



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



Georgia Cotton

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Cotton Planting Intentions and Progress for 2007. (*Brown*) USDA surveys suggest Georgia farmers will plant 1.15 million acres of cotton this year; likewise, a National Cotton Council survey pegged the number at 1.07 million acres. These estimates reflect a decrease of 18 and 23 percent, respectively, compared to the 2006 crop of approximately 1.4 million acres. The anticipated huge increase in corn has been muted slightly by dry weather, and growers have yet to fully assess the effects of the Easter weekend chill on existing corn stands. When the “dust settles,” cotton plantings are likely to approach to 1.2 million acres in the state for 2007.

Very little cotton has been planted to date, and wisely so.

Unseasonably warm conditions in March lulled some into thinking, “It’s cotton planting weather,” but the harsh cold and winds of Easter weekend made many thankful that dry weather had prevented an early start. In Georgia, moisture (not temperature) is the most common limiting factor in stand establishment. Conditions across the state are terribly, terribly dry, and dryland producers should be ready to go following significant rainfall. Significant rainfall – well in excess of an inch – is needed to recharge seedbeds that have been depleted after weeks of open weather and limited winter rain. It’s time to proceed with non-irrigated acres after the next good rain. And a good, slow soaker is desperately needed.

Planting Tips with DP 555 BG/RR. (*Brown*) DP 555 BG/RR is again expected to be the most widely planted variety in Georgia. Its unmatched yield potential and full maturity render it ideally suited to our production environment. However, it is not the best variety in certain situations, especially extremely early and late in the planting season.

The limited seed size of DP 555 BG/RR confers uniquely weak seedling vigor, making it a poor choice for early season planting. As we have already seen, April weather can offer stiff challenges for stand establishment. At least through mid-April it seems advisable to start with other varieties that have greater vigor just in case of adverse weather. Cool, wet conditions and/or crusty, compacted soils can spell disaster for DP 555 BG/RR. If you're starting early, plant a variety with strong seedling vigor.

The limited vigor of DP 555 BG/RR also makes it very sensitive to planting depth. Avoid the temptation to go too deep "chasing moisture." A fraction of an inch change in depth can lead to erratic stands. Be careful!

The indeterminate (full season) maturity of DP 555 BG/RR makes it less than ideal as an option for late plantings, particularly into June. With considerable acreage of wheat in Georgia this year, growers will be looking for double crop options. It makes sense to select early to mid-maturity offerings as planting moves past the end of May.

Thrips Management. (*Roberts*) Thrips are a predictable early season insect pest of cotton. Thrips feed on cotyledons and unfurled leaves in the terminal bud. Damaged cotyledons appear shiny and silvery whereas damaged true leaves are crinkled and misshapen. Moderate thrips damage stunts plants and delays maturity; loss of apical dominance or stand loss may occur in severe situations. A preventive systemic insecticide is recommended at planting for control of thrips. A summary of thrips control research trials conducted in Georgia since 2000 indicated that recommended thrips insecticides used at planting increased yield about 90 percent of the time. Failure to use a preventive treatment can result in excessive thrips injury and the need for multiple foliar sprays.

Recommended at-plant treatments for thrips control include Temik 15G, Orthene as an in-furrow spray, and the seed treatments Cruiser, Gaucho Grande, and Orthene. Temik granules are applied in the seed furrow at planting and generally provide control of thrips for four-plus weeks after planting (rate dependent). Orthene in-furrow sprays are seldom used in Georgia but are an option for thrips control. The seed treatments Cruiser and Gaucho Grande have performed similarly in GA and typically provide thrips control for about three weeks after planting. Cruiser is the thrips insecticide component in Syngenta's Avicta Complete Pak and Gaucho Grande is the thrips insecticide component in Bayer's Aeris Seed Applied System. Orthene seed treatment provides thrips control for about 7 days.

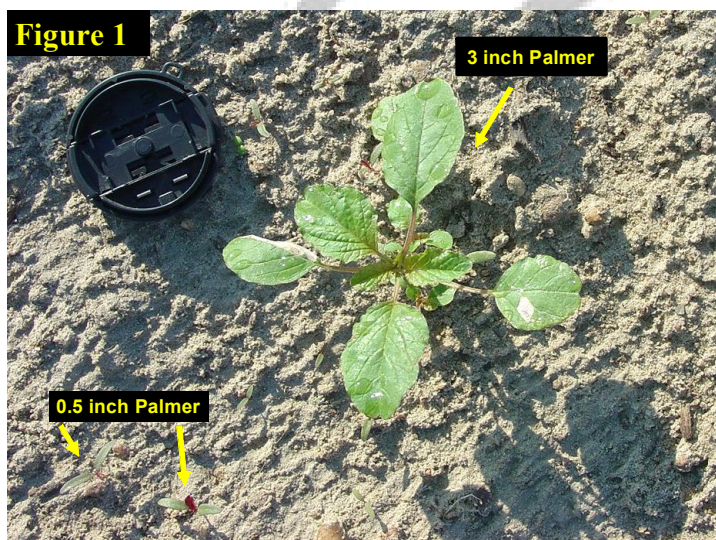
Slow seedling growth compounds the resulting damage from thrips. Thrips must feed on seedlings to obtain a toxic dose of the systemic insecticide used at planting. If the plant is not growing, feeding injury is often compounded due to the fact that many thrips have repeatedly fed on the same unfurled leaf in the terminal bud. As seedlings develop they become more tolerant to thrips injury. For example, we expect greater yield losses from similar thrips injury symptoms on 1 to 2 leaf cotton versus 4-leaf cotton. Cotton seedlings are susceptible to thrips until plants attain five true leaves and are growing rapidly.

Automatic applications of a thrips insecticide with glyphosate at the 4 to 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 to 3 thrips per plant. When scouting for thrips the presence of immature or wingless thrips suggests that the systemic insecticide is failing and a foliar treatment may be justified. In reality most decisions to treat thrips are based on plant injury symptoms. When looking at plant injury symptoms, focus on newly expanding leaves. Recommended foliar insecticides for thrips include Bidrin, dimethoate, and Orthene.

University of Georgia Herbicide Programs for Palmer Amaranth Control in Cotton.

(Culpepper, *et al*) Palmer amaranth (pigweed) is Georgia's most problematic weed in cotton (Figure 1). One Palmer amaranth per 20 row feet of cotton can reduce yield at least 7 percent, and a single female plant can produce 500,000 seeds.



For years, growers have relied heavily on glyphosate (Roundup) to control this weed. In 2005, Palmer amaranth resistance to glyphosate was confirmed in Georgia. Resistant populations can no longer be controlled by glyphosate at any practical rate, if at all. (Figure 2).

This pest threatens Georgia cotton production. Growers who have resistant Palmer amaranth must adopt aggressive manage programs. More importantly, growers who do not have resistance must delay its arrival as there are *no economical management programs for fields infested with glyphosate-resistant Palmer amaranth*.

Tables 1A and 2A are herbicide management programs for glyphosate-resistant Palmer amaranth while Tables 2A, 3A and 4A are programs strongly encouraged to delay the onset of resistance. Also to help delay resistance, growers need to diversify crop production practices, including crop rotation and use of herbicides with different modes of action (herbicide modes of action can be found in the 2007 Georgia Cotton Production Guide). Also, refer to the most recent Georgia Cotton Production Guide or Georgia Pest Control Handbook for herbicide rates and proper cotton sizes at time of application.

Table 1A. Managing **Glyphosate-Resistant** Palmer Amaranth in **Roundup Ready (RR) Cotton**.*

PPI or Preemergence	Postemergence (1- to 4-leaf cotton)	Layby Directed
Prowl or Treflan PPI + Reflex PRE	Glyphosate + Dual Magnum ¹ (no Palmer emerged)	MSMA + Direx MSMA + Layby Pro MSMA + Suprend ² MSMA + Valor
	Glyphosate + Staple ² (Palmer 1-2")	

*Hand weeding, cultivation, and/or application of Gramoxone mixtures with hooded sprayers will likely be needed.

1. Dual Magnum contains S-metolachlor. The generic brands Brawl and Medal also contain S-metolachlor. Other generic brands contain metolachlor, a mixture of R and S isomers. Per unit of product, brands containing S-metolachlor are more effective on Palmer amaranth and other weeds. Sequence contains a mixture of glyphosate + S-metolachlor.

2. Make only one application of an ALS-inhibiting herbicide (Staple, Envoke, etc.) per season. Will not control ALS-resistant Palmer amaranth.

Table 2A. Managing **Glyphosate-Resistant or Sensitive** Palmer amaranth in **Liberty Link Cotton**.

Preemergence	Postemergence (1- to 4-leaf cotton)	Layby Directed
Prowl + Cotoran, Direx, or Reflex	Ignite or Ignite + Dual Magnum ¹ (Palmer < 2 inch)	MSMA + Direx MSMA + Layby Pro MSMA + Suprend ² MSMA + Valor
	Ignite + Staple ² (Palmer < 4 inch)	
Cotoran, Direx, Prowl or Reflex	Ignite + Dual Magnum ¹ (Palmer < 2 inch)	
	Ignite + Staple ² (Palmer < 4 inch)	

1. Dual Magnum contains S-metolachlor. The generic brands Brawl and Medal also contain S-metolachlor. Other generic brands contain metolachlor, a mixture of R and S isomers. Per unit of product, brands containing S-metolachlor are more effective on Palmer amaranth and other weeds. Sequence contains a mixture of glyphosate + S-metolachlor.

2. Make only one application of an ALS-inhibiting herbicide (Staple, Envoke, Suprend) per season. Will not control ALS-resistant Palmer amaranth.

Table 3A. Managing **HEAVY Glyphosate-Sensitive** Palmer Infestations in **RR Cotton**.

Preemergence	Postemergence (1- to 4-leaf cotton)	Layby Directed
Prowl + Cotoran, Direx, Reflex, or Staple ²	Glyphosate + Dual Magnum ¹	MSMA + Direx MSMA + Layby Pro MSMA + Suprend ² MSMA + Valor Glyphosate + Direx ³ Glyphosate + Layby Pro ³ Glyphosate + Suprend ² Glyphosate + Valor
	Glyphosate + Staple ²	

1. Dual Magnum contains S-metolachlor. The generic brands Brawl and Medal also contain S-metolachlor. Other generic brands contain metolachlor, a mixture of R and S isomers. Per unit of product, brands containing S-metolachlor are more effective on Palmer amaranth and other weeds. Sequence contains a mixture of glyphosate + S-metolachlor.

2. Make only one application of an ALS-inhibiting herbicide (Staple, Envoke, Suprend) per season. Will not control ALS-resistant Palmer amaranth.

3. Mixing Direx or Layby Pro with glyphosate may reduce grass control by glyphosate, especially when grasses are large and conditions are dry.

Table 4A. Managing **LIGHT-MODERATE Glyphosate-Sensitive** Palmer Infestations in **RR Cotton**.

Preemergence	Postemergence (1- to 4-leaf cotton)	Layby Directed
Prowl	Glyphosate + Dual Magnum ¹	MSMA + Direx MSMA + Layby Pro MSMA + Suprend ² MSMA + Valor Glyphosate + Direx ³ Glyphosate + Layby Pro ³ Glyphosate + Suprend ² Glyphosate + Valor
	Glyphosate + Staple ²	
Prowl + Cotoran, diuron, Reflex, or Staple ²	Glyphosate as needed	

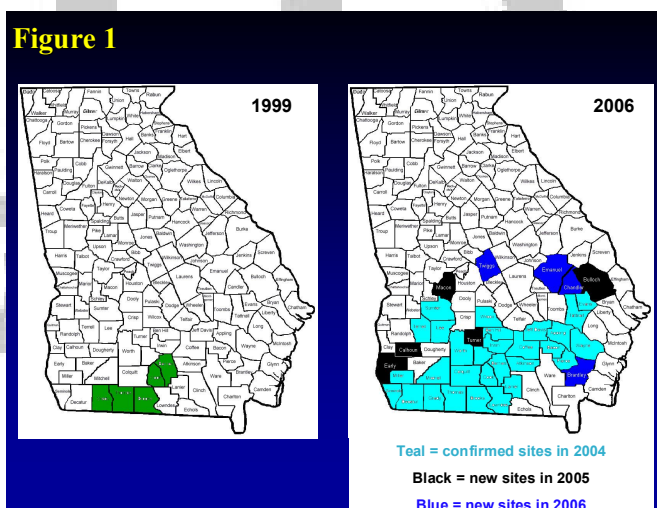
1. Dual Magnum contains S-metolachlor. The generic brands Brawl and Medal also contain S-metolachlor. Other generic brands contain metolachlor, a mixture of R and S isomers. Per unit of product, brands containing S-metolachlor are more effective on Palmer amaranth and other weeds. Sequence contains a mixture of glyphosate + S-metolachlor.

2. Make only one application of an ALS-inhibiting herbicide (Staple, Envoke, etc.) per season. Will not control ALS-resistant Palmer amaranth.

3. Mixing Direx or Layby Pro with glyphosate may reduce grass control by glyphosate, especially when grasses are large and conditions are dry.

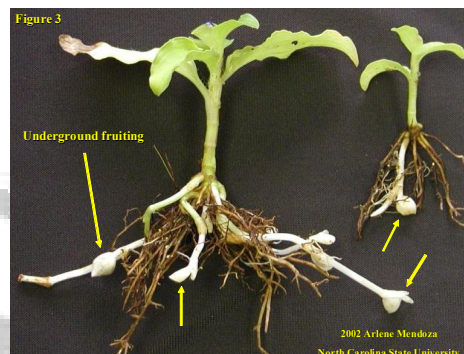
University of Georgia Herbicide Programs for Tropical Spiderwort Control in Cotton.

(Culpepper *et al*) Tropical spiderwort is a noxious, exotic, invasive weed that has spread quickly and has become a serious pest in many Georgia agricultural production areas (Figure 1). The increase in prevalence of tropical spiderwort in Georgia may be attributed in part to 1) adoption of weed management programs that lack residual herbicides and 2) adoption of reduced-tillage production systems.



Upon initial observation, tropical spiderwort appears to be a grass (Figure 2). While not a grass, it is a monocot (in contrast to broadleaf weeds, which are dicots) with leaves and stems usually fleshy and succulent. The stems will creep along the ground and root at the nodes. Vegetative

cuttings from stems are capable of rooting and reestablishing following cultivation. Tropical spiderwort will produce seed above and below ground (Figure 3).



Tables 1B through 3B are suggestions for the management of different levels of tropical spiderwort infestations in Georgia cotton. *Refer to the most recent cotton production guide or pest control handbook for herbicide rates and proper cotton sizes at time of application.*

Table 1B. Managing **SEVERE** Infestations of Tropical Spiderwort in Roundup Ready (RR) Cotton.*

Preemergence	Postemergence (1- to 4-leaf cotton)	Layby Directed
(Planting before May 10) Use at-plant herbicide appropriate for other weeds	Glyphosate + Dual Magnum ¹ (10-12 oz/A)	Direx + MSMA + Dual Magnum (10-12 oz/A)
(Planting after May 10) Cotoran	(Spiderwort should be less than 1 inch and the Dual must completely cover the soil)	

*Research has shown that deep turning land will provide fair to good control of this pest. This practice may be required in addition to the herbicide program in some fields.

1. Dual Magnum contains S-metolachlor. The generic brands Brawl and Medal also contain S-metolachlor. Other generic brands contain metolachlor, a mixture of R and S isomers. Per unit of product, brands containing S-metolachlor provide longer control. Sequence contains a mixture of glyphosate + S-metolachlor.

Table 2B. Managing **MODERATE** Infestations of Tropical Spiderwort in RR Cotton.

Preemergence	Postemergence (1- to 4-leaf cotton)	Layby Directed
(Planting before May 10) Use at-plant herbicide appropriate for other weeds	Glyphosate + Dual Magnum ¹ (8-12 oz/A) (Spiderwort should be less than 1 inch and the Dual must completely cover the soil)	Direx + MSMA + Dual Magnum (8-12 oz/A) or Glyphosate + Aim + Dual Magnum (8-12 oz/A)
(Planting after May 10) Cotoran	Glyphosate + Dual Magnum ¹ (8-12 oz/A) (Spiderwort should be less than 1 inch and the Dual must completely cover the soil)	
1. Dual Magnum contains S-metolachlor. The generic brands Brawl and Medal also contain S-metolachlor. Other generic brands contain metolachlor, a mixture of R and S isomers. Per unit of product, brands containing S-metolachlor provide longer control. Sequence contains a mixture of glyphosate + S-metolachlor.		

Table 3B. Managing **LIGHT** Infestations or **DELAYING ARRIVAL** of Tropical Spiderwort in RR Cotton.

Preemergence	Postemergence (1- to 4-leaf cotton)	Layby Directed
(Planting before May 10) Use at-plant herbicide appropriate for other weeds	Glyphosate + Dual Magnum ¹ (16 oz/A) (Spiderwort should be less than 1 inch and the Dual must be able to completely cover the soil)	Valor + MSMA Direx + MSMA Glyphosate + Valor Glyphosate + Direx
(Planting after May 10) Cotoran		
1. Dual Magnum contains S-metolachlor. The generic brands Brawl and Medal also contain S-metolachlor. Other generic brands contain metolachlor, a mixture of R and S isomers. Per unit of product, brands containing S-metolachlor provide longer control. Sequence contains a mixture of glyphosate + S-metolachlor.		

Economics of Conventional Tillage vs. Conservation Tillage in BR Cotton. (Ziehl and Shurley) According to a survey conducted by UGA Extension during spring 2005, approximately 53 percent of cotton acreage in Georgia was under some form of conservation tillage (43 percent under strip-till, 3 percent under no-till, and 7 percent under reduced-till). Cotton producers often inquire about the cost and benefit trade off between conventional tillage and conservation tillage. Some benefits are intangible or difficult to place a value on such as reduced erosion, improved soil quality, and organic matter. Others are more tangible. One way to analyze the tangible costs and benefits is to examine the UGA Cotton Enterprise Budgets.

The UGA Cotton Enterprise Budgets are based on typical production practices, input prices, and field operations in Georgia. Conventional-till and strip-till budgets for both dryland and irrigated cotton represent significant acreage across the state. Although each individual operation varies, the budgets provide values on a per acre basis for a typical operation and are designed to be used as a tool for cotton producers to begin calculating their own costs. The budgets include variable costs such as seed, fertilizer, chemicals, fuel, repairs/maintenance, labor, and interest on operating capital. Fixed costs on machinery and equipment are also included in the budgets. These costs include depreciation, taxes, insurance, and other overhead costs.

Conventional- and conservation-tillage cotton generally have comparable costs for seed, fertilizer, insect and disease control, plant growth regulator, and defoliant; however, there are differences in herbicide, labor, fuel, repairs/maintenance, and irrigation costs. Table 1C has a breakdown of these different inputs and costs between conventional- and strip-till cotton.

Table 1C. Select Variable Inputs between Conventional-Till and Strip-Till BR Cotton, Dryland, and Irrigated.

Item	Dryland Conv-Till BR Cotton	Dryland Strip-Till BR Cotton	Irrigated Conv-Till BR Cotton	Irrigated Strip-Till BR Cotton
Herbicide (\$/A)	\$ 30.00	\$ 36.00	\$ 30.00	\$ 36.00
Labor (hrs./A)	2.25	1.90	2.35	2.00
Fuel (gal./A)	13.35	11.10	13.90	11.50
Repairs/Maintenance (\$/A)	\$ 25.00	\$ 24.00	\$ 26.00	\$ 25.00
Irrigation (\$/A)	NA	NA	\$ 68.00	\$ 59.50

Based on the budgets for BR cotton, strip-till producers typically spend \$6.00 more per acre on herbicides. Conventional-till cotton often requires more trips over the field resulting in higher labor, fuel, and repair/maintenance costs. The budgets show that strip-till cotton producers use approximately 1/3 of an hour, or 20 minutes, less labor per acre than conventional-till. In addition, strip-till cotton producers use 2.25 fewer gallons of fuel per acre of dryland cotton and 2.40 fewer gallons of fuel per acre of irrigated cotton. Repairs and maintenance costs are approximately \$1.00 less per acre for strip-till cotton. Also according to the budgets, strip-till cotton producers use less irrigation per acre resulting in a savings of \$8.50 per acre.

The total variable and fixed costs per acre and breakeven cost per pound for conventional- and strip-till cotton are summarized in Table 2C.

Table 2C. Yield, Variable, Fixed, and Total Costs per Acre, and Breakeven Costs per Pound between Conventional-Till and Strip-Till BR Cotton, Dryland and Irrigated.

Item	Dryland Conv-Till BR Cotton	Dryland Strip-Till BR Cotton	Irrigated Conv-Till BR Cotton	Irrigated Strip-Till BR Cotton
Yield (lbs./A)	700	700	1100	1100
Variable Cost (\$/A)	\$ 380.10	\$ 376.51	\$ 484.58	\$ 471.81
Breakeven Variable Cost (\$/lb.)	\$ 0.54	\$ 0.54	\$ 0.44	\$ 0.43
Fixed Cost (\$/A)	\$ 149.01	\$ 144.65	\$ 250.46	\$ 245.18
Total Cost (\$/A)	\$ 529.11	\$ 521.16	\$ 735.04	\$ 716.99
Breakeven Total Cost (\$/lb.)	\$ 0.76	\$ 0.74	\$ 0.67	\$ 0.65

The budgets assume cotton producers are established in their production practices and that yields between the two different tillage methods are similar. Conventional-till dryland producers have slightly higher variable costs at \$3.59 per acre as a result of more labor and fuel use. The difference in variable costs between conventional-till and strip-till irrigated cotton is greater at \$12.75 per acre, largely because of the savings on irrigation as seen in Table 1C. Even so, when yield is taken into consideration breakeven variable costs per pound are within a penny for both dryland and irrigated cotton. Fixed costs are \$4.36 per acre higher for dryland conventional-till cotton and \$5.28 per acre higher for irrigated conventional-till cotton compared to strip-till. This results in a cost savings of \$7.95 per acre to dryland strip-till cotton producers and \$18.05 per acre for irrigated strip-till cotton producers. Assuming comparable yields, the budgets show a total breakeven cost difference of \$0.02 per pound between conventional-till and strip-till cotton.

Each individual operation is different. These budgets are based on typical operations and average input prices. Costs and yields may differ depending upon location, management style, and weather. You might find it useful to take a look at the UGA Cotton Enterprise Budgets and use your own values for your operation to determine your cost comparisons.

The UGA Cotton Enterprise Budgets are available annually through your local County Extension Office and online at <http://www.ces.uga.edu/agriculture/agecon/printedbudgets.htm>. Results of the 2005 survey mentioned in the beginning of this article can be found in the publication titled, *Conservation Tillage in Georgia Cotton Production: An Analysis of a 2005 Survey*, which is available online at <http://www.ces.uga.edu/agriculture/agecon/pubs/comm/agecon-06-112.pdf>.

Cotton Nematode Management. (*Kemerait*) Plant parasitic nematodes of cotton rank as one of the most important, yet under managed, pest problems for cotton producers in the state of Georgia and across the cotton belt. In addition to practicing good crop rotation, effective management of nematodes often requires the use of nematicides prior to or at planting. Growers who fail to take the necessary actions to manage nematodes before the seeds are buried in the closed furrow have severely reduced their chances of avoiding a problem.

Here are a few tips that cotton producers should consider in order to optimize their management of nematodes.

1. Know the levels of plant parasitic nematodes (southern root-knot, reniform, Columbia lance, and sting) in your fields. This is best done by collecting soil samples in the late fall for analysis.
2. Treat fields with nematicides that are appropriate for the levels of nematodes that occur in your fields. For example, where nematode populations are at approximately threshold levels, a grower may want to use 5.0 lb/A Temik in-furrow, AVICTA Complete Pak, or perhaps the new AERIS Seed Applied System. However, where nematode populations are well above the thresholds, growers must consider use of Telone II or an additional side-dress application of Temik to maximize nematode control and increase yields.
3. Nematicides are most effective when they are applied correctly. Insure that Temik hopper boxes and Telone II application rigs are well-maintained and calibrated correctly. Insure that soil conditions (temperature and moisture) are adequate at the time of application to insure maximum efficacy of the products.
4. Plant the cotton when conditions are favorable for rapid and vigorous growth. Not only will this minimize the risk to seedling diseases, but will also give all nematicide treatments, to include AVICTA Complete Pak and AERIS Seed Applied System, the best opportunities for success.
5. Producers should also know that Telone II now has an at-plant application label (24C) for cotton production in Georgia. This option will add convenience for many growers, especially those who practice conservation tillage. Growers who choose to apply Telone II at planting time should take all necessary steps to insure that conditions are appropriate for application of Telone II and for the next few days after planting to reduce the risk of damage to the cotton crop.

For more information on any of these topics, please contact Dr. Bob Kemeraut or your local UGA Cooperative Extension office.

Scout Schools. (*Roberts*) Locations and dates for scheduled Cotton Scout Schools are as follows. Individuals planning to attend the school in Tifton need to pre-register.

Tifton	June 4, 2006	Contact: Debbie Rutland	(229) 386-3424
Midville	June 14, 2006	Contact: Will Duffie	(706) 554-2119

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

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