



The University of Georgia
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College of Agricultural and Environmental Sciences



Georgia Cotton

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Cotton Gives Ground to Grains? (*Brown*) Acreage surveys and seed orders suggest that corn acreage will increase across the U.S. and Georgia in 2007. Recent price rallies have also escalated interest in soybeans. Cotton acreage could fall to 1.1 million acres, a significant drop from 1.38 million certified in 2006. Corn planting will begin in earnest this week, so acreage commitment to corn should soon become evident.

Considerations in Cotton / Corn Culture. (*Brown*) Expansion of corn acreage compels thoughts about potential impact in cotton. (1) Both cotton and corn are hosts of Southern root knot nematode; therefore, growers should realize that rotation to corn could exacerbate (increase) problems with root knot in cotton. Conversely, corn is an excellent management option for reniform nematodes, and rotation to corn will provide positive results for future cotton. (2) Where cotton and corn are planted in close proximity, both should be Roundup Ready (RR or RF) if possible. More than 95 percent of the cotton planted will likely be RR, while seed availability indicates that RR corn may be limited to 50 to 65 percent of the expected acreage. Non RR corn is very sensitive to glyphosate, so it makes sense that adjacent fields be RR if at all possible. (3) Corn (as well as soybeans and peanuts) serve as a reservoir for stink bugs. Bug numbers and damage can be significantly greater in cotton rows that border corn, so there is value in taking a much more aggressive approach (scouting and spraying) in a sprayer swath width or two of cotton adjacent to corn. (4) Weed control in corn should include atrazine, a broad spectrum herbicide that has both residual and postemergence activity. It represents an alternative way (in terms of herbicide mode of action) of dealing with weeds, especially such problem species as Palmer amaranth (pigweed). Growers should also be careful to NOT lose the battle following corn harvest. Tillage and/or herbicides should be used post harvest in corn to prevent weed buildup.

Cotton Nematicide Management Opportunities for 2007. (*Kemerait*) Many growers continue to seek advice when selecting a nematicide for management of parasitic nematodes of cotton in Georgia. Below is a summary of the research presented at the 2007 Beltwide Cotton Conference in New Orleans. The majority of this research was conducted with county agents in commercial cotton fields across the state.

1. Results from 26 cotton studies conducted in 2004, 2005, and 2006 are included in this summary.
2. Field sites were naturally infested with either southern root-knot nematodes (*Meloidogyne incognita*), reniform nematodes (*Rotylenchulus reniformis*), or Columbia lance nematodes (*Hoplolaimus columbus*).
3. Efficacy of new seed treatments AVICTA Complete Pak and AERIS Seed-Applied System was compared to that of aldicarb (Temik 15G) and to commercial seed treated with insecticides thiomethoxam (Cruiser) or Imidacloprid (Gaucho Grande).
4. Fumigant 1,3-dichloropropene (Telone II) was evaluated in 10 of the 26 trials.
5. Where assessed, root gall ratings assessed approximately 30 days after planting (a measure of early season nematode control) were typically statistically lower on plants treated with aldicarb than on plants from seed treated with AVICTA Complete Pak, AERIS Seed-Applied System, Cruiser, or Gaucho Grande. A lower rating indicates less damage from the southern root-knot nematodes at the time of sampling.
6. It was difficult to statistically differentiate the efficacy of AVICTA Complete Pak from aldicarb (Temik 15G, 5.0 lb/A), Cruiser, or Gaucho Grande based upon final lint yields.
 - a. In 14 of 25 studies, plots treated with aldicarb, 5.0 lb/A, numerically out-yielded plots where seeds treated with AVICTA Complete Pak were planted.
 - b. The average yield advantage to aldicarb in these 14 trials was 119.5 lb lint/A; however in only one of the 14 trials was the yield difference between aldicarb and AVICTA Complete Pak statistically different.
 - c. In 11 of 25 trials, plots that were planted to seeds treated with AVICTA Complete Pak out yielded plots treated with aldicarb (5.0 lb/A) with a yield advantage of 48.1 lb/A lint. Yields were statistically different in one of the 11 trials.
 - d. Yield advantage to AVICTA Complete Pak over Cruiser or Gaucho Grande was 54.5 lb/A, though yield differences were statistically significant in only 1 of 25 trials.
7. Where fumigation with 1,3-dichloropropene (Telone II) produced a significant increase in yield over use of seed treatment AVICTA Complete Pak (four of 10 trials), the increase in lint per acre varied from 224 lb to 615 lb. Telone II, when applied properly, provides optimum control of nematodes in fields with higher populations, e.g. 3X threshold and above.

Conclusions from these research studies

1. AVICTA Complete Pak does have a fit in cotton production in Georgia for management of nematodes in fields where populations are at threshold level or slightly above. The yield advantage of AVICTA Complete Pak over Cruiser-treated seed or seed treated with Gaucho Grande demonstrates this.

2. My interpretation of these results is that AVICTA Complete Pak is not as good as Temik 15G at reducing early season galling from the southern root-knot nematodes.
3. In these trials, AVICTA Complete Pak was just as likely to out-yield Temik 15G (5 lb/A) as Temik was to out-yield AVICTA Complete Pak. However, the magnitude of the yield increase for Temik over AVICTA Complete Pak was numerically greater than for yields of AVICTA Complete Pak over Temik.
4. When choosing between AVICTA Complete Pak and Temik, growers should consider such factors at difference in efficacy and yield potential, cost differences, and the “convenience” factor when making their decision.
5. Comparisons between AVICTA Complete Pak and AERIS Seed-Applied System were limited in Georgia in 2006. Growers who wish to use AERIS Seed-Applied System in 2007 are encouraged to:
 - a. Use it on limited acreage to determine its fit on their farm.
 - b. Avoid using the product in fields with heavy nematode pressure.
 - c. Determine the risk to seedling disease in each field in order to decide if the cost of the optional Trilex fungicide portion of the package is a good investment.
6. Growers planting cotton in fields with high levels of nematodes or a history of significant yield losses to nematodes should use of more powerful nematicide, like Telone II, to insure greatest yields. (In future articles I will discuss side-dress applications of Temik 15G and use of Vydate C-LV.)

New 24C label for Telone II

Some cotton growers, especially those practicing conservation tillage, have been fumigating with Telone II at time of planting for some time. However, such an application has been off-label until now. As of the 2007 season, cotton growers in Georgia can legally fumigate with Telone II at time of planting and UGA Cooperative Extension and Dow AgroSciences are ready to assist those who wish to consider such an option.

Until the arrival of the 24C label, growers were legally required to wait 7-10 days after applying Telone II before plating the cotton seeds. This waiting period insured adequate time for the Telone II fumigant to work effectively and escape from the soil prior to germination of the cotton seeds. If cotton seeds germinate when too much fumigant remains in the soil, then stand problems are likely to occur.

Telone II can be effectively and safely applied at time of planting, provided that soil conditions are favorable. The main reason for applying Telone II at planting time, in addition to providing excellent control of nematodes, is to eliminate an earlier trip across the field. Growers who are considering the adoption of fumigating with Telone II as they plant their cotton should consider the precautions below.

Specific Use Precautions For At-plant Applications of Telone II:

- Crop injury is not expected, but may occur with at-plant applications.
- Some conditions that may enhance crop injury are:
 - Cool wet weather following application.
 - Very dry conditions.
 - Making at-plant applications in heavier soils.

- Hard compacting rains occurring within 2 days after application.
- Using rates higher than 3 gallons of Telone® II per acre.
- Uneven or improper application.
- Poor quality seed

New Fertilizer Products: N-Guard (now called Nutrisphere-N™) and AVAIL®. (Harris) Southern States has partnered with a company called Specialty Fertilizer Products (SFP) and will market two new fertilizer products for 2007. AVAIL® is a liquid polymer additive for granular or liquid P fertilizers. Nutrisphere-N™, initially called N-Guard, is similar “technology” i.e. a liquid polymer additive that can be added to granular urea or UAN solutions. Nutrisphere-N™ is supposed to reduce N loss by volatilization (as a urease inhibitor, like Agrotain) and leaching (as a nitrification inhibitor, like the old N-Serve by Dow used with anhydrous).

Unfortunately, these two products are being brought to the Southeast before anyone has had a chance to adequately test them here. These products have been evaluated in other parts of the country; for example, in the Midwest and Great Plains on corn. Obviously, cotton in south Georgia can be a lot different situation than corn in Michigan or Kansas.

The basic premise for AVAIL® is that the polymer protects or “shields” the P fertilizer from being “locked up” in the soil (by aluminum, iron, calcium and magnesium) , thus keeping it more AVAIL®-able for plant uptake (much like a chelate). Most of the P in fertilizer applied to soil is “locked up.” However, once it is added to the soil bank or reservoir, some of it can be “re-released” for plant uptake. In fact, the bigger the reservoir, the bigger the re-release or “slow bleed” as I like to call it. This is why you soil test. In other words, the higher your soil test phosphorous, the greater the release of P from the soil reservoir. When you add the 20 to 30 percent uptake from applied P fertilizer (this figure taken right from the old PPI soil fertility manual) with P released from the soil reservoir, you normally get enough P into the plant so it is not the limiting nutrient; that is, P does not reduce crop yields or quality. According to literature provided by SFP, “in study after study, AVAIL® has been shown to reduce phosphate fixation and boost potential yields – as much as 10 to 15 percent.” We’ll have to wait until after 2007 to see if Georgia studies show similar results. And by the way, the question about adding AVAIL® directly to soil to “lock up” high soil test P has already been asked a number of times. The simple answer is NO; i.e. AVAIL® only locks up P in fertilizer that you add and does not lock up P already in the soil.

The Nutrisphere-N™ product probably holds more promise than AVAIL® for cotton in south Georgia. This is because nitrogen is much more likely to be the nutrient limiting our cotton yields. In addition, nitrogen is needed in larger amounts by cotton and is also more expensive on a per pound basis than P. The exact mechanism used by Nutrisphere-N™ to decrease volatilization and leaches losses is still a little unclear. Apparently, Nutrisphere-N™ affects the element nickel (Ni) in the soil, which affects urease activity and therefore reduces ammonia volatilization. Apparently, since the N is polymer-coated and thus released slowly, it prevents the conversion to nitrate, the form in which N is susceptible to leaching, making the product a nitrification inhibitor. That does not fit the technical official definition of a nitrification inhibitor per se but it may have that effect. Again, the biggest question is will N in this product be released – or not released – when it is needed to provide adequate N to cotton in south Georgia.

Like with AVAIL®, we'll be working with Southern States to test Nutrisphere-N™ on cotton this year. We'll know more by season end.

Bt Cotton Insect Resistance Management. (*Roberts*) Bt cotton has had a significant impact on cotton production in Georgia and throughout the U.S. Growers obviously value the technology as demonstrated by the fact that 90 percent of the cotton planted in Georgia during 2006 was Bt cotton (Bollgard, Bollgard II, and WideStrike). Tobacco budworm and corn earworm have demonstrated an ability to develop resistance to chemical insecticides and both have the ability to develop resistance to Bt cotton.

Resistance to an insecticide occurs through selection. When an insecticide application is made, susceptible individuals will be controlled and a percentage of individuals which are inherently resistant or tolerant to the insecticide will survive. Repeated exposure of succeeding generations to the same insecticide will increase the percentage of resistant individuals in the population. Alternating the use of different insecticide classes on different generations of insects is a recommended insecticide resistance management strategy.

Bt cotton expresses toxin continuously and season long, thus there is a high potential of tobacco budworm or corn earworm to quickly develop resistance if an effective resistance management plan is not implemented. Resistance management in Bt cotton utilizes the refuge approach to maintain a pool of susceptible moths to mate with any resistant moths that may survive exposure to Bt cotton. The primary function of the non-Bt cotton refuge is to produce tobacco budworm and corn earworm populations that are not exposed to Bt which can reintroduce susceptibility into the selected populations.

Growers planting Bt cotton must employ one of three refuge (structured refuges are required for Bt cottons as conditions of the EPA registrations for these products):

- Option 1: 5% Embedded Refuge
- Option 2: 5% Unsprayed Refuge
- Option 3: 20% Sprayed Refuge

See the following websites for additional details on refuge placement and design and additional information on insect resistance management in Bt cotton.

http://www.monsanto.com/monsanto/us_ag/content/stewardship/irm/2007/bollgard.pdf
<http://www.dowagro.com/widestrike/steward/refuge.htm>

Georgia Quality Cotton Award Winners. (*Brown*) On February 13, 2007, Bayer Crop Sciences and The University of Georgia hosted the second annual Georgia Quality Cotton Awards program at Reynolds Plantation near Greensboro, GA. County agents across the state submitted 29 grower entries from 15 gins. Quality premiums for the grower winners ranged up to 5.19 cents/lb over the local loan value. It is noteworthy that multiple gins were repeat winners from both the 2005 and 2006 crops, as was Heard Family Farm from Seminole County.

2006 Georgia Quality Cotton Award Winners.			
Region / Acreage Category	Farm / Grower	Gin	County Agent
Region 1			
< 500 acres	Ryan Henderson	McClesky Cotton Co	Charles Lamb
500 to 1,000	Lance Thompson	Arabi Gin	Ronnie Barentine
> 1,000 acres	Grimsley Farms	McClesky Cotton Co	Charles Lamb
Region 2			
< 500 acres	Ratchford Hill Farms	Bryant's Incorporated	Jim Crawford
500 to 1,000	Brett & Brett Farms	Farmers' Gin & Storage Co	Jim Crawford
> 1,000 acres	J.H. Harrison Farms	Farmers' Gin & Storage Co	Jim Crawford
Region 3			
< 500 acres	Derrell Bennett, Jr	BCT	Ben Tucker
500 to 1,000	Charles Dodd	BCT	Johnny Whiddon
> 1,000 acres	DeWitt Farms	BCT	Johnny Whiddon
Region 4			
< 500 acres	Travis Braswell	Cloverleaf Gin	Rome Ethredge
500 to 1,000	Wilbeth Farms	Cloverleaf Gin	Rome Ethredge
> 1,000 acres	Heard Family Farm	Cloverleaf Gin	Rome Ethredge

Verdict on Monsanto / D&PL Expected Soon. (*Brown*) The “jury is still out” on Monsanto’s \$1.5 billion bid for D&PL, but an answer, or at least a preliminary one, is expected very soon. While the deal involves many complex issues, arguments FOR and AGAINST can be distilled into a few statements. On the positive, this purchase represents a huge on-going commitment to cotton by a global technology company and the resulting partnership will likely result in more rapid development and delivery of superior products to cotton growers. Conversely, this deal raises concerns about future competitiveness in the cotton seed/trait business. Monsanto has had a near-monopoly on transgenic technology in cotton. Acquisition of D&PL by Monsanto creates an even more formidable, more powerful competitor. Response from the U.S. Department of Justice should be forthcoming.

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

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