The University of Georgia
Cooperative Extension
College of Agricultural and Environmental Sciences

Georgia Cotton

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2010 US and Georgia 2010 Cotton Acreage

As expected, US cotton acreage will increase this year. According to USDA's *Prospective Plantings* report released on March 31st, farmers say they intend to plant almost 15% more cotton this year than last year (Table 1). If realized, this would be the first increase in acreage since 2006 (after 3 consecutive years of decline 2007-2009).

These "intentions" were based on an early-March survey of producers. What will actually be planted will be determined by weather, markets, and other factors and not known until USDA's *Acreage* report at the end of June. Prices have been strong and cotton acreage will be up - it's just a matter of how much.

Table 1. US Cotton Acres Planted[1] By Region.

	2008 Actual	2009 Actual	2010 [2]	Change [3]
Southeast	1,923	1,891	2,390	+26.4%
Mid-South	1,876	1,627	1,730	+6.3%
Southwest	5,221	5,261	5,893	+12.0%
West	451	371	492	+32.6%
Total U.S.	**9,471**	**9,150**	**10,505**	**+14.8%**

1/ Thousand acres.
2/ *Prospective Plantings*, USDA, March 31, 2010. First estimate of 2010 Actual will be on June 30, 2010.
3/ 2010 percent change from 2009.

Acreage is expected to be up from last year in 14 of the 17 cotton-producing states. Percentage-wise, the largest increase in planting is expected in South Carolina (up 52%), North Carolina (up 44%), Alabama (up 41%), and California (up 39%). The acreage rebound is much less in the Mid-South were farmers apparently plan to largely continue with a significant acreage shift toward soybeans and corn. In fact, the report shows that planting intentions in Louisiana will be down again in 2010 and Arkansas will be unchanged.

Cotton is coming off a new record yield in Georgia last year. Yield uncertainty and fears regarding the demise of single-gene Bt technology (and DP555BR specifically) have eased with evidence that other/new varieties have performed favorably to 555.

Georgia cotton acreage is expected to be 1.15 million acres - up 15% from last season (Table 2). Peanut acreage is also expected to be up but all other major row crops in the state are expected to decline from last year.

Wheat acreage is expected to be down 41% due to wet field conditions this past Fall and farmers being unable to get the crop planted. This will mean less double-crop cotton and soybeans. The reduction in the "7-Crop Total" (Table 2) the past 2 years is due specifically to the decline in wheat acres. Acreage of the remaining 6 spring-planted crops has actually been fairly constant with acreage simply shifting among those 6 crops.

Table 2. Georgia, Acreage Planted[1] to Major Row Crops.

	2008 Actual	2009 Actual	2010 [2]	Change [3]
Corn	370	420	380	-9.5%
Cotton	940	1,000	1,150	+15.0%
Grain Sorghum	60	55	50	-9.1%
Peanuts	690	510	540	+5.9%
Soybeans	430	470	320	-31.9%
Tobacco	16	14	10	-28.6%
Wheat	480	340	200	-41.2%
7-Crops Total	**2,986**	**2,809**	**2,650**	**-5.7%**

1/ Thousand acres.
2/ *Prospective Plantings*, USDA, March 31, 2010. First estimate of 2010 Actual will be on June 30, 2010.
3/ 2010 percent change from 2009.

According to 2010 intentions, Georgia corn and soybean acreage is expected to be down a combined 190,000 acres. Cotton and peanuts, on the other hand, are expected to be up a combined 180,000 acres. The 150,000 acre increase that is expected in cotton acreage is land shifting back to cotton from corn and soybeans.

Given the continued strong level of cotton prices and depending on availability and acceptance of peanut contracts, actual cotton and peanut acreage could, in fact, be higher than the intentions report indicates. Weather will also be a factor in final planting decisions. Recent drier and warmer conditions have been conducive to corn planting. This could increase corn acreage. April and May precipitation and field conditions will also be a factor. This could cause farmers to shift intended acreage among cotton, soybeans, and peanuts.

Protecting Your Investment

Now that the weather is warming up, most growers are getting anxious to plant. As we prepare to plant to 2010 cotton crop, there are several things we must consider when doing so. First and foremost, we must consider the significant investment that we are making in this crop at the very beginning. Once cotton is planted, a substantial investment has been made in seed and technology, long before we know what weather the year will bring, and much less what our yield potential will be. Currently, the costs of seed and technology range from about $65/A to $83/A based on 2.5 seed/foot on 36 inch rows, depending on the particular variety and technology you decide to plant (see the Cotton Seed Cost Calculator, developed by UGA economist, Don Shurley, for more information). Most of our top performing varieties cost towards the more expensive end of this spectrum, representing approximately 21% of our total variable costs according to our economist, Don Shurley. In addition to seed and technology, we also have a significant investment in fungicides, nematicides, and insecticides which generally cost somewhere between $10/A and $20/A depending on the product(s) used, as well as a proactive herbicide program and fertilizers. Therefore, our investment in the crop is very heavily weighted towards the front end of the season, whereas most of our other agronomic inputs can be geared towards, or catered to, plant growth or expected yield at the time of application.

With so much invested in planting a cotton crop, it is absolutely imperative that we protect this investment by taking all precautionary measures to establish an optimal stand and to guide the crop into the early fruiting period. We can not control the environment once we plant, however there are a few things we can control in order to promote and establish an optimal stand.

Seed Quality: Germination and Seedling Vigor - This is something that is often taken for granted when we get in a hurry to plant. Seed germination and subsequent seedling vigor can greatly influence stand establishment and ultimately yield, especially when encountering adverse weather that can occur during the early portion of our planting window. When evaluating the germination of cotton seed, consideration should be given to both the warm (standard) and cool germination test percentages. The warm germ ratings can often be found on the seed bag, and is likely the only germination criteria that most growers observe. The warm germ test is conducted at temperatures alternating between 68°F and 86°F for various lengths of time. Results from this test are more indicative of seed germination in near-optimal conditions. However, we may encounter less than optimal temperatures during the early portion of our planting window, thus the warm germ rating may not be the best measure of actual seed performance during such environmental conditions. The cool germ test, which is conducted at 64.4°F, is a better measure of germination and vigor in suboptimal conditions such as cool, wet weather. This information can often be provided by the dealer and/or the seed company. Cool germ percentages between 65 and 80 are considered to be good, while percentages greater than 80 are considered to be excellent. Seed with cool germ percentages ranging from 50 to 65 should be planted with extreme caution. Understanding both warm and cool germ test results, allows us to somewhat predict the potential for losses in various environmental conditions, and also provides a basis upon which seeding rate decisions or adjustments can be made in order to achieve optimal stands in these conditions. Additionally, protecting our seed by avoiding herbicide injury, maintaining proper pH, and ensuring protection against thrips, nematodes, and seedling diseases, are all considerations that are not to be ignored. These general rules apply to us in Georgia every year, but they may be especially important in 2010. Most of our cotton seed originates from the far west regions of the U.S. However, some of our seed still originates from the mid-south region. The adverse harvest weather we experienced in 2009 here in Georgia was actually much worse in the mid-south, therefore there could be some unpleasant issues with seed quality observed in some varieties this year. Just because some seed originates from the mid-south, it does not necessarily mean that there will be undesirable seed quality, however there is potential for suboptimal quality. Additionally, there will be approximately 1/3rd of the 2009 supply of DP 555 BR planted in 2010. These seed are roughly two years old and may also have sporatic problems associated with germination and vigor, which should be factored into planting decisions. Therefore growers should pay closer attention to germination test results and make planting decisions wisely and cautiously, possibly requiring adjustments in seeding rates to be made. As seed for some varieties may already be limited, it is likely that replant options may even be more limited.

Current and Expected Weather Conditions - Despite its perennial and indeterminate nature, cotton is a very weak plant when it is young. Cotton seed and seedlings are very susceptible to injury resulting from both biotic and abiotic stresses, one of which is cool, wet conditions within a few days of planting. This is generally not a problem for most of our planting season, however we are sometimes faced with cooler temperatures at the early end of our planting window. The first five to seven days after seed imbibe water is generally the period when cotton is sensitive to cool temperatures, with the greatest sensitivity occurring during the first two to three days after imbibition. If we anticipate potential problems with germination and vigor, it is very important to plant when cool, wet conditions don't add to the problem, and to adjust planting rates to account for potential losses. Even though we may experience some high daytime temperatures, we must not forget the impact that low nighttime temperatures could have on germination and emergence. In general, cotton should be planted when soil temperatures are 65°F or greater and 30 to 50 DD60's are expected to accumulate within five days of planting. Remember that soil temperatures in no-till systems are generally a little bit cooler than what is usually observed in conventional tillage systems. In most years, we can meet these demands in Georgia, however we may need to watch this more carefully this year if seed quality is marginal.

Seeding Rate and Plant Population - There has been a lot of discussion recently regarding seeding rates of these newer varieties as we transition away from DP 555 BR, and whether or not these rates should be adjusted. Most of the inquiries seem to be in regards to reducing seeding rates for two logical reasons. First, as we transition away from DP 555 BR, our best options in terms of yield potential tend to be varieties that come with WRF, LLB2, and B2RF technologies, which are more expensive. In general, the first impulse for many growers is to offset these costs by reducing seeding rates. Secondly, many growers' preliminary observations in 2009 indicate that the majority of these newer varieties appear to be larger-seeded and more vigorous in terms of germination, emergence, and early season growth than DP 555 BR. Since DP 555 BR was smaller seeded and somewhat weaker in terms of early season vigor, many growers are questioning the necessity of our current seeding rates for these newer varieties. These are logical thoughts, however there is currently no data in Georgia that suggests that seeding rates should be, or could be, reduced when planting these newer varieties. Plant population research may be revisited in 2010, however we can not discard past experience and some of the things we learned with DP 555 BR. Our seeding rates are generally lower than in other regions of the cotton belt, largely due to our warmer temperatures during planting season, and the length of our entire season which allows us to wait and plant when conditions are favorable. Although DP 555 BR tended to be smaller seeded and somewhat less vigorous, growers in Georgia were generally able to achieve an optimal plant stand and early season growth with the currently recommended seed rates. If we consider our minimum standard seeding rate to be 2.5 seed/foot of row on 36-inch rows, our "per acre" seeding rate would be approximately 36,300 seed/A. To achieve this same "per acre" rate, we would need to plant approximately 2.64 seed/foot of row on 38-inch rows and 2.08 seed/foot on 30-inch rows. Until we have more data with these newer varieties, this is probably as low as we need to go, in order to achieve optimal yields and plant canopy architecture. This is especially true, if germination and emergence problems occur. Erratic stands not only lead to potential yield losses, but also lead to delayed and inconsistent maturity, and poor harvest efficiency if the number of vegetative branches and stalk thickness is influenced by skips between plants.

At the other end of the spectrum, there have been questions regarding increasing seeding rates for DP 0949 B2RF. Some have observed that this particular variety tends to be columnar in its growth and fruiting distribution while others have noted very little difference compared to other varieties. Theoretically, increasing seeding rates for "columnar" varieties would allow the crop to reach a greater yield potential by utilizing space more efficiently, whereas varieties that normally produce longer branches and outer position fruit would require more space between plants. We do not want to refute any data that Deltapine has generated regarding the optimal seeding rate for this particular variety in Georgia. However, our observations in 2009 indicate that this variety is similar, in terms of fruit distribution and ability to compensate for space, to some of our other top-performing varieties when planted at our currently recommended rates (Figures 1 and 2). As is the case with other varieties, the recommendations for establishing an optimal plant stand still hold true for this variety.

Figure 1. Boll distribution of 1st, 2nd, and 3rd position bolls across plant nodes for multiple varieties in 2009.

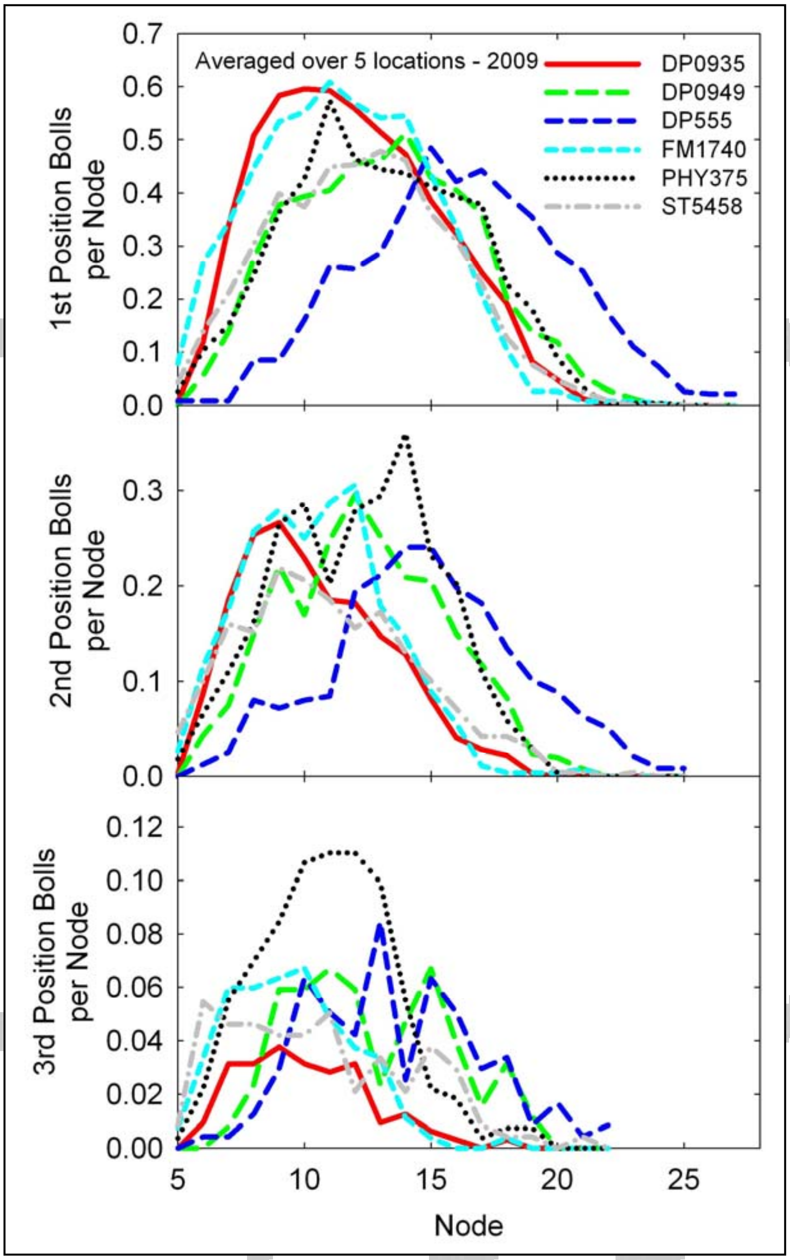
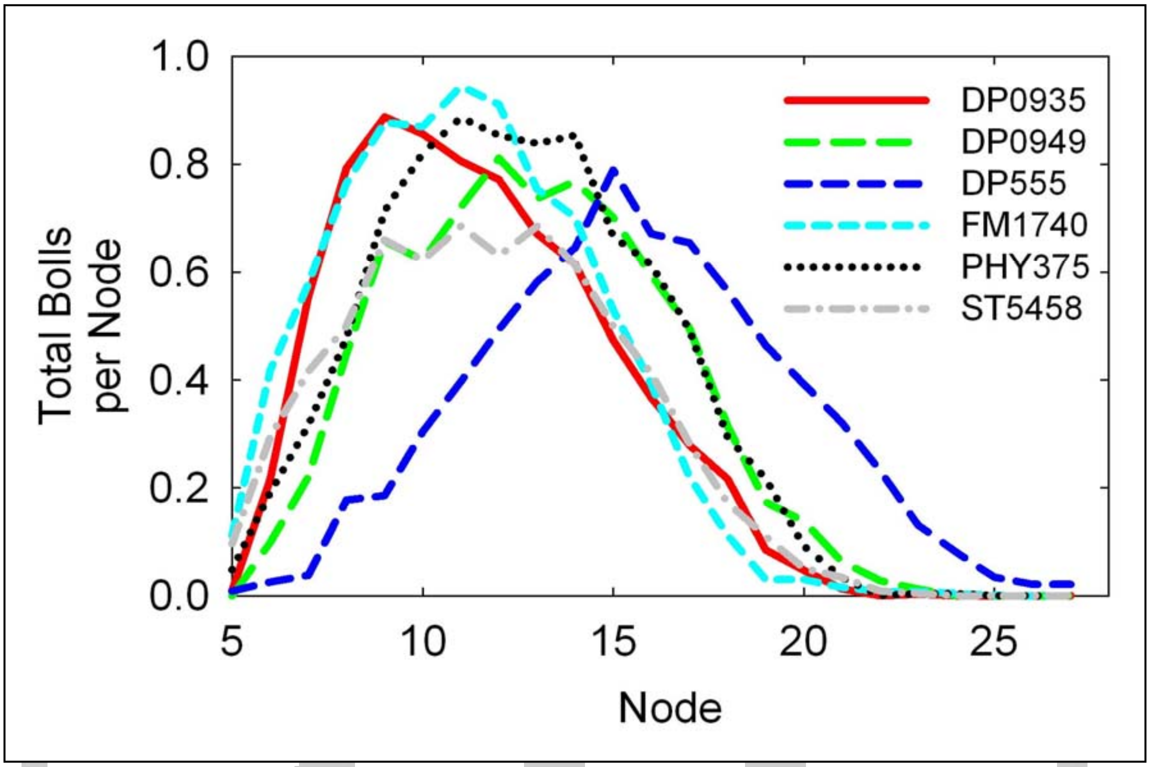


Figure 2. Distribution of total bolls across plants nodes for multiple varieties in 2009.



Thrips Management

Thrips are a predictable insect pest of cotton in Georgia and the use of a preventive insecticide at planting is the most consistent means to manage thrips. Preventive insecticides such as Temik and the seed treatments Cruiser and Gaucho have consistently provided positive economic returns on the farm and in small plot research trials. However there will be some situations where a supplemental foliar insecticide may also be needed, so it is important that growers monitor stands for thrips and injury until plants reach the 4-5 leaf stage and are growing vigorously.

Thrips populations are generally higher on April and early May planted cotton compared with later planted cotton. Thrips feed on the underside of cotyledon leaves of newly emerged cotton and then primarily in the terminal bud once it forms. Slow seedling growth due to cool temperatures or other plant stresses makes seedlings more susceptible to thrips injury. Damage from thrips feeding is often compounded on slow growing seedlings due to the fact that many thrips repeatedly feed on the same unfurled leaf in the terminal bud. A rapidly growing seedling is more tolerant to thrips injury compared with a slow growing seedling.

Thrips populations are generally lower in reduced tillage systems compared with conventional tillage systems. The mechanism of why this difference exists is unknown but differences in thrips populations and injury among tillage types are significant. Observation and limited research suggests that these differences are correlated with the amount of cover crop residue on the soil surface (the more soil which is covered by residue the lower the thrips populations).

At plant systemic insecticides include Temik 15G which is applied in-furrow at planting and the systemic insecticide seed treatments Cruiser and Gaucho. Cruiser is the insecticide component in Avicta Complete Cotton and Gaucho is the insecticide component in the Aeris Seed Applied System. Temik is the most active at-plant insecticide in terms of thrips control. Use rates range from 3.5 to 6 lbs per acre and we anticipate residual control for four plus weeks after planting (higher rates provide longer residual activity). The seed treatments, Cruiser and Gaucho, have performed similarly in Georgia and typically provide thrips control for about three weeks after planting.

As seedlings develop they become more tolerant to thrips injury. For example, we expect greater yield losses from similar thrips populations on 1-2 leaf cotton versus 3-4 leaf cotton. Cotton seedlings are susceptible to thrips until plants attain four to five true leaves and are growing vigorously. Automatic applications of a foliar thrips insecticide with glyphosate at the 5 leaf stage are discouraged for two primary reasons: 1) It is uncommon to observe a yield response to foliar thrips sprays applied at the 5 leaf stage. 2) Disruption of natural enemies increases the likelihood of aphid and/or spider mite outbreaks. The decision to treat thrips with a foliar insecticide should be based on scouting. Our threshold is 2-3 thrips per plant and immatures present. When scouting for thrips the presence of immature or wingless thrips suggests that the systemic insecticide is no longer active.

Growers Find an Expanding "Tool Box" for Management of Parasitic Nematodes

Plant parasitic nematodes, primarily the southern root-knot, reniform, and Columbia lance nematodes, cause serious damage to the cotton crop in Georgia every year. The most important result of this damage is significant yield loss in fields where the crop is not adequately protected; however other problems can occur because of the stunting and poor growth, inadequate nutrient uptake, and pre-mature "cut out" that are often associated with a cotton crop affected by the nematodes.

Effective management of the parasitic nematodes affecting cotton can be challenging and expensive for growers. To date, no commercially-available variety of cotton appropriate for growers in Georgia is truly resistant to any of the three parasitic nematodes mentioned above. It is important to note that the variety Phytogen 367 WRF is reported to have increased resistance/tolerance to the southern root-knot nematode; we will continue to evaluate the potential for this variety in the management of nematodes.

In the absence of a "resistant" variety, an integrated pest management program that incorporates a number of different tactics is the best way to minimize losses to nematode in a field. Production practices important in the management of nematodes include the following.

A. **Crop rotation.** Rotating non-host crops in a field with cotton is a critical tool to reduce the populations of nematodes that affect the cotton crop. Planting peanuts in rotation with cotton helps to reduce the populations of southern root-knot, reniform, and Columbia lance nematodes. Rotating corn with cotton will reduce the populations of reniform nematodes but will have less benefit on the populations of southern root-knot nematodes as both crops are susceptible. Soybeans and cotton are affected by many of the same nematodes; however by planting a soybean cultivar that has resistance to southern root-knot nematodes, the grower may be able to reduce the nematode population from what it would have been if a susceptible cultivar had been planted.

B. **Sampling for nematodes.** The best time to sample for nematodes affecting cotton is in the fall of the year immediately following harvest. The size of the populations is greatest then and it is easiest to determine what the threat for the following year is. Sampling for nematodes is not only important to determine the magnitude of the risk for the following season, but is also important to determine the species of nematodes infesting a field. This information is critical in determining an appropriate crop rotation schedule. NOTE: Growers can sample for nematodes in the winter and spring of the year; however the results may be unreliable. Nematode populations tend to "crash" when the soil temperatures drop and it may be difficult to adequately sample them. Also, in Georgia our economic thresholds are based upon fall counts; interpretation of "winter/spring" counts is uncertain.

C. **Treatment of "Risk Management Zones".** Parasitic nematodes, especially the southern root-knot and the Columbia lance nematodes, tend to found in a patchy distribution in a cotton field. This "patchiness" is largely a result of different soil types in the field, but may also be related to other factors, to include the history of cropping in the field. Southern root-knot nematodes and Columbia lance nematodes are typically found in the sandiest areas of the field. Based upon this knowledge, considerable effort has been expended by researchers at the University of Georgia, Clemson University, Louisiana State University, the USDA-ARS, and Arizona State University to develop methods to identify and map regions of a field most prone to infestation by these pests. Today, cotton growers in Georgia have the opportunity to work with consultants, Cooperative Extension, and representatives from industry (primarily Dow AgroSciences) to develop risk management zones. Growers can then use these risk management zones to refine their efforts to identify areas where nematode populations are at damaging levels and then to treat these levels accordingly. In theory, this should lead to more effective and less costly management of these pests.

D. **Use of nematicides.** Nematicides are a very important tool for use in the management of parasitic nematodes; however they must be used carefully. Careful use by the grower includes attention to personal safety (for example dressing with the appropriate protective equipment), careful calibration of application equipment, careful placement of the nematicide in the field, and finally, careful consideration for the appropriate nematicide to use.

E. **Which nematicide?** Growers in Georgia can use a fumigant (Telone II), a granule (Temik 15G) or seed-treatment nematicides (AVICTA Complete Cotton and AERIS Seed Applied System) for the management of nematodes. These products offer a range of efficacy, a range of ease of application, and a range of costs. To BEST manage nematodes with nematicides, growers are encouraged to consider the results from nematodes soil tests and damage to the cotton crop in previous seasons to first determine the nematicide of choice. Next, growers can consider the convenience in application and cost of the products to finalize their decision. Generally, fumigation with Telone II offers the most effective and complete management of nematodes in moderate-to-high populations of nematodes. At low populations, Temik 15G, AVICTA Complete Cotton and AERIS Seed Applied System may offer similar control; however there is no question (at least in my mind) that Temik 15G (5-6 lb/A) offers better management of nematodes than do the seed treatments as the size of the population grows.

F. **New developments in nematode management.** In addition the use of risk management zones, there have been a few other developments. For example, Telone II is now labeled in Georgia for an at-plant application on cotton. Growers must ensure that soil conditions and the weather forecast is appropriate for this strategy; however it may prove quite useful for growers practicing conservation tillage.

In conclusion, effective management of parasitic nematodes affecting cotton is a critical decision and must be crafted carefully drawing upon a number of tools. For growers, the opportunity to manage nematodes is severely limited once the furrow is closed.

<u>Cotton Burndown in a Glyphosate-Resistant Palmer amaranth World</u>

For years, our greatest challenge with cotton burndown was controlling cutleaf eveningprimrose and wild radish. Although controlling these weeds is still important, managing glyphosate-resistant (GR) Palmer amaranth is more important. Ultimately, our goal is to control emerged winter annual weeds and to delay/reduce Palmer amaranth emergence.

With that in mind, developing a burndown program controlling primrose and radish while providing residual Palmer amaranth control would be optimal. The most effective burndown mixtures for emerged weeds while providing residual Palmer control would likely include Valor or Direx. Of course, residual Palmer control will be effective only if these products contact the soil and are activated prior to emergence (Palmer emergence usually occurs during mid- to late-April; however, if it stays in the 80's for long emergence will be much earlier). Although Direx or Valor alone offer residual Palmer amaranth control, they will not effectively control emerged primrose and radish when applied alone. A few potentially effective mixtures may include the following:

Immature (no seed set) Wild Radish and Primrose, Residual Palmer Control:
1. Glyphosate + Valor + 2,4-D
2. Glyphosate + Direx + 2,4-D (Direx can reduce grass control by glyphosate if grasses are large or it becomes dry, especially grass cover crops)
3. Glyphosate + Direx or Valor (provides 75 to 85% control of radish and primrose)

Mature (seed development) Wild Radish and Primrose, Residual Palmer Control:
1. Gramoxone + Direx + Crop Oil
2. Glyphosate + Valor + 2,4-D
3. Ignite + Direx
4. Glyphosate + Valor + Crop Oil
5. Glyphosate + Direx

Emerged Small GR Palmer amaranth, Mature (seed development) Wild Radish and Primrose, Residual Palmer Control:
1. Gramoxone + Direx + Crop Oil

Regardless of the burndown mixture one selects, always read and follow label directions including planting intervals required between herbicide treatment and planting.

Plant Back Restrictions:
1. Valor:
    A. Strip-till prior to Valor application: 30 days with an inch of rain
    B. Strip-till following Valor application: 14 days prior to planting *(a new label is excepted any day allowing a 7 day plant back interval, I still suggest 10 to 14 days)*

2. Direx: Apply Direx 15 to 45 days ahead of planting *(I must admit, I don't know why this label suggests that we need to apply Direx 15 days ahead of planting)*

3. 2,4-D: Most, but not all, brands suggest 30 days ahead of planting or until the herbicide has dissipated from the soil.

4. Glyphosate, Ignite, Gramoxone: Apply anytime prior to planting.

<u>Be Cautious…..Some Recommendations Are Not All They Are Cracked Up To Be.</u>

Recently, several recommendations have caught our attention and we wanted to voice our concerns in an effort to convince Georgia growers' to not believe everything they hear.

First, let's begin with the adjuvant Soysoap and its potential impact on improving the control of glyphosate-resistant (GR) Palmer amaranth with glyphosate. Many claims by the manufacturer, even on their website as of today, suggest the addition of Soysoap with your Roundup will solve your GR- Palmer amaranth problems. Boy, Prostko and Culpepper would be the happiest people on the planet if this were true as we could get away from the painful Palmer beast. Unfortunately, this is not the case on Georgia GR- Palmer amaranth (Table 1).

Table 1. Glyphosate-resistant (GR) Palmer amaranth response to glyphosate alone or mixed with adjuvants.			
Herbicide Treatments	Percent Control of GR-Palmer amaranth		
	6 d after	13 d after	20 d after
Roundup WeatherMax	0 a	5 a	0 a
Roundup WeatherMax + Soysoap (Enhanced 250)	0 a	5 a	3 a
Roundup WeatherMax + Nanoboast	0 a	5 a	0 a
*Roundup WeatherMax applied at 22 oz/A to 4-6 inch Palmer amaranth during 2009. Soysoap applied at 8 oz/A and Nanoboast applied at 2 oz/A. Values within a column followed by the same letter are not different at P = 0.05. A value of 0 = no control while a value of 100 = complete control.			

In susceptible plants, glyphosate targets the EPSPS enzyme which is needed to produce essential amino acids (tyrosine, tryptophan, and phenylalanine) required for plant growth. Georgia's resistant Palmer amaranth plants generate up to **160-fold** more copies of the EPSPS gene than susceptible plants. So, the addition of an adjuvant or a little more glyphosate will simply not impact the level of control, at least with all the products studied thus far.

Second, in some parts of Georgia there have been suggestions of using Touchdown (glyphosate) plus 8 oz/A of Reflex for cotton burndown. Hmmm…this recommendation simply does not make sense. For burndown it is clear that we need to control the emerged weeds present and we now need residual Palmer amaranth control. Cutleaf eveningprimrose continues to be the most problematic emerged weed to control with burndown treatments and mixing Reflex at 16 oz/A, much less 8 oz/A, with glyphosate provides an initial burn with no real advantage in control over Roundup alone (Table 2). Mixtures of glyphosate with 2,4-D, Valor, or diuron as well as Gramoxone + Direx are consistently effective options to manage primrose and most other winter weeds. Also, Valor or diuron would offer a much broader residual control package compared to a reduced rate of Reflex.

Reflex is the most effective preemergence herbicide option for cotton growers to manage Palmer amaranth. Growers should utilize this herbicide in this method…… not at a reduced rate during burndown!!!!!!!!!!!!!!!!!!!!!!!!!! Additionally, it is very important to remind our growers that the use of reduced rates contributes to the faster evolution of herbicide resistance!!!

Table 1. Cutleaf Eveningprimrose Response to Reflex Mixed with Glyphosate.			
Herbicide Treatment	Percent Control of Cutleaf Eveningprimrose		
	9 d after	22 d after	35 d after
Roundup WeatherMax	63 c	77 c	77 b
Roundup WeatherMax + Reflex 16 oz/A	79 b	75 c	81 b
Roundup WeatherMax + 2,4-D	67 c	84 b	99 a
Gramoxone + Direx + COC	99 a	99 a	99 a
*Roundup WeatherMax, 22 oz/A; 2,4-D amine, 1 pt/A of 4 lb/gal formulation; Gramoxone Inteon, 1 qt/A; and Direx, 1.8 pt/A. Values within a column followed by the same letter are not different at P = 0.05.			

These are just two examples of why growers should never just simply take someone's word when it comes to managing pests in their crops. Always ask to see the data!!!!!!!!!!!!!!!!!!!!! And there is no doubt…..if we find the miracle cure to control GR Palmer amaranth you will know about it in less than 10 minutes!!!!!!!!!

University of Georgia Programs for Controlling Moderate to Severe Populations of Glyphosate-Resistant Palmer Amaranth in 2010 Cotton. (*A. Stanley Culpepper, Jeremy Kichler, Lynn Sosnoskie).* Glyphosate-resistant Palmer amaranth continues to spread rapidly across Georgia (Figure 1). By 2011, this pest will likely infest all Georgia cotton-producing counties. Major factors influencing this rapid development of resistance include 1) resistance to glyphosate and Staple, 2) heavy seed production (up to 450,000 seeds per female plant in dryland cotton), and 3) spread of resistance by seed (equipment, etc.) and pollen (wind).

Figure 1. Georgia counties confirmed to be infested with glyphosate-resistant Palmer amaranth.

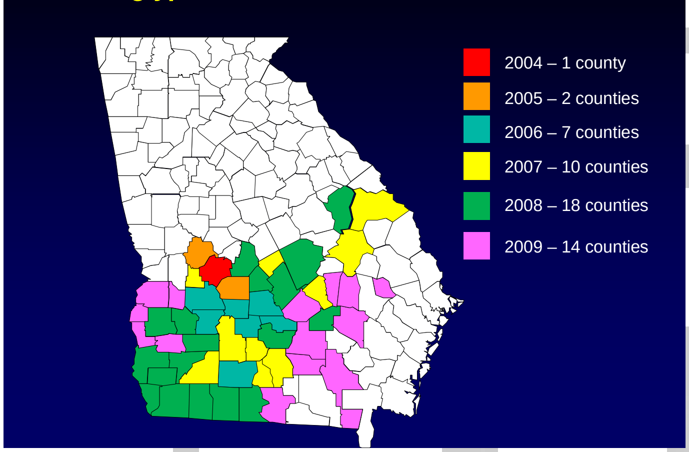
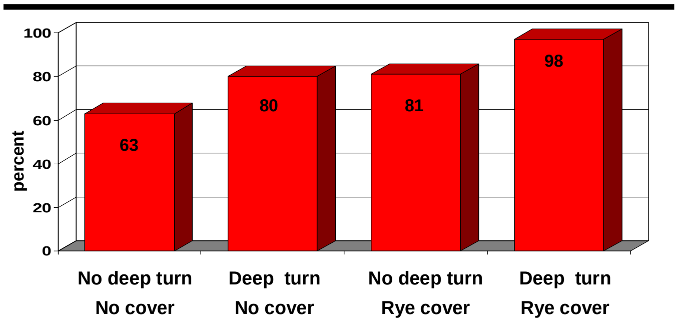


Figure 2. Palmer requires sunlight to emerge!!

Research during 2008 and 2009 determined that Palmer amaranth has three potential weaknesses, including 1) a shallow emergence depth, 2) short seed life in soil, and 3) a significant light requirement needed for germination. Each of these weaknesses can be manipulated to improve control by herbicide systems.

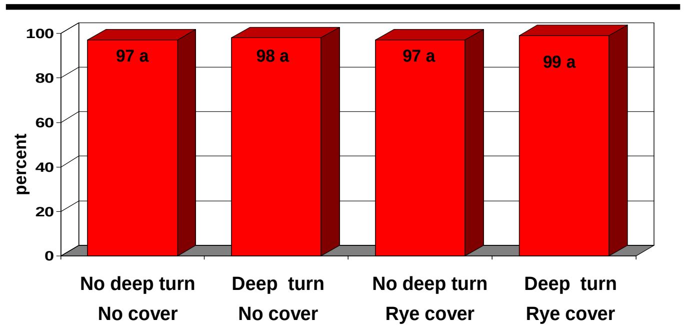
In conservation tillage, heavy residue crops can be used to essentially block sunlight required for Palmer germination (Figure 2) and can greatly improve control (Figure 3). It is critical to note that in strip-tillage production, Palmer amaranth will emerge in the strip if herbicides are not activated in a timely manner by irrigation or rainfall. In conventional tillage, Palmer amaranth control can be improved by deep turning (Figure 3) or using a yellow herbicide preplant incorporated. The adoption of timely Ignite-based programs will likely improve control regardless of producing cotton in conventional or conservation tillage systems (Figure 4). The most effective herbicide programs are noted in Tables 1 and 2 on back.

Figure 3. GR Palmer amaranth control at harvest with Roundup-based systems. Macon Co., GA 2009.



Rye 7 foot when killed, rolled, planted.
Deep turn 12 inch in previous fall.
Herbicide program: Direx + Reflex + Staple PRE; RU + Parrlay POST, Direx + MSMA at layby.

Figure 4. GR Palmer amaranth control at harvest with Ignite-based systems. Macon Co., GA 2009.



Rye 7 foot when killed, rolled, planted.
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THE UNIVERSITY OF GEORGIA
COOPERATIVE EXTENSION
Colleges of Agricultural and Environmental Sciences & Family and Consumer Sciences

The Georgia Cotton Commission, Cotton Incorporated, and Industry are primary funding sources!

Table 1. Managing Palmer amaranth with Ignite-based programs.[1]

Preplant or Preemergence (PRE)[2]	Topical (3 inch Palmer)	Layby
Conventional Tillage: Reflex or Staple + Prowl PRE	Ignite 29 oz + Dual Magnum[3]	Direx + MSMA[4]
Conservation Tillage: Valor preplant; Staple + Prowl PRE or Diuron preplant; Reflex or Staple +Prowl PRE	Ignite 29 oz + Dual Magnum[3]	Direx + MSMA[4]

[1]Cotton must be tolerant to Ignite 280 (glufosinate) herbicide at 29 oz/A. Follow all labeled preplant herbicide plant back restrictions.
[2]The addition of paraquat is needed for all at plant applications if Palmer is emerged at time of application.
[3]A follow up application of Ignite will be needed if application is not timely or Dual is not activated by rainfall. Staple could be mixed with Ignite in place of Dual if Palmer is larger than 4 inches and not ALS resistant.
[4]Will not control grasses larger than 1 in. If grasses greater than 1 inch are present, an Ignite mixture will be required in Liberty Link cotton.

Table 2. Managing glyphosate-resistant Palmer amaranth in Roundup Ready cotton.[1]

Preplant, Preplant Incorporated (PPI), or Preemergence (PRE)[2]	Topical (1- 4-leaf cotton)	Layby
Irrigated -Conventional Tillage (Program 1): Reflex + Staple + Prowl or diuron PRE	glyphosate + Dual Magnum ***(no Palmer emerged)***	Direx + MSMA[3]
Irrigated - Conventional Tillage (Program 2): Reflex + Prowl and/or diuron PRE	glyphosate + Staple[4] ***(Palmer 1" or less)***	Direx + MSMA[3]
Irrigated - Conservation Tillage (Programs 1 and 2): Valor preplant; Staple + Prowl + diuron PRE or Diuron preplant; Reflex + Staple + Prowl PRE	glyphosate + Dual Magnum ***(no Palmer emerged)***	Direx + MSMA[3]
Irrigated - Conservation Tillage (Programs 3 and 4): Valor preplant; Prowl + diuron PRE or Diuron preplant; Reflex + Prowl PRE	glyphosate + Staple[4] ***(Palmer 1" or less)***	Direx + MSMA[3]
Dryland – Conventional Tillage (Program 1): Treflan or Prowl PPI; Reflex + Staple PRE	glyphosate + Dual Magnum ***(no Palmer emerged)***	Direx + MSMA[3]
Dryland – Conventional Tillage (Program 2): Treflan or Prowl PPI; Reflex PRE	glyphosate + Staple[4] ***(Palmer 1" or less)***	Direx + MSMA[3]

[1] Follow all labeled preplant herbicide plant back restrictions.
[2]The addition of paraquat is needed for all at-plant applications if Palmer is emerged at time of application.
[3]Will not control grasses larger than 1 in. If grasses greater than 1 inch are present, a glyphosate mixture will be required.
[4]Staple will not control ALS-resistant Palmer amaranth.

NOTE: Programs were specifically developed to use only one PPO herbicide (Reflex, Valor) and only 1 ALS herbicide (Staple) application during the season to reduce the potential for the development of PPO herbicide resistance in Palmer amaranth and to minimize further development of ALS-resistant Palmer amaranth. Other programs relying more heavily on these herbicides may provide greater control this season but threaten long term production due to increased resistance.

Study shows the UGA Microgin and commercial gins perform similarly

Thanks to the funding support from the Georgia Cotton Commission, a comprehensive study was conducted in 2009 by comparing six commercial gins with the UGA Microgin and a laboratory gin stand in terms of lint turnout and HVI fiber quality. As displayed in Figure 1, the lint turnout from the laboratory gin stand was consistently higher (1-3.7%) than that from the commercial gins, while the Microgin and commercial gins had similar gin turnout (0.1-1.9% differences), with differences explained primarily by the number of lint cleaners used. As for the fiber quality, the Microgin and commercial gins had almost undistinguishable color grade, leaf grade, length, and uniformity, largely due to the similarities in equipment layout in these two types of gins. For instance, the HVI trash and leaf grade from the lab gin stand were 0.98 (units) and 3 (grades) higher than that from the commercial gins, respectively; the differences between the Microgin and commercial gins were only 0.16 and 1, respectively. Color reflectance from the lab gin was 5.92% less than that from the commercial gins; the difference between the Microgin and commercial gins in reflectance was only 0.68%. Length and uniformity from the lab gin were 1.02 mm and 1.7% higher than those from the commercial gins, respectively; the differences between the Microgin and commercial gins were only 0.25 mm and 0.58%, respectively. Figure 2 compares the lab gin stand and the Microgin in predicting fiber quality of lint ginned by commercial gins. The Microgin gave more accurate estimation of fiber quality than the lab gin stand in most HVI properties, except micronaire and strength. This study provided convincing evidence that the Microgin outperforms the lab gin stand in estimating the lint turnout and most fiber quality properties and it should be a valuable tool for cotton research.

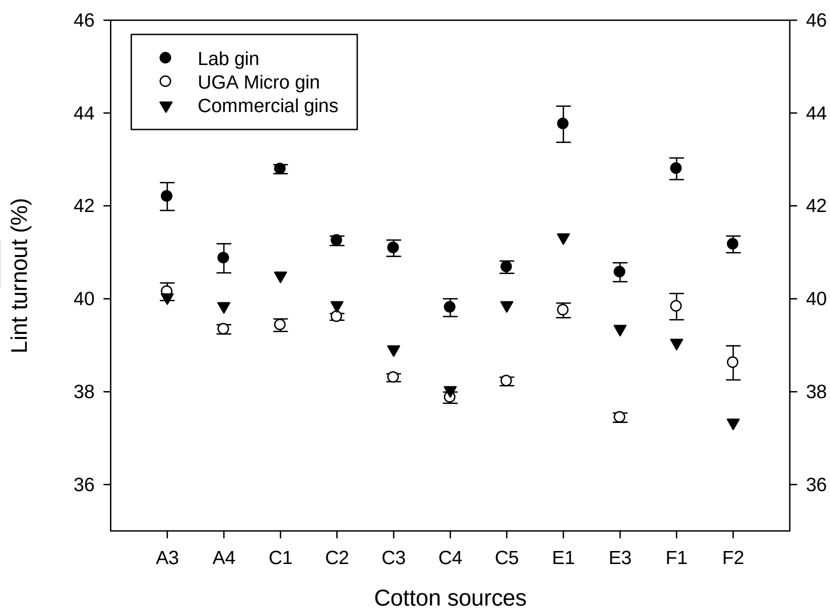

Figure 1. Lint turnout comparison among the lab gin, the Microgin, and four commercial gins. The first letters (A, C, E, and F) of the x-axis tick label identify four commercial gins, and the second numbers (1 to 5) represent five cotton cultivars. Error bars on the lab gin and the Microgin data sets represent standard error of the mean. Standard error was not shown in the commercial gin data because only one turnout per each cotton source was reported.

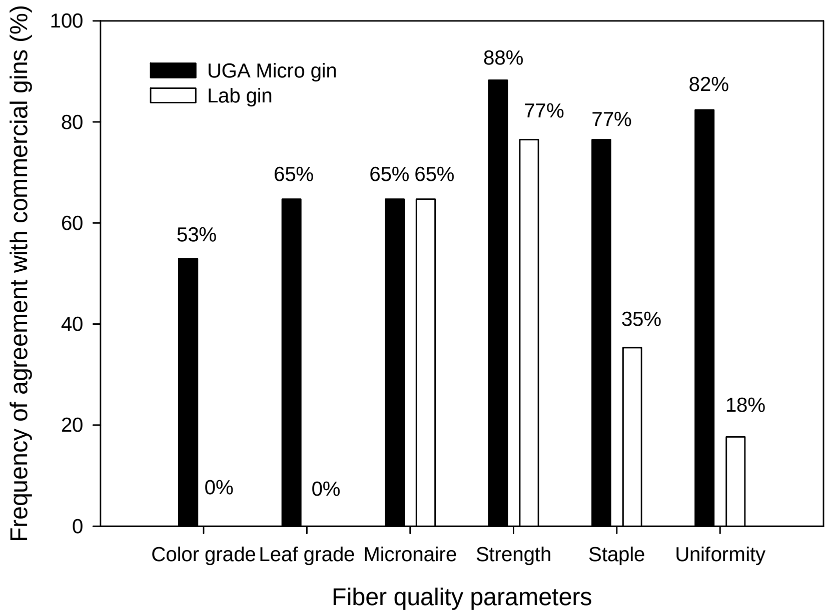

Figure 2. Comparison between the Microgin and the lab gin stand in estimating six HVI fiber quality properties obtained from commercial gins.

UGA Cotton Variety Performance Calculator

Each year numerous cotton variety trials are conducted across Georgia by UGA Extension Agents. These trials evaluate the performance of varieties grown in large plots in commercial production situations. This information is an extremely valuable tool to use when making variety selections. However, due to land restraints and seed availability, the number of entries is limited and actual varieties tested often vary depending upon location. This can limit the utility of making variety comparisons across a large number of locations.

The University of Georgia Cotton Variety Performance Calculator has been developed to help deliver new cotton variety information across multiple trials to growers and extension personnel throughout the state. This calculator utilizes information from both on-farm large plot trials and UGA official variety trials. By accessing this database, up to five varieties can be compared based on lint yield across multiple trials. These comparisons only utilize data from trials were all of the varieties of interest were tested in each location, making multi-location variety comparisons more valid. Users can choose to look at data from only irrigated or dryland trials, or across all locations. This calculator also presents information regarding relative variety performance or stability, represented as percentage of yield compared to the trial average across all trials as well as in only dryland or irrigated situations, which may assist in variety placement.

The UGA Cotton Variety Performance Calculator can be found on the UGA Cotton website, (http://commodities.caes.uga.edu/fieldcrops/cotton/ or www.ugacotton.com) in the "Breaking News" section.

Cotton Seed Cost Calculator

To further investigate costs related to seeding rates of particular varieties, check out the Cotton Seed Cost Calculator developed by Don Shurley at the UGA Cotton website, (http://commodities.caes.uga.edu/fieldcrops/cotton/ or www.ugacotton.com) in the "Breaking News" section.

Cotton Scout Schools: Tifton June 14, Midville June 22, 2010

Cotton insect scouting schools are annually held at various locations in Georgia. These programs offer general information on cotton insects and scouting procedures and will serve as a review for experienced scouts and producers and as an introduction to cotton insect monitoring for new scouts. The annual Cotton Scout School in Tifton will be held on June 14, 2010 at the UGA Tifton Campus Conference Center. The Midville Cotton Scout School will be will be held on June 22, 2010 at the Southeast Georgia Research and Education Center. The training programs at each location will begin at 9:00 a.m. and conclude at 12:30 p.m.

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

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