



Cotton Comments

OSU Southwest Oklahoma Research and Extension
Center Altus, OK



August 20, 2020

Volume 10 No. 11

Current Situation

This year's crop has rapidly reached the mature stage. In the southwest corner of the state a survey reveals that near 80 percent of this year's crop is either at "cutout" or near this stage.

Cotton bollworm pressure in Bt 2 fields lessen with fewer control sprays. Stinkbugs numbers have triggered control spray in several fields. Aphids are still being held in check by beneficial insects however with applications of control sprays for stinkbugs and the elimination of beneficial insects an outbreak may occur.

After emergence scouting of the field must start and continue on a weekly basis until termination of the crop.

Irrigation Termination

The Effects of Irrigation Termination Date on Cotton By Saleh Taghvaeian and Jerry Goodson

Irrigated cotton is one of the major crops in Oklahoma. According to the 2018 Irrigation and Water Management Survey conducted by the U.S. Department of Agriculture, Oklahoma had about 114,000 acres of irrigated cotton, giving us the rank of eight among all cotton producing states. We ranked higher (4th) in terms of yield, with an average lint yield of 1,358 lb/ac harvested at irrigated fields, following California, Arizona, and Missouri. The future growth, economic viability, and environmental sustainability of irrigated cotton in Oklahoma relies on the availability of agricultural water resources. At the same time, our water resources are facing grand challenges caused by frequently occurring droughts, declining groundwater levels, and diminishing river flows to surface reservoirs.

To address these challenges, OSU's researchers and extension specialists and educators have been conducting research and demonstration projects across the state. One of these projects investigated different times of terminating irrigation and its effects on cotton yield and fiber quality. If irrigations can be terminated earlier at the end of the growing season without hurting yield and fiber quality, water resources could be saved for future.

Research setup

The research was conducted for three years (2015-2017) at OSU's southwest research and extension center near Altus. Water was applied using surface (gravity) irrigation by means of furrows. Three irrigation termination dates were examined each year: mid-August, one week later, and two weeks later (end of August). Cotton health and growth was monitored during the study. Sensors were also installed in the root zone to track changes in soil moisture, especially before and after irrigation was terminated. At the end of each season, cotton was harvested and the lint and seed yields were measured. Fiber quality parameters were also determined.

Results

Terminating irrigation earlier was effective in conserving water resources, with 28% less water applied under mid-August termination compared to end-of-August termination on average. Extending irrigation for one more week past mid-August still resulted in smaller water savings (16%). To put these numbers into perspective, the 28% saving in irrigation application would be about 14,000 acre-feet of water being saved in a normal year in the Lugert-Altus Irrigation District. The 16% irrigation reduction would translate to about 8,000 acre-feet of water.

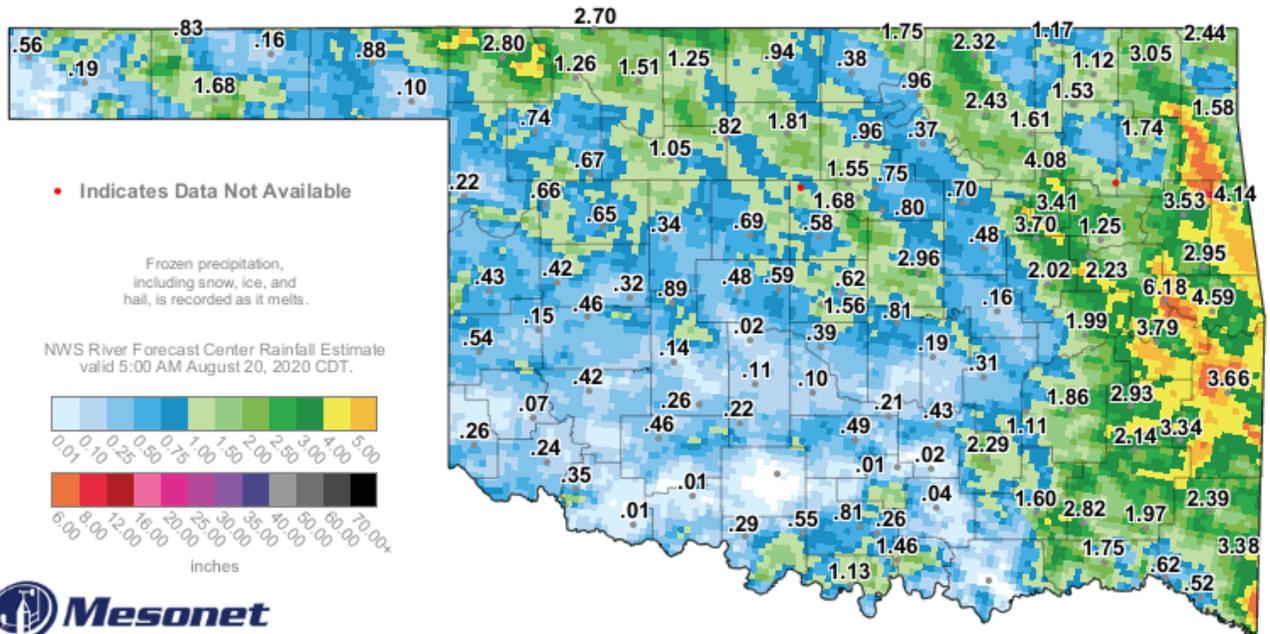
Although a considerable amount of water was saved with early irrigation termination, the savings were accompanied with a relatively similar percentages of reductions in cotton lint yields. When averaged over the three years (2015-2017), lint yield at the latest termination treatment was 1,448 lb/ac. Terminating irrigations one week earlier reduced the average lint yield to 1,221 lb/ac. At the mid-August termination (2 weeks earlier), lint yield was 1,138 lb/ac. Fiber quality was less impacted. Nevertheless, the average micronaire dropped from 3.89 to 3.65 and the average uniformity declined from 82.8% to 81.7% when terminated 2 weeks earlier than the end of August.

Despite the above average estimates, the impact of earlier termination was highly variable from year to year depending on the late-season rainfall and soil moisture availability. In years that were characterized with dry late season, ending irrigations even one week earlier had a substantial effect on cotton performance. In contrast, irrigation could be terminated two weeks early without any impact on cotton if timely rainfalls replenished soil moisture towards the end of the cotton growing season. This finding highlights the importance of using technologies such as soil moisture sensing in managing irrigations. Although these technologies require time and money investments, they can be effective in conserving limited water resources without experiencing yield and fiber quality reductions.



The 2020 has been different than any of the three years included in the irrigation termination study (see the cumulative rainfall chart below from Mesonet at Altus). We had a wet spring with a total of 15 inches of rain from January 1st to June 1st, much more than the 2005-2019 average of 9.7 inches. However, less than 3 inches has been recorded by Mesonet since June 1st. At the time of writing this report (August 17th), the 2020 total rainfall was 17.7 inches, while that amount was more than 24 inches on the same day in any of the 2015-2017 years. **Hence, 2020 does not appear to be a good year for early termination of irrigation.**

For more information, please see the research article at the following link (available to public): <https://www.mdpi.com/2077-0472/9/2/39>



14-Day Rainfall Accumulation (inches)

6:40 AM August 20, 2020 CDT

Created 6:44:53 AM August 20, 2020 CDT. © Copyright 2020

Next Seven Days

Weather Forecast Office
Norman, OK
Issued Aug 20, 2020 4:45 AM CDT

	Thu	Fri	Sat	Sun	Mon	Tue	Wed
Forecast	 20% LOW	 20% LOW	 LOW	 LOW	 LOW	 LOW	 LOW
Impacts	Some showers early, across the west		Rain chances mainly overnight				
PM Highs	88 WWR, 87 PNC, 88 OKC, 92 SPS, 91 DUA	88 WWR, 88 PNC, 88 OKC, 91 SPS, 92 DUA	90 WWR, 90 PNC, 90 OKC, 92 SPS, 94 DUA	93 WWR, 92 PNC, 91 OKC, 95 SPS, 95 DUA	92 WWR, 92 PNC, 91 OKC, 95 SPS, 95 DUA	92 WWR, 92 PNC, 92 OKC, 94 SPS, 94 DUA	92 WWR, 91 PNC, 91 OKC, 96 SPS, 95 DUA
AM Lows	63 WWR, 61 PNC, 63 OKC, 66 SPS, 63 DUA	66 WWR, 64 PNC, 65 OKC, 68 SPS, 64 DUA	64 WWR, 65 PNC, 66 OKC, 68 SPS, 67 DUA	66 WWR, 67 PNC, 68 OKC, 69 SPS, 70 DUA	67 WWR, 68 PNC, 69 OKC, 70 SPS, 70 DUA	67 WWR, 68 PNC, 69 OKC, 70 SPS, 70 DUA	67 WWR, 69 PNC, 69 OKC, 71 SPS, 71 DUA

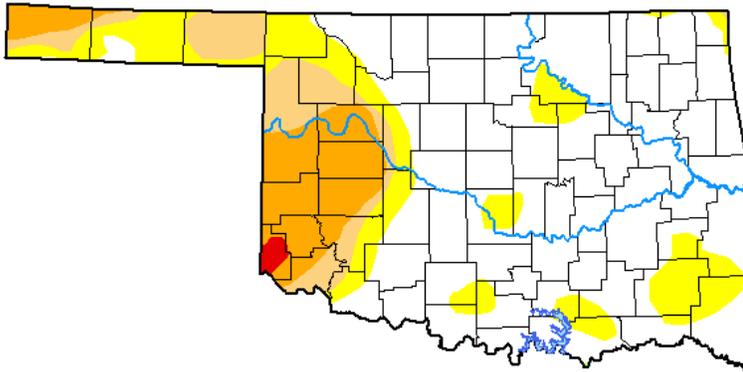
f @NWSNorman weather.gov/norman

U.S. Drought Monitor Oklahoma

August 18, 2020
(Released Thursday, Aug. 20, 2020)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	65.06	34.94	18.59	10.74	0.46	0.00
Last Week <i>08-11-2020</i>	66.91	33.09	18.62	9.35	0.00	0.00
3 Months Ago <i>05-19-2020</i>	72.34	27.66	16.66	3.46	0.00	0.00
Start of Calendar Year <i>12-31-2019</i>	76.45	23.55	10.47	3.64	0.00	0.00
Start of Water Year <i>10-01-2019</i>	71.94	28.06	11.08	1.01	0.00	0.00
One Year Ago <i>08-20-2019</i>	50.05	49.95	24.24	11.87	0.00	0.00



Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

David Simeral
Western Regional Climate Center



droughtmonitor.unl.edu

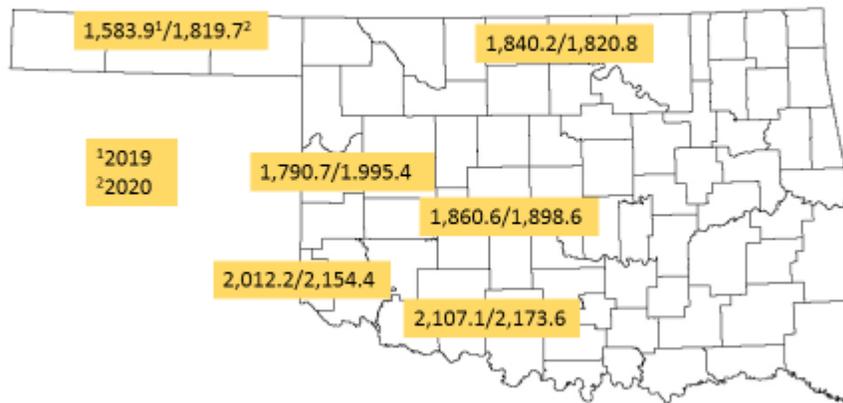
Growing degree days

Cotton Growth Timetable

<u>Stage of Growth</u>	<u>GDD</u>	<u>Days</u>
Emergence	50 - 60	3 - 4
Pinhead Square	425 - 500	25 - 45
First Bloom	725 - 825	41 - 67
Open Boll	1575 - 1925	102 - 127
Defoliation	2150 - 2300	120 - 140

2020 Growing Degree days for select locations May 1 to August 20

State wide average 111.3 more degrees units 2020 compared to 2019



To calculate growing degree days for specific fields and planting dates please click here: [Oklahoma Mesonet Degree Heat Unit Calculator-Cotton](#)

The standard calculation for cotton DD60 heat units is:

$((\text{maximum air temperature, } F^{\circ} + \text{minimum air temperature, } F^{\circ}) / 2) - 60 = \text{DD60 heat units}$

Essentially, the average air temperature for the day is determined and the 60 degree F° developmental threshold for cotton is subtracted. The DD60s for each day are then totaled.

Oklahoma State University Field Surveys

This office conducts field surveys in six counties (Jackson, Caddo, Greer, Harmon, Tillman and Washita) on a weekly basis. These include producer fields, Extension trials, official variety test sites in southwestern Oklahoma. These fields have different planting dates and varieties with various traits. The plant stage varies as of August 20, 2020 from Blooming to Cutout.

The most dominant plant stage as of August 5 for these trials: **Blooming**



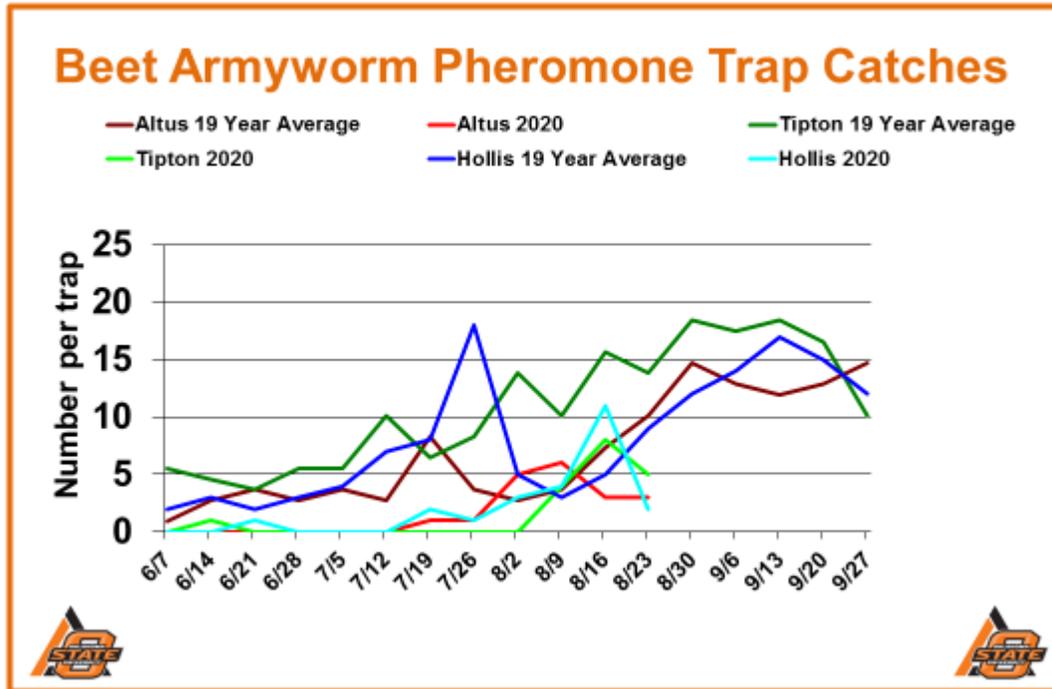
The cotton pest of most concern as of August 20 for these trials: **Bollworm complex, Cotton Aphids and Stinkbugs.**



Courtesy of UT Crop News

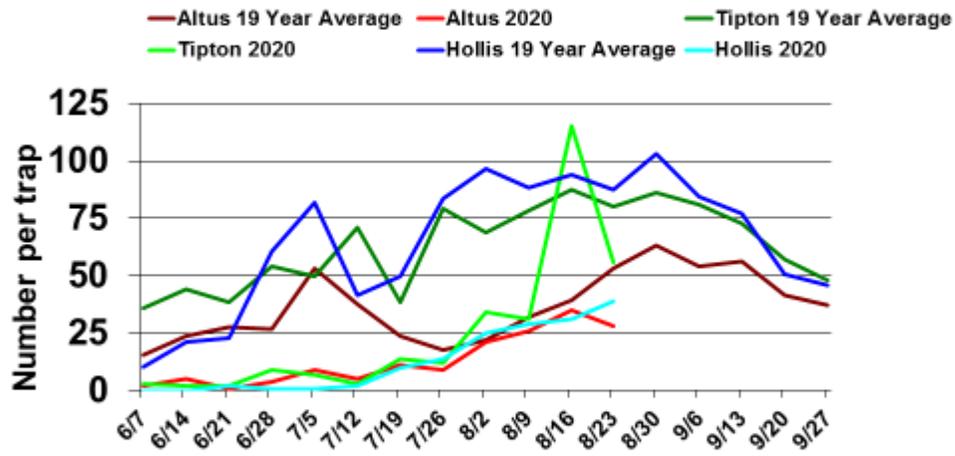
Moth Trap Counts 2020

The spike in numbers at the Tipton location is probably due more to the corn harvest than a migratory flight. Most of the state is reporting very few moths being observed except in corn areas.



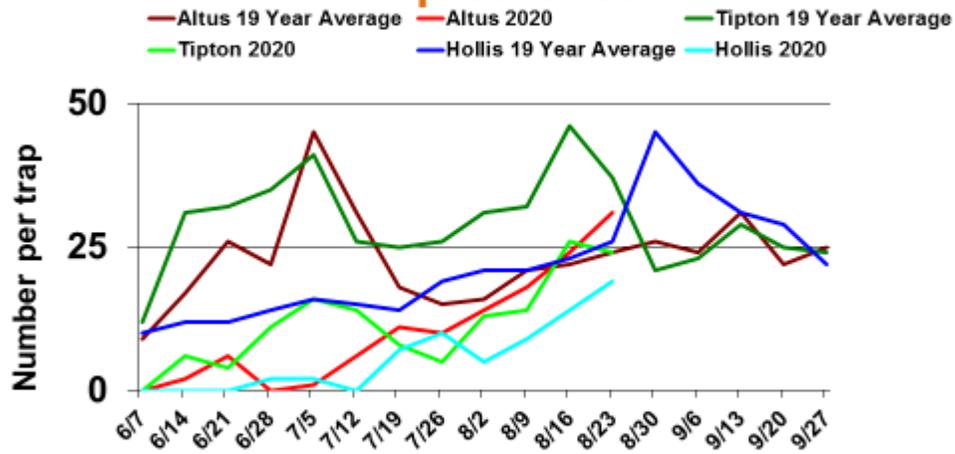
Beet armyworm moth
Photo courtesy of University of Georgia

Cotton Bollworm Pheromone Trap Catches



Cotton bollworm moth
Photo courtesy of University of Georgia

Tobacco Budworm Pheromone Trap Catches



Tobacco budworm moth
Photo courtesy of University of Georgia

Fall Armyworm Trap Results 2020

Date Week ending	Jackson	Tillman	Harmon	Caddo
6/7	0	2	0	1
6/14	0	5	0	2
6/21	3	0	0	2
6/28	1	2	0	4
7/4	2	3	2	2
7/11	0	0	0	8
7/18	1	0	2	0
7/26	1	0	1	0
8/2	6	0	3	11
8/9	4	2	0	7
8/16	12	9	14	22
8/23	11	15	6	19

Jackson OSU Southwest Research and Extension Center
Tillman OSU Southwest Agronomy Research Station
Harmon County
Caddo OSU Caddo Research Station



Photos courtesy Oklahoma State University

Oklahoma Boll Weevil Eradication Organization

New web page address click here: [OBWEO](#)

Brenda Osborne, Director of the Oklahoma Boll Weevil Organization, based at Altus, provided the information below. Eradication of the boll weevil across most of the U.S. Cotton Belt, and in the state has been very successful and is a major contributing factor to the continued profitability of cotton production. It has been a long, difficult, and expensive task to rid our state and most of the Cotton Belt of this invasive species that for such a long time negatively impacted our production. Since 1998 the producers of Oklahoma has spent over **thirty seven million** dollars to eradicate and provide a maintenance program.

Cotton acres for the past five years

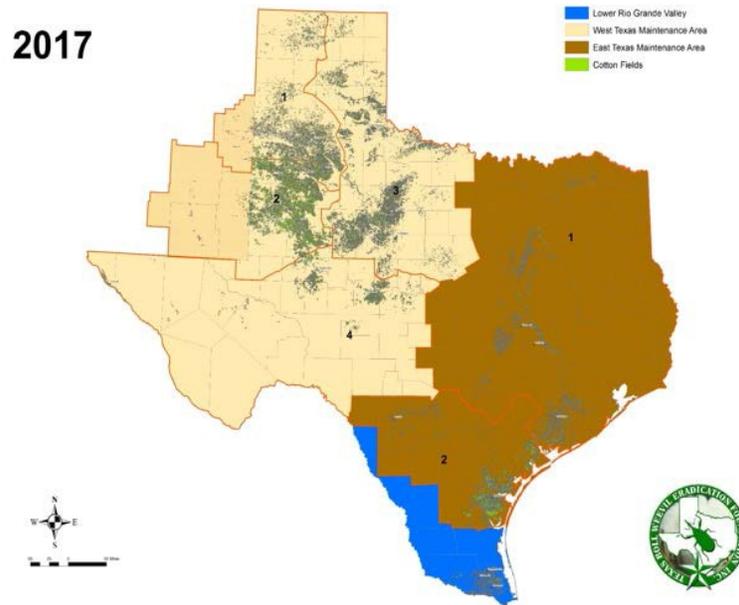
Year	Acres ¹
2015	216,678
2016	299,302
2017	568,434
2018	756,397
2019	603,014

¹ Oklahoma Boll Weevil Eradication Organization

OBWEO is preparing for the upcoming 2020 cotton season. It is our responsibility to ensure the continued success of this program. If you have been growing cotton for the past 3-5 years, we know where those fields are located. ***However, if you are a new producer or have not grown cotton in several years, we need you to provide the legal descriptions of these new cotton fields.***

There is a Boll Weevil Assessment for harvested cotton acres. The current assessment is \$2.50 per harvested acre. This assessment is reviewed annually. The trapping density this year is one trap per 640 acres. In areas where planted cotton acreage density is high, not all fields will actually have a trap near it. In other areas that are more isolated, each field will need a trap.

There is still a difficult fight with this insect pest in south Texas, and we all need to do our part in keeping this pest from resurfacing in our state. Cotton harvesting equipment entering Oklahoma from two eradication areas in Texas has to be certified as boll weevil free prior to movement into our state. Please contact TBWEF before departure from these two areas. This will allow TBWEF to inspect the equipment. A USDA-APHIS phytosanitary certificate is issued and is required before equipment can be transported from these areas. These ONLY include the Lower Rio Grande Valley Eradication Zone (blue area on the map below) or the East Texas Maintenance Area (brown area on the map below). This is critical to meet USDA- APHIS requirements and prevent the re-infestation of boll weevils into eradicated areas. It is illegal to move non-certified cotton harvesting equipment from these areas into the state of Oklahoma.



Texas Boll Weevil Eradication Foundation: 325-672-2800
After Hours and Weekends: 325-668-7361

Contact John Lamb at the Frederick office at 580-335-7760 or cell 580-305-1930 for the following counties: Tillman, Cotton, Comanche, Atoka, Bryan, and Stephens.

Contact Brenda Osborne at the Altus office at 580-477-4287 or cell 580-471-79632 for all other counties.

Cotton Board



If you weren't able to join, or would like to share information from this session, the recording has been uploaded to YouTube channel: <https://youtu.be/4cSXXNmQRdc>.

Jon Devine writes a monthly economic update letter. If you'd like to sign up to have your email address added to the distribution list for that monthly update, click on this link and off to the right of the page there is a box to enter your email address: <https://www.cottoninc.com/market-data/monthly-economic-newsletter/>

A question that was added latter.

Question: What is a healthy level of stocks-to-use ratio for the U.S. and the world?

Answer from Jon Devine: For the U.S., a healthy ratio would be around 20%. In 2019/20 and 2020/21, we are nearly double that. It can change quickly if demand picks up. For the world, it has been migrating higher. A healthy ratio a decade or more ago would have been around 50%. In the current market, we should be able to get decent prices with the ratio around 60%. In 2019/20 and 2020/21, forecasts are around 95%.

If you have any questions you weren't able to ask, you can reach out to Jon directly at jdevine@cottoninc.com. We look forward to seeing you at our next Cotton & Coffee session, on September 8th, where Bruce Atherly from Cotton Council International will discuss efforts to promote U.S. cotton around the world. Since you've registered for a previous session, there is no need to register again. We'll send you the Zoom link in advance of the September 8th call.



The Cotton Comments Newsletter is maintained by Jerry Goodson, Extension Assistant. If you would like to receive this newsletter via email, send a request to:

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