvalde.
— Livestock Options for Smaller Acreage, Dr. Reid Redden, AgriLife Extension state sheep and goat specialist, San Angelo.
— Rainwater Harvesting Options, Billy Kniffen, retired AgriLife Extension water resource associate, Menard.
— Edwards Plateau – Where We Have Come From and Where We Are Going, Dr. Barron Rector, AgriLife Extension range specialist, College Station.

The second day of the conference will be dedicated to tours. Individuals will pick from tours of the Hillingdon Ranch in Kendall County, “Wine and Roses” in Gillespie County or the Kerr Wildlife Management Area.

For more information, contact Redmon at l-redmon@tamu.edu or an AgriLife Extension agent in the region, or got to http://agrilife.org/bennetttrust.
The 2016 Replicated Agronomic Cotton Evaluation or RACE trial results from South and East Texas are in and reflect the extremes of the past season, according to a Texas A&M AgriLife Extension Service specialist.

"We had many regions with superb yield and quality, while other regions suffered tremendously from excessive late-season rainfall," said Dr. Gaylon Morgan, AgriLife Extension state cotton specialist in College Station.

"Hopefully, the current prices will hold or improve as we move into the 2017 season, and the 2016 RACE trial results will provide producers some guidance on variety selection," Morgan said.

The 2017 season provides producers with more herbicide-tolerant technologies in varieties than anytime in the past, including GlyTol, LibertyLink, RoundupFlex, XtendFlex and Enlist cotton systems, he said.

"This is a good thing from a weed management perspective, and yields and fiber quality are comparable across these technologies," Morgan said. "However, the number of choices can be a bit overwhelming, especially to some of our new growers in 2017.

"Where farmers have high populations of glyphosate-resistant weeds, the LibertyLink, XtendFlex and Enlist cotton systems provide great value. In fields with low levels of glyphosate-resistant weeds, the GlyTol and RoundupFlex systems are still a great fit when paired with residual herbicides."

Morgan said variety decisions should start with the agronomic characters such as yield, maturity and fiber quality first and transgenic technology second.

The AgriLife Extension cotton agronomy team of Morgan, Dr. Josh McGinty, agronomist in Corpus Christi; Dale Mott, program specialist in College Station; and Clint Livingston, technical assistant in Corpus Christi, has been conducting large-plot, on-farm, replicated variety trials for 11 years in the Lower Rio Grande Valley, Blacklands, South Texas/ Wintergarden and Upper Coastal regions, with collaboration from growers and AgriLife Extension county agents.

"This approach provides a good foundation of information that can be utilized to assist the variety selection process," Morgan said. "These trials occur on producers' farms and are managed by the producers."

He said 19 RACE trials and many small-plot variety trials were planted in 2016 and the results are available at http://Cotton.tamu.edu. Results include yield, fiber quality and estimated lint value for each location, as well as rankings based upon lint yield for the varieties within a production region.

"Yields across the Lower Rio Grande Valley and Coastal Bend were very good this season with good early season moisture and some timely rains during the season," Morgan said. "Also, weather was not much of a hindrance to harvest, unlike the Upper Gulf Coast and Blacklands.

"In the Upper Gulf Coast and Blackland regions, the trials represent below-average yields, which were common in 2016. Most of these lower yields were due to very saturated conditions between planting and early bloom followed by an extended dry period throughout boll fill, followed by an extended wet period in mid-August and into September, which decreased yield, fiber quality and seed quality."

The average non-irrigated yields for the 2016 RACE trials ranged from 1,425 pounds per acre for Nueces County to 421 pounds per acre for the Delta County location. Mean irrigated location yields ranged from 2,129 pounds per acre for the Hidalgo County location to 968 pounds per acre for the Fort Bend County location.

Morgan said when selecting cotton varieties, several key factors should be considered before planting.

"Producers need to gather as much unbiased yield and fiber quality data as possible from their area and beyond," he said. "Some varieties are widely adapted, while others perform well under more specific growing conditions and situations."

Also, Morgan said, select the herbicide- and insect-tolerant traits that best fit the expected challenges for 2017.

"Seed and technologies fees for the newer herbicide and insect traits are usually more expensive," he said. "If you don't need these traits, then many varieties with older trait packages are still competitive in yield and quality."

For more information, contact Morgan at gdmorgan@tamu.edu or 979-845-2425 or McGinty at jmcginty@tamu.edu or 361-265-9203.
Producers hoping to mitigate annual ryegrass growth for warm-season hay production have options and should start sooner than later, said a Texas A&M AgriLife Extension Service expert.

Annual ryegrass, a cool-season forage, is often utilized by livestock producers for winter grazing, said Dr. Vanessa Corriher-Olson, AgriLife Extension forage specialist, Overton. However, East Texas hay producers often view it as an unwanted species that competes with Bermuda and Bahia grasses, she said.

Volunteer annual ryegrass can be common in East Texas hay meadows. Winter rainfalls can promote seed germination, and seeds can survive multiple years in regional soils. Late season annual ryegrass can delay or prevent warm-season perennial forages, such as Bermuda or Bahia grasses, from breaking dormancy in April or May.

“If your hay meadow happens to be fenced and has a good source of water, grazing can be an excellent way to utilize a high-quality forage and remove it from the meadow,” Corriher-Olson said.

Ryegrass also can be baled for hay, she said.

Baleage, or haylage, is forage baled at 50-60 percent moisture. It should then be preserved in an airtight plastic wrap as single bales or one long tube. This requires specialized equipment and diligence in maintaining the integrity of the plastic wrap.

Harvesting for a dry bale product can be tricky during wet springs, she said. “A lot of people clear hay meadows of volunteer grasses and weeds during their first cutting,” she said. “They may be battling ryegrass, and many consider that a ‘trash cutting’ because they value warm-season grasses like Bermuda grass. But ryegrass is a very good forage under the right conditions.”

Another way to fight ryegrass is to promote warm-season grasses, she said. Maintaining some substantial Bermuda or Bahia grass stubble, 4 inches or more, could provide some shade to reduce ryegrass seed germination.

Maintaining a higher stubble height can also be beneficial for warm-season perennial forages’ future growing season, Corriher-Olson said. Higher stubble height means more substantial root structure to capture deeper soil moisture and nutrients.

“If your hay meadow happens to be fenced and has a good source of water, grazing can be an excellent way to utilize a high-quality forage and remove it from the meadow,” Corriher-Olson said.

Prowl H2O, or pendimethalin, is a good pre-emergent herbicide labeled for dormant Bermuda grass and Bahia grass pastures and hay meadows. Treatments should be applied prior to rainfall, she said, to enhance soil incorporation and herbicide activation. Glyphosate, the active ingredient in Roundup and other herbicides, and Pastora, which includes nicosulfuron and metsulfuron, are two postemergent herbicide options.

Ideally, ryegrass needs to be sprayed when plants are less than 6 inches in height in the fall, but second applications are recommended in February or March, Corriher-Olson said. “Annual ryegrass is generally susceptible to postemergence herbicides in early winter prior to freezing temperatures and before seed-head emergence,” she said. “Unfortunately for Bahia grass growers, there are no selective herbicides available for postemergence control of annual ryegrass.”

Spot treatments of glyphosate are recommended in Bahia grass for control, she said. For rates and any restrictions refer to product labels.

Producers can control ryegrass by grazing it, she said.
It comes as no surprise to agricultural and environmental scientists that the success of any great research ultimately comes down to the ability to obtain funding, especially from government organizations.

Being awarded a grant from organizations such as the National Science Foundation (NSF) or USDA ensures support for state-of-the-art research projects where the cost of hiring a graduate student tends to cost more than the project itself. However, with constant shifts in research priorities based on current societal needs and political agendas, scientists continue to question where the future of research funding lies.

During the ASA, CSSA, and SSSA Annual Meeting in Phoenix, AZ, a diverse panel of speakers experienced in obtaining and/or distributing scientific funding spoke on the future of agricultural research. This session was organized by the Graduate Student Committee and was spearheaded by Elizabeth Gillispie (NC State), Heidi Meyer (Penn State), and Brandon Smith (Texas A&M). Panelists included:

- Dr. David Baltensperger, Head, Department of Soil and Crop Sciences, Texas A&M University
- Dr. Wayne Honeycutt, President and CEO, Soil Health Institute
- Dr. Emilio Oyarzabal, Technology Development Manager, Monsanto
- Dr. Sally Rockey, Executive Director, Foundation for Food and Agriculture Research
- Karl Anderson, Director of Government Relations, ASA, CSSA, and SSSA
- W. Brandon Smith, Texas A&M AgriLife Research, who moderated the session.

The session was moderated in a “talk show” format by W. Brandon Smith. Both students and professional members interacted with the panel in a candid discussion of the current culture of research funding and the indications of future directions.

In this article, we briefly address some of the questions asked and highlight the main topics covered.

**Key Players in Agricultural and Environmental Funding**

The government plays a critical role in funding agricultural and environmental research. It was the view of those involved in the session that government should continue to support basic science just as much as applied science. The government funds research that could not be reasonably funded by other avenues. These alternate avenues tend to focus on applied research that has a real-world problem in search of a solution. And, to address the greatest societal challenges in science, we must pull together a diversity of scientists and specialists to solve problems through more collaborative, interdisciplinary work. Whether it is currently the focus of funding sources, this was viewed as a critical point in the future direction of agricultural research.

Moving forward, industry involvement in research will most likely have a direct impact on the food production cycle. This is an area of direct consumer involvement and interest and, thus, is of primary interest to organizations in this sector. As scientists, we should think about our engagement with industry and look at these organizations as another strong source of collaboration. Companies such as Monsanto and General Mills, for example, conduct proactive research (a growing interest in the basic realm of science), and this could lead to more investment in agricultural funding.

Of the most intriguing discussions in the session was the discussion of the “hidden” role of government. While government agencies such as NSF and USDA fund a portion of university and agency research directly through grants, government funding influences all aspects of the funding cycle. Through tax incentives on grants and donations, government policies influence the amount of money
available for research activities of non-governmental organizations (NGOs). Tuition waivers and student loans are also points of indirect government involvement that allow the activities of undergraduate and graduate students to advance research efforts.

Training Students
The vast majority of our undergraduate and graduate students being trained as scientists will not end up in careers in academia. Thus, a proactive approach to training will assist all sectors involved in advancing the shared mission of agricultural and environmental researchers. All of our panelists emphasized the need for students to be trained to be flexible. It may be that an individual career involves stints in several positions within a sector or even across sectors. Having a healthy understanding of the relationships involved and the role of each will benefit all to the common goal. From a policy perspective, soft skills are more valued by employers and should be emphasized in future agricultural funding.

Impact of Election on Research
Since the session coincided with the current presidential election, panelists were asked their opinions of how agricultural and environmental research may be impacted. Overall, the sentiment was unanimous. Support for research has been historically bipartisan and tends to be relatively stable across administrations. Both Democratic and Republican administrations have a history of supporting research and development efforts, and there is little to indicate that this will change in the current change of administration.

Nonetheless, there will likely be a shift in priorities with the new administration as there is in any change in leadership, with certain funding priorities likely being reduced or removed in future budget proposals. Therefore, advocacy is a key actor to ensure funding in the new administration.

The Think Tank Symposium was an overwhelming success, bringing together graduate students and professionals for a candid discussion of common interests. As with any discussion of this depth, there are more questions left to be answered in addition to those addressed, not the least of which is how any of these factors may affect the environmental sciences and whether this will be different than the agricultural sciences.

To engage a wider audience, the group launched #ACSThinkTank for involvement from those not in attendance. This has enabled our group to continue the discussion after the meetings ended and has gained a following of several commodity and industry groups. We encourage all interested to take to Twitter and join the discussion. Together, we can ensure a bright future for our research interests.

Russ Garetson received second place in MS poster competition at the Southern Weed Science Society annual meeting held in Birmingham, AL, January 23-26.

Russ is working on his Master of Science in Agronomy, under the supervision of Dr. Muthu Bagavathiannan.

He is originally from Talty, Texas, and earned his Bachelor of Science at Texas A&M University in 2015.
With variety selection the most important decision made during the year by cotton farmers, Texas A&M AgriLife Extension Service agronomists in the High Plains and Rolling Plains have variety trial results to share from 2016.

Dr. Jourdan Bell in Amarillo and Dr. Emi Kimura in Vernon recently released the results of their large plot, on-farm, replicated cotton variety trials, which are conducted annually to assist Texas cotton producers in remaining competitive in these regions.

“This approach provides a good foundation of information that can be utilized to assist farmers with the variety selection process,” Kimura said.

The two agronomists said unlike herbicide or insecticide decisions that can be changed during the season to address specific conditions and pests, variety selection is made only once and dictates the management of a field for the entire season.

Across the state, AgriLife Extension agronomists are advising that variety decisions be based on genetics first and transgenic technology second, focusing attention on agronomic characteristics such as yield, maturity and fiber quality when selecting varieties.

In the High Plains, cool temperatures and late spring precipitation prevailed through the 2016 cotton planting season, Bell said. As a result, most locations were planted with good soil moisture.

While soil temperatures at all locations were above 60 degrees at planting, cool, wet conditions slowed germination at all locations except in Hartley County where the sandier soil likely resulted in warmer soil temperatures and more uniform emergence, she said.

“Cool, wet conditions coupled with low nighttime temperatures resulted in delayed early season development as reflected in the growing degree days accumulated at all locations,” Bell said. “Late July and early August were marked by several weeks with daily highs that reached or exceeded 100 degrees, causing some stress during the peak bloom period.”

She said September brought much-needed precipitation and cooler temperatures; however, this also resulted in secondary regrowth at several locations requiring aggressive plant growth regulator management.

Lint production was greatest at the Deaf Smith, Hartley and Sherman county locations for all varieties. Production at Parmer County was affected by verticillium wilt that resulted in premature defoliation especially for non-tolerant varieties. At the Parmer County trial, all plots were rated for defoliation damage, and the greatest yields were achieved with tolerant varieties such as Phytogen 243 and Stoneville 4747GLB2.

Verticillium was also found at the Sherman County trial, but not at yield-limiting levels that warranted ratings, Bell said. Lint production at the Swisher County trial was affected by a late planting.


There was no specific variety that topped yields at all locations, however, Deltapine 1612B2XF, Fibermax 1320GL, NexGen 3405B2XF and NexGen 3406B2XF all yielded above 1,600 pounds per acre lint at the Deaf Smith, Sherman and Hartley county locations where yield was not limited by disease or late planting.

In the Rolling Plains, trials were planted in 14 locations in 2016, of which 13 locations were harvested, Kimura said. Planting dates ranged from May 10 to June 14, while the harvesting dates ranged from Nov. 10 to Jan. 13, which was a month longer than the 2015 growing season.

“Timing of defoliation is always challenging in the Rolling Plains with the increased chance of rain in the fall to early winter; however, it is critical to maintain high quality fiber,” she said.

Yields for the 2016 Replicated Agronomic Cotton Evaluation, or
A Texas Well Owner Network training March 2 in Tyler for those interested in managing private water wells. The training, which is free and open to the public, will be from 1-5 p.m. in Building C at the East Texas State Fair, 2112 W. Front St.

“The TWON program is for Texas residents who depend on household wells for their water needs, so they can learn about improving and protecting their community water resources,” said Drew Gholson, AgriLife Extension program specialist and network coordinator, College Station. “The program was established to help well owners become familiar with Texas groundwater resources, septic system maintenance, well maintenance and construction, and water quality and treatment.”

Those who attend have the option to bring samples from their well for analysis. The cost is $10 per sample, due when they are turned in. According to Gholson, the samples will be screened for nitrates, total dissolved solids and bacteria.

Sample containers can be picked up from the AgriLife Extension offices in Smith County at 1517 W. Front St. in Tyler, in Cherokee County at 165 East 6th St., Suite 104 in Rusk, in Wood County at 618 S. Main St. in Quitman, or in Rains County at 410 Tawakoni Drive in Emory.

He said space is limited, so attendees are requested to register at http://twon.tamu.edu/training or by calling 979-845-1461 as soon as possible.

The training is one of 30 being conducted statewide through the Texas Well Owner Network project.

“Dryland cotton production in the Rolling Plains was superior in the 2016 growing season with the good moisture and accumulated heat units,” Kimura said. “We expect to see increasing dryland cotton acreage in the 2017 growing season.”

Tables with the complete RACE trial yield data and fiber analysis for each individual location can be found at http://bit.ly/2lMJHGU. Data featured in these tables include: statistical analysis of yield, turnout, fiber quality parameters, and loan and gross lint value per acre.

Most locations were ginned with a 20-saw table-top gin with no lint cleaner, Kimura said. This method consistently produces higher lint turnout percentages than would be common in a commercial gin. Consequently, higher turnouts equate to lint yields, which are generally higher than area-wide commercial yields.

For more information, contact Bell at jourdan.bell@ag.tamu.edu or 806-677-5600, or Kimura at emi.kimura@ag.tamu.edu or 940-552-9941.
Upgrades to Heep room 224

Heep 224 was renovated in January to benefit both local and distance students.

According to Distance Education Coordinator LeAnn Hague, the renovations were made to increase ease of use for lecture recording, to give instructors additional options for recording and delivering lectures, and to improve web-conferencing options for synchronous class meetings as well as distance student committee meetings.

The primary improvement was the installation of a tile ceiling which will improve the acoustics of the room. The drop ceiling replaces the open beam structure used in the 1970s when the building was built.

Other improvements include ceiling microphones for both the instructor and students, installation of cameras, and installing speakers with the capability to use voice lift.

A new tile ceiling was added to enhance the acoustics of the room. Improved lighting assists students and enhances the room's aesthetics.

The front of Room 224 prior to the remodel.

224 after remodel - ready for classes, seminars and meetings.
The Texas Well Owner Network will present water well screenings in March for Mills, Llano and Lampasas counties to give residents the opportunity to have their well water screened.

The screenings are presented by the Texas A&M AgriLife Extension Service offices in these counties in partnership with the Texas Water Resources Institute. “Private water wells should be tested annually,” said Dr. Diane Boellstorff, AgriLife Extension water resource specialist, College Station. “It is very important that only sampling bags and bottles from the county AgriLife Extension office be used and all instructions for proper sampling are followed to ensure accurate results.”

Dates, times and locations for the screenings will be:

- **Mills County**, 1011 Fourth St., in the basement of the Mills County Courthouse in Goldthwaite. Sampling bags and bottles can be picked up at the AgriLife Extension office for Mills County. A meeting to explain screening results will be held at 7 p.m. March 7 at the Mills County Community Center, 1003 Parker St. in Goldthwaite.
- **March 6 from 8:30–10 a.m.** at the AgriLife Extension office for Mills County, 1011 Fourth St., in the basement of the Mills County Courthouse in Goldthwaite. Sampling bags and bottles can be picked up at the AgriLife Extension office for Mills County. A meeting to explain screening results will be held at 7 p.m. March 7 at the Mills County Community Center, 1003 Parker St. in Goldthwaite.
- **March 7 from 8:30–10 a.m.** at St. James Lutheran Church’s Schorlemmer Hall, 1401 Ford St. in Llano. Sampling bags and bottles can be picked up at the AgriLife Extension office for Llano County, 1447 E. Texas Highway 71, Unit E in Llano. A meeting explaining screening results will be held at 6 p.m. March 8, also at Schorlemmer Hall.
- **March 8 from 8:30–10 a.m.** at the Lampasas County Farm Bureau office, 1793 N. U.S. Highway 281 in Lampasas. Sampling bags and bottles can be picked up at the AgriLife Extension office for Lampasas County, 409 S. Pecan St., Suite 102 in Lampasas. A meeting explaining screening results will be held at 6 p.m. March 9 at the same location.

Samples will be screened for common contaminants, including E. coli bacteria, nitrates and high salinity. Boellstorff said the presence of E. coli bacteria in water indicates waste from humans or warm-blooded animals may have contaminated the water. Water contaminated with E. coli bacteria is more likely to have pathogens that can cause diarrhea, cramps, nausea or other health issues.

“Water with nitrate nitrogen at levels of 10 parts per million is considered unsafe for human consumption,” said John Smith, AgriLife Extension program specialist, College Station. “These nitrate levels above 10 parts per million can disrupt the ability of blood to carry oxygen throughout the body, resulting in a condition called methemoglobinemia. Infants less than 6 months of age, the elderly and young livestock are most susceptible.”

Salinity as measured by total dissolved solids will also be determined for each sample. Water with high levels may leave deposits and have a salty taste, and using water with high levels for irrigation may damage soil or plants. Boellstorff said it is important for those submitting samples to be at the meetings to receive results, learn corrective measures for identified problems and to improve their understanding of private well management.

For more information about the screening in Mills County, call 325-648-2650; for Llano County, call 325-247-5159; and for Lampasas County, call 512-556-8271.

To learn more about programs offered through the Texas Well Owner Network or to find additional publications and resources, go to [http://twon.tamu.edu](http://twon.tamu.edu). Funding for the Texas Well Owner Network is through a state nonpoint source grant provided by the Texas State Soil and Water Conservation Board. 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 3rd Annual Texas A&M University Plant Breeding Symposium was held February 15-16 in College Station with 160 people in attendance and another 140 reached through the webinar.

The symposium is part of the DuPont Plant Sciences Symposia Series which includes more than 15,000 participants from more than 30 universities on five continents.

This year’s symposium focused on utilizing genetic diversity, and included presentations about a variety of crops ranging from peanuts to cotton.

At the opening of the program, Dr. Craig Nessler, Director of Texas A&M AgriLife Research, presented an award to Dr. Charles Simpson honoring his contributions to Texas A&M University and peanut diversity.

In the Student Research Competition scholarships were awarded to the top three abstract presentations and top three posters.

The top three student abstract presentations were: 1st - Brian Pfeiffer, PhD, Soil and Crop Sciences; 2nd - Mitchell Schuman, PhD, Soil and Crop Sciences; 3rd - Nolan Bentley, PhD, Horticulture.

In the poster competition the winners and their poster titles were: 1st place-Michael Jochum - “Bioprospecting Rhizosphere Bacteria to Improve Drought Tolerance in Grasses”; 2nd - David Horne - “Validation and Implementation of Unmanned Aerial Systems in the Sorghum Breeding Pipeline”; 3rd - Yang Yang - “Analysis of QTL associated with yield and yield components in TAM111 and TAM112 and their interactions with environments.”

Recipients of the DuPont Pioneer Travel Scholarships were, from left to right: Pablo Barrios, Univ. Wisconsin-Madison; Heather Kates, University of Florida; and Derek Barchenger, New Mexico State Univ.
The Texas A&M AgriLife Extension Service Ranch Management University will be offered April 3-7, said Dr. Larry Redmon, Texas A&M University soil and crop sciences associate department head and Texas A&M AgriLife Extension Service program leader, College Station.

Ranch Management University is held each spring and fall at the G. Rollie White Visitors’ Center, 7707 Raymond Stotzer Parkway on the Texas A&M campus in College Station.

Registration is $500 and attendance is limited to 40 people, Redmon said. To register online and for more information, go to http://agriliferegister.tamu.edu and enter “ranch management” in the search window. Registration will end March 24 online.

Ranch Management University is an intensive five-day event targeting new or inexperienced ranchers and landowners and covers the fundamentals of soils and soil fertility, forage establishment, and pasture management and utilization by livestock, Redmon said.

The course is primarily taught by AgriLife Extension specialists at College Station. Speakers and their topics include:
- Dr. David Anderson, economist, Planning for Profit and Marketing Livestock: Cow-calf? Stockers? Or Own Them to the Feedlot?
- Dr. Jake Mowrer, state soil fertility specialist, Basic Soils, Soil Fertility and Soil Sampling in the Field.
- Matt Brown, forage and water quality program specialist, What Is a Watershed?
- Redmon, Forage Establishment, Weed and Brush Management, Hay Sampling, Sprayer Calibration, and Use of Prescribed Fire and the Prescribed Burn Associations.
- Jennifer Zoller, horse specialist, Horse Production 101.
- Dr. Jason Cleere, beef cattle specialist, Genetic Strategies for Profitable Beef Production, Nutrient Requirements and Supplementation of Beef Cattle, Body Condition Scores in Beef Cattle, Non-traditional Production Strategies and an animal handling demonstration at the Texas A&M Beef Center.
- Dr. Vanessa Corriher-Olson, forage specialist in Overton, Forage Legumes in the Pasture and Hay Production.
- Jason Hohlt, U.S. Department of Agriculture Natural Resources Conservation Service range specialist, NRCS Financial Assistance Programs.
- Peter Woods, fisheries program specialist in Bay City, Farm Pond Management and farm pond visit.
- Josh Helcel, wildlife and fisheries associate in Gatesville, Feral Hog Issues and a hog trap demonstration.

Meals and break refreshments are covered by the registration fee, along with customized flash drives containing more than 100 publications covering ranch resource management.

For additional information or late registration, contact Linda Francis at 979-845-2425 or l-francis@tamu.edu.
Texas A&M Turfgrass Science students have been doing some travelling in the last few months. Trevor Austin, Kirstin Burnett, Syed Ahmed, Corey Diaz and Jose Polanco (top photo) attended the Sports Turf Managers Association Meeting. The bottom photo was taken when Sam Irwin, Kevin Hejl, Calvin Wilson, Scott Gee, and Kevin Cloud (not pictured) attended the Golf Course Superintendents Assn. Of America Conference. Both meetings were held in Orlando, Florida.

These events are outstanding opportunities for the students to learn more about career opportunities and new technologies, and to network with prospective employers.

The GCSAA is the largest educational event in the industry with more than 13,000 attendees this year.

### Turf Club calendar for the spring semester

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb. 22</td>
<td>Industry Guest Speaker- TBD</td>
<td>Heep 440</td>
</tr>
<tr>
<td>Mar. 8</td>
<td>Industry Guest Speaker- TBD</td>
<td>Heep 440</td>
</tr>
<tr>
<td>Mar. 22</td>
<td>Industry Guest Speaker- TBD</td>
<td>Heep 440</td>
</tr>
<tr>
<td>Mar. 25</td>
<td>Big Event</td>
<td>Bryan/College Station</td>
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<tr>
<td>Mar. 27- Apr. 2</td>
<td>Shell Houston Open Volunteer Opportunity</td>
<td>Houston, TX</td>
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<tr>
<td>Apr. 19</td>
<td>Tour of Olsen Field- Nick McKenna TAMU Athletics</td>
<td>Olsen Field</td>
</tr>
<tr>
<td>May 3</td>
<td>Aggie Turf Golf Tournament</td>
<td>TBD</td>
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**Cotton meetings will be part of the Expo in Abilene February 21-22**

The Rolling Plains Cotton Growers Association’s annual meeting and luncheon, the Big Country Range Management Seminar and the Cotton Production Conference will all be part of the Texas Farm-Ranch-Wildlife Expo February 21-22 in Abilene.

The annual Expo, which is co-hosted by the Texas A&M AgriLife Extension Service and the Abilene Chamber of Commerce, will be held at the Taylor County Expo Center, 1700 Hwy 36 in Abilene.

Big Country Range Management, sponsored by DOW AgroSciences, will be held in the Western Heritage Ranch House beginning at 8:00 am on Tuesday, February 21. There will be 3 CEUs that can be earned at this meeting.

The annual meeting of the Rolling Plains Cotton Growers Association will begin at 10:00 a.m. Feb. 21 in the Big Country Hall. Registration opens at 9:00 a.m.

Cotton Production in 2017 will follow the Association meeting in the Big Hall at 1:30. There will be 3 CEUs available at this meeting, which is sponsored by Daniel’s Trading.

In addition to these meetings, there will be a trade show, feral hog management seminars, a cowdog demonstration and more.

More information can be found on the Abilene Chamber of Commerce website - [www.abilenechamber.org](http://www.abilenechamber.org) or by contacting Robert Pritz, AgriLife Extension agent for Taylor County, at r-pritz@tamu.edu or 325-672-6048
Margaret Jane McGinty was born December 20, 2016 weighing 7 lb 2 oz. Margaret is the first child of Josh and Britni McGinty. Margaret’s dad is an Assistant Professor and Extension Agronomist in Corpus Christi. His specialty is field crops and forages.

Olivia Lucille Neely was born January 18, 2017, weighing 5 lbs 14 oz. Olivia is the second child of Drs. Clark and Haly Neely. She has a big sister, Evelyn, who is 2 and a half. Olivia’s mom is an Assistant Professor specializing in spatial soil and water management. Her dad is an Assistant Professor and Extension Small Grains and Oilseed Specialist.

Groundwater is the world’s most extracted raw material with withdrawal rates currently in the estimated range of 259 trillion gallons/year. About 60% of the groundwater withdrawn worldwide is used for agriculture. The rest is almost equally divided between industry and other sectors. Globally about 38% of irrigated lands are equipped for irrigation with groundwater.

For more information go to: http://www.ngwa.org
February

21 - Farm-Ranch-Wildlife Expo - Abilene
21 - Lake Lavonne Watershed Partnership meeting - McKinney
28 - Inventory Completion Goal

March

1-4 - Commodity Classic - San Antonio, TX
2 - Texas Water Well Owner Training - Tyler
3 - Taylor County Forage Producers Soil Nutrient workshop - Abilene
3 - Texas Healthy Streams Workshop - Hempstead
4 - FFA Land/Soil/Homesite evaluation clinic - Beef Center
5-11 - Groundwater Awareness Week
8 - Texas Watershed Stewards Workshop - Denton [http://tws.tamu.edu/workshops/registration/]
16-17 - Spring Break faculty/staff holidays
22 - Xiao (Steve) Li - Extension Weed Science candidate interview

April

3-7 - Ranch Management University - College Station [https://agriliferegister.tamu.edu/productListingDetails/2195]
6 - Soil and Crop Sciences Student Awards Banquet
20-21 - Bennett Trust Land Stewardship Conference - Kerrville [https://agriliferegister.tamu.edu/BennettTrust]

Save the Date

May 4 - Grand Opening of new turf facility - College Station
May 16-18 - Southern Department Heads Meeting
May 24 - Deadline for Staff Evaluations