



Georgia Cotton

December 18, 2009

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Challenging Harvest Conditions and Potential Impacts: Planting and harvest during the 2009 season was challenging for Georgia cotton producers, but was also very rewarding for some. From the start of the season, growers had a difficult time planting the cotton crop due to rain. Nearly 40 % of the 2009 crop was planted in June as opposed to the normal 18 % (Table 1). However, producers had caught up by the end of the second week in June, therefore a low percentage of Georgia cotton acres were planted beyond mid-June. In addition to the late planting, the persistent rains also stifled seedling emergence and caused some herbicide injury in some fields, further delaying the maturity of an already late crop. Despite the challenges during the spring, frequent summer rains developed a promising crop. Although these summer rains were a blessing, the rains did not subside as the defoliation and harvest season approached.

Table 1. Percent of Cotton Acreage Planted

Week Ending	2009	2004-2008
4/26/09	3	8
5/3/09	10	17
5/10/09	22	31
5/17/09	40	49
5/24/09	53	68
5/31/09	61	82
6/7/09	75	91
6/14/09	96	96

(USDA, NASS, 2009 - <http://www.nass.usda.gov/Publications/index.asp>)

The harvest season in 2009 has also been extremely frustrating for Georgia cotton growers, again primarily due to rainfall. This is trying the patience of many growers. For the most part, bolls were distributed across several nodes this year. The delayed planting shifted upper boll development on into the fall, decreasing the rate of maturity and opening of these upper bolls, therefore growers were forced to delay defoliation and harvest. According to the USDA National Agricultural Statistics Service, Georgia cotton is usually 50% harvested by November 1st, however in this year, only 22% of the cotton acreage had been harvested by this date (Table 2). In addition, 21% (over 200,000 acres) of Georgia's 2009 acreage will be harvested in late December or January. This figure is likely higher for some growers across the state, especially in areas like central and east Georgia, who had difficulty planting and have yet to finish harvesting.

Table 2. Percent of Cotton Acreage Harvested

Week Ending	2009	2004-2008
9/27/09	0	6
10/4/09	2	12
10/11/09	6	19
10/18/09	8	29
10/25/09	15	39
11/1/09	22	50
11/8/09	34	62
11/15/09	44	73
11/22/09	56	81
11/29/09	67	87
12/6/09	76	N/A
12/13/09	79	N/A

(USDA, NASS, 2009 - <http://www.nass.usda.gov/Publications/index.asp>)

There are several problems that can arise from delayed or prolonged harvest. As harvest is shifted to later in the year, daylight hours suitable for harvest are reduced. In addition, cooler temperatures are more prevalent, prolonging drying time of dew in the morning and slowing evaporation of previous rains from the soil. A rain event during this time of year requires much more time to dry, delaying growers from re-entering the field to harvest. Even on drier days, the prolonged time required to dry the dew from the previous evening, along with the shorter day length, greatly reduces the number of acres a grower can harvest in a day's time.

To add to these complications, growers have experienced much more rainfall during the harvest season this year, as well as a greater number of rainy days, preventing harvest progress. This causes additional problems for cotton that was defoliated in a timely manner but has been

exposed to these weather conditions for a long period of time. The effect of seedcotton exposure to weathering is difficult to predict, and varies from year to year. However, it has been proven that fiber quality is at its highest as soon as bolls begin to open. In general, growers should attempt to harvest within 2 weeks of defoliation if optimal yields can be achieved within this timeframe. For this reason, rapid defoliation and boll opening should be the goal with any defoliation program. The longer the time that lint is exposed to the elements, the greater the chance of both yield loss and fiber quality reductions. In the absence of rainfall, losses resulting from delayed harvest are generally insignificant. However, significant rain events during this time can “string out” seedcotton, degrade fiber through weakening and discoloration, and can cause some seedcotton to fall out of the burrs rendering it unharvestable thereby decreasing yield. Intense rainfall pulls the seedcotton downwards through impact and by increasing weight of seedcotton as water is retained in the lint. Yield losses can result from intense rains, especially in simultaneous windy conditions. Rain can weaken the stalk and the burrs, causing them to become more brittle, and thus weakens the grasp of the burrs to the seedcotton. Lint discoloration, fiber weakening, and increased trash content are also very likely.

Some research has been conducted, regarding cotton losses due to weathering. Williford (1992) conducted a harvest timing study in Mississippi and found that 1.97 inches of rain adversely affected yields, whether this amount of rain occurred in a single event or multiple events. In North Carolina, Faircloth (2002) found that yield losses occurred when rainfall exceeded as little as 0.2 inches and/or winds that exceeded 20.13 mph. Kelley et al. (2002) conducted a 2-year harvest timing study, with harvest dates ranging from early-October to early-January. Depending upon the year or environment, these researchers found that delaying harvest degraded color, and reduced staple length, uniformity, fiber strength, leaf grades, and loan value. They also noted that bark content increased after rain events in one year, and that yield was reduced after rain events in another year. These researchers concluded that yield and quality losses can occur when 3 inches of rainfall occurs during harvest. Although some of these experiments were conducted in different conditions and environments, the same general rules may apply to Georgia cotton, due to the significant amounts of rainfall that has occurred during the fall this year (Figures 1, 2, and 3; data from www.georgiaweather.net). The amount of rainfall and the number of rainy days during the first 15 days of December have already exceeded the long-term average for this month in Midville, Plains, and Tifton.

Figure 1. Climate averages (1958-2003) compared to 2009 for Southeast Research and Education Center - UGA Midville

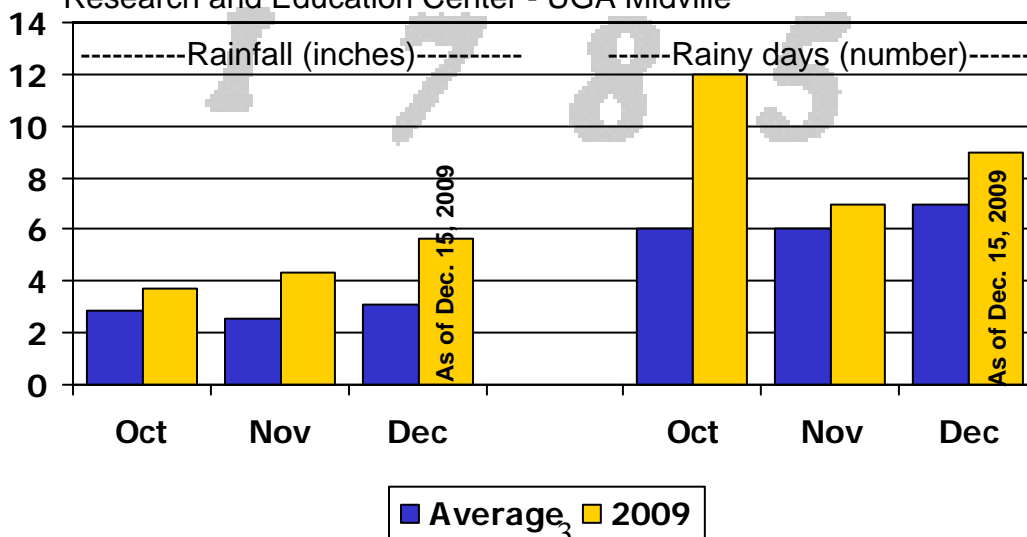


Figure 2. Climate averages (1956-2003) compared to 2009 for Southwest Research and Education Center – UGA Plains

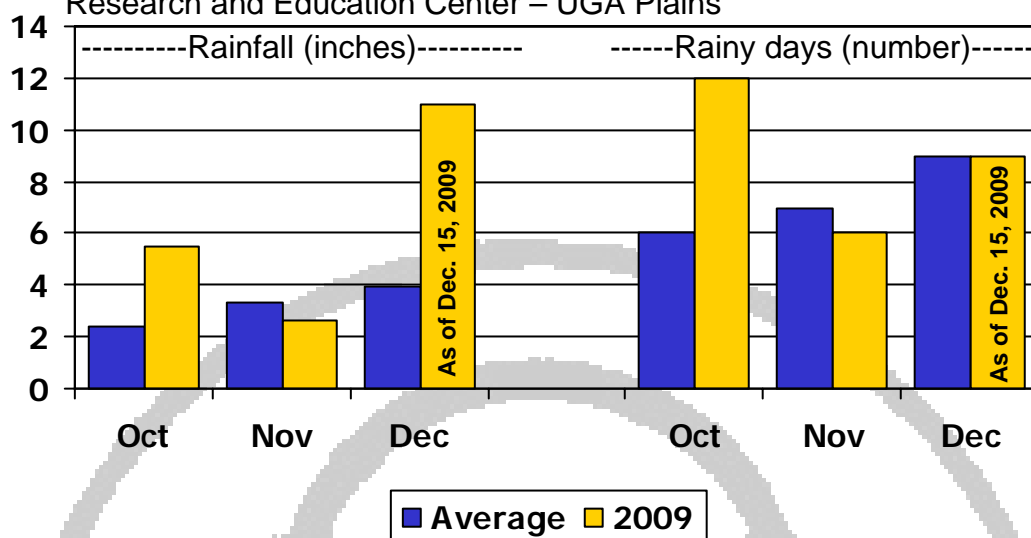
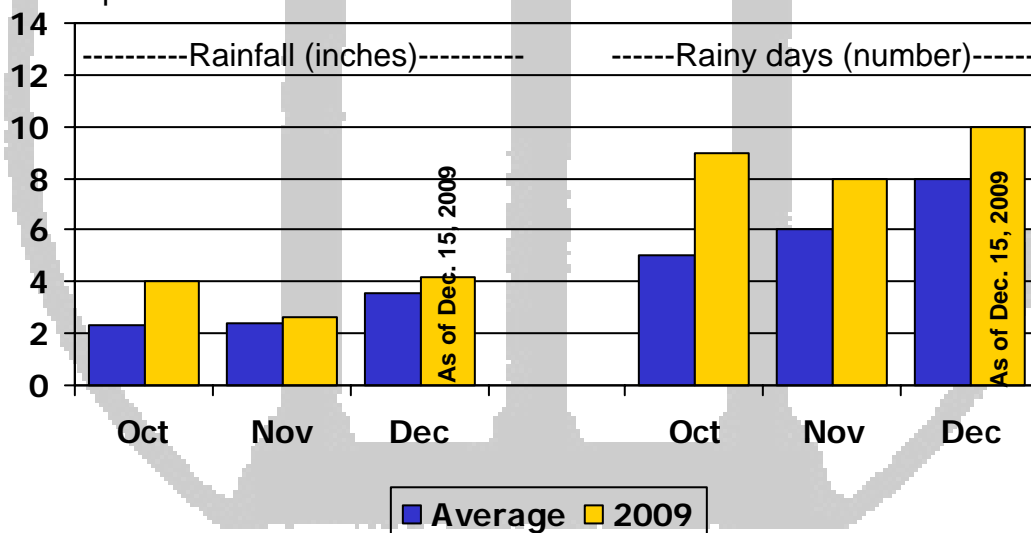


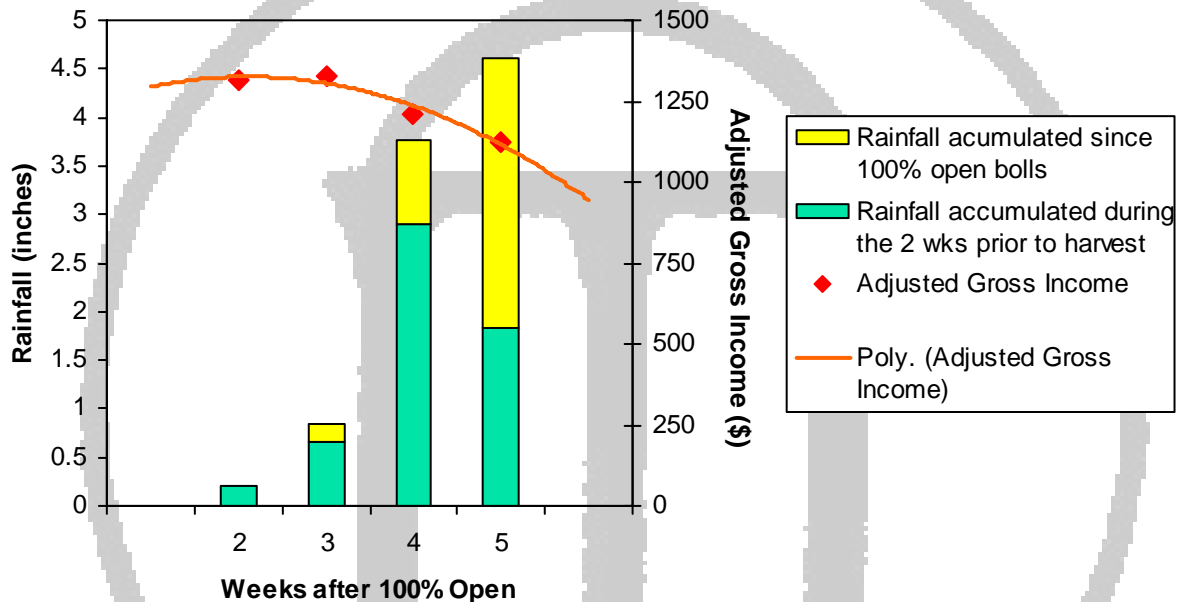
Figure 3. Climate averages (1912-2003) compared to 2009 for Coastal Plains Experiment Station – UGA Tifton



The effects of harvest delays and weathering have been evaluated in Georgia by Craig Bednarz and Don Shurley. This project was published at various levels in the Cotton Research-Extension Report 2001, the 2004 AGECON-04-94 Extension publication, and the Agronomy Journal (2002). In the Cotton Research-Extension Report 2001, they note that favorable harvest conditions in one year had little to no effect on income, whereas in two other years they found that each week delay in defoliation and harvest beyond 100% open bolls resulted in \$13.61 and \$50.15 income losses per acre per week, respectively. The latter case occurred under extensive rainfall, similar to that experienced this year. Figure 4 below contains similar data for the version of this study published in Agronomy Journal, but only for the year when the greatest losses occurred. As you can see, both the amount of rainfall occurring between defoliation and harvest (approximately two weeks), and the total amount of rainfall accumulated since 100%

open bolls, both had adverse effects on adjusted gross income, hence its gradual decline. Adjusted gross income accounts for both yield and quality losses. Little rainfall had accumulated by the 3rd week after 100% open bolls, therefore the effects on income were minimal. However, rainfall accumulation was significant leading up to cotton harvested at week 4, thus resulting in a sharper decline in income. This decline continued into week 5 as more rainfall accumulated.

Figure 4. Relationship between Adjusted Gross Income (AGI), approximate rainfall accumulated between defoliation and harvest, and approximate total rainfall accumulation since 100% open bolls in 2000. AGI data taken from Bednarz et al. (2002).



The 2004 AGECON-04-94 Extension publication version of this project can be found at: <http://www.ces.uga.edu/Agriculture/agecon/pubs/comm/increasingcot.pdf> and is entitled “Increasing Cotton Yield, Fiber Quality, and Profit Through Improved Defoliation and Harvest Timeliness”

Determining the amount of seedcotton loss or fiber quality reductions due to rainfall during harvest is very difficult to predict, and depends on several factors including the condition or strength of plants and the length of time that cotton has been exposed to the elements. However, given the weather conditions that Georgia growers have experienced during the harvest season in 2009, it is very likely that both yield and quality losses have occurred and may continue to occur. In addition to crop losses, many fields will require repair due to rutting from harvest machinery.

References:

- Bednarz, C.W., W.D. Shurley, and W.S. Anthony. 2002. Losses in yield, quality, and profitability of cotton from improper harvest timing. *Agron. J.* 94:1004-1011.
- Faircloth, J.C. 2002. Storm resistance and weather related seedcotton loss from spindle picked upland cotton. Ph.D. diss. North Carolina State Univ., Raleigh, NC.
- Kelley, M., R. Boman, A. Brashears, E. Hequet. 2002. Harvest timing effects on yield and quality of stripper cotton in the Texas high plains. Unpaginated CD-ROM. *In Proc. Beltwide Cotton Conf.*, San Antonio, TX 4-8 Jan. 2002. Natl. Cotton Counc. Am., Memphis, TN.
- Shurley, D., and C. Bednarz. 2001. Increasing cotton profits through improved defoliation and harvest timeliness. In 2001 Georgia Cotton Research and Extension Reports, Agriculture and Applied Economics pp. 45-50.
- Shurley, D., C. Bednarz, S. Anthony, and S.M. Brown. 2004. Increasing cotton yield, fiber quality, and profit through improved defoliation and harvest timing. Extension publication AGECON-04-94, Dept of Agriculture and Applied Economic, University of Georgia.
- Williford, J.R. 1992. Influence of harvest factors on cotton yield and quality. *Transactions of the ASAE.* 35 (4): 1103-1107.

Extension Cotton Specialist: Dr. Guy Collins recently joined the University of Georgia and will serve as the Extension Cotton Agronomist. Dr. Collins joins the Crop and Soil Sciences faculty having just received his Ph.D. from North Carolina State. His office will be in the Horticulture Building on the UGA Tifton Campus. His phone number is (229) 386-3006. We are very pleased to have Dr. Collins on board and as a member of the UGA Cotton Team.

Georgia Cotton Conference (January 27, 2010): Mark your calendars for the third annual Georgia Cotton Conference to be held on January 27, 2010 at the UGA Tifton Campus Conference Center. See the recent press release from the Georgia Cotton Commission below for additional information.



GEORGIA COTTON COMMISSION

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FOR IMMEDIATE RELEASE
December 15, 2009

Georgia Cotton Conference, January 27, 2010, Tifton Program speakers and workshop sessions confirmed

Perry, GA -- The speaker line-up for the Georgia Cotton Commission's 3rd Annual Meeting portion of the conference is confirmed as follows: **Eddie Smith**, Vice Chairman, National Cotton Council, "*Report from the Council*"; **Dr. Kater Hake**, Vice President Ag Research, Cotton Incorporated, "*A Perspective: Pro & Con of Conventional Varieties*"; **Andy Warlick**, President & CEO, Parkdale Mills, Inc., "*A Manufacturer's Viewpoint of the Textile Industry Today and in the Future*" and **Allen McLaurin**, President, Southern Cotton Growers, "*A Message from our SE Regional Organization.*" Featured in the panel presentation, "*Best Seed Options for 2010,*" are **Dr. Dave Albers**, US Cotton Germplasm Manager, Monsanto; **Dr. Steve M. Brown**, Cotton Development Specialist, Dow AgroSciences and **Dr. Steve Nichols**, US Agronomic Manager, Bayer CropScience. Following the presentations, the panelists will take questions from the audience.

Producers present are eligible for door and grand prize drawings. Commission Annual Meeting Co-sponsors include **Bayer Crop Science; Case IH Agriculture; Crop Production Services; Delta & Pine Land; DuPont Crop Protection; Lasseter Equipment Company; Phytogen; Southeast AgNet Radio; Syngenta; Triangle Chemical Co. and Valent.**

Following name badge pick-up and late registration at 7:30 a.m., the Georgia Cotton Production Workshop sessions are offered twice as follows:

8:00 - 8:50 a.m. Economics and Marketing (Rm. 1); Physiology (Rms. 4/5); Insect Pest Management (Rms. 6/7); Cotton Varieties (Rm. 10) **9:00 - 9:50 a.m.** Engineering (Rm. 1); Plant Pathology (Rms. 4/5); Agronomics / Weed Management Systems (Rms. 6/7); Soil Fertility (Rm. 10) **2:00 - 2:50 p.m.** Economics and Marketing (Rm. 1); Physiology (Rms. 4/5); Insect Pest Management (Rms. 6/7); Cotton Varieties (Rm. 10); **3:00 - 3:50 p.m.** Engineering (Rm. 1); Plant Pathology (Rms. 4/5); Agronomics / Weed Management Systems (Rms. 6/7); Soil Fertility (Rm. 10) **The workshop is sponsored by the University of Georgia and Georgia Cotton Commission**

Please pre-register **FREE** from December 1, 2009 through January 18, 2010, online at www.ugatiftonconference.org or by phone 229.386.3416. Your early registration will help us get a count for the sponsored breakfast, breaks and lunch.

Annual meeting questions may be directed to: Richey Seaton (gactn@windstream.net) or Karen Nikitopoulos (cotton@windstream.net) at the Georgia Cotton Commission office (phone) 478.988.4235.

Check the commission's website for updates: www.georgiacottoncommission.org

Contributions by:

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Jared Whitaker, Extension Agronomist

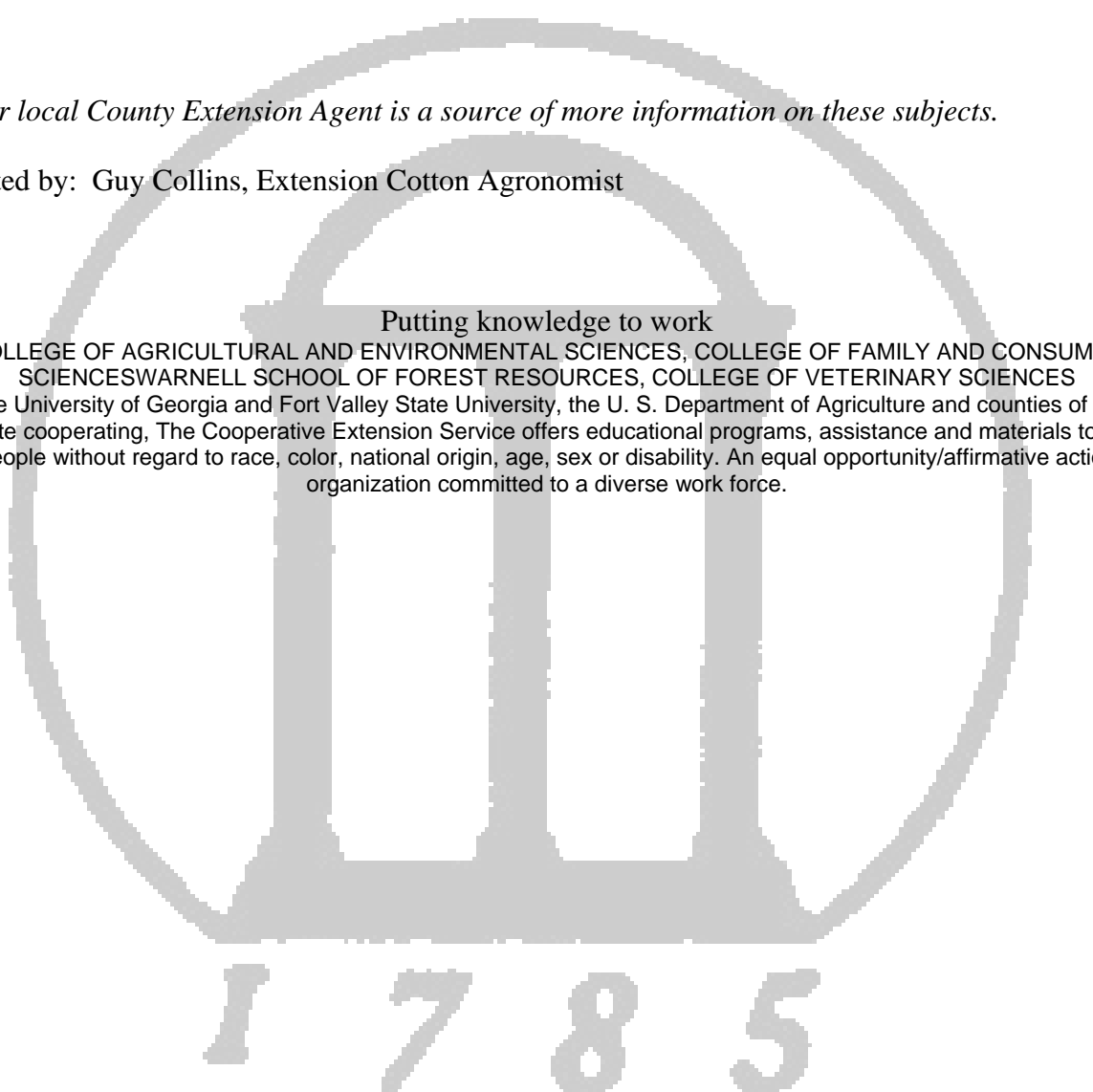
Phillip Roberts, Extension Entomology

Don Shurley, Extension Economist

Amanda Smith, Extension Economist

Your local County Extension Agent is a source of more information on these subjects.

Edited by: Guy Collins, Extension Cotton Agronomist



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