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

Georgia Cotton

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Advantages and Risks of Waiting for Moisture *(Collins and Whitaker)*

Now that cotton planting is largely underway, it is important consider the significant investment in planting a cotton crop, and to avoid hasty decisions that could compromise the crop. As cotton acreage is increasing and equipment and labor resources are stretched thinner, another pressing factor to consider is time. The most challenging planting decisions during the early part of our planting window are often associated with dryland acreage. When warm temperatures prevail, growers usually begin planting dryland acreage as soon as sufficient soil moisture is available. This year has been relatively dry so far, and several growers have been faced with decisions of whether to "dust in" seed in anticipation of rain if soils are extremely dry, plant deeper to capture some subsurface moisture, or to delay planting until it rains. Of course, there is a risk that it will continue to remain relatively dry which could force growers to plant in suboptimal conditions. However, growers should keep in mind that we are still at the very beginning of our planting season, and there is considerable time remaining to plant. At this point, waiting on rain poses little risk and there is little need to plant in soils with suboptimal moisture. This risk really only becomes greater as time elapses, and these decisions are much more difficult towards the end of our planting window. Some growers may also want to utilize or capture available soil moisture by deep planting. Deeper planted cotton in Georgia should be planted at depths between 0.75 and 1.25 inches but not greater than 1.25 inches. Planting on the shallower end of this spectrum is advised when encountering unfavorable soil or environmental conditions, or if surface crusting is likely. Deep planting in unfavorable soil temperatures, or in soils that tend to crust, could lead to germination and emergence problems. Planting at depths closer to 1.25 inches is only appropriate when planting in good soil moisture, warm soil temperatures, and in well-drained soils without the potential for crusting. The success of deep planting is more probable if soil moisture at these depths are sufficient and forecasted conditions continue to remain favorable until seedlings emerge.

Evaluating Plant Stands and Replant Considerations ***(Collins and Whitaker)***

Plant stands should be evaluated very soon after emergence. Replant decisions are far more difficult to make as time elapses, and these decisions usually need to be made more quickly as the end of the planting season draws near. Every field situation seems to be different, and there are several factors to take into account, when considering saving or replanting a sub-optimal stand, such as costs (seed, fuel, labor, additional herbicides/insecticides), herbicide options or limitations, the status/health of the remaining stand, how much time is left to plant, delays in maturity, and yield potential, among others. Therefore, it is imperative to evaluate the crop and make these decisions promptly. Small, evenly spaced and infrequent gaps between plants may have little impact on maturity, architecture, or yield. Frequent gaps of 3 feet or larger however could significantly impact yield and could lead to delays in maturity, as the plants adjacent to these gaps could only compensate for space by forming more outer position and/or vegetative branches or bolls. Additionally, these plants may often produce very thick stalks to support the additional growth of vegetative branches, and if this type of plant structure is observed throughout the field, then harvest efficiency may also be affected.

Observing the size and frequency of these gaps compared to a mental "optimal stand" could help determine potential yield losses and the advantages/disadvantages of replanting. Previous research in Georgia suggests that replanting in June may be justified when 3-foot (or greater) skips occupy nearly 50% of planted acres, which is quite a substantial loss. One reason that such a substantial loss is required before replanting is justified is the economics of starting over, therefore it is important to reduce the risks of stand loss by planting when conditions are optimal and protecting seedlings (from insects, herbicide injury, diseases, nematodes, etc.) for several weeks after emergence. When evaluating a plant stand, take a mental note of stand losses and try to visualize what an optimal stand would look like. If planting 2.5 seed per foot on 36-inch rows, then you would expect to see a stand of approximately 2 plants per row foot. Comparing the stand losses to an optimal stand could provide insight on how much yield may be lost. Additionally, observing the size of gaps between plants may provide insight regarding potential effects on weed control, maturity and canopy architecture. When making visual estimations of stand loss, consider gaps larger than 3 feet as multiple gaps to determine the percentage of acreage that is comprised of 3-foot gaps. For example, if gaps of 6 feet are observed, then it should be considered as two 3-foot gaps. Secondly, evaluate the status or health of remaining plants. If significant thrips and/or herbicide injury are observed when seedlings are relatively young, then additional yield may be lost, although this varies widely from situation to situation. Whether or not additional injury is observed in fields with skippy stands, it is always imperative that the remaining stand be protected from anything that could cause additional yield loss or delays in maturity. If a skippy stand is the result of hail damage, remember that seedlings can generally survive if one or both cotyledons are still present in whole (preferably) and sometimes in part, although split terminals and delays in maturity are a common result of hail damage. Also evaluate the strength of the main stalk in hail damaged situations, as hail can typically damage or bruise the main stem and affect the seedlings' ability to recover and continue to grow. These observations should be made meticulously in order to make the best decision. Another factor to consider is yield potential of a particular field, based on field history and other factors (soil productivity, irrigated versus dryland, etc) when deciding whether it is worth the extra effort and expense of replanting. Additionally, growers must decide whether or not a better stand can be established by replanting. Some fields may consistently present a challenge for stand

establishment, or moisture may become deficient when growers intend to replant. Most of the time (but not always), replanting is rarely justified, but this can only be determined through extensive evaluation and consideration of all factors. Although there are factors we can not control, there are several factors that can be controlled to protect seedlings, so that replanting can be avoided. Additionally, keep in mind that a skippy stand looks much worse early in the season than it does at the end in many cases.

Foliar Thrips Sprays (*Roberts*)

Thrips injury is typically greater on early planted cotton compared with cotton planted after May 10. This is for two reasons. Thrips populations are typically higher on early planted cotton and seedling growth may sometimes be slowed due to cool temperatures. Slow seedling growth, for whatever reason, makes the seedling more susceptible to thrips feeding; a rapidly growing seedling can much better tolerate thrips feeding.

Due to the short supply of Temik, many growers will be using neonic seed treatments as a preventive treatment for thrips for the first time. The neonic seed treatments provide thrips control for about three weeks after planting. In environments where seedlings are growing rapidly and thrips populations are not extremely high (i.e. planted after May 10), neonic seed treatments typically provide acceptable control. Regardless of when you plant, fields should be scouted for thrips and injury and foliar applications should be made if threshold populations are observed. Foliar treatments for thrips should be applied when 2-3 thrips per plant are counted and immatures are present. The presence of immatures suggests that the at-plant systemic insecticide is no longer active. Once seedlings reach the 4-leaf stage and are growing vigorously, foliar insecticide applications are rarely justified.

COTTON INSECT CONTROL (continued)

PEST	INSECTICIDE	FORMULATION PER ACRE	LBS. ACTIVE PER ACRE	REMARKS
Thrips (seedling cotton), Foliar Spray	acephate			Apply when 2-3 thrips per plant are counted and immatures are present. Treatment is rarely necessary after plants have 4 true leaves and are growing vigorously.
	(Orthene 97)	3.0 ozs	0.18	
	(Orthene 90S)	3.2 ozs	0.18	
	(Acephate 97)	3.0 ozs	0.18	
	(Acephate 90)	3.2 ozs	0.18	
	dicrotophos			
	(Bidrin 8)	1.6-3.2 ozs	0.1-0.2	
	dimethoate			
	(Dimethoate 4)	0.25-0.5 pt	0.125-0.25	

If an at-plant insecticide is not used, multiple well timed foliar sprays will be needed. It will be especially difficult to control thrips with foliar sprays alone on early planted cotton. Multiple sprays targeting thrips will also increase the risk of having problems with aphids and/or spider mites due to the destruction of beneficial insects.

We have learned in recent years that the first 14 days of a cotton plants life are the most important in terms of thrips control. This is likely the reason at-plant systemic insecticides provide such a consistent yield response

We have received questions about the efficacy of Vydate C-LV on thrips. Vydate C-LV is labeled on thrips (suppression only) at 8.5-17 fluid oz per acre to provide supplemental control of tobacco and onion thrips and can be applied when cotton reaches the 1st true leaf. Tobacco thrips is the primary thrips species which infest cotton seedlings in Georgia. All Vydate C-LV applications must follow a previous at-plant insecticide treatment that has activity on thrips. Below are partial results of a trial conducted in 2006 which included a foliar application at the 1st true leaf of Vydate C-LV at 17 oz/a or Orthene 97 at 3 oz/a compared with no foliar insecticide (cotton seed had been treated with a neonic seed treatment).

	Immature Thrips per 5 Plants		
	3 DAT	7 DAT	14 DAT
No Foliar	14.2	17.0	32.7
Vydate C-LV 17 oz/a	4.7	10.2	26.0
Orthene 97 3 oz/	9.2	8.5	17.5
LSD (P=.05)	7.0	11.3	19.4

Vydate C-LV had significant thrips activity in this trial. Orthene is considered the standard for thrips control due to efficacy as well as economics. However, if Vydate C-LV were being used in a nematode management program we could expect some thrips suppression based on these results. Vydate C-LV is a broad spectrum insecticide (as is Orthene) which will disrupt natural controls.

With Emerged Pigweed, Should I Spray Before or After Planting? ***(Culpepper)***

As growers begin to plant, they are finding emerged pigweeds in most fields. Obviously many of these growers would prefer to plant and then spray preemergence herbicide plus paraquat (Gramoxone, others) in an effort of controlling emerged plants while obtaining residual weed control. Although this process is convenient, it is likely not the most effective approach. In most situations the planting process or strip-tillage/planting process covers up a few pigweed plants with dirt which allows them to survive the preemergence (including paraquat) herbicide application (Figures 1 and 2). Thus, these pigweeds should be sprayed prior to planting followed by residual herbicides being applied after planting. Yes, this method does require an additional herbicide application but it is still better than handweeding!!!!! See "controlling emerged Palmer amaranth at planting" for the most effective herbicide options!

Figure 1. Pigweed covered by dirt with strip till operation prior to spraying herbicide.

Figure 2. Pigweed control without dirt covering pigweeds with strip tillage or planting process.

Controlling Emerged Palmer Amaranth at Planting ***(Culpepper)***

Glyphosate-resistant Palmer amaranth is up in most fields, the exception being those fields planted to heavy cover crops. Growers must control these emerged pigweeds before planting. If the Palmer amaranth population is resistant to Roundup, then one of the more effective mixtures to control emerged plants would be an application of paraquat (Gramoxone, others) plus diuron (Direx, others) plus crop oil (Table 1). Mixtures of diuron with paraquat are usually far more effective than paraquat applied alone. Other effective options do exist including Ignite. Ignite can be an effective treatment depending on the rate of Ignite applied and size of Palmer amaranth during the application. Ignite at 29-32 oz/A can be used to effectively and consistently control Palmer amaranth that is 3 inches or smaller, and 40 oz/A of Ignite would likely control 5 inch Palmer. Combinations of Ignite plus diuron would control the appropriated size pigweed and provide some residual control. (Follow labeled plant back restrictions for all herbicides).

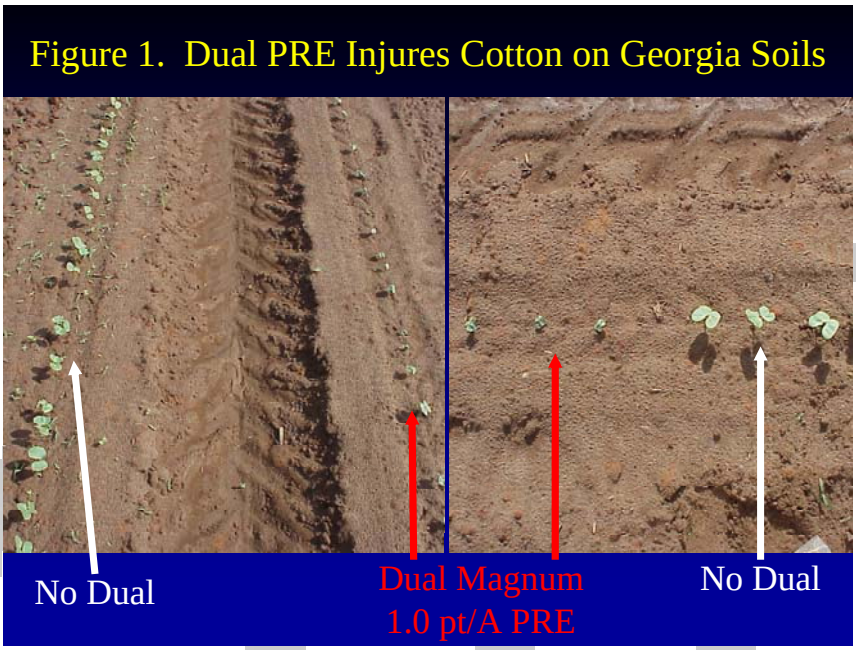
Table 1. Six-inch glyphosate-resistant Palmer amaranth response to burndown herbicide treatments.*

Herbicide treatments	Rate(s)/A	Control (%)	
		7 d	24 d
Roundup WMax	22 oz/A	0 e	0 e
Gramoxone Inteon	2.0 pt/A	85 b	62 d
Gramoxone Inteon	4.0 pt/A	88 b	67 cd
2,4-D	2 pt/A	70 d	70 bcd
Clarity	8 oz/A	65 d	69 bcd
Direx	1.8 pt/A	79 c	74 bc
Gram. Inteon + Direx	2 pt + 1.8 pt/A	94 a	78 ab
Gram. Inteon + Direx	3 pt + 1.8 pt/A	96 a	87 a

*Crop oil concentrate included with all treatments except Roundup alone.

Do NOT Apply Dual Preplant or Preemergence in Cotton ***(Culpepper)***

For some unknown reason, I continue to get numerous calls where growers want to apply Dual preemergence in cotton. Again, I will remind you to not apply Dual preplant or PRE on our soils (Figure 1)!!!!!!!



Heavy Rye Cotton Production System ***(Culpepper and Kichler)***

Our research using heavy rye residue systems currently suggests that this production method may be our most economically effective approach to control Palmer amaranth and to produce maximum cotton yields with long term sustainability. We are well aware that some growers will never move to this production method; however, for many of our growers this system should be looked at closely (Figures 1 and 2). Each month in the newsletter, we will provide up-to-date information on our inputs to manage heavy Palmer amaranth populations in the following systems: 1) conventional, 2) strip tillage into winter weeds, and 3) strip tillage into heavy rye.

Figure 1. Comparing conventional tillage programs to heavy residue programs for pigweed control and cotton production.

Figure 2. Rolling of rye and spraying rye in preparation for planting which will occur after the next rain.

DRYLAND CONVENTIONAL SYSTEM:

1. Early March: Disk, rip and bed.
2. April 1: Gramoxone Inteon 1 qt + diuron (pigweeds up and 2 inches)
3. April 28: Ignite 29 oz (new flush pigweed 3 inches)
4. Target plant date: immediately after next rain event

DRYLAND STRIP TILLAGE INTO WEEDS:

1. April 1: Gramoxone Inteon 1 qt + diuron (pigweeds up and 2 inch)
2. April 28: Ignite 29 oz (new flush pigweed 3 inches)
3. Target plant date: immediately after next rain event

DRYLAND HEAVY RYE SYSTEM:

1. November 2010: Rye 1.5 bu/A
2. February: 20 units of N
3. April 14: roll rye and spray Gramoxone Inteon at 1 pt/A (no pigweed)
4. Target plant date: immediately after next rain event

NOTE: For the next newsletter, we will get Dr. Shurley to assist in the economic comparison of the systems including herbicide input, equipment, labor, fuel and other input expenses.

Planning Today for Disease and Nematode Management ***(Kemerait)***

Much of a cotton grower's opportunity to manage diseases and nematodes affecting his crop occurs very early in the season. Variety selection, use of nematicides, addition of fungicide seed treatments, and choice of planting date with attention to temperature and soil moisture all can have a significant impact on the yield potential in field.

To minimize losses to seedling disease, the crop should be planted under conditions that support rapid germination of the seeds and aggressive, vigorous growth. Early season conditions across the Coastal Plain have been unusually warm and also dry. Warm and dry conditions typically reduce the threat to losses from seedling disease; however *Rhizoctonia solani*, the most common seedling pathogen of cotton in Georgia, thrives under warm soil condition. A combination of fungicide seed treatments, good crop rotation, and high quality seed will minimize losses to seedling disease. As a note, it is becoming more evident that *Pythium* is also an important pathogen of seedling cotton in Georgia. Pythium seedling disease is more common under cooler and wetter conditions. Where disease is caused by *Rhizoctonia solani*, seedlings typically emerge; however a necrotic lesion develops early in their growth just below the soil line and the young plant wilts and dies. In contrast, where *Pythium* is a major problem, the seedlings may never emerge and simply rot prior to cracking the soil surface thus leading to a poor plant stand.

With the shortage of Temik 15G in 2011, many growers are searching for alternatives for their management of root-knot and reniform nematodes. Although the loss of Temik reduces suitable options for managing nematodes, growers are by no means without tools to employ in the battle against this hidden foe. Fumigation with Telone II is an outstanding but under-utilized option for many growers; selection of more-resistant varieties and careful use of seed treatment nematicides in appropriate fields can provide growers with effective control as well.

The shortage of Temik in 2011 has sparked renewed interest in use of Vydate CLV after emergence for both management of plant parasitic nematodes and thrips. The issue of Vydate and trips is addressed elsewhere in this newsletter by Dr. Phillip Roberts; I will address the issue of nematode control here. Vydate CLV is labeled for the management of nematodes that affect cotton and is commonly used in the Mid-South region of the cotton belt. Historically, use in Georgia has been focused on an application of Vydate CLV (17 fl oz/A) somewhere around the 5^{th}-to-7^{th} true-leaf growth stages. Such an application is intended to supplement and earlier treatment, perhaps Temik, Avicta Complete Cotton, or Aeris Seed-Applied System. Results from field trials conducted in Georgia in recent years where the southern root-knot nematode is the problem in a field have not demonstrated any significant advantage when following an application of Temik 15G with an application of Vydate with regards to management of nematodes.

Currently, a new focus for use of Vydate CLV on cotton encourages growers to make their application earlier than in the past, now at the 1^{st} or 2^{nd} true leaf stage, following an earlier use of a seed treatment nematicide. Such an application is likely to target both thrips and nematodes. I do not have any data on such an application for the management of nematodes but will conduct trials this year. Based upon what data is available on management of root-knot nematodes, I believe that use of Vydate in such a strategy may not typically offer additional control but results may be better when considering management of reniform nematodes. In short, supplementing a seed treatment nematicide with Vydate CLV is an option that could benefit growers when Telone II or Temik 15G is not available, but an option that should be weighed carefully.

Cotton Scout Schools: Tifton June 13, and Midville June 21, 2011

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 13, 2011 at the UGA Tifton Campus Conference Center. The Midville Cotton Scout School will be will be held on June 21, 2011 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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