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

Georgia Cotton

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Bt Cotton Update (*Roberts*): Over 90 percent of cotton planted in Georgia during 2007 was Bt cotton. The majority of Bt cotton acres planted were varieties which included the single gene Bt cotton technology Bollgard. The registration of Bollgard, which was commercialized in 1996, will expire September 30, 2009. The provider of Bollgard technology does not plan to ask for an extension of the registration due to concerns over resistance development. From an insect resistance management standpoint, the move from the single gene Bollgard technology to two-gene Bt cotton technologies is advantageous. Carryover seed (Bollgard seed not planted in 2009) will be available for planting in 2010; however the quantity available will depend on acres planted in 2009.

Two-gene Bt cotton technologies currently available include Bollgard II and WideStrike. Bollgard II was commercialized in 2003 and WideStrike was commercialized in 2005. In terms of insect control, both Bollgard II and WideStrike are superior to Bollgard. The two gene Bt cottons have a broader spectrum of activity and increased efficacy. However, the potential of caterpillar damage remains and both technologies should be scouted and treated on an as needed basis. We have evaluated these technologies for several years and have a general understanding of insect control performance. However, as these cottons are planted on tens or hundreds of thousands of acres we will learn more.

Growers should consider planting a portion of their acres to varieties with Bollgard II or WideStrike technology. Growers need to gain experience in how these two-gene technologies and varieties perform on their farm and their production system.

Cotton Burndown (*Culpepper*). Controlling cutleaf eveningprimrose and wild radish has proven difficult as these weeds are usually tolerant to glyphosate (Roundup, others) and paraquat (Gramoxone, others) when applied alone. The most effective burndown program is a late winter application of 2,4-D applied alone followed by either glyphosate or paraquat applied closer to planting. However, for growers who are not able to make early applications of 2,4-D then glyphosate or paraquat in mixture with other herbicides are often the most effective options.

Either glyphosate or paraquat in mixture with 2,4-D or Clarity will provide excellent control of primrose and radish as well as most, if not all, other problematic weeds (Tables 1 and 2). Plant back restrictions from 2,4-D labels are quite confusing. Many labels suggest we should wait 90 days or until the 2,4-D has dissipated from the soil prior to planting cotton. Research in Georgia and North Carolina has shown that 30 days between application and planting is acceptable as long as rainfall occurs during that waiting period. The waiting period for Clarity is 21 days AFTER receiving one inch of rainfall.

For growers not wanting to use 2,4-D or Clarity it is important to determine if the primrose and radish are mature (seed set) or are young and vegetatively growing when selecting a burndown program.

Immature primrose: Mixtures of Ignite, glyphosate or paraquat plus Valor, and paraquat plus diuron can provide good control.

Mature primrose (seed development): Ignite, glyphosate or paraquat plus Valor, and especially paraquat plus diuron can provide excellent control.

Immature radish: Harmony Extra or Express plus glyphosate or paraquat can provide excellent control while glyphosate plus Valor can provide good control.

Mature radish (seed development): Mixtures of Harmony Extra or Express with glyphosate or paraquat can also provide excellent control of mature radish as will paraquat plus diuron or glyphosate plus Valor. Ignite will also be fairly effective in controlling mature radish.

Many growers have become accustom to using low water volumes and special drift reduction spray tips when applying glyphosate or 2,4-D; however, it is essential that growers use the appropriate water volumes and spray tips when applying other herbicides especially Ignite, paraquat mixtures, as well as Aim, ET, or Valor mixtures.

Also before using any herbicide, determine the appropriate plant back interval before planting cotton (Table 3)

Table 1. Percent primrose control by burndown herbicides. Control reported 28 days after treatment.*

Glyphosate mixtures	Primrose control		Paraquat mixtures	Primrose control
WeatherMax (22 oz)	60		Gramoxone Max 3 SL (2 pt)	70
+ Aim 2 EC (1 oz)	70		+ Aim 2 EC (1 oz)	75
+ Diuron 4 L (1 to 1.5 pt)	75		+ Diuron 4 L (1.5 to 2 pt)	85 to 99**
+ Harmony Extra 75 DF (0.5 oz) or Express 75 DF (0.33 oz)	70		+ Harmony Extra 75 DF (0.5 oz) or Express 75 DF (0.33 oz)	80
+ Valor (1.5 to 2 oz)	85		+ Valor (1.5 to 2 oz)	85
+ Clarity (8 oz)	90		+ Clarity (8 oz)	90
+ 2,4-D 3.8 L (1 pint)	100		+ 2,4-D 3.8 L (1 pint)	100

*Results generated from 16 trials over past six years.
**Paraquat plus diuron will provide fair to good control of immature plants but excellent control of mature plants.

Table 2. Percent wild radish control by burndown herbicides. Control reported 28 days after treatment.*

Glyphosate mixtures*	Radish control		Paraquat mixtures	Radish control
WeatherMax (22 oz)	70		Gramoxone Max 3 SL (2 pt)	66
+ Aim 2 EC (1 oz)	73		+ Aim 2 EC (1 oz)	66
+ Diuron 4 L (1 to 1.5 pt)	84		+ Diuron 4 L (1.5 to 2 pt)	88
+ Harmony Extra 75 DF (0.5 oz) or Express 75 DF (0.33 oz)	95		+ Harmony Extra 75 DF (0.5 oz) or Express 75 DF (0.33 oz)	97
+ Valor (1.5 to 2 oz)	85		+ Valor (1.5 to 2 oz)	76
+ Clarity (8 oz)	95		+ Clarity (8 oz)	95
+ 2,4-D 3.8 L (1 pint)	95		+ 2,4-D 3.8 L (1 pint)	95

*Results generated from two trials.

Table 3. Plant back restriction for cotton when applying herbicides at burndown.

Burndown herbicide option	Time interval before planting	Special comments
2,4-D	varies by product used	Most labels suggest cotton can be planted after 2,4-D has dissipated from soil. Salvo and Barrage formulations note 30 day interval with up to 0.48 lb ai/A.
Aim	anytime prior to planting	
Clarity	21 days after 1 inch of rain	Following application AND one inch of rainfall, a waiting period of 21 days is required.
Diuron	15 to 45 days prior to planting	
Express	14 days prior to planting	
Harmony Extra	14 days prior to planting	
Glyphosate	prior to emergence (non-RR cotton)	
Ignite	prior to emergence	
Paraquat	prior to emergence	
Valor	14 days prior to planting for strip till production	Following application a strip till operation must occur prior to planting.

Dealing With High Fertilizer Prices (*Harris*): Fertilizer prices continue to increase. I used the values of 60-50-35 (cents per pound of N-P2O5 and K2O) during meetings this winter. However, prices made another increase recently, with DAP going to around $1000 per ton ! Based on current prices, N-P2O5 and K2O are somewhere around 65-83-58!

Unfortunately there are no "silver bullets" when it comes to getting around these prices. Cotton needs a certain amount of nutrients. These need to be supplied from the soil and from applied fertilizer. The higher the yield goal, the more nutrients the cotton plant needs.

Banding P and K fertilizer does not increase uptake efficiency on soils with medium or higher P and K soil test levels. If you cut the recommended rate of P and K because you apply them in a band you may also cut your yield.

Some things that may be helpful to weather the storm of high fertilizer prices this year include:

1) Soil test – Important to do every year anyway but even more important now. Makes the cost of soil testing pale in comparison to the value of knowing where you stand.

2) Apply the recommended P and K, and ¼ to 1/3 of your total N rate at planting. If using chicken litter as a preplant fertilizer, calculate how much N, P and K is applied.

3) Tissue test around first square if you suspect any micronutrient problems (mainly Mn or Zn) especially due to high soil pH.

4) Sidedress N between first square and first bloom with the appropriate N rate for expected yield goal. Give yourself a 30 lb N/a credit if following peanuts or a legume cover crop.

5) Starting at first bloom, petiole test to fine tune N, K and boron needs. This is especially recommended if you are cutting your N rate compared to previous years because you thought you were high, or if using chicken litter since it is not easily predicted exactly how much and when N will be released from the organic portion of the litter.

Thrips Management (*Roberts*): Early season thrips are the most predictable insect pests of cotton in Georgia. Preventive treatments at planting are used for thrips control on most acres due to the predictability of thrips infestations. Control of thrips infestations in the absence of an at-plant treatment is difficult and requires multiple well timed foliar sprays (multiple foliar sprays may flare cotton aphids, spider mites, or other pests). General observations of thrips infestations and control are listed below.

- The use of a preventive insecticide at planting provides a consistent yield response.
- Thrips infestations are generally higher in April and early May plantings compared with late May and June plantings.
- Yield impacts from thrips infestations are compounded by slow seedling growth due to cool temperatures or other stress factors.
- Thrips infestations in conservation tillage systems are typically reduced compared with conventionally tilled production systems (winter cover crops should be killed at least 3 weeks prior to planting and no green vegetation should be present at planting).
- At plant preventive thrips insecticides include:
  - Temik 15G applied in-furrow
  - Cruiser seed treatment (Avicta Complete Pak)
  - Gaucho Grande seed treatment (Aeris Seed Applied System)
  - Orthene in-furrow spray
  - Orthene seed treatment.
- The seed treatments Cruiser and Gaucho Grande perform similarly, providing about three weeks of control. Temik typically provides extended residual control (four+ weeks) compared with the seed treatments.
- Seedlings become more tolerant of thrips feeding as they develop. Small seedlings (1-2 leaf) are more sensitive to thrips injury in terms of yield loss compared with 4-5 leaf seedlings. It is unlikely that seedlings which have reached the 5-leaf stage and are growing rapidly will benefit from supplemental foliar sprays.
- Systemic insecticides such as Bidrin, dimethoate, and Orthene should be used for foliar control of thrips if needed.
- Automatic foliar thrips sprays should be avoided. In addition to the cost associated with an unneeded spray, foliar sprays increase the likelihood of pests such as aphids and spider mites developing.

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